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FROM THE ILLEGAL EXPLOITATION OF THE WASTE CYCLE TO SUSTAINABLE BUSINESS MODELS: TOWARDS BUSINESS ETHICS AND ENVIRONMENTAL PROTECTION

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Abstract

The research is conducted within the framework of the PON project “Sociological and Legal Tools for the Analysis of Environmental Crime Phenomena (Ecomafie)” (Action IV-5 GREEN). It aims to examine the phenomenon of Ecomafie, understood as illicit activities with a significant environmental impact, emphasizing the involvement of mafia organizations.

The investigation focuses on the factors driving the criminal business associated with environmental crimes, aiming to understand the reasons behind its success and the interest it garners from legally operating entities. The study seeks to identify effective tools to counter these phenomena, contributing to formulating operational strategies that mitigate the impact of illicit activities on the environment and society.

Adopting a sociological-legal approach, the analysis examines the origins, challenges, and contemporary manifestations of environmental crimes. It focuses on the Italian context while accounting for European and international regulations and the phenomenon’s transnational dimension.

The research relies on sources such as academic literature, judicial decisions, parliamentary reports, data from environmental organizations, and national, European, and international criminal and administrative regulations. Particular attention was devoted to documents collected during an internship at a private company, which, together with three semi-structured interviews conducted with key organizational figures, provided qualitative data essential for understanding the dynamics of the phenomenon while ensuring the confidentiality of the parties involved.

Among the various manifestations of Ecomafie—including the illegal cement cycle, the trafficking of flora and fauna, and the trafficking of cultural heritage—the research focuses on the illegal waste cycle. This phenomenon, selected for its widespread occurrence, severity, and socio-legal relevance, represents a particularly significant case study due to its close connection to the economic and productive development of society. Moreover, the complexity and scale of the phenomenon underscore the need for appropriate regulatory advancements to effectively combat it.

The research begins with an analysis of the term Ecomafie, originally used to describe the involvement of mafia organizations in environmental crimes, with particular attention to the relevance of these illicit activities within the economic models of criminal organizations. The investigation also examines the contemporary significance of this concept, highlighting the growing involvement of criminal actors outside traditional mafia contexts.

The analysis focuses on the structural and conjunctural factors characterizing the legal waste cycle, identifying the aspects systematically exploited by criminal actors to infiltrate the management of such materials and generate illicit profits. This investigation includes a historical perspective, examining emblematic phenomena such as the "*Terra dei Fuochi*", the "*navi dei veleni"* (poison ships), and the "*navi a perdere*" (disposable ships), which are considered key moments in the development of criminal dynamics related to waste.

The growth of production and industry has not been accompanied by environmentally and socially sustainable solutions, leading to delays in the development of adequate regulatory and infrastructural tools. This has facilitated the emergence of a highly lucrative and structured illegal waste management cycle, exploiting systemic inefficiencies such as the immense volume of waste produced, structural and technical-regulatory deficiencies, high management costs, and regulatory disparities among states. The strength of this system lies in its ability to significantly reduce costs and bureaucratic burdens associated with environmental compliance, leveraging illicit services for waste collection, treatment, and disposal.

The analysis continues by delving into the contemporary manifestations of the criminal phenomenon, with particular attention to the operational methods and criminal phenomenology, highlighting the evolutions linked to national and international regulatory developments, such as the promotion of the circular economy and the ecological transition. The study examines the profile of the offenders, assessing whether the illegal waste cycle remains a central business for mafia organizations and outlining the role of other actors within the ecocriminal network.

The international dimension of the phenomenon is also considered, emphasizing how criminal networks exploit regulatory discrepancies between countries to concentrate illicit activities in areas with weaker environmental protections. This phenomenon, known as environmental dumping, facilitates the export of hazardous waste to nations with lax regulations, exacerbating environmental degradation on a global scale.

A central aspect of the research is the analysis of the regulatory framework, essential for identifying effective legal and operational tools to counter environmental crimes. This analysis begins with international and European Union sources, which establish the fundamental principles for global environmental protection. It then focuses on the evolution of Italian legislation, highlighting its strengths and weaknesses and identifying areas requiring further systematization to enhance its effectiveness.

Particular attention is devoted to emerging technologies, including drones, satellite systems (*Copernicus*), and advanced big data analytics, which have shown significant potential in monitoring

and preventing environmental crimes. However, their use raises challenges related to privacy and the reliability of evidence in legal proceedings. The Artificial Intelligence Act (AI Act) is examined as a tool to regulate the use of artificial intelligence, ensuring transparency and safety while balancing the enhancement of operational capabilities with the protection of fundamental rights.

The analysis delves into the responsibility of collective economic entities within the context of the illegal waste cycle, highlighting how corporate crime constitutes a central aspect of the phenomenon. The examination of criminal phenomenology and judicial rulings has demonstrated that, from a cost-benefit perspective, some businesses choose to violate environmental regulations to maximize profits. This dynamic is facilitated by weak regulations, high compliance costs, and penalties that are often insufficiently dissuasive.

Particular attention is devoted to the Italian regulatory framework, specifically Legislative Decree No. 231/2001, which establishes the administrative liability of entities for predicate offenses, including environmental crimes. In parallel, the research examines the role of Corporate Social Responsibility (CSR) as a complementary tool to promote ethical and sustainable business practices, supporting the legal framework in preventing offenses.

The organizational, management, and control models provided by Legislative Decree No. 231/2001 have been identified as essential tools for combating environmental crimes, although their adoption presents significant challenges. Key difficulties include the lack of standardization, the necessity for adaptation to specific corporate contexts, and high costs, which particularly disadvantage small and medium-sized enterprises (SMEs).

This framework was further explored by analyzing a case study involving a company operating in the metallic waste sector, which was implicated in a criminal proceeding for illegal waste trafficking, money laundering, and tax fraud. The implementation of the organizational model according to Legislative Decree No. 231/2001, following judicial seizure, provided an opportunity to examine specific protocols aimed at preventing environmental crimes and ensuring regulatory compliance. The analysis focused on tools such as risk mapping, the development of preventive measures, the adoption of a code of ethics, and the strategic role of oversight bodies.

The best practices identified through the case study represent replicable models for other businesses, particularly beneficial for SMEs, supporting them in strengthening regulatory compliance and promoting a corporate culture oriented toward legality and sustainability. This approach contributes to enhancing organizational resilience, transparency, and market trust while fostering responsible and sustainable governance.

Introduction

General context and relevance of the topic

This research addresses one of the most significant and widely debated topics in recent years: environmental protection. The value and importance of the environment have been increasingly recognized, progressively achieving a central position in public discourse. This awareness stems from a dual realization. On the one hand, it has become evident that environmental harm directly impacts the health of the ecosystems in which human communities live, with inevitable negative consequences for public health. On the other hand, the environment has begun to be valued for its intrinsic value, regarded as an autonomous good deserving of legal protection, irrespective of the utility it represents for human beings.

However, another perspective on the human-environment relationship cannot be overlooked: how environmental resources are exploited within the framework of economic and industrial production. This specific relationship has led to some of the most severe forms of environmental harm, further deteriorating the conditions of natural ecosystems. It is within this context that the international community has begun to promote initiatives aimed at ensuring environmental protection and fostering sustainable development models while strengthening regulatory measures and controls over the management of natural resources.

Despite the progress made, an anthropocentric perspective persists in social perceptions, wherein the environment is often regarded as a dispensable good when compared to other interests deemed primary. This view is likely exacerbated by the gradual manifestation of environmental damage over time, which makes the consequences of harmful actions less perceptible to humans. It is precisely from this perspective that the criminal behaviors analyzed in this research can be understood. In fact, only by considering the environment as a dispensable good can one grasp the origins of unlawful actions aimed at environmental exploitation.

Definition of the research problem.

The premise outlined applies to a wide range of human behaviors that harm the environment; however, this research focuses on actions that fall within the broader definition of environmental crime, which, according to estimates from international organizations, currently ranks as the fourth most serious global threat.

In Italy, this criminal phenomenon has historically been associated with the concept of Ecomafie, a term coined by the association Legambiente to designate illicit activities carried out by mafia-type organizations that harm the environment. Ecomafie operates in various sectors, including the

trafficking and illegal disposal of waste (illegal waste cycle), unauthorized construction, arson, the plundering of cultural heritage, and crimes against flora and fauna.

This research's specific subject of analysis is the illegal waste cycle, a term used to highlight both the illicit nature of the activities involved and the cyclical dimension characterizing the life cycle of materials targeted by criminal interests.

The choice of this research area stems from a dual rationale: on the one hand, its strategic relevance, as it represents a sector of particular interest for criminal activities; on the other hand, the close correlation between the emergence and development of the phenomenon and the dynamics of the capitalist economic model, which has traditionally paid little attention to the environmental sustainability of its growth. This connection makes the subject of study not only legally significant but also particularly engaging and rich with opportunities for critical and multidisciplinary analysis.

The illegal waste cycle has been one of the sectors in which mafia organizations have tested their criminal strategies since the late 1980s, as evidenced by historical records. To this day, it remains a pivotal area for illicit interests, both due to the economic volume it generates and the opportunities it provides for infiltration into legal sectors. However, the most significant aspect lies in the innovative approach with which mafias have transformed waste, derived from industrial production and everyday household activities, into a profitable resource. In certain historical periods, the revenues generated by the illegal waste cycle have been comparable, in scale, to those of drug trafficking.

From its inception, however, the interests tied to this phenomenon have not been the exclusive domain of mafia organizations. On the contrary, the illegal waste business is a cross-cutting affair that involves a wide array of economic, social, and institutional actors.

It follows that the illegal waste cycle remains one of the most complex and challenging forms of crime to combat, as it operates at the intersection of economic, political, and criminal interests. Its persistence over time and its ability to adapt to regulatory and socio-economic changes necessitate a critical reflection on the structural causes that foster its growth and consolidation.

The roots of this form of criminality can be traced to a series of structural deficiencies that characterize the waste management system.

Moreover, alongside these issues, a critical and overarching factor emerges: the economic value of waste. Waste is not merely a residual material but an economically exploitable resource, both for the profits that can be generated through its management (e.g., recycling and recovery) and for the cost savings that businesses can achieve by evading regular waste management and disposal obligations.

The economic value of waste explains the active involvement of two key actors in the illegal waste cycle. On the one hand, mafia organizations have maintained a strong focus on this sector for decades, driven both by significant economic profits and by the territorial control it facilitates. The strategic interest of mafias also lies in their ability to establish privileged connections with political actors, public administrations, and the business sector, thereby strengthening their network of power and influence.

On the other hand, so-called "legal" businesses not only benefit from or suffer the consequences of the illegal waste cycle but, in many cases, become their primary actors. These economic entities often operate "inside and outside" the boundaries of legality, balancing compliance with regulations and economic expediency. This behavior, grounded in the logic of profit, represents one of the primary obstacles to combating illicit activities within the waste cycle.

Objectives and research question.

In light of these premises, the present research aims to address the following question: which legal and operational tools can contribute to the prevention and repression of the illegal waste cycle, with particular emphasis on the active role of corporate entities?

To answer this question, the research will explore the historical origins of this criminal phenomenon, the structural factors that sustain it, its operational methods, and the criminal law measures designed to counter it. The analysis will then focus specifically on the role of corporate entities.

Regarding the role of businesses, the research first examines the capacity of Legislative Decree No. 231/2001 to sanction illicit conduct and to promote the adoption of organizational, management, and control models for the prevention of environmental crimes. Second, it goes beyond a punitive approach, exploring the integration of Corporate Social Responsibility (CSR) principles to guide businesses toward more environmentally sustainable production and adherence to fundamental values.

Furthermore, the analysis of a case study, which investigates the process of adopting an organizational, management, and control model, constitutes a central element of the investigation. This aims to identify best practices applicable to other business contexts.

The primary aim of this research is to understand the structural and operational factors that underpin the success of the illegal waste cycle, with particular attention to the roles of mafia organizations and "legal" businesses. The study seeks to identify legal and operational solutions

capable of promoting legality and environmental sustainability, with a focus on prevention and strengthening Corporate Social Responsibility (CSR).

The specific objectives of the research are as follows:

- To identify the structural and regulatory factors that make the illegal waste cycle a persistent and challenging phenomenon to suppress;
- To analyze the roles of mafia organizations and corporate entities in the illegal waste cycle;
- To assess the effectiveness of the framework governing the administrative liability of corporate entities under Legislative Decree No. 231/2001, examining the challenges associated with implementing organizational, management, and control models;
- To investigate preventive proposals aimed at encouraging virtuous behaviors and integrating Corporate Social Responsibility (CSR) principles;
- To analyze a specific case study to understand the methodology for adopting the model under Legislative Decree No. 231/2001 and identifying best practices applicable to other business contexts.

Methodology

The adopted methodology is sociological-legal and employs an interdisciplinary perspective of inquiry. The analysis focuses on the Italian context while considering the phenomenon's international implications, both in terms of the transnational extension of crimes and the influence of international and EU sources on national regulations.

The primary sources used include: academic literature; national and international legislation; case law, with specific reference to environmental crimes and the liability of corporate entities; and reports, studies, and observatories from public institutions and non-governmental organizations.

With specific reference to the case study, the research included a six-month observation of the corporate context, during which relevant documents were analyzed in full compliance with privacy regulations and data protection laws. This observation was complemented by on-site visits aimed at gaining a deeper understanding of the business environment, allowing for the integration of theoretical analyses with concrete technical and operational aspects.

Three semi-structured interviews were also conducted with key individuals involved in the drafting and implementation of the organizational, management, and control model pursuant to Legislative Decree No. 231/2001, including the sole administrator, an environmental consultant, and a legal advisor. The interview methodology was selected for its flexibility and its ability to provide detailed and targeted insights, enabling an in-depth exploration of a complex and technical subject. The semi-

structured format allowed for a focused approach while also permitting the emergence of new insights during the conversations.

Original contribution.

The research identified the organizational, management, and control models provided for by Legislative Decree No. 231/2001 as fundamental tools for preventing environmental crimes and promoting corporate management aligned with the principles of legality, sustainability, and social responsibility. Although these models represent essential regulatory instruments, their application reveals challenges related to the lack of standardization and the need for customization to the specific characteristics of each business entity, particularly in the case of environmental crimes, which require an in-depth understanding of complex and technical regulations.

Through the analysis of a case study, the research provided an original contribution by examining a corporate entity involved in criminal proceedings that subsequently chose to adopt an organizational, management, and control model according to Legislative Decree No. 231/2001 to restore legality and promote management practices aligned with regulatory and sustainability principles.

This approach enabled the development of a structured methodology for introducing organizational, management, and control models, organized into four main phases: analysis of corporate governance, risk assessment, model implementation and compliance, and drafting and communication of the model. Each phase was accompanied by practical recommendations to overcome operational challenges and enhance the effectiveness of the adopted tools.

The research also developed specific best practices related to corporate protocols for the prevention of environmental crimes, focusing on the sector of procurement and resale of metallic waste. It highlighted how procedures for supplier qualification, preliminary homologation, and load acceptance inspections are indispensable tools for mitigating the risks of illegal management.

These protocols, which integrate economic-structural, reputational, and operational checks, constitute a replicable model for other businesses in the sector and contribute to creating a virtuous system of regulatory compliance throughout the entire supply chain.

The original contribution of this research lies in its combination of theoretical analyses and operational solutions, offering a methodological and practical framework that addresses both regulatory and economic-organizational challenges. This approach not only promotes legality but also facilitates a cultural transformation, shifting the focus from the exclusive maximization of profit

to ethical and sustainable corporate management, with positive impacts on the business sector and the broader environmental and social context.

Structure of the Dissertation

The first chapter examines the phenomenon of the illegal waste cycle within the Italian context, with particular attention to the structural and conjunctural factors that contribute to its emergence and are exploited by criminal entities or actors with illicit interests. The analysis is enriched by a historical perspective aimed at tracing the origins of the phenomenon through the examination of emblematic events, such as the cases related to the so-called "*Terra dei Fuochi*" and the episodes known as the "*navi dei veleni*" (ships of poison) and the "*navi a perdere*" (disposable ships).

The second chapter focuses on the analysis of the phenomenology and criminal methodologies associated with the illegal waste cycle. The discussion begins with an examination of environmental administrative regulations, whose thorough understanding is an essential prerequisite for comprehending how such provisions are circumvented or violated.

Subsequently, the main *modus operandi* and the criminal structures involved are analyzed in detail, identifying the key actors and the economic interests driving illicit activities. The chapter further examines the evolution of criminal phenomenology in light of regulatory and social changes, with particular attention to the adaptations the actors involved employ.

The chapter concludes with a reflection on the international dimension of the phenomenon and a quantitative analysis, supported by available data, aimed at highlighting its scope and implications.

The third chapter delves into the legal tools aimed at combating the illegal waste cycle, beginning with an analysis of the international context to underscore the importance of globally coordinated environmental protection. The focus then shifts to the European framework, with an examination of the historical evolution of EU environmental policies.

Subsequently, attention is directed to the transposition of international and EU directives into the Italian context, assessing the national legal system's capacity to effectively address the phenomenon. Finally, the chapter explores the use of innovative technologies, such as artificial intelligence and drones, as emerging tools for the prevention and counteraction of environmental crimes, highlighting their potential as well as their operational challenges.

The fourth chapter examines environmental crime stemming from corporate activities, with a particular focus on the administrative liability of entities as regulated by Legislative Decree No. 231/2001. The analysis explores the legal framework governing the liability of corporate entities, focusing on predicate offenses and the main challenges in its application. This is complemented by

an examination of extra-codal measures, such as antimafia provisions and mechanisms for monitoring and supporting businesses, introduced to counter criminal infiltration into the legal economy.

The chapter also addresses the doctrine of Corporate Social Responsibility (CSR), investigating how sustainability and social responsibility principles can complement existing legal tools. The aim is to outline an integrated approach in which legislation, extra-codal measures, and CSR converge to promote corporate management that upholds legality, environmental sustainability, and social responsibility.

The fifth chapter is devoted to the analysis of a case study, with the aim of identifying strategies for regulatory compliance and environmental sustainability through the implementation of the Organizational and Management Model (MOG) pursuant to Legislative Decree No. 231/2001.

The chapter begins with a contextualization of the case study, highlighting its specific characteristics and operational context. It then analyzes the methodology employed for the introduction of the MOG, focusing on critical steps and tools used, and deriving practical recommendations that can serve as a guide for other corporate entities.

The chapter continues with an in-depth study of the protocols adopted to prevent the commission of environmental crimes in the specific case, developing recommendations and best practices aimed at ensuring effective and replicable application in similar contexts. These strategies emphasize the creation of a competitive environment founded on transparency, integrity, and compliance with regulations while fostering virtuous and lawful behaviors throughout the entire production chain.

Chapter 1: Framework of the phenomenon in Italy.

1.1 The definition of the phenomenon: the contemporary relevance of the neologism "Ecomafie".

The phenomenon addressed in this research concerns a complex range of actions carried out by multiple actors, resulting in harm, broadly understood, to the environment.

Starting from this premise, it is essential to define the fundamental concepts to delineate the subject of the investigation.

First and foremost, the common denominator across the diverse spectrum of actions, actors, and interests contributing to environmental harm is the production of negative effects on the environment, which is recognized as a public interest legal interest.

The centrality of the environment as a fundamental interest is undisputed, explicitly enshrined and pursued by the European Union legal framework. Article 191 of the Treaty on the Functioning of the European Union (TFEU) aims to safeguard, protect, and improve environmental quality; protect human health; promote the prudent and rational use of natural resources; and foster international measures to address environmental issues and combat climate change[1]. Similarly, though more recently, the environment as a fundamental good of paramount interest has officially attained constitutional status in the Italian legal system (Articles 9 and 41 of the Constitution) through Constitutional Law No. 1 of 2022.

With this necessary preamble, which will be revisited later, it can be asserted that the environment occupies a pivotal place within the European regulatory framework. This aligns with the established centrality of public discourse on climate change and its connection to the economic model of modern society. Globally, at least in principle, attention has been directed toward mitigating the environmental consequences of human industrial and productive activities.

In such a context, where the environment plays a focal role and national policy agendas prioritize curbing climate change, a shadowy area persists. This involves a set of criminal activities systematically plundering this valuable resource.

Regarding this phenomenon, various definitions have been proposed. The international scientific literature uses the term environmental crimes, European regulations adopt the term environmental criminality, and Italian law has introduced the term *ecoreati* (eco-crimes). All these definitions, consistent with standard legislative techniques, emphasize the criminal offense as conduct that

[1] Treaty on the Functioning of the European Union (TFEU), Consolidated Version, *Official Journal of the European Union* C 326/47, October 26, 2012, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012E/TXT.

infringes upon or endangers the environment. In this sense, they distinguish environmental crimes from other forms of aggression against legal assets.

However, within the Italian context, these illicit activities have primarily emerged and are still predominantly recognized under the name Ecomafie. The neologism Ecomafie was coined in 1994 by the environmental organization Legambiente and refers to that segment of organized mafia-type crime engaged in unlawful activities with significant environmental impact[2].

It is worth briefly examining the term itself, as its creation was far from arbitrary; it deliberately incorporates the word *mafie* within it. As the above definition suggests, this choice reflects the involvement of mafia organizations in these illegal activities. However, it is equally important to explore why such a compelling new term was introduced.

To answer this question, one must consider the historical context in which it was conceived. In 1994, due to Legambiente's research and the efforts of law enforcement and the judiciary, the public became aware of illegal activities related to waste management that were causing severe environmental disasters. Specifically, the discovery of illicit trafficking and disposal of waste—including radioactive and hazardous materials—highlighted a nationwide issue. This problem traced a route from northern to southern Italy, often culminating in the Campania region. The land in Campania had become the dumping ground for all of Italy, facilitated by the crucial role played by the Camorra, particularly the Casalesi clan. This was revealed through the testimonies of the first justice collaborators, who disclosed these practices and famously declared that "waste is gold" for the mafia—more lucrative and less risky than drug trafficking.

In response, Legambiente, in its initial reports on the phenomenon, introduced the term Ecomafie to emphasize not only the mafia's involvement but also the centrality of these crimes in their illegal activities.

This definition encompasses a wide range of criminal activities, including not only illegal waste disposal but also arson, the illegal cement cycle, the plundering of cultural heritage, and crimes against flora and fauna.

The illegal cement cycle refers to activities related to unauthorized construction that deplete and degrade the country's natural heritage. It involves building in prohibited areas, infiltrating public contracts, engaging in corruption, and speculating by inflating costs to fuel bribery networks, often

[2] Ispes, *Osservatorio permanente su ambiente e legalità, Ecomafie: il ruolo della criminalità organizzata nell'illegalità ambientale*, Roma: Ispes, 1994.

using substandard materials. This sector has consistently been central to mafia activities, with clans historically maintaining monopolies over quarries, land movement, and concrete.

As for the plundering of cultural and artistic heritage, referred to as *Archeomafie*, it involves clandestine excavations of archaeological sites, thefts, and the illegal trafficking of cultural artifacts. This business encompasses a wide range of actors, from those who physically steal the artworks to intermediaries and buyers who seek to place these items on the market, often as the final link in the chain. In some cases, stolen artifacts even reach museums, accompanied by forged documents to conceal their true origins. For mafia organizations, this trade also provides an avenue for money laundering, as artworks can be used as currency in exchange for drugs and weapons[3].

Finally, crimes against flora and fauna, known as *Zoomafie*, encompass activities harming animals and plants to achieve various objectives, such as economic exploitation, social control, or territorial dominance. These acts are perpetrated by mafia organizations or by individuals and groups who, while not directly affiliated with the mafia, operate using similarly violent and oppressive methods[4].

At this point, an additional element can be introduced. Awareness of the existence of such environmental plundering did not merely lead to the introduction of the "successful" new definition; more significantly, it positioned Italy as the first country to shine a spotlight on this criminal reality. This outcome was likely influenced by the prominent role of mafia organizations in Italy, both in the waste and cement cycles, as well as the importance of its cultural and archaeological heritage, which has been heavily targeted.

However, this acknowledgment also prompted a significant counter-reaction. Since 1994, the Legambiente association has published an annual report on Ecomafie, constituting a crucial study at the international level. In 1995, a Parliamentary Commission of Inquiry was established to investigate the waste cycle and the illegal activities associated with it. Additionally, in 1986, the *Nucleo Operativo Ecologico* (Environmental Operations Unit) of the Carabinieri was created, followed in 1992 by the *CITES Service* of the State Forestry Corps, which conducts both national and international investigations into the trafficking of protected species.

Returning to the definition of fundamental concepts, the term Ecomafie, unlike the definitions previously discussed, is distinctly Italian. While still considering the environment as the primary

[3] Legambiente, *Centro di documentazione sull'illegalità ambientale Noecomafia-Legambiente.It*, 2024, available at: <https://noecomafia.legambiente.it/>.
[4] C. Troiano, *Sintesi del "Rapporto Zoomafia" 2023*, LAV, 2023, available at: <https://static.lav.it/docs/lav-sintesi-del-rapporto-zoomafia-2023-ciro-troiano.pdf>, p. 3.

victim of criminal actions, it intentionally emphasizes the origins of those who engage in environmental plundering[5].

However, since this definition, as outlined, aims to highlight the perpetrators of these crimes as a defining feature of the phenomenon, a clarification is necessary. One might risk assuming that only mafia organizations are involved in environmental crimes within the national territory, but this is not the case.

Environmental criminality, particularly the illicit trafficking of waste, which is the subject of this research, is characterized by a convergence of interests. Specifically, this phenomenon involves a wide array of actors, some of whom hold legally recognized statuses, such as entrepreneurs, transporters, public administration officials, technical managers, and laboratory chemists. Others occupy more ambiguous roles, including intermediaries and facilitators, while still others are members of mafia-type criminal organizations. Their common objective is to maximize profit or significantly reduce costs[6].

In this regard, the *Comando Carabinieri per la Tutela dell'Ambiente* (Carabinieri Command for Environmental Protection) has stated:

> It is commonly thought that [...] the so-called 'Ecomafia' [...] represents the final product of a sort of metamorphosis that transformed the old organized crime into a new criminal association targeting the environment. The reality is not exactly like that. It has been demonstrated that traditional criminal groups, such as camorra, 'ndrangheta, and mafia, have some involvement with the Ecomafia but are not synonymous with it; in other words, we do not have a "waste of our own". In simpler terms, camorra, 'ndrangheta, and mafia have economic interests revolving around the environmental crime sector without directly participating in the management of illegal waste[7].

It follows that the neologism Ecomafie must be credited with effectively defining and bringing to public attention a previously overlooked phenomenon, which became evident following the disaster in Campania, where the role of Camorra clans was central.

In subsequent years, this category of criminality has evolved. While it remains a lucrative business for mafia organizations, there has been a growing involvement of entrepreneurial actors who

[5] L. Bonzanni, *Ecomafie, oggi: l'inversione della rotta dei rifiuti illeciti*, in *Diacronie. Studi di Storia Contemporanea: Mafia e storiografia. Premesse culturali e prospettive attuali*, 39 (2019), n. 3, available at: https://journals.openedition.org/diacronie/11858.

[6] D. Gentile, *La questione rifiuti nell'ordinamento italiano: genesi e fenomenologia delle ecomafie*, Canterano: Aracne, 2017.

[7] N. G. Grillo, *Rifiuti SpA fra ecomafia e mafia delle autorizzazioni*, Roma: Geva, 2007.

independently engage in these illicit activities. They either employ the same techniques used by the mafia associations or enter into cooperative transactions with mafia associations[8].

Thus, it can be asserted that the term retains its relevance today, given that mafias, even when not directly involved in criminal acts, have nonetheless established a distinctive modus operandi in the commission of crimes. This pattern is often replicated by external actors who are not affiliated with criminal organizations.

Consequently, the term Ecomafie will be used in this study as a starting point to outline the scope of the investigation, while acknowledging that it encompasses a phenomenon whose underlying interests extend beyond mafia organizations.

1.2. From Ecomafie to the Illegal Waste Cycle

Having broadly defined the area of interest, it is now possible to narrow the scope of the investigation to a single aspect of the broader phenomenon of Ecomafie: the illegal waste cycle, which will be the focus of this discussion.

Among the various sectors of Ecomafie, the waste cycle has been selected as the subject of study because it has represented, and continues to represent, an exceptionally lucrative business for criminal actors. This profitability comes at the cost of an environmental impact that is difficult to quantify, with repercussions affecting the entire ecosystem.

Furthermore, it is particularly relevant to a socio-legal investigation due to the complex interests it involves and the legal evolution required to counter it effectively.

The analysis of practices related to the waste cycle is intrinsically linked to the evolution of society itself, specifically the challenge of balancing economic prosperity with its sustainability in relation to the surrounding environment.

The illicit trafficking and disposal of waste refers to a business stemming from the infiltration of criminal actors into the so-called waste cycle, encompassing the stages of collection, transportation, and final treatment, with the aim of pursuing economic gain at the expense of immeasurable environmental consequences.

[8] L. Bonzanni, *Le rotte globali dei rifiuti: spunti nella cornice dei cambiamenti climatici*, in *The climate crisis in Mediterranean Europe: cross-border and multidisciplinary issues on climate change*, Lago (CS): Il Sileno Edizioni, 3, n. (2020), n. 1, section II, available at: <https://air.unimi.it/retrieve/dfa8b9a2-80db-748b-e053-3a05fe0a3a96/Bonzanni%202020%2C%20Rotte%20globali%20dei%20rifiuti.pdf>.

In this initial section, the analysis will aim to examine the waste management supply chain, specifically investigating how mafia-type organized crime infiltrates this sector to identify the main risks associated with it.

This research will adopt a national perspective, considering that the Italian regulatory framework aligns with directives established by the European Union and that the illicit activities examined extend beyond national borders.

To understand the subject, it is essential to first examine the origins of the phenomenon and contextualize it within the contemporary socio-economic system.

In this regard, it is crucial to consider that the economic model adopted by contemporary society—focused on increasing productivity within a framework of development, innovation, and social well-being—must inevitably address the issue of waste management generated by industrial processes and the daily activities of human life in general.

For a long time, the necessity of resolving the issue of waste disposal was perceived by entrepreneurs as both a problem and an obstacle to production, while it was largely underestimated by citizens. From a regulatory standpoint, effective intervention in the sector was also significantly delayed. Only in the second half of the 20th century, with the emergence of an awareness of the need to protect environmental resources and, above all, the realization of the impact that unregulated waste management has on human health, did the international community gradually begin to establish its first regulatory frameworks on the matter.

In addition, as previously mentioned, there has been a growing awareness of the consequences that human activities have on the environment, particularly in terms of climate change.

Regarding the Italian legal system, the first comprehensive regulation on waste management was adopted only in 1997 with the so-called *Ronchi Decree*. This decree implemented the EEC Directives 91/156 on waste, 91/689 on hazardous waste, and 94/62 on packaging and packaging waste. Prior to this, the national situation was characterized by an outdated system primarily reliant on landfills and, to a limited extent, on disposal and recovery facilities[9].

Over the years, there has been a proliferation of legal sources in this area. These regulations, due to the difficulty of balancing all the interests at stake—economic-industrial interests, technological development, environmental protection, and human health—have led to a particularly complex

[9] A. Pergolizzi, *Toxicitaly: ecomafie e capitalismo: gli affari sporchi all'ombra del progresso*, Roma: Castelvecchi, 2012.

regulatory framework. This framework is not only bureaucratically intricate but also costly for waste producers.

As a result, despite increasing environmental awareness, a shadowy area persists. It comprises those who, applying a cost-benefit logic, opt for illegal means to circumvent the complex and expensive system of lawful waste management.

Regarding the Italian state, although the idea that waste can be a resource through reuse—and not merely a problem to be disposed of—has gradually gained traction, the national framework is still characterized by weaknesses in the waste management system. These stem from the extensive scope of the disposal cycle, infrastructural deficiencies, and insufficient controls.

This premise already highlights the factors underlying the emergence of illegal waste disposal. These include a capitalist economic model that relentlessly drives production and consumption, resulting in the constant generation of disproportionate amounts of waste that must be eliminated. This occurs within an environmental context increasingly compromised by human activities. Attempts have been made to address this through regulations aimed at preserving natural resources and human health. However, these efforts must coexist with economic interests and often cannot—or are unwilling to—impede development.

It is precisely within such a complex framework that organized crime finds its role, acting as an agency offering quick and cost-effective solutions to the problem. Furthermore, according to the logic of the rational offender, crimes related to the waste cycle have proven—and continue to prove—particularly advantageous. They guarantee high profitability while posing low risks due to inadequate controls, delayed legislative action in effectively countering the phenomenon, and the reduced visibility of such crimes because of the challenges and lengthy timelines associated with detecting and confirming environmental damage[10].

The analysis thus far reveals that, although waste management issues are often presented in public discourse as periodic emergencies requiring extraordinary measures, they are, in fact, rooted in structural factors inherent to the sector. These structural factors are periodically compounded by conjunctural elements, which organized crime exploits effectively to its advantage, both parasitically and proactively[11].

[10] P. Peluso, *Dalla terra dei fuochi alle terre avvelenate: lo smaltimento dei rifiuti in Italia*, in *Rivista di Criminologia, Vittimologia e Sicurezza*, 9 (2015), n. 2, available at: <https://www.vittimologia.it/rivista/articolo_peluso_2015-02.pdf>.
[11] L. Bonzanni, *Ecomafie, oggi: l'inversione della rotta dei rifiuti illeciti*, op. cit.

1.2.1. Structural Factors

Among the structural factors related to the waste cycle, the significant amount of waste produced annually stands out as a primary concern.

To address this issue, it is first necessary to clarify the definition of waste.

Article 183 of Legislative Decree No. 152 of April 3, 2006, following Article 3 of Directive 2008/98/EC, defines waste as "any substance or object which the holder discards or intends or is required to discard"[12].

Waste is classified based on its origin into municipal waste and special waste, and based on its hazardousness into hazardous and non-hazardous waste.

Municipal waste includes undifferentiated household waste and waste from separate collection; undifferentiated and separately collected waste from other sources that is similar in nature and composition to household waste; waste from street cleaning and the emptying of public waste bins; waste of any kind or origin lying on streets and public areas, or on private areas subject to public use, or on maritime and lake beaches and riverbanks; waste from the maintenance of public green spaces; and waste from cemetery areas[13].

By contrast, special waste includes waste generated by agricultural, agro-industrial, forestry (as defined in Article 2135 of the Civil Code), and fishing activities; waste from construction and demolition activities, as well as excavation activities; waste from industrial, artisanal, commercial, and service activities; waste resulting from waste recovery and disposal activities; sludge from water treatment, wastewater treatment, and other water purification processes; waste from smoke abatement systems, septic tanks, and sewer systems; waste from healthcare activities; and end-of-life vehicles[14].

About the characteristic of hazardousness, reference must be made to Annex I of Part Four of Legislative Decree No. 152/2006, which primarily identifies characteristics such as explosiveness, flammability, irritability, harmfulness, toxicity, corrosiveness, and others.

Concerning the quantity of waste produced annually in Italy, the *Istituto Superiore per la Protezione e la Ricerca Ambientale* (ISPRA) reports in its latest publication that national municipal

[12] Legislative Decree No. 152 of April 3, 2006, Environmental Regulations (Official Gazette No. 88 of April 14, 2006), available at: https://www.bosettiegatti.eu/info/norme/statali/2006_0152.htm#183; Directive 2008/98/EC of the European Parliament and of the Council of November 19, 2008, on waste and repealing certain directives, available at: https://eur-lex.europa.eu/eli/dir/2008/98/oj.
[13] See Article 183, paragraph 1, letter b-ter, Legislative Decree No. 152/2006, op. cit.
[14] See Article 184, paragraph 3, Legislative Decree No. 152/2006, op. cit.

waste (MW) production in 2022 amounted to approximately 29.1 million tons, marking a decrease of 1.8% compared to 2021.

Considering the period from 2009 to 2022, it is noted that between 2009 and 2010, production exceeded 32 million tons. This figure then dropped sharply below 30 million tons during 2011–2012, following declines in gross domestic product (GDP) and household consumption. Subsequently, MW production resumed an upward trend, exceeding 30.1 million tons again, except in 2017, before starting to decline in 2019 and significantly in 2020 due to the pandemic. Finally, in 2021, waste production increased again in light of the post-pandemic economic recovery.

At the level of the European Union as a whole, municipal waste production recorded a 1% increase in 2021 compared to 2020, rising from 233.3 million tons to 235.4 million tons. This represents a 4.5% increase compared to 2019[15].

Regarding special waste, ISPRA reports a significant increase in national production in 2021 compared to 2020, amounting to 165 million tons, an increase of +12.2%, equivalent to nearly 18 million tons. However, it is important to note that the substantial discrepancy between 2020 and 2021 is attributable to the post-pandemic economic recovery. When considering 2019 as a reference point, the increase in 2021 is more moderate, at 7.1%, or +11 million tons[16].

In 2022, the amount of waste generated by the national production system (including industrial, commercial, artisanal, and service activities, as well as activities related to waste treatment and environmental remediation) declined compared to 2021, reaching 161.4 million tons, a decrease of 2.1% (over 3.4 million tons less). This figure reflects a context marked by the onset of the conflict in Ukraine and the global energy crisis, whose combined effects inevitably impacted the national economy[17].

Examining the period from 2013 to 2021, despite regulatory measures aimed at reducing waste volumes, a steady increase in the production of special waste in Italy is evident, except for the slowdown in 2020.

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[15] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Urbani Edizione 2023*, 393/2023, available at: https://www.isprambiente.gov.it/files2023/pubblicazioni/rapporti/rapportorifiutiurbani_ed-2023_n-393_versioneintegrale.pdf.

[16] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Speciali Edizione 2023*, 389/2023, available at: https://www.isprambiente.gov.it/files2023/pubblicazioni/rapporti/rapportorifiutispeciali_ed-2023_n-389_versioneintegrale.pdf.

[17] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Speciali Edizione 2024*, 402/2024, available at: https://www.isprambiente.gov.it/files2024/pubblicazioni/rapporti/rapportorifiutispeciali_ed-2024_n-402_versioneintegrale.pdf.

The European Union, in Article 4 of Directive 2008/98/EC, establishes a hierarchy of operations to be followed in waste management processes by all member states. This hierarchy prioritizes prevention—namely, reducing the amount of waste produced—followed by reuse, recycling, recovery, and, lastly, disposal[18].

In line with this directive, the *National Waste Prevention Programme* adopted by the Ministry of the Environment and Protection of Land and Sea (now the Ministry of the Environment and Energy Security), according to Article 180 of Legislative Decree No. 152/2006 as amended by Legislative Decree No. 116/2020, aims to decouple economic growth from the environmental impacts associated with waste production and sets specific prevention targets. Specifically, the reduction targets for 2020, compared to 2010, include a 10% reduction in the production of hazardous special waste per unit of GDP and a 5% reduction in the production of non-hazardous special waste per unit of GDP.

Data recorded by ISPRA indicate that, regarding the ratio between the production of non-hazardous special waste and GDP, the variation is positive and increasingly diverges from the targets set by the Prevention Programme. Specifically, the percentage variation has increased by +24.66% in 2020 and +31.06% in 2021 compared to 2010. Similarly, for hazardous special waste, the values remain far from the targets outlined in the Prevention Programme. The percentage variation in hazardous special waste production per unit of GDP increased by 28.57% in 2020 and 30.18% in 2021 compared to 2010[19].

In light of the above, concerning the first structural factor of the waste cycle, it is clear that despite efforts directed toward prevention, there is an overall increase in municipal waste production at the EU level, although a decrease has been observed in Italy. Conversely, there has been an increase in the national production of special waste, except for the slight decline recorded in 2022, which remains inconsistent with the targets set by the National Programme.

The second structural factor concerns infrastructural deficiencies, specifically the lack of adequate facilities to enable proper waste management.

The primary weakness lies in the unequal distribution of waste treatment facilities across the national territory, with a lower concentration in southern Italy. This disparity means that some regions are unable to complete the waste treatment cycle and must send waste to other regions, resulting in

[18] Directive 2008/98/EC of the European Parliament and of the Council of November 19, 2008, on waste and repealing certain directives, op. cit..
[19] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Speciali Edizione 2023*, op. cit..

an extended supply chain and overburdening of facilities in regions receiving waste from outside their boundaries.

In detail, the majority of special waste management facilities are located in northern regions, particularly Lombardy, Veneto, and Piedmont, which together account for 38.4% of the national infrastructure. Among the central regions, Tuscany and Lazio stand out, while in the south, Campania and Puglia have the highest number of facilities[20].

Similarly, in the management of municipal waste, the primary issue identified is the movement of waste to destinations outside the region of origin. This creates significant challenges in tracking the waste from its production to its final destination. Indeed, out of a total of 654 facilities, 348 are located in the north, 117 in the center, and 189 in the south of Italy.

Particularly illustrative in this regard are the data on municipal waste incineration: 71.5% of waste is treated in the north, 9.7% in the center, and 18.8% in the south. This imbalance results from the fact that substantial quantities of waste produced in central and southern Italy are treated in the north. Specifically, Lombardy alone receives nearly 375,000 tons of waste from other regions[21].

Such structural inefficiency, combined with the significant quantity of waste produced annually, often leads some operators to choose illegal routes, gaining advantages in terms of cost containment and process simplification.

Indeed, this situation creates fertile ground for criminal organizations, which are particularly adept at exploiting systemic weaknesses. For instance, they infiltrate the waste management supply chain, taking advantage of its extended length and territorial movement, offering "solutions" to the waste disposal problem that appear advantageous to those seeking them.

Supporting this assessment, the Parliamentary Commission of Inquiry into illegal activities related to the waste cycle and other environmental and agri-food offenses during the XVIII Legislature concluded its final report by outlining the issues within the sector that require continued investigation by the current Commission.

In particular, the Commission stated that there are "general issues whose lack of or incorrect resolution can give rise to illegal phenomena"[22].

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[20] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Speciali Edizione 2024*, op. cit..

[21] ISPRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*, *Sistema Nazionale per la Protezione dell'Ambiente, Rapporto Rifiuti Urbani Edizione 2023*, op. cit..

[22] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, 2022, available at: <https://www.questionegiustizia.it/data/doc/3397/commissione-ecomafie-relazione-finale.pdf>.

Firstly, a key issue concerns compliance with the European hierarchy established under Article 4 of Directive 2008/98/EC, previously mentioned, regarding waste management. To prevent the infiltration of illegal interests, efforts must prioritize reducing waste at its source and constructing facilities for material recovery and reuse rather than resorting to landfilling. In this regard, the Commission's investigations revealed that landfills remain a significant reality in Italy.

The investigative activities highlighted that reuse, which should be prioritized over recycling, is implemented with considerable delays due to the lack of an adequate organizational framework. Regarding material recovery, an appropriately structured supply chain is absent for certain types of materials, such as plastics, which require different treatments depending on their type.

Secondly, investigations into illicit waste flows and fires at treatment facilities have shown that inefficiencies in recycling supply chains for certain materials, the lack of obligations concerning the use of recycled materials in public procurement, and the prevalence of economic incentives for energy recovery make the latter more appealing than material recovery. In this context, reuse is pursued even less, and the goal of reducing waste production is often overlooked altogether.

Therefore, the Commission concluded by stating:

> We live in a system that measures its well-being based on GDP, and paradoxically, producing large amounts of waste is seen as synonymous with prosperity and wealth. As long as we continue to unnecessarily produce such large quantities of waste, there will always be problems managing it, problems of illegality, and environmental issues. The Commission's investigations, initiated or developed in specific territorial contexts, as well as those concerning financial guarantees in the landfill sector and the environmental aspects of mining and quarry management, reveal at times an insufficient regional response in terms of knowledge, information management, and oversight, all elements for preventing potential environmental offenses[23].

Continuing with structural factors, part of the academic doctrine[24] has highlighted another critical issue: the central role played by public institutions in managing municipal waste often serves as a precursor to criminal infiltration. The history of illegal waste cycle management is marked by corrupt practices carried out by criminal groups that infiltrate local public tenders for the provision of municipal waste collection and disposal services. Municipalities, which play a significant role in this sector, have proven particularly vulnerable and susceptible to corruption[25].

[23] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op., cit.
[24] See I. Sales, *La questione rifiuti e la camorra*, in *Meridiana*, (2012) n. 73-74, pp. 63–79, available at: <http://www.rivistameridiana.it/>, pp. 63–79, A. Pergolizzi, *Emergenza e green corruption. Come la corruzione divora l'ambiente*, Manfredonia: Andrea Pacilli Editore, 2018.
[25] L. Bonzanni, *Le rotte globali dei rifiuti: spunti nella cornice dei cambiamenti climatici*, op. cit..

In Italy, Part Four of Legislative Decree No. 152/2006, Articles 200 et seq., stipulates that the management of municipal waste must be organized based on optimal territorial areas, known as *Ambiti Territoriali Ottimali* (ATOs), as defined by regional plans. The integrated waste management service must be entrusted through a tender process conducted by the *Autorità d'Ambito* (Territorial Authority).

Regarding municipal responsibilities, Article 198 of Legislative Decree No. 152/2006 provides that:

> Municipalities participate, within the framework of activities carried out at the level of the optimal territorial areas referred to in Article 200 and in accordance with the methods provided therein, in the management of municipal and similar waste. Until the start of activities by the entity awarded the public tender conducted by the Territorial Authority pursuant to Article 202, municipalities shall continue to manage municipal and similar waste destined for disposal under an exclusive arrangement in the forms provided for in Article 113, paragraph 5, of Legislative Decree No. 267 of August 18, 2000[26].

Finally, to understand the last structural factor of the illegal waste cycle, it is necessary to look beyond national borders and consider the export of these materials, which is often associated with illicit trafficking. This phenomenon stems primarily from the economic and industrial disparities between more and less-developed countries. In terms of supply and demand, certain countries, such as those in Africa, offer waste disposal services at significantly lower costs compared to those in European countries. Consequently, exporting waste to such destinations is advantageous both for the recipients, who generate revenue and for the exporters, who reduce costs.

This situation has been widely exploited by criminal organizations, which offer significantly more cost-effective disposal services.

In addition to economic disparities, there are also regulatory imbalances. Environmental legislation in developing countries is often far less stringent, making it easier to circumvent legal requirements unlawfully.

This creates a veritable international illegal waste market and results in environmental dumping[27] by businesses that choose these advantageous "disposal services"[28].

[26] Art. 198, Legislative Decree No. 152/2006, op. cit..

[27] The term *dumping* originates from the English verb "to dump", meaning to throw away, discard, or get rid of something. In economic literature, it refers to an unfair trade practice where certain businesses sell their goods abroad at prices lower than those in their domestic market. The term *environmental dumping* describes the behavior of businesses that can offer goods at lower prices because they are produced with reduced costs in countries where environmental regulations are either non-existent or less stringent. Similarly, this occurs when economic operators manage to lower waste disposal costs compared to those who operate lawfully.

[28] L. Bonzanni, *Le rotte globali dei rifiuti: spunti nella cornice dei cambiamenti climatici*, op. cit..

1.2.2. Conjunctural Factors

To the so-called structural factors of the sector, conjunctural factors are added, arising from temporary crises in waste management systems. These events negatively affect the already fragile infrastructural system and are often addressed by institutions through emergency measures, such as the appointment of commissioners with extensive discretionary powers or the adoption of exceptional regulatory instruments that deviate from general rules. These conditions frequently create new opportunities for infiltration and exploitation by criminal organizations[29].

As an example, one of the most significant waste management emergencies in Italy's history occurred in the Campania region between 1994 and 2010. This crisis was caused by mismanagement of the sector and the absence of a regional plan for the disposal of municipal waste, which resulted in tons of garbage being abandoned along the streets.

To address this crisis, from February 11, 1994, to December 31, 2009, the Prime Minister declared a state of emergency. During this period, the management of the emergency was assigned to a series of extraordinary commissioners, assisted by deputy commissioners.

In 1997, the President of the Region, acting as the delegated commissioner, issued a regional waste disposal plan and, in 1998, launched a public tender to award a ten-year concession for the treatment and disposal of waste generated in the province of Naples. The goal was to remove landfill management from private hands and establish a public and lawful governance system for the sector.

These measures were intended to lay the groundwork for overcoming the emergency and creating an efficient and modern integrated waste management system. However, in practice, these measures were handled unlawfully, and the crisis persisted from 1994 to 2010.

Some administrators and employees of the companies that won the public tenders, as well as the commissioner in office from 2000 to 2004, were investigated by the Public Prosecutor's Office of the Naples Court for offenses including fraud, non-compliance with the execution of public supply contracts, fraud against public authorities, interruption of a public service or service of public necessity, abuse of office, ideological falsehood in the exercise of public functions, and unauthorized waste management activities.

Moreover, the severity of the situation led to the condemnation of the Italian State by the European Court of Justice with its judgment of March 4, 2010. The Court found that the Italian Republic:

> By failing to adopt, for the Campania region, all the measures necessary to ensure that waste is recovered or disposed of without endangering human health and without harming

[29] Ibid.

> the environment, and in particular by failing to establish an adequate and integrated network of disposal facilities, has failed to fulfill its obligations under Articles 4 and 5 of Directive 2006/12/EC of the European Parliament and of the Council of April 5, 2006, on waste[30].

Similarly, Italy was also condemned by the European Court of Human Rights (ECtHR) in January 2012 for violating Article 8 of the European Convention on Human Rights (ECHR), which safeguards the right to respect for private and family life. This ruling was based on the failure of public institutions to ensure the proper functioning of waste collection and disposal systems over an extended period, thereby endangering citizens' health.

Furthermore, the ECtHR found a violation of Article 13 of the ECHR, as the Italian legal system lacked an effective judicial remedy available to citizens to address the ongoing situation[31].

This topic will be revisited in the following sections for a detailed analysis of the historical and social context.

An illustrative case is the situation related to Law No. 164 of 2014, known before its conversion as the "Unlock Italy" decree (*decreto Sblocca Italia*). Among other objectives, this law aimed to address the waste management crisis affecting the Lazio and Campania regions. However, by allowing regions with more facilities to process municipal waste from other regions, it increased the movement of waste across the territory toward northern regions, thereby heightening the risk of overburdening these areas.

In this context, Lombardy, a region significantly impacted due to its substantial facility infrastructure, opposed the measure by filing an appeal with the Constitutional Court. The region argued that resolving the waste crisis by delegating disposal to other regions with more facilities was a flawed approach[32].

The COVID-19 health emergency has been particularly significant concerning the analysis presented here, as it had a substantial impact on the waste management system. This emergency exemplified the specific behavior of criminal organizations, which are adept at exploiting crises marked by inefficiencies and inattention to expand their illicit interests.

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[30] European Court of Justice (Fourth Chamber), Judgment of March 4, 2010, Case C-297/08, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=ecli:ECLI%3AEU%3AC%3A2010%3A115.

[31] A. Colella, *Strasburgo condanna l'Italia per la gestione dell'emergenza rifiuti in Campania. Nota a Corte EDU, sent. 10 gennaio 2012, ric. n. 30765/08, Di Sarno e altri c. Italia*, in *Diritto Penale Contemporaneo*, january 13, 2012, available at: <https://archiviodpc.dirittopenaleuomo.org/d/1154-strasburgo-condanna-l-italia-per-la-gestione-dell-emergenza-rifiuti-in-campania>.

[32] L. Bonzanni, *Le rotte globali dei rifiuti: spunti nella cornice dei cambiamenti climatici*, op. cit..

First, it is important to highlight how the extraordinary nature of the events necessitated ad hoc regulatory interventions to address the situation. In terms of waste management, Decree-Law No. 18/2020, converted into Law No. 27/2020, under Articles 113 and 113-bis, extended certain deadlines related to environmental regulations and increased the limits and quantities for temporary waste storage established by Legislative Decree No. 152/2006.

Additionally, Article 4-bis, introduced during the conversion of Decree-Law No. 23/2020, added environmental services, remediation and reclamation activities, and other services related to waste management to the list of activities deemed most at risk of mafia infiltration under Article 1, paragraph 53, of Law No. 190/2012.

Finally, during the conversion of Decree-Law No. 23/2020, Article 30-bis was added, introducing a specific regulation on healthcare waste.

Furthermore, it is particularly noteworthy that, in addition to these limited primary legislative measures, a significant number of public interventions were issued by the *Istituto Superiore di Sanità* (Italian National Institute of Health) and ISPRA-SNPA. These measures, constituting non-legislative regulatory sources, raised legal issues regarding their binding nature.

These regulations aimed to govern municipal waste management to mitigate risks to health and the environment during the pandemic. For example, they introduced a new distinction within the category of municipal waste, differentiating between waste produced in households with COVID-19-positive individuals and waste generated by the general population. This resulted in separate collection and disposal regimes for these two categories of waste.

However, as these regulations did not have the force of law, failure to comply with their provisions could not constitute an offense unless formally incorporated into an official administrative act.

Additionally, the Ministry of the Environment, through Circular No. 22276/2020, identified *ordinanze contingibili e urgenti* (contingent and urgent ordinances) according to Article 191 of Legislative Decree No. 152/2006[33] as tools to address the emergency, with the aim of "envisioning

[33] Contingent and urgent ordinances may be issued by the President of the Regional Council, the President of the Province, or the Mayor, within their respective areas of competence, when "*situations of exceptional and urgent necessity arise for the protection of public health and the environment, and no alternative measures are available"* to "*allow the temporary use of special forms of waste management, including derogations from current regulations, provided that the provisions of European Union directives are respected, ensuring a high level of health and environmental protection*". Such ordinances must be communicated to the Prime Minister, the Ministry of the Environment, the Ministry of Economic Development, the Regional President, and the Territorial Authority pursuant to Article 201 of Legislative Decree No. 152/2006 within three days of issuance and are effective for a period not exceeding six months. Art. 191, Legislative Decree No. 152/2006, op. cit..

the possibility of implementing extraordinary regimes, temporally limited to the duration of the emergency"[34].

The circular provided guidelines for regions and autonomous provinces regarding the areas and measures that such ordinances could regulate, such as the storage capacity of facilities, temporary waste storage, storage of municipal waste at municipal collection centers, incineration facilities, and landfill disposal.

Therefore, in light of the Ministry's guidelines, regions and autonomous provinces adopted multiple ordinances. A significant portion of these provided for increased storage capacity at facilities. However, in the absence of specific guidance from the Ministry regarding the percentages for such increases, this resulted in a diversified regime across different regions.

Other ordinances extended the duration and volume of municipal waste storage at collection centers and authorized incineration facilities to operate at maximum thermal capacity. These measures allowed derogations—upon prior notification—from waste acceptance protocols and Presidential Decree No. 254/2003. Additionally, temporary amendments to landfill authorizations were permitted upon the submission of a *SCIA* (Certified Notification of Start of Activity), enabling the acceptance of non-hazardous waste residues derived from the treatment of municipal waste lacking alternative destinations.

As a consequence of such measures, private operators were able to alter the storage capacity and reserved storage of facilities, as well as landfill disposal authorizations, with a mere declaration of activity modification to the public administration. This occurred without prior official approval and in the absence of clear limits.

Such a system raised significant concerns. Firstly, the increase in waste quantities at facilities could, in principle, also be implemented by companies lacking the necessary resources and professional expertise. Secondly, in cases where new storage locations had to be identified, the absence of prior assessment could result in inappropriate choices, with obvious repercussions on the environment.

Additionally, the derogation regime introduced by the regions for all waste categories made it more difficult to track waste, significantly increasing the risk of illegal management.

[34] Ministero dell'Ambiente e della Tutela del Territorio e del Mare, *Circolare ministeriale recante Criticità nella gestione dei rifiuti per effetto dell'Emergenza COVID-19 – indicazioni*, 30 March 2020, No. 22276, available at: https://www.mase.gov.it/sites/default/files/archivio/eci_circolare_covid_19.pdf.

These measures were also deemed inappropriate in light of the fact that the emergency situation did not lead to a significant increase in waste production; on the contrary, it decreased. Instead, these ordinances appeared to address issues related to the structural deficits of the national waste management infrastructure. In this regard, the health emergency exacerbated the consequences stemming from the lack of suitable destinations for specific types of waste[35].

In this regard, Alessandra Dolci, Deputy Prosecutor at the Milan Tribunal, stated clearly:

> We have always documented activities of illegal waste trafficking involving companies that are regularly authorized to manage waste because, I imagine, to increase profits they accept an overload of waste. As a result, sites are filled to an unsustainable level, creating the need to dispose of part of the overload illegally. Concerning this possibility of increasing storage, considering that at this particular moment adequate controls cannot be guaranteed, I simply believed it was not the right time for such a derogation from the ordinary regime established by the specific authorizations[36].

This brief overview of the new measures introduced during the pandemic highlights how there has been a proliferation of regulatory sources added to the existing environmental legislation governing waste management, primarily contained in Legislative Decree No. 152/2006. This framework is already considered by practitioners as one of the most complex within the national legal system, posing risks of new inconsistencies and inefficiencies[37].

As previously mentioned and as will be further explored, a convoluted regulatory system, characterized by a multiplicity of sources and challenges in enforcement, creates fertile ground for criminal organizations. These groups easily circumvent regulations and offer simplified solutions for the disposal of generated waste.

In this context, the Parliamentary Commission of Inquiry into Illegal Activities Related to the Waste Cycle and Environmental Offenses Connected to It published a dedicated report on the issue of the COVID-19 epidemic emergency and the waste cycle, highlighting the main criticalities.

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[35] Camera dei deputati – Senato della Repubblica, Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, *Emergenza epidemiologica COVID-19 e ciclo dei rifiuti*, July 8, 2020, available at: <https://www.camera.it/leg18/824?tipo=A&anno=2020&mese=07&giorno=08&view=filtered&commissione=39#data.20200708.com39.allegati.all00010>.

[36] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti su illeciti ambientali ad esse correlati, XVIII Legislatura, Verbatim Report No. 73, Session of Tuesday, June 9, 2020, available at: <https://www.camera.it/leg18/1364?id_commissione=39&annomese=202006&view=filtered_scheda_bic&shadow_organo_parlamentare=3015>.

[37] S. Colombo, *Il 'virus' dell'ecomafia non si arresta né conosce crisi. Osservazioni sul rapporto Ecomafia 2020*, in *Diritto penale e uomo*, (2021) n. 4, available at: <https://dirittopenaleuomo.org/contributi_dpu/il-virus-dellecomafia-non-si-arresta-ne-conosce-crisi/>.

The report, based on testimony from FISE-Assoambiente (Association of Environmental Services and Circular Economy Enterprises) and reports from the National Anti-Mafia and Counter-Terrorism Directorate (DNA), emphasized that the COVID-19 emergency did not reduce but rather exacerbated

> the possibility that criminal phenomena may exploit the delays and complexities of 'long-chain' authorization procedures in the waste cycle, thereby creating a temptation to resort to illegal shortcuts; and that similar behaviors may be driven by the lack of a legal supply of treatment facilities, resulting in a mismatch with demand that illegality is likely to address[38].

Another issue, highlighted in the testimony of FISE-Unicircular (Association of Circular Economy Enterprises), concerns companies in the sector, which, affected by economic difficulties, are increasingly vulnerable to infiltration and proposals from individuals operating outside the bounds of legality.

The report also references the testimony given on June 17, 2020, by the Attorney General at the Court of Cassation, who noted that specific investigative findings revealed a distinct appeal and interest by organized crime in acquiring facilities where regional ordinances issued under Article 191 of Legislative Decree No. 152/2006 had increased quantitative limits[39].

The Parliamentary Commission of Inquiry's observations were corroborated by data collected by Legambiente and published in the *Ecomafie Report 2021*. This confirmed that the lockdown did not hinder criminal organizations but instead provided an opportunity to expand their illegal activities by exploiting the emergency situation and the derogatory waste management regimes.

The number of criminal offenses related to the waste cycle recorded in 2020 was 8,313, a decrease compared to the previous year. However, this reduction was influenced by the contraction in production and consumption, as well as the decrease in inspections carried out. Additionally, it is worth noting that the number of arrests increased by 15.2%, and investigations into such offenses spanned all Italian regions, with a rise in crimes committed in regions with a traditional mafia presence, from 41% in 2019 to 44% in 2020.

Particularly significant are the data concerning the offense of organized activities for the illegal trafficking of waste under Article 452-quaterdecies of the Italian Penal Code. This offense, typically perpetrated by criminal organizations exploiting the sector, was the subject of 27 investigations in 2020, one more than in 2019, and 23 investigations from January 1 to September 15, 2021[40].

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[38] Camera dei deputati – Senato della Repubblica, Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, p. 135, op. cit..
[39] Ibid.
[40] Legambiente, *Ecomafia 2021. Le storie e i numeri della criminalità ambientale in Italia*, Milano: Edizioni Ambiente, 2021.

Finally, the emergency caused by the pandemic had significant repercussions globally, creating new opportunities for illegal waste trafficking exploited by transnational criminal organizations.

In this context, Interpol (The International Criminal Police Organization) prepared a report identifying and analyzing the risks surrounding the management of personal protective equipment (PPE)[41]. Specifically, the increased production of medical waste, packaging, and single-use plastics created a crisis in waste management in many cities worldwide, opening up new avenues for generating illegal profits.

Interpol's report highlighted emerging trends, including the illegal recycling and resale of used medical masks, the rise in trafficking and dumping of medical waste, and the increased use of landfills and fires as solutions to the waste problem[42].

Having concluded the focus on the COVID-19 pandemic crisis and its impact on the subject under analysis, attention can now turn to how supranational events can also serve as conjunctural factors disrupting the national waste management system.

An illustrative example is the decision by the Chinese government, starting in 2017, to significantly reduce its imports of waste, banning 24 categories of materials, including specific types of plastics, wastepaper, and metals. Before this policy change, China imported more than 70% of the world's plastic waste. To put this into perspective, in 2016 alone, China imported approximately 8 million tons of such waste.

As a result, the new Chinese policy caused a crisis for many nations. Rather than developing more efficient and self-sufficient waste management systems, these countries identified new foreign destinations for their waste, such as Malaysia and Indonesia[43].

Looking at the consequences on the national territory, the import ban imposed by China led to congestion within companies operating in the sector. This situation compounded the bottleneck already created by the aforementioned Decree-Law No. 133/2014, known as the *Sblocca Italia* decree, which, under specific parameters, removed basin restrictions for municipal and similar waste.

[41] S. Colombo, *Il 'virus' dell'ecomafia non si arresta né conosce crisi. Osservazioni sul rapporto Ecomafia 2020*, op. cit..
[42] Interpol, *Environmental Security Programme. Strengthening Law Enforcement Cooperation Against Pollution Crime*, 2022, available at: <https://www.interpol.int/es/content/download/17125/file/INTERPOL%20ENS%20Pollution%20Crime%20Prospectus%20Jan2022_v3-lr.pdf>.
[43] L. Bonzanni, *Le rotte globali dei rifiuti: spunti nella cornice dei cambiamenti climatici*, op. cit..

The combination of these two factors, coupled with an already fragile infrastructure system, resulted in an influx of significant quantities of waste into the market and new profit opportunities for criminal actors.

The Anti-Mafia Investigation Directorate (DIA), in its first biannual report of 2019, confirmed that this condition led to an increase in illegal waste disposal operations through irregular cross-border activities and the so-called *incendi liberatori* (liberating fires) at storage sites, both authorized and unauthorized. Initially, this phenomenon affected only the industrial waste cycle, but it later extended to treatment centers managing municipal solid waste[44].

1.3. The Origin of the Phenomenon

After analyzing the factors underlying the criminal phenomena under examination—namely, the critical vulnerabilities in the waste management cycle exploited by criminal actors—it is essential to investigate how this illicit business originated from a historical and social perspective.

On June 20, 1995, the first Parliamentary Commission of Inquiry into the Waste Cycle and Related Illegal Activities was established in a unicameral format by the Chamber of Deputies. It was also the shortest-lived commission, operating for only 258 days[45]. Despite its brief duration, the Commission documented an already alarming situation with roots in earlier times, dating back to at least the late 1980s. The national landscape was characterized by "widespread illegality, with branches extending into public administration and the presence of organized crime"[46].

In 1995, there were sixteen legal proceedings across Italy concerning environmental crimes, offenses against public administration, and association crimes.

In reporting this information, it is important to note, as will be discussed, that the legislative framework governing environmental offenses has significantly evolved from the 1990s to the present day.

At this point, to understand how organized crime became involved in this sector, it is necessary to consider certain circumstances.

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[44] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Gennaio - Giugno* 2019, available at: https://direzioneinvestigativaantimafia.interno.gov.it/relazioni-semestrali/.

[45] A. Carnì, *Alle origini della Commissione parlamentare d'inchiesta sul ciclo dei rifiuti. Genesi, componenti e attività (1994-1996)*, in *Meridiana*, (2023), n. 106, available at: <Alle origini della Commissione parlamentare d'inchiesta sul ciclo dei rifiuti. Genesi, componenti e attività (1994-96) on JSTOR>.

[46] Camera dei deputati, Commissione parlamentare di inchiesta sul ciclo rifiuti e sulle attività illecite ad esso connesse, *Relazione trimestrale*, 1995, Doc. XXII-bis, No. 1, available at: <https://legislature.camera.it/_dati/leg12/lavori/stampati/pdf/37355_001.pdf>.

Mafia groups such as the Sicilian *Cosa Nostra*, Apulian *Sacra Corona Unita*, Calabrian *'Ndrangheta*, and Neapolitan and Casertan *Camorra*, all engaged in the waste management business, each with their own distinct characteristics, share some common elements, including stable territorial control. This attribute is a cornerstone of mafia culture, as it enables the organization to influence the economic and political life of the area under its power.

One sector where this criminal dominance has progressively emerged with significant impact is construction, where criminal organizations have managed to infiltrate and take control of public procurement contracts. This development laid an important foundation for their involvement in the waste cycle. The extensive availability of quarries, from which construction materials were extracted, provided, once the extraction sites were exhausted, "ideal" locations for burying all types of waste.

Moreover, the methods used to infiltrate construction procurement contracts have been replicated in the acquisition of waste collection and disposal services.

It is essential to consider another circumstance: in 1995, the Parliamentary Commission observed an evolution in the strategies employed by mafia organizations to infiltrate the economy.

Initially, mafia intervention in productive activities was characterized as "protective of businesses", involving extortion, labor control, intimidation, financing, and usurious lending.

Over time, however, these organizations began to emerge as "business entities". Mafia groups, particularly the Camorra, progressively entered bidding processes for contracts and subcontracts in a corporate structure, demonstrating managerial and marketing skills comparable to legitimate businesses. These groups established economic observatories, legal departments, and political networks[47]. This "qualitative leap" was noted across all mafia clans operating nationwide, which increasingly contaminated the public procurement sector.

In 1997, Legambiente reported that, based on parliamentary and judicial records, in at least 53 organized crime groups, mafia leaders could be described as "captains of industry", as they were actively engaged in entrepreneurial activities[48].

The entrepreneurial transformation of mafia organizations occurs through specific operational methods. Mafias aim to establish a monopoly over economic activities, concessions, authorizations, public contracts, and services, as skillfully defined in Article 416-bis of the Italian Code of Criminal Procedure. They attract businesses operating in the legal market that do not have members of criminal

[47] Camera dei deputati, Commissione parlamentare di inchiesta sul ciclo rifiuti e sulle attività illecite ad esso connesse, *Relazione trimestrale*, op. cit..

[48] Legambiente, *Le nuove frontiere dell'ecomafia. Rapporto di Legambiente sull'illegalità ambientale in Italia e il ruolo della criminalità organizzata (1994-1997)*, Roma: Legambiente, 1997, pp. 2-15.

associations among their ranks. According to sociological analyses and judicial findings, the typical methods of infiltration into these companies are extortion (racket) and usury.

In the case of extortion, the criminal consortium targets prosperous companies, presenting itself as a private protection agency in exchange for financial compensation, thereby asserting its para-political control over the territory. In the case of usury, it approaches businesses facing economic difficulties, offering loans and presenting itself as a benefactor, while simultaneously demanding gratitude and respect. Although these two crimes are characterized by distinct modalities, they share a common outcome: the gradual assumption of control over the targeted commercial or business activity[49].

After this process of appropriation, the entrepreneur falls under the dominion of the criminal consortium. The organization then exploits the entrepreneur's professional skills and public relations to present itself as a formally legal entity in public procurement processes.

Through these methods, mafia organizations have progressively gained control over key sectors across the national territory—initially concentrated in southern regions—including construction, earthmoving, and the production and distribution of cement, thereby steadily strengthening their entrepreneurial capacity.

What has just been outlined serves as an important premise for understanding how the mafia's interest in the waste management sector emerged and how the "criminal skills" developed in other areas proved equally successful in this additional illicit business. However, this represents only one part of the overall picture.

Given the complexity of the subject under investigation, one certainty emerges: the mafias did not invent the illegal waste market. Instead, in response to demand, they provided a service to address the problem illegally.

Isaia Sales, in an article on the topic, explains:

> It is important to reiterate, once again, that not all illegal activities are monopolized by organized crime. However, it is highly likely that wherever there is demand for illegal services, organized crime will eventually appear to supply them, possessing the means and expertise to carry them out at competitive prices and the persuasive tools (violence) to assert its role[50].

[49] P. Patrono, *La tutela penale dell'ambiente: dal diritto penale del rischio al rischio di diritto penale*, in *Rivista trimestrale di diritto penale dell'economia*, (2017), n. 3–4, pp. 139-146.
[50] I. Sales, *La questione rifiuti e la camorra*, op. cit., p. 65.

At this point, it is necessary to deepen the analysis by examining the other side of the coin, that concerning civil society.

As noted in the preceding paragraphs, the rapid economic and industrial evolution was not accompanied by an equally swift development of solutions for the disposal of production waste—neither in terms of industrial processes nor household consumption. Moreover, there was no timely intervention to regulate the sector adequately.

Regarding industrial waste,

> the massive presence of criminal organizations in the illegal disposal of toxic and hazardous waste is not due to the extraordinary entrepreneurial skills of criminals, capable of ingeniously creating a market from scratch, but instead arises from the industrialized world's failure to adequately address the social cost of hazardous production and the lack or inadequacy of facilities to dispose of such waste[51].

In this context, the Minister of Industry Pier Luigi Bersani declared in 1997 that the industrial sector responded to environmental regulations on waste by perceiving them as restrictive and prohibitive measures. Similarly, in the same year, Giuseppe Sverzellati, President of Federambiente, stated that

> In Italy, there are approximately 800,000 small and medium-sized industrial and artisanal enterprises that often lack the technical and financial capacity to engage in self-disposal, and therefore rely on operators with limited professionalism and poor reliability. Disposal facilities for special waste are underutilized, while at the same time, illegal disposal—including hazardous waste—is occurring, causing enormous environmental damage[52].

The first official data on industrial waste quantities collected by the Ministry of the Environment dates back to 1992. These figures were primarily estimates of actual production since, at that time, the attempt to create a waste registry, as mandated by the establishment of the cadastre in 1988, had essentially failed. Nevertheless, it was recorded that annual production amounted to approximately 34.6 million tons of industrial waste, while the disposal capacity in authorized facilities accounted for only 30–33% of the waste generated.

Furthermore, as remains evident today, structural conditions varied significantly from region to region. Certain areas, such as Abruzzo, Basilicata, Calabria, Lazio, Liguria, Marche, and Molise, had disposal capacities below 10% of their needs.

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[51] I. Sales, *La questione rifiuti e la camorra*, op. cit., p. 65.

[52] Legambiente, *Rifiutopoli. La regione fantasma. Dossier di Legambiente sui traffici e gli smaltimenti illeciti dei rifiuti industriali pericolosi. La denuncia di Assoambiente e il silenzio di Confindustria – I dati, inverosimili, della Relazione sullo Stato dell'Ambiente- Lo screening dei sequestri nel 1997 e le richieste di Legambiente*, Roma: Legambiente, 18 November 1997.

It was also noted that in some southern regions, where the gap between waste production and industrial waste management facilities was most pronounced—less than 10% of needs were covered in Calabria, around 16% in Campania, and between 10% and 40% in Puglia and Sicily—the disposal of waste from outside the region had been authorized. This occurred through the operation of certain landfills implicated in multiple legal cases, such as Di.fra.bi in Pianura, Campania, and Ines Sud in Brindisi, Puglia. Consequently, it can be inferred that the logic of maximum profit pursued by private enterprises was prioritized at the expense of proper regional planning and adequate waste disposal[53].

This dramatic situation was further compounded by the fact that, as noted by the association Assoambiente, the facilities in operation at the time were underutilized. This represented a paradox, considering the structural deficiency relative to the quantities of waste produced.

As a result, most industrial waste necessarily followed an illegal disposal route. According to Assoambiente, the main illegal channels included

> the clandestine inclusion of industrial waste into the municipal waste collection and disposal system, obviously carried out covertly and […] with the collusion of corrupt public officials; purely nominal and paper-based transformation of waste into secondary raw materials, improperly or illegally used by complicit operators in production cycles or, for example, in the construction of road foundations or other structures; unlawful downgrading of toxic and hazardous waste, which has higher disposal costs, into special waste, achieved «… through unscrupulous intermediaries, often identifiable as the transporters themselves, falsified analyses, illegal manipulations in storage and pre-treatment facilities, and compliant landfill owners who accept this waste without accurately verifying its characteristics»[54].

In addition, the Parliamentary Commission in 1995 reported that, based on site inspections and judicial investigations, wild dumping practices were carried out in certain regions, particularly in Piedmont, Lombardy, and Campania, through the burial of waste in abandoned quarries.

From this, the illegal trafficking of industrial waste was progressively uncovered. Although these wastes were ostensibly destined for landfills in southern regions, they were, in fact, disposed of illegally. These trafficking activities attracted the interest of mafia organizations which, as previously noted, possess the tools to effectively conduct illegal operations. These include territorial control, ownership of quarries, monopoly over earthmoving operations, extensive use of violence and threats, and the ability to influence political decisions through corruption[55].

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[53]Legambiente, *Rifiuti spa 2: le rotte dei TIR, il volume d'affari, i poli di smaltimento, il mistero dei rifiuti scomparsi ...: secondo libro bianco di Legambiente contro le holding dei traffici di rifiuti*, Roma: Legambiente, 1995.

[54] Camera dei deputati, Commissione parlamentare di inchiesta sul ciclo rifiuti e sulle attività illecite ad esso connesse, *Relazione trimestrale*, op. cit..

[55] Ibid.

According to data collected by Legambiente, the illegal industrial waste disposal business generated an annual turnover of approximately 5–6 trillion lire[56].

Regarding urban waste, the existence of an illegal market and the consequent involvement of mafia-type criminal organizations cannot be attributed to the provision of a service in response to a disposal demand. This sector, in fact, is characterized by being managed by public institutions and is largely legal[57].

Looking at the historical origins of the phenomenon, the management of municipal solid waste has always been marked by periods of emergency, caused by the inefficiency and structural inadequacy of facilities.

Referring to the first available data, the 1990s experienced a constant crisis that had effectively become "business as usual". This situation was due to deficiencies in the Italian system for handling municipal solid waste, a shortcoming that became even more apparent when compared to other European countries.

In 1993, the production of MSW in Italy was approximately 26 million tons, and in subsequent years it hovered around 25 million tons. Of this waste, 90% was sent to landfills, 7–8% to combustion facilities, and 2–3% to recycling.

Consequently, national strategies for waste disposal were significantly outdated, characterized by a very low reuse rate and an almost complete lack of advanced, low-impact environmental technologies. The overwhelming reliance on landfills often led to the exhaustion of designated sites and the accumulation of waste along streets.

This was addressed by resorting to Article 12 of Presidential Decree No. 915/1982, which allowed for the opening of temporary landfills. This article, titled "Urgent and Contingent Orders", before being repealed in 1997, provided that in cases of "exceptional and urgent necessity to protect public health or the environment", the president of the regional council or the mayor could "order temporary recourse to special waste disposal methods, even in derogation of existing regulations"[58].

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[56] Legambiente, *Rifiuti spa 2: le rotte dei TIR, il volume d'affari, i poli di smaltimento, il mistero dei rifiuti scomparsi ...: secondo libro bianco di Legambiente contro le holding dei traffici di rifiuti*, op. cit.
[57] Sales, *La questione rifiuti e la camorra*, op. cit., p. 65.
[58] Art. 12, Presidential Decree of 10 September 1982, No. 915, Implementation of EEC Directives No. 75/442 on waste, No. 76/403 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls, and No. 78/319 on toxic and hazardous waste, available at https://www.normattiva.it/uri-res/N2Ls?urn:nir:presidente.repubblica:decreto:1982-09-10;915~art5.

This privileged position of landfills progressively attracted the interest of mafia consortia, which had extensive access to quarries. Additionally, entering the sector required minimal investment to activate landfills, given the inadequacy of regulatory controls.

Significant in this regard is the 1990 survey conducted by the company Castalia on behalf of the Ministry of the Environment, which recorded 2,166 landfills across the country, of which 1,381 were unauthorized, with 1,325 of these located in southern regions.

As in the construction sector, mafias infiltrated the landfill industry by engaging in public procurement, particularly contracts issued by local authorities and municipalities in northern Italy. They then carried out disposal operations in locations other than those declared by falsifying documentation. Additionally, illegal dumping of waste into public landfills in southern Italy was reported, often occurring outside of operating hours.

In 1995, the Parliamentary Commission noted that waste management crises in certain Italian regions—Lombardy, Campania, Puglia, Lazio, Basilicata, Calabria, Tuscany, and Emilia-Romagna—had given rise to illegal waste trafficking. Specifically, the overburdening of disposal facilities, the exhaustion of landfill capacity, and technical and administrative difficulties had led local authorities to rely on companies that promised to resolve the issue quickly and effectively by sending waste to operating landfills in southern Italy. However, these landfills were often illegal operators using unauthorized quarries and sites.

Another structural issue contributing to the municipal solid waste (MSW) emergency lay in the delegation of disposal responsibilities to municipalities under Article 3 of Presidential Decree No. 915/1982, now repealed. This led to fragmentation, inefficiency, and consequent vulnerability to mafia infiltration[59].

The extensive involvement of mafia organizations in the management of municipal solid waste (MSW) can be explained by their preference for the tertiary sector as an economic area for reinvesting criminal capital. Construction, waste management, food supply, agriculture, and the distribution of oil and gasoline are all fields characterized by low technological advancement and high labor intensity. These sectors also belong to protected economic markets with high capital investment requirements but low demands for managerial skills and innovation.

Other distinctive features of the tertiary sector include public authority oversight, which creates opportunities to influence decisions through corruption; the ability to shift profits onto the public by

[59] Camera dei deputati, Commissione parlamentare di inchiesta sul ciclo rifiuti e sulle attività illecite ad esso connesse, *Relazione trimestrale*, op. cit..

raising fees; the significant presence of an immigrant workforce, which is more easily exploited; and the absence of genuine market competition. These attributes are highly appealing to mafia organizations, which seek to reinvest their capital in the legal economy, aiming for maximum profit with minimal risk.

Consequently, the management of municipal solid waste, which depends on public authorizations, requires substantial capital and is marked by persistent crises due to infrastructural inefficiencies and fragmented, emergency-driven regulations, becomes an ideal target for criminal penetration. This is achieved through corruption, political manipulation, threats, and violence[60].

The situation regarding hazardous and toxic waste was equally alarming. Data provided by the Ministry of the Environment in 1997, referring to the years 1993/1994, painted a disconcerting picture due to the discrepancy between the amount of waste produced and the amount for which individual regions reported a plausible final destination.

Specifically, the annual production of hazardous waste amounted to 2,708,596 tons, of which information about the destination was available for 2,557,436 tons. However, 151,160 tons, equivalent to 5.5% of the total production, remained unaccounted for, even from a documentary perspective. While this percentage might seem marginal, it must be emphasized that it concerns the most dangerous waste for both the environment and human health.

According to the Ministry's data, for the 2,557,436 tons of waste for which regions reported a final destination, nearly all regions declared disposal outside their territory. More specifically, out of the total 2,708,596 tons of hazardous waste produced annually by individual regions, 1,600,455 tons were disposed of outside the region, equivalent to 60%, while 880,211 tons were disposed of within regional boundaries, accounting for 34.4%.

If these figures are taken at face value, this would imply that national roads were constantly traversed by trucks transporting hazardous waste to extra-regional destinations. Assuming such road transport actually took place during those years, the precise extra-regional destinations remained unknown. Furthermore, it is unlikely that these shipments were directed to authorized facilities, as Assoambiente reported that these facilities were desperately seeking waste to process.

These assumptions are contradicted by the very data provided by the Ministry. If there had indeed been an extra-regional destination for this waste, at least one region should have reported an internal disposal volume exceeding its production. However, this was not the case. All regions declared

[60] I. Sales, *La questione rifiuti e la camorra*, op. cit., pp. 66-67.

internal disposal volumes either equal to or, in the case of Piedmont, less than the amount of waste produced within their borders.

Moreover, an international destination must also be ruled out, as official data recorded the export of only 17,723 tons of hazardous waste in 1993 (1.1% of the total) and 31,443 tons in 1994 (1.9% of the total).

It is therefore evident that the disposal routes followed in this context were, once again, illegal.

In a dossier published in 1997 on the subject, Legambiente provocatively denounced that by publishing the aforementioned data, the Ministry and the regions effectively legitimized the existence of a hypothetical twenty-first region—the "ecomafia"—to account for the final destination of toxic waste.

That same year, the environmental association conducted research into the illicit trafficking and disposal of hazardous waste by analyzing the number of illegal landfills seized that contained such materials. The findings painted a troubling picture, highlighting a nationwide issue.

From January to October 1997, 22 seizures of illegal landfills were reported, with particularly severe cases in specific areas. In Latina, for instance, 10,000 barrels containing highly toxic materials were confiscated. In San Giorgio di Nogaro, in the province of Udine, the Guardia di Finanza seized an area where 30,000 tons of such waste had been illegally dumped. Similarly, in the province of Caserta, 30 quintals of toxic waste had been illicitly discharged.

In the face of such a widespread and dire situation, legislative and judicial responses were consistently slow. By 1997, only one trial had reached its conclusion. This trial concerned an incident in Castelnuovo di Porto, in the province of Rome, where three individuals were convicted for the illegal disposal of hazardous waste[61].

1.3.1. "The Landscape of Ecocamorre"[62]

The issues outlined above regarding the origins of the business of waste disposal and illicit waste trafficking affect the entire Italian territory and involve the operations of all mafia-type criminal organizations. However, one particular region of Italy has been disproportionately impacted, and one criminal group has particularly "distinguished itself" in this sector.

[61] Legambiente, *Rifiutopoli. La regione fantasma. Dossier di Legambiente sui traffici e gli smaltimenti illeciti dei rifiuti industriali pericolosi. La denuncia di Assoambiente e il silenzio di Confindustria – I dati, inverosimili, della Relazione sullo Stato dell'Ambiente- Lo screening dei sequestri nel 1997 e le richieste di Legambiente*, op. cit.

[62] G. Corona, R. Sciarrone, *Il paesaggio delle ecocamorre*. in *Meridiana*, (2012), n. 73-74, available at: <http://www.rivistameridiana.it/>.

Indeed, when considering illegal activities related to waste, they are almost automatically associated with the Campania region and attributed to Camorra groups. This association is not without basis: in Campania, starting in the 1980s, one of the most severe environmental and civil disasters in national history unfolded. It was in this context that the neologism Ecomafie was coined, and awareness grew of the existence of the so-called *Rifiuti S.p.A.*[63].

It is important to clarify from the outset, however, that while the commonly held public association—linking Campania, the Camorra, and the burial of toxic waste—is broadly accurate, the attribution of the region's urban waste crisis to the Camorra is more contentious.

This crisis, previously referenced, was not caused by the presence of the criminal organization, although the latter, particularly the Casalesi clan, emerged as its primary beneficiary[64].

Proceeding systematically, it is necessary to examine the factors that led to this environmental disaster in this specific Italian region and to understand how Camorra groups, especially the Casalesi, achieved dominance in the waste trafficking sector.

Judicial findings, particularly in light of statements made by collaborators of justice, have clarified that the waste business holds paramount importance for all Italian mafias. This sector guarantees exceptionally high profits while involving significantly lower risks compared to other lucrative criminal enterprises, such as drug trafficking.

Within this context, the Camorra has proven to be the organization that has benefited the most from this criminal sector for several reasons.

First, the geographical location of Campania within the national territory plays a critical role. Compared to Calabria, Sicily, and Puglia, Campania is closer to the northern regions of Italy, where industries seeking fast and cost-effective waste disposal services are primarily based. This proximity has provided the Camorra with a significant competitive advantage, enabling them to offer lower prices than other mafia-type organizations, due to the shorter distances required to transport waste from its point of origin to its clandestine disposal sites.

The second reason lies in the Camorra's monopolistic control of the construction sector, which extends to territorial dominance over quarries and close ties with the construction industry.

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[63] Legambiente, *Rifiuti spa: pseudo-imprenditori, logge massoniche, politici corrotti e criminalità organizzata: una holding dietro i traffici abusivi: libro bianco di Legambiente sullo smaltimento illegale nel Mezzogiorno dei rifiuti urbani e industriali prodotti in Italia*, Roma: Legambiente, 1995.

[64] I. Sales, *La questione rifiuti e la camorra*, op. cit., p. 63.

To understand this factor, it is necessary to delve deeper into the analysis by examining the policies implemented in Southern Italy during the post-World War II period.

The area under consideration in this investigation includes the province of Caserta—specifically, the Agro Aversano, the Agro Casertano, and the Litorale Domitio—and extends to some municipalities in the northern outskirts of Naples, collectively referred to as the so-called *Campania felix*. This region, as its name suggests, was historically distinguished by its natural wealth and thriving agricultural activity. However, it underwent a profound transformation in the post-war period, following a rapid process of industrial development[65].

The transformation began in the 1950s with the establishment of the *Cassa del Mezzogiorno* under Law No. 646/1950. This was followed by the first extraordinary intervention, carried out from 1950 to 1957, which focused on public works in agriculture and the creation of a favorable environment for industrialization. Specifically, efforts included the regulation of mountain basins and waterways, land reclamation, irrigation, agrarian reform, the construction of aqueducts and sewage systems, and the development of roads and railways.

The second extraordinary intervention, spanning from 1957 to 1980 and enacted under Law No. 634/1957, shifted towards "polarized" development. This phase aimed at establishing Industrial Development Areas (*Aree di sviluppo industriale*, or ASI) and Industrialization Nuclei (*Nuclei d'industrializzazione*, or NI)[66]. During this period, the state committed to investing in the establishment of large industrial plants in sectors such as steelmaking, heavy machinery, chemical production, and petrochemicals, all characterized by high technological standards and significant capital-to-labor ratios.

Encouraged by the financial and fiscal incentives provided by the law to facilitate the industrialization process, many large companies from Northern Italy and abroad decided to open plants in this area, radically transforming its landscape. However, these industrial hubs lacked any connection to the local productive base and, consequently, showed no interest in fostering its development.

The rapid transition from an agricultural economy to an agro-industrial one led to significant growth, resulting in a period of prosperity and increased income for the population up until 1981.

[65] See A. Gennaro, *Crisi dei rifiuti e governo del territorio in Campania*, in *Meridiana*, (2009), n. 64, p. 71-86, available at: <http://www.rivistameridiana.it/>.
[66] M. Andretta, *Da Campania felix a discarica. Le trasformazioni in Terra di Lavoro dal dopoguerra ad oggi*, in *Meridiana*, (2009). n. 64, pp. 87-120, available at: <http://www.rivistameridiana.it/>.

This transformation, which also spurred employment growth, was accompanied by an uncontrolled increase in population and, consequently, urbanization.

However, by 1991, the region faced a severe industrial crisis following the end of extraordinary interventions. This crisis led to a 30% reduction in the workforce and a 22% decrease in local industrial units, alongside the progressive abandonment of industrial plants without any accompanying redevelopment policies. The era of industrialization concluded with a profound transformation of the territory—a fleeting period of apparent prosperity that neither resulted in economic autonomy nor fostered sustainable development of local production. This left the population dependent on public resources and the construction sector, which remained the only thriving economic reality unaffected by the crisis and continued to grow[67].

Compounding this situation was the 1980 earthquake that devastated much of Campania. In its aftermath, a significant portion of the population was relocated to areas such as Aversa, Caserta, and along the Domiziana, further straining the urban sector, which was already experiencing expansion due to industrialization. This expansion occurred without proper urban planning, sufficient administrative oversight, or enforcement of regulations, creating fertile ground for widespread illegality.

In this regard, Corona and Sciarrone write:

> The landscape of the ecocamorre is nothing more than the final outcome of these processes in an area with a strong presence of criminal groups and marked weakness and fragmentation of local administrations. An outcome that intersects, as we have seen, with the effects of national policies of an extraordinary nature aimed solely at disbursing financial resources, detached from a comprehensive and shared plan, as well as an effective control system[68].

In the construction sector, the 1980s saw the aggressive rise of the Casalesi clan. The significant expansion of this economic sector, driven by the implementation of public and residential projects, represented one of the most lucrative fields of the time, inevitably attracting the attention of criminal organizations.

Following the victory in the early 1980s of the *Nuova Fratellanza*—comprising the Bardellino, Nuvoletta, Alfieri, and Giuliano groups—over Raffaele Cutolo's *Nuova Camorra Organizzata*, the involvement of organized crime in public contracts became firmly established. While Cutolo's mafia had its roots in agricultural activities, the victorious faction displayed different organizational

[67] Ibid.
[68] G. Corona, R. Sciarrone, *Il paesaggio delle ecocamorre*, op. cit.

capacities, marking the transition to an entrepreneurial mafia that dominated vast market segments, particularly in construction.

The key to their criminal success was the creation of a consortium-based mechanism, described as

> capable of ensuring, effectively, monopolistic control over entire market sectors or producers, achieving a synthesis of interests between the Camorra, who received substantial bribes, the businesses, which secured significant market shares by outcompeting rivals and gaining protection for their sites, and the politicians, who, in exchange for awarding contracts, received money from entrepreneurs and electoral support from the clans[69].

In 1983, Antonio Bardellino established *General Beton*, a concrete production plant located in Santa Maria la Fossa, to directly participate in the public works linked to post-earthquake reconstruction efforts. The following year, in 1984, *General Beton* joined the newly formed *Consorzio Cedic*, which brought together all producers of concrete and aggregates in the province of Caserta.

The rules of the consortium stipulated that the Camorra Association would guarantee exclusivity to consortium members by excluding all external companies. In return, the Camorra secured the inclusion of businesses directly managed by the clan and collected a share of profits from supplies.

This organizational structure significantly strengthened collusive practices during the 1980s, involving businesses, politics, and organized crime, intending to appropriate public resources allocated to the region. As the criminal presence in public works contracts deepened, so too did the dependence of politicians on electoral support provided by the clans.

It is now clear how the monopoly in the construction sector became a decisive factor in entering the waste business starting in the mid-1980s. The clans involved in this lucrative new activity were the same ones participating in the concrete and aggregate consortia, as they already had extensive access to quarries and earth-moving equipment.

Additionally, the dense network of collusion established during those years played a crucial role. This network included connections with public administrations, which would later be leveraged to obtain permits for creating landfills or for illegally dumping waste, as well as with landfill owners, who had until that point been used for depositing unusable aggregates or production waste.

The third key factor that contributed to the success of the Casalesi clan was their strong control and deep roots in the agricultural territory bordering the urban outskirts of Naples. This can be attributed to the agricultural origins of many Camorra families and their resulting strong ties with

[69] M. Andretta, *Da Campania felix a discarica. Le trasformazioni in Terra di Lavoro dal dopoguerra ad oggi*, op. cit.

landowners and cultivated estate proprietors. Moreover, the Casalesi had already gained significant experience in agricultural fraud schemes, which they used as a stepping stone to enter the waste sector.

Specifically, in the 1970s, in the province of Caserta, the *Azienda per gli interventi sul mercato agricolo* (AIMA), under the Ministry of Agriculture, spent years withdrawing and destroying surplus agricultural production to balance prices in response to market oversupply. This mechanism, implemented as part of European Union policies, required the identification of land where surplus produce could be buried. Farmers would deliver their crops to these sites, where the goods were weighed, recorded, and subsequently destroyed. The tasks were overseen by officials from the Regional Government, Prefectures, and the Ministry of Agriculture.

The mafia clans exploited this system by falsely declaring more produce than was delivered, tampering with weight records, intimidating or bribing public officials, and, through typical mafia methods, seizing fields where surplus production was to be buried.

This led to the consolidation of criminal practices such as falsifying documentation—a precursor to the so-called *giro bolla* scheme in the waste business—corrupting public officials, engaging in illegal transportation, and intimidating landowners. In essence, the entire array of criminal methods later applied to the waste business was first developed in this context.

In summary, the geographical location, the monopoly in the construction sector accompanied by agreements with businesses, politicians, and landowners, territorial dominance, and the criminal methods refined through fraud schemes involving AIMA, all contributed to the success of the Casalesi clan in capitalizing on the most profitable new business of the time[70].

Simultaneously, across the national territory, industrialization and urbanization were reshaping society from an economic and consumption perspective, as previously discussed. These changes introduced challenges in maintaining a balance between new socio-economic practices and the management and preservation of environmental resources. These challenges escalated into crises starting in the 1980s, marked by an unprecedented increase in the production of urban and special waste—a fertile ground for criminal exploitation.

Regarding special waste, the first insights into the related criminal business emerged from the 1992 statements of justice collaborator Nunzio Perrella to magistrates of the Naples *Direzione Distrettuale Antimafia*. These revelations led to the *Adelphi* investigation, the first inquiry into this sector. It was from this point that the criminal framework reshaping the entire nation began to be uncovered.

[70] M. Andretta, *Da Campania felix a discarica. Le trasformazioni in Terra di Lavoro dal dopoguerra ad oggi*, op. cit., pp. 102-109; G. Corona, R. Sciarrone, *Il paesaggio delle ecocamorre*,op. cit., pp. 21-26; I. Sales, *La questione rifiuti e la camorra*, op. cit., pp. 73-74.

Perrella, brother of the Perrella clan leader who controlled the Traiano district in Naples, explained how the Casalesi clan had established a network overseeing the entire special waste chain through intermediary, storage, and transportation companies.

Specifically, the Casalesi clan leaders—Nunzio Perrella, Francesco Bidognetti, Francesco Schiavone, and Vincenzo Zagaria—formed an agreement and established a waste transport and disposal company, *Ecologia 89*, managed by Bidognetti's nephew, Gaetano Cerci. This company was later joined by others, forming a full-fledged criminal cartel. Key players included *Alma* of Villaricca, which managed waste transportation and storage in Giugliano and was owned by Luca Avolio (arrested during the *Adelphi* operation); *Novambiente S.r.l.*, a disposal company owned by Gaetano Vassallo, who also operated landfills in areas between Giugliano and Caserta; and *Setri*, owned by Cipriano Chianese, who controlled several landfills.

Cerci and Vassallo played pivotal roles by building connections with the industrial sector in Northern Italy, particularly in Tuscany, Lazio, Lombardy, Piedmont, and Veneto, acting as effective intermediaries for waste disposal services. Additional key figures included Mario Caterino and Francesco Di Puorto, who focused on recruiting entrepreneurs in Tuscany.

The turning point, however, was marked by the agreement reached between Bidognetti-Perrella and Raffaele Perrone Capano, the Environmental Councillor for the Province of Naples. The agreement stipulated that the clans would allocate a portion of the bribes from the waste business to politicians in exchange for permits to dispose of waste, including that originating from outside the region, despite the prohibition against accepting out-of-region waste. Specifically, for every kilogram of waste, 25 lire were paid to politicians, and 10 lire to the Camorra.

These are the main actors in what Legambiente dubbed *Rifiuti S.p.A.*:

> This involves a group of individuals who, even legally speaking, occupy different positions but who have nonetheless participated in the great 'feast' of waste trafficking towards Southern Italy, with connections extending into Central and Northern Italy. Trafficking was either entirely illegal or carried out through the disastrous habit of some regions allowing the disposal of out-of-region waste. [...] The primary goal was to get rid of the waste. Contracting companies, transporters, and final disposal sites [...] assumed the role of providential saviors. Unfortunately, it was the local populations who paid the price for this 'miraculous solution' and had to endure the consequences of this trafficking[71].

The criminal network operated in the following manner. First, it is essential to clarify that there was total control over the entire waste management cycle in all its phases: collection, transportation,

[71] Legambiente, *Rifiuti spa: pseudo-imprenditori, logge massoniche, politici corrotti e criminalità organizzata: una holding dietro i traffici abusivi: libro bianco di Legambiente sullo smaltimento illegale nel Mezzogiorno dei rifiuti urbani e industriali prodotti in Italia*, op. cit.

and disposal. The main actors in this business were intermediaries, associated with recovery companies; transporters, affiliated with transport companies; and disposers, linked to storage companies. All these entrepreneurial operators had previously secured contracts through public tenders for waste management services.

The intermediaries' role was to identify and negotiate agreements with entrepreneurs seeking to dispose of their hazardous waste and to locate parties willing to accept the waste. To establish relationships with entrepreneurs, the intermediaries participated in public tenders, presenting themselves as companies offering services at competitive prices. In fact, their operating costs ranged from 80 to 200 lire per kilogram of hazardous waste, compared to the 800 to 1,200 lire mandated by legal disposal regulations.

Once the entrepreneurs accepted this "advantageous offer", the criminal organization's transport companies took charge of collecting the waste. To bypass inspections, the transporters carried accompanying documentation (*bolle di accompagnamento*), which initially contained accurate information about the waste, classifying it as hazardous and specifying the intended storage facility. However, these storage facilities were also part of the criminal network. At this stage, the waste was not handled as required by law; instead, a document certifying lawful disposal—which never occurred—was issued, along with a new document falsely reclassifying the waste as non-hazardous without undergoing any treatment.

With the counterfeit documentation, the waste was then transported to Caserta, where the individual responsible for disposal directed it to quarries, landfills, or open fields. When these sites reached capacity, the waste was set on fire.

This highly effective criminal network was unveiled through Operation Cassiopea, conducted between 1999 and 2003 by Deputy Prosecutor Donato Ceglie from Santa Maria Capua Vetere. This operation marked the first instance in which associative crimes aimed at environmental pollution were prosecuted[72].

The members of *Rifiuti S.p.A.*, once subjected to judicial action, began collaborating with the authorities, thereby corroborating the aforementioned findings. Domenico Bidognetti explained that

> Initially, waste from the North was disposed of in landfills, but then we decided to avoid authorized disposal sites to prevent them from reaching capacity. We thus opted to dump the waste in illegal landfills"[73].

[72] M. Andretta, *Da Campania felix a discarica. Le trasformazioni in Terra di Lavoro dal dopoguerra ad oggi*, op. cit., pp. 111–113; Legambiente, *Rifiuti spa 2: le rotte dei TIR, il volume d'affari, i poli di smaltimento, il mistero dei rifiuti scomparsi ...: secondo libro bianco di Legambiente contro le holding dei traffici di rifiuti*, op. cit.
[73] P. Peluso, *Dalla terra dei fuochi alle terre avvelenate: lo smaltimento dei rifiuti in Italia*, op. cit., p. 19.

Similarly, Gaetano Vassallo stated

> Once the landfills were full, the waste was buried anywhere. In these cases, entrepreneurs were essentially bypassed, though at times we were asked to provide the use of our official stamps to cover and justify the disposal of waste produced by companies in Northern Italy[74].

The system devised by the aforementioned actors proved highly effective, generating immense profits for those involved in the business. However, it also resulted in severe environmental degradation and significant repercussions on human health for the affected populations. This is evidenced, for instance, by the findings of the study "*Waste Management in Campania: Impact on Human Health*", conducted by the National Research Council and the Italian National Institute of Health. The study confirmed an exponential increase in cancer cases and heightened risks of various diseases in areas adjacent to illegal landfills between 1996 and 2002[75].

Turning to the issue of municipal waste, the dynamics shift and become increasingly intertwined. To understand the municipal waste emergency that affected the Campania region from the 1990s, one must start from February 11, 1994, when then-Prime Minister Carlo Azeglio Ciampi issued a decree declaring a state of emergency. This situation arose due to the exhaustion and closure of landfills, which led to waste accumulating along the streets, posing a serious hygienic and health risk. Until that point, two-thirds of the municipal waste produced had been sent to private landfills located in the provinces of Naples and Caserta, which reached capacity in December 1993.

With the Prime Minister's decree, the prefect of Naples was appointed as the extraordinary commissioner for the municipal waste emergency. Subsequently, in 1996, the President of the Campania Regional Council was also appointed as the delegated commissioner responsible for implementing the necessary measures to overcome the emergency and establish a modern waste management system[76].

Initially, the prefect responded by establishing several landfills to continue waste disposal, delegating their management to inter-municipal public consortia formed under regional law. In 1996, the regional waste management plan was published, calling for the construction of five incineration plants. This plan was later revised in 1998 to align with the 1997 Ronchi Decree. The revised plan proposed the introduction of seven RDF (Refuse-Derived Fuel) plants—intended to process waste for incineration—and two waste-to-energy plants designed to convert the RDF into energy.

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[74] Ibid.
[75] G. Corona, R. Sciarrone, *Il paesaggio delle ecocamorre*, op. cit., p. 28.
[76] G. Corna, M. Franzini, *Capire l'emergenza rifiuti a Napoli. Un'introduzione*, in *Meridiana*, (2009) n. 64, available at: <http://www.rivistameridiana.it/>, pp. 9–11.

Consequently, a public tender was issued for the construction of three RDF plants and one waste-to-energy plant in the province of Naples. In 1998, the tender was awarded to the Temporary Consortium of Enterprises (ATI) Fisia-Impregilo.

In 1999, Antonio Bassolino assumed the role of President of the Campania Region and Commissioner for the waste emergency, a position he held until 2004.

During this period, the testing of the RDF plants in Pianodardine, Giugliano, Caivano, Santa Maria Capua Vetere, Tufino, Casalduni, and Battipaglia was completed. However, each of these facilities presented technical issues, rendering them unable to produce compliant RDF. The contractor, Fisia-Impregilo, also failed to fulfill its contractual obligations to recover energy in other facilities while the waste-to-energy plants were being constructed.

This situation exacerbated the waste emergency, leading to the accumulation of refuse-derived fuel and plastic-wrapped waste packages, known as *ecoballe*, at facilities, storage areas, and designated sites. The crisis reached its peak between 2007 and 2008, as it became impossible to find disposal solutions for thousands of tons of garbage.

On this matter, Corna and Franzini observed:

> Within the broader 'Campania issue,' the waste crisis represented the dramatic outcome of dysfunctions in the political and institutional system. It thus revealed itself to be inadequate for managing and governing an issue of such critical collective interest[77].

At this point, it is necessary to introduce an additional element. While Camorra clans had distanced themselves from the management of municipal solid waste (MSW) following the delegation of its entire management to a single company, they later re-entered the system when, due to the non-compliance of Fisia Impregilo, private entities were once again utilized for waste transport and landfill identification.

When private companies operating in the sector were re-engaged to address MSW disposal, so-called "mixed companies" were formed, consisting of public entities (the consortia) and private enterprises specializing in waste disposal. A representative example is the case of the Caserta 4 consortium, which had political figures Nicola Cosentino and Mario Landolfi as its representatives. This consortium orchestrated a sham tender to select a private company for establishing the mixed company, with the winning bid awarded to the Orsi brothers' enterprise, which was connected to the Bidognetti clan. This effectively reopened the MSW cycle to the Camorra.

[77] G. Corna, M. Franzini, *Capire l'emergenza rifiuti a Napoli. Un'introduzione*, op. cit., p. 14.

The Camorra, leveraging its experience in the monopolistic management of special waste, adeptly expanded its operations to encompass municipal solid waste as well.

Paradoxically, Commissioner Bassolino encouraged the merger of the Caserta 4 consortium with Naples 1 and Naples 3 to shift from Fisia-Impregilo's monopolistic management to that of basin consortia associated with each other. This move effectively returned the entire MSW cycle to the control of local administrations and private operators.

In practice, the management within the consortia mirrored the approach already implemented for special waste: the personnel hired were selected by Camorra clans, as well as by Cosentino and Landolfi[78].

In conclusion, during the years marked by the Campania waste emergency, there was a failure to transition to a modern industrial cycle for municipal solid waste. This failure resulted in a reversion to local management characterized by deeply rooted illegal and clientelistic mechanisms. In this context, it is argued that the Camorra did not cause the crisis but certainly participated in its management and emerged enriched, leveraging its remarkable ability to exploit structural inefficiencies to its advantage.

The events described above have recently been the subject of scrutiny by the European Court of Human Rights. On 30 January 2025, the Court issued a judgment against Italy in the case *Cannavacciuolo and Others v. Italy*, raising serious concerns regarding the effectiveness of the Italian criminal justice system and the country's environmental policies. The case originated from the phenomenon under examination, commonly referred to as the "Land of Fires"(*Terra dei Fuochi*).

The application was brought before the Court by, on the one hand, numerous residents of the municipalities in Campania affected by the phenomenon and, on the other hand, by several local associations and committees engaged in the protection of the environment and public health.

About the admissibility of the applications, the Court declared inadmissible those lodged by associations and committees, considering them incompatible *ratione personae* with Articles 2 and 8 of the Convention, as they lacked the status of "victim" within the meaning of the ECHR. Conversely, the individual applications were deemed admissible, as the domestic remedies pursued — including compensation awarded in criminal proceedings — had failed to provide adequate protection against prolonged exposure to environmental risk.

[78] I. Sales, *La questione rifiuti e la camorra*, pp. 76–79, op. cit.

On the merits, the Court focused its assessment on the alleged violation of Article 2 of the Convention (right to life), considering the complaint under Article 8 (right to respect for private and family life) absorbed. It found that the environmental contamination, due to its duration and extent, had given rise to a real and immediate risk to human life, which had been known to the Italian authorities since the 1990s. In this context, the State was under a duty to take prompt and comprehensive action, from identifying the nature and scope of the pollution to assessing its health impact, prosecuting unlawful conduct, and ensuring transparent information to the population.

According to the Court, these obligations were systematically disregarded: Italy failed to implement sufficiently coordinated measures to address the emergency, displaying an inadequate response in terms of the diligence and urgency required by the situation. The judgment also devotes significant attention to the shortcomings of the criminal justice system in tackling environmental offenses.

In its assessment, the Court emphasized the necessity of a systematic and coordinated response by the Italian authorities to confront the environmental degradation in the so-called “Land of Fires”. In the Court’s view, the phenomenon calls for complex and well-structured action, involving a clear delineation of competences so as to avoid a fragmentation of responsibilities among the different levels of government (local, regional, and central) and the relevant State agencies. The authorities are required to act in an integrated manner, developing a comprehensive strategy that, in cooperation with local, regional, and national actors, addresses all issues related to pollution.

Such a strategy must include measures to identify contaminated areas, assess health risks, investigate the sanitary impact, and combat illegal waste disposal practices. It should also provide for a clear implementation plan, with defined timelines and adequate resources allocated to the competent actors.

A key aspect highlighted by the Court concerns the importance of identifying and assessing contaminated areas, as such activity constitutes a necessary prerequisite for understanding the associated health risks and for defining the appropriate measures to be taken. Moreover, the Court emphasized that the authorities must ensure the continuous updating of information concerning polluted areas, by consistently monitoring the development of the environmental crisis — particularly in light of the discovery of new sites used for illegal waste disposal.

Finally, the Court stressed the urgency of remediating contaminated sites. It is essential that the authorities ensure adequate and transparent management of all information related to remediation efforts, making certain that data are complete and accurate. Furthermore, the progress and

effectiveness of the remediation measures adopted must be regularly monitored, in order to better guide future interventions[79].

1.3.2. Le "navi dei veleni" e le "navi a perdere" (The "Ships of Poison" and the "Disposable Ships")

Analyzing the origins of illicit waste trafficking and disposal—understood as the period when the first reports of such activities emerged—it is impossible not to mention the events linked to the so-called *navi dei veleni* (ships of poison) and *navi a perdere* (disposable ships).

These two phenomena, although distinct, share certain points of connection and temporally predate the explosion of the waste disposal business that positioned Campania as a key player in the North-South waste disposal route.

The term *navi dei veleni* commonly refers to the illegal trafficking and disposal of toxic and radioactive waste carried out by international criminal networks. These networks aimed to offload the problem from the global North by transporting the waste, via ship, to countries in the global South, effectively turning them into dumping grounds.

Conversely, the term *navi a perdere* refers to the suspicious sinking of ships in the Mediterranean Sea. It has been hypothesized that these ships were laden with radioactive or otherwise hazardous waste, with the dual objective of illicitly obtaining insurance payouts and profiting from the disposal of the waste.

From the outset, it is important to clarify that, regarding these alarming illicit activities, no judicial proceedings have ever definitively established the commission of these crimes or resulted in the conviction of alleged perpetrators. Jurisprudence, academic scholarship, parliamentary inquiry commissions, and the media have all examined these phenomena for over thirty years without finding concrete evidence. Nonetheless, the hypothesis that these offenses were indeed committed has never been dismissed, and significant doubts still remain.

It is important to emphasize that numerous Italian judicial authorities conducted investigations; however, during the 1980s and 1990s, those who dedicated themselves to these inquiries encountered insurmountable obstacles due to the inadequacy of the procedural tools available at the time. Indeed, the investigations involved individuals, interests, and geographical areas that exceeded the jurisdictional limits of various Italian prosecutors' offices. Furthermore, the legislative framework of

[79] European Court of Human Rights, *Cannavacciuolo and Others v. Italy*, judgment of 30 January 2025, application no. 10650/21, available at: https://images.processopenaleegiustizia.it/f/sentenze/documento_lMGOM_ppg.pdf

the time did not yet account for such criminal phenomena, and as a result, the necessary laws to effectively investigate and punish these criminal behaviors were lacking.

The Parliamentary Commission during the XVI legislature effectively described these challenges as follows:

> The investigative activities carried out to ascertain transnational criminal acts involving the illegal disposal of radioactive or otherwise toxic waste have consistently encountered insurmountable difficulties, in the sense that, to use an easy metaphor, they had to push toward the known borders of the law and always arrived at places beyond the Pillars of Hercules, where the law simply does not exist. Therefore, investigative activity, while discretionary, is nonetheless subject to the law and must conform to the law. It has proven to be an entirely blunt instrument where it could not find the mold to shape its actions. Thus, the conclusion as to whether the investigated phenomenon exists or does not exist cannot be derived from the results of investigative activities, because investigative activities produce results according to rules that the illicit phenomenon does not recognize[80].

Subsequently, efforts to shed light on these events in more recent years have still encountered additional challenges, such as the passage of time and the statute of limitations for offenses already codified by the legislation in force at the time.

Nonetheless, numerous investigations conducted by the judiciary have made it possible to outline the historical, geopolitical, and economic framework of our national state. After the adoption of Presidential Decree No. 915/1982, which introduced the first regulations on waste disposal, Italy became a strategic hub for the logistical management of the business that transported industrial waste from the North to the South. This transformation was facilitated both by Italy's favorable geographical position and by the presence of organized crime groups with mafia-like structures that had vested interests in these illegal activities.

As Legambiente explained, citing a 1996 report by the Direzione Investigativa Antimafia (Anti-Mafia Investigative Directorate) on international arms trafficking:

> Investigations conducted in Italy and abroad have confirmed that our peninsula is considered one of the crucial transit points for shipments of radioactive material arriving via trucks from the East[81].

[80] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, doc. XXIII, n. 21, approved on February 28, 2013, p. 280–281, available at: <https://legislature.camera.it/_dati/leg16/lavori/documentiparlamentari/indiceetesti/023/021/pdfel.htm>, pp. 280–281.

[81] Legambiente, *I mercati globali dell'ecomafia. Rifiuti, beni archeologici e specie protette: le rotte dei traffici illegali*, Palermo, December 13, Roma: Legambiente, 2000.

In fact, this phenomenon involved actors across the entire European continent, so much so that the environmental organization Greenpeace used the title *"The Network"* in a report from the 1990s to refer to it.

Moreover, the alarm caused by these events led the international community to adopt the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal in 1989, which Italy ratified on February 7, 1994[82].

In analyzing the aforementioned phenomena, it is crucial to consider the date of the adoption of the above-cited decree in 1982. This decree, incorporating EEC Directives 75/442 on waste, 76/403 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls, and 78/319 on toxic and hazardous waste, introduced for the first time a classification of waste. Thus, the division into municipal waste and special waste was established, drastically altering the management of waste derived from industrial processes.

The necessity of this legislative text arose from the fact that, until that time, industrial waste disposal often occurred in an uncontrolled manner, with tragic environmental consequences. However—and this is particularly relevant here—the regulatory innovation was swiftly met with the creation of an alternative: a parallel system that enabled actors to evade the costs associated with the newly introduced waste disposal requirements.

A significant portion of entrepreneurs quickly recognized the opportunity to circumvent these regulations by falsifying documentation to fabricate compliance while operating illegally in practice. Additionally, the sanctioning system introduced by Decree 915/1982 lacked real deterrent power, given the leniency of the penalties, making the business particularly profitable.

Bearing in mind that the investigated events did not lead to any determination of liability, it still seems pertinent to briefly reference the significant episodes that prompted investigators to hypothesize the existence of such crimes.

For both the *navi dei veleni* and the *navi a perdere*, the investigations suggested that the network involved in these operations was the same one that had been consolidated during the 1980s in connection with the "Oil Scandal". This scandal, investigated by the Brescia Operational Unit,

[82] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVII legislatura, *Relazione sulle "navi dei veleni" i traffici internazionali di rifiuti negli anni '80 e '90*, doc. XXIII, n. 51, approved on February 28, 2018, p. 3–4, available at: <https://documenti.camera.it/apps/nuovosito/Documenti/DocumentiParlamentari/parser.asp?idLegislatura=17&categoria=023&tipologiaDoc=documento&numero=051&doc=pdfel>, pp. 3–4.

concerned a system of tax evasion on hydrocarbons facilitated by the complicity of certain institutional actors.

Subsequently, the criminal group reinvented itself, focusing on the illegal disposal of waste. It comprised networks of companies, intermediaries, maritime brokerage representatives, and financial firms, primarily based in Switzerland.

With regard to the events surrounding the *navi dei veleni*, documentation revealed that the main company handling maritime waste transport to destinations outside the European Union was Jelly Wax, whose key figure was Renato Pent. Preferred destinations for waste shipments typically included countries experiencing conflict or with weak governments, such as Lebanon and Nigeria. Additionally, destinations included South American countries like Venezuela and Eastern European countries like Romania.

Renato Pent himself, testifying as a witness before the Parliamentary Commission during the XVII legislature on September 18, 2017, stated:

> We collected industrial waste from all over Italy, so there were countless names involved. Companies trusted us because we operated properly. At that time, as I already mentioned, there were significant difficulties in finding final disposal centers in Italy, and there were no laws on transboundary waste. So, alternative disposal centers outside Europe were sought[83].

Jelly Wax formally operated within the bounds of legality, creating a profitable business due to structural deficiencies and the absence of specific regulations governing the sector. However, at a certain point, the scandal dubbed the *navi dei veleni* erupted, raising suspicions of illicit management of these transboundary waste traffics from a substantive perspective.

Specifically, on May 29, 1988, the ship *M/N Zanoobia* docked at the port of Genoa carrying a cargo of Italian-origin waste that had been rejected by Venezuela. Following this event, Admiral Giuseppe Francese was appointed as an extraordinary Commissioner to address the emergency and investigate the origins of the waste-filled barrels on board. The investigation identified the producers and handlers of the waste. It was revealed that during the 1980s, all intermediary companies belonged to 10 groups, including Jelly Wax. Conversely, the disposal facilities, such as landfills, incinerators, and chemical treatment plants, were extremely limited, demonstrating a clear imbalance between the demand for and the supply of disposal services.

[83] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVII legislatura, *Relazione sulle "navi dei veleni" i traffici internazionali di rifiuti negli anni '80 e '90*, op. cit., p. 15.

This imbalance, caused by a structural shortage of facilities, is believed to have triggered the onset of illegal waste trafficking, initially on an international scale and subsequently within Italy, particularly in southern regions.

The criminal network is believed to have operated through well-established methods: intermediaries collected waste from companies, presenting them with statements issued by foreign entities regarding disposal facilities that, in reality, did not exist. Once the shipments reached their destinations, the intermediaries provided the companies with falsified certificates of completed disposal.

To understand the scale of this phenomenon, the following data is noteworthy.

In 1987, the company Jelly Wax conducted a series of shipments of industrial waste by sea. In February, the *Lynx* departed from Marina di Carrara, destined for Djibouti. However, the waste was offloaded in Puerto Cabello, Venezuela. The *Lynx's* cargo was subsequently transported to Syria on the *Makiri* and later returned to Italy aboard the *Zanoobia*.

In June, the *Radhost* also departed from Marina di Carrara, heading for Puerto Cabello, Venezuela, but the waste was later offloaded in Beirut, Lebanon. Subsequently, the *Radhost's* cargo returned to Italy aboard the *Jolly Rosso*.

Between August 1987 and April 1988, the *Baruluch*, *Danix*, *Line*, *Juergen Veste Denise* departed from the ports of Marina di Carrara and Livorno, carrying a total of 43,330 tons of waste collected by Jelly Wax and the company Ecomar. These shipments later returned to Italy aboard the *Karin B* and *Deep Sea Carrier*.

In total, eleven ships carried significant quantities of waste, and it was believed that, beyond these more common routes, other destinations were also involved. Specifically, an intelligence report by the Brescia Forestry Police's Operational Unit dated June 15, 1998, stated:

> There are still other episodes reported internationally regarding operations connected to the dumping of toxic waste in desert areas of African countries, such as in 1988 in Sierra Leone, in Bomen, involving the burial of 25 million tons of industrial waste over five years. Other instances include dumping on the Somali coast and inland, managed by a certain Guido Garrelli (known for the 'Urano project' with the Spada/Bizzio duo). Additionally, agreements were made to dispose of waste in Mauritania, Morocco, Senegal, Zimbabwe, and Gabon[84].

[84] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVII legislatura, *Relazione sulle "navi dei veleni" i traffici internazionali di rifiuti negli anni '80 e '90*, op. cit., p. 16.

To understand the critical issues associated with the aforementioned shipments, the case of the *Lynx* can be briefly revisited as an illustrative example.

The company Jelly Wax had agreed with Ambrosini S.r.l. of Genoa, which represented Intercontract S.A. of Belfaux. This agreement granted Jelly Wax exclusive use of permits issued by the Republic of Djibouti to dispose of special and/or hazardous waste on its territory. Jelly Wax was responsible for transporting the cargo to the ports of arrival, where it would be handled by Ambrosini S.r.l.

The *Lynx* departed for Djibouti carrying 10,876 barrels containing 2,146.946 tons of waste. However, it was denied entry by the authorities for reasons that were never clarified. Specifically, Ambrosini S.r.l. reported that the ship's docking had been blocked by warships, allegedly due to French informants alerting authorities that the cargo was toxic. As a result, the ship never docked or unloaded. Conversely, Jelly Wax claimed that the warships had turned the *Lynx* away because the permits provided by Ambrosini were fraudulent.

Furthermore, inexplicably, it was discovered that Ambrosini had sent Jelly Wax certificates of successful unloading, complete with customs stamps from Djibouti. This documentation was, therefore, falsified.

Following these events, Jelly Wax terminated its relationship with Ambrosini and engaged a new maritime broker, who identified Venezuela as the destination. The *Lynx* arrived at Puerto Cabello on April 25, 1987, and completed the unloading of the barrels by May 8 of the same year.

At this point, a new critical issue arose. The receipt of the cargo had been managed by Mercantil Lemport S.A., while the disposal was carried out by Inversiones Ileadil S.A. What remains unclear is how the waste disposal contract with the Venezuelan company was signed on February 5, 1987, predating the *Lynx's* departure. Consequently, it is puzzling why Jelly Wax initially decided to head to Djibouti when the treatment in Venezuela had already been agreed upon.

Subsequently, in Venezuela, issues arose regarding the waste unloaded from the *Lynx*. The Parliamentary Commission during the XVII legislature reported the account of a French journalist investigating the incident following the ship's arrival:

> About ten barrels began to leak. One morning, children playing soccer near the landfill approached the area. One child played with the yellowish liquid seeping out and got it on his torso. The burning was immediate. Taken to the hospital, and he died the next day after much suffering[85].

[85] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVII legislatura, *Relazione sulle "navi dei veleni" i traffici internazionali di rifiuti negli anni '80 e '90*, op. cit., p. 25.

It was discovered that the waste unloaded had never been treated. The episode provoked significant unrest within the local community, leading to the formation of a protest movement against the importation of waste from Europe. As a result, the Venezuelan government decided to return the waste shipment to Italy and block the arrival of another ship, the *Radhost*.

The *Lynx's* cargo was subsequently reloaded onto the ship *Makiri* and set off once more, with its destination generically listed as the "Mediterranean area" The ship reached Cagliari, where it stopped due to an engine failure, before departing again for Syria.

Jelly Wax had allegedly signed an agreement with a Syrian national representing the brokerage firm Alsa Shipping. However, further issues later emerged regarding the contract. The same Syrian individual filed a complaint, claiming that the agreement had been signed under false pretenses, specifically stating:

> I went to the offices of Alsa Shipping in Piraeus looking for work (...), and I was asked to sign a document that I believed to be an employment contract and not a toxic waste disposal agreement, as I do not understand written English[86].

Nonetheless, the cargo was again rejected in Damascus and was sent back to Italy aboard the *Zanoobia*, arriving in Genoa.

At this point, Commissioner Giuseppe Francese began investigating the origin of the waste to identify its producers and verify whether it corresponded to the cargo initially shipped on the *Lynx*. Based on the findings, the Italian state administration pursued civil litigation against Jelly Wax and Ambrosini. The case was definitively concluded with ruling no. 3127 of February 7, 2017, in which the Court of Cassation rejected the appeal of the two companies. Consequently, the sums were recovered by the Department of Civil Protection, which had borne the costs of disposing of the waste returned to Italy[87].

As previously mentioned, from a criminal law perspective, no determination was made regarding the commission of potential criminal offenses. However, an analysis of the case indicates that during those years, there was a lack of transparency in the management of industrial waste disposal. These events reveal numerous critical issues and remain unresolved matters to this day.

Another significant aspect of the *navi dei veleni* case concerns the adoption of the Basel Convention, which prohibited the shipment of industrial waste to countries outside the European Union. According to reconstructed accounts, it appears that the implementation of this regulation

[86] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVII legislatura, *Relazione sulle "navi dei veleni" i traffici internazionali di rifiuti negli anni '80 e '90*, op. cit, p. 27.
[87] Ibid., pp. 27–30.

marked the beginning of the domestic waste route within Italy, from the North to the South. The Casalesi clan essentially succeeded the network that had previously operated waste trafficking by sea.

In a different context, the case concerning the *navi a perdere* first came to light with a report filed by Legambiente in 1994, which denounced the presence of illegal dumps for hazardous waste in the Aspromonte region of Calabria. The waste was transported to Calabria's ports by ship and then moved inland via heavy vehicles. This led to the opening of the first investigation, against unknown persons, at the Reggio Calabria District Prosecutor's Office, registered under case number 2114/94, model 21 R.G.N.R., and assigned to Francesco Neri, Deputy Prosecutor of the Republic.

The investigations carried out in this case quickly unveiled previously unimaginable scenarios. Deputy Prosecutor Neri informed the Chief Prosecutor of the need to initiate international letters rogatory, collaborations with other Italian prosecutor's offices—both within and beyond the Calabria region—and information exchanges with intelligence services.

Specifically, while investigating illegal dumps in Aspromonte, the Reggio Calabria Prosecutor's Office received a report about a search conducted on a ship named *Koraby*, flying the Albanian flag. The ship had departed from Durrës and was heading to Palermo. The search took place near Pentimele (RC), as it was suspected that the ship was carrying blast furnace copper slag, a potentially radioactive material. The *Koraby* had previously been denied entry to Palermo due to the radioactivity of its cargo. However, in the subsequent inspection, no traces of radioactivity were detected, allowing the ship to resume its journey to Durrës.

Deputy Prosecutor Neri considered the incident suspicious and hypothesized that the ship had disposed of its cargo while traveling from Palermo to Reggio Calabria. Furthermore, during inspections in Reggio Calabria, the *Guardia di Finanza* discovered an outboard motor for which the captain of the *Koraby* could not provide an explanation. It was later found that the motor had been stolen. As a result, the ship's captain was detained for receiving stolen goods, and the vessel was seized and moored at the port of Pescara.

However, the investigations into the alleged radioactive cargo yielded negative results, leading to the release of the ship. From that point onward, the hypothesis emerged that the waste might have been dumped into the sea[88].

In light of this new scenario, a dedicated investigative unit was formed, comprising Domenico Scimone, Chief Marshal of the Judicial Police Section of the Carabinieri in Reggio Calabria; Natale

[88] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, op. cit., pp. 11–13.

De Grazia, Corvette Captain; and Nicolò Moschitta and Rosario Francavilla, a Marshal and Carabinieri officer, respectively, from the Operational Unit of the Carabinieri in Reggio Calabria.

During the investigation, the unit collaborated with the Matera Prosecutor's Office, which was handling a case involving radioactive waste trafficking by the Trisaia Enea Research Center in Rotondella, and with the Brescia Forestry Corps, which had long been investigating Giorgio Comerio, a suspect in toxic waste trafficking.

The involvement of the Matera Prosecutor's Office occurred in 1995 when Carlo Giglio, an engineer and official at Enea, who had learned that Reggio Calabria was investigating the illegal trafficking of radioactive waste, requested to be heard by the judicial police. The engineer, later codenamed "Bill" for confidentiality reasons, informed Deputy Prosecutor Neri and Marshals Scimone and Moschitta that, during his duties, he had discovered that the records of nuclear waste were falsified to prevent verification of the entry and exit of radioactive materials, which were supposed to be managed at nuclear facilities.

He further revealed that Enea was involved in clandestine activities, including supplying nuclear technologies and materials to Iraq and disposing of radioactive waste produced by Enel, with its destinations unknown. Finally, the engineer explained that, following the findings of his inspection reports at the Enea centers in Rotondella and Saluggia, he had faced retaliation and was later accused of defamation and slander.

The investigations at the Matera Prosecutor's Office were coordinated by Prosecutor Nicola Maria Pace, who hypothesized that Enea was implicated in sea dumping operations, thereby linking the case to the inquiry in Reggio Calabria[89].

The collaboration between Prosecutors Pace and Neri was further enriched by the contributions of the Brescia State Forestry Corps, coordinated by Colonel Rino Martini. In 1995, Martini conducted significant investigations into a large-scale trafficking operation involving radioactive waste destined for disposal at sea. Colonel Martini informed the prosecutors about a holding company, Oceanic Disposal Management Inc. (ODM), which was engaged in the disposal of waste through underwater dumping. The primary figure behind the holding was Manfred Convalexius, owner of Convalexius Trading based in Vienna, who was already known in Northern European countries for his involvement in waste and scrap metal trafficking. In Italy, the holding's representative was Giorgio Comerio, owner of Comerio Industry Ltd., headquartered in Malta.

[89] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, op. cit., pp. 14–18.

ODM came to the attention of the Brescia State Forestry Corps following the inspection of Elio Ripamonti at the Chiasso border. Ripamonti was found in possession of documents related to an ODM project named DODOS, which concerned the disposal of radioactive waste at sea involving countries such as Italy, Austria, Czechoslovakia, Germany, and Latvia.

Ripamonti had previously been detained by the *Guardia di Finanza* in Vigevano, where he was found with documents concerning the trafficking and illegal disposal of radioactive waste.

During its investigations, the Brescia Forestry Corps also identified another individual, Renato Pent, representative of Jelly Wax, known for his involvement in the *navi dei veleni* case alongside Ambrosini[90].

Based on the information shared by the Brescia Forestry Corps, Prosecutors Pace, and Neri began to focus on Giorgio Comerio, who appeared to be a central figure in the arms and waste trafficking operation. They decided to search his residence on May 12 and 13, 1995, uncovering alarming information.

At this point, the role of Captain De Grazia became crucial, as he was particularly active in the investigative efforts.

The seizure yielded documents related to the DODOS project, which proposed the disposal of radioactive waste through the use of so-called penetrators, already implemented in African and Northern European regions. Other documents pertained to a project aimed at manufacturing and selling underwater mines (*telemine*), which are subaqueous military devices. Additionally, there was evidence of contacts with Arab and Indian countries, as well as bank transactions involving Swiss accounts, suggesting the actual sale of *telemine*.

Notably, the documentation also included schematics of ships and records concerning vessels of low commercial value and poor structural condition. Among these was the *Jolly Rosso*, a ship implicated in the *navi dei veleni* scandal.

In light of the recovered documentation, investigators hypothesized that Comerio was interested in acquiring ships to carry out illicit activities.

Subsequently, an inquiry was conducted at the Lloyd's of London office in Genoa to gather information on maritime incidents occurring between 1987 and 1993 in Calabrian waters, aiming to identify those that could be deemed intentional. The investigation revealed that 23 ships had sunk near Calabria. Furthermore, it was found that two Maltese-flagged ships, the *Anni* and the *Euroriver*,

[90] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, op. cit., pp. 18–22.

had sunk at locations matching those identified in Comerio's project as potential sites for waste disposal.

An additional noteworthy finding emerged from radiometric checks carried out by the Vibo Valentia Port Authority and the fire brigade on the *Jolly Rosso*. These operations had been requested by Commander Bellantone. Onboard, documents were discovered referencing radioactive material and corresponding to ODM project documents previously found in Comerio's residence[91].

Further investigations led to the hearing of Marino Ganzerla, a business partner of Comerio, who came forward voluntarily in July 1995. On that occasion, Ganzerla stated:

> Regarding the sinking of ships, I must say that about 10 years ago, I became aware of plans to sink ships loaded with chemical waste, the so-called system of "disposable ships", thereby also defrauding insurance companies. If I remember correctly, the most suspicious port was that of La Spezia. I also recall hearing that the Ionian coasts were preferred not only because they were controlled by the 'Ndrangheta but also because the sailors, once they reached shore with lifeboats, entrusted these rescue vessels to local individuals who would ensure they were sunk or otherwise hidden permanently to erase any trace of the sinking and thus avoid judicial investigations. […] I would add that the sailors could also be recovered by other friendly ships that purposely passed near the sinking site and transported them to foreign countries, as these were often foreign sailors, although sometimes the captain or chief engineer was Italian or otherwise trusted by the shipping agents. If I recall correctly, this was told to me by a Greek during a dinner about 10 years ago in Genoa. The Ionian was preferred because it is very deep. I know that Comerio dealt with buying and selling ships[92].

Ganzerla was heard again in 2010 by the Parliamentary Ecomafia Commission. However, his statements differed partially; he refused to provide the name of the Greek individual and, in general, claimed not to remember the events.

In 1995, the Reggio Calabria Prosecutor's Office continued its investigation, increasingly focusing on Comerio and his collaborators. Evidence collected suggested the possibility that ships were being deliberately sunk while carrying waste, thereby securing the dual benefit of an insurance payout and profits from illegal disposal.

Captain De Grazia concentrated on the 23 ships reported sunk near Calabria, as indicated by Lloyd's records. Several of these sinkings appeared suspicious due to certain peculiar elements, such as the consistent use of flags of convenience, the lack of information on the incident's aftermath, or the nature of the cargo. Moreover, in many cases, there had been no "Mayday" distress signal before

[91] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, op. cit., pp. 22–24.
[92] Ibid., pp. 28–29.

the sinking, no information about the crew's fate, and, in some instances, the ship's captain or owners had criminal records[93].

Among these, Captain De Grazia focused particularly on the motor vessel *Rigel*, owned by Mayfair Shipping Company Limited of Malta, which allegedly sank near Capo Spartivento, in international waters off the coast of Reggio Calabria, on September 21, 1987. The ship had departed from Marina di Carrara and was headed to Cyprus. The sinking of the *Rigel* had been investigated by the Prosecutor's Office of La Spezia, leading to the indictment of suspects accused of deliberately sinking the ship. The trial concluded with a first-instance conviction in 1992 for defrauding the insurance company, later confirmed in subsequent appeals.

However, that investigation did not address the nature of the *Rigel's* cargo or suspect that it might have contained hazardous waste—a matter subsequently pursued by Prosecutor Neri and Captain De Grazia.

The particular interest in the *Rigel* stemmed from two corroborating elements. First, in Comerio's agenda, seized during the search of his residence, there was a note dated September 21, 1987, stating, "lost the ship"—the same date as the *Rigel's* reported sinking. Second, Lloyd's records indicated that the *Rigel* was the only ship confirmed to have sunk on that date.

In light of these findings, Captain De Grazia focused on analyzing documentation to pinpoint the exact location of the sinking to locate the wreck. According to Prosecutor Pace's testimony, Captain De Grazia identified the precise coordinates of the sinking and contacted the prosecutor before departing for La Spezia, inviting him to join the investigation on December 12, 1995. However, Captain De Grazia never conducted these activities, as he died en route under circumstances many of his colleagues described as suspicious.

On the same day, Captain De Grazia was also scheduled to take statements from several crew members of the ship *Jolly Rosso*, later renamed *Rosso*. Additionally, he planned to conduct further investigations into suspicious sinkings identified in Lloyd's registers, interview a confidential informant regarding the motor vessel *Latvia*, and inspect the ship, which was docked at the port of La Spezia.

The investigations related to *Latvia* were particularly significant, as a confidential source had reported a trafficking operation involving hazardous waste in the area of La Spezia and the province of Naples. The operation allegedly involved Camorra families and members of clandestine Masonic

[93] Legambiente, *L'intrigo radioattivo. I traffici internazionali – L'affare O.D.M. – I cimiteri di rifiuti nel Mediterraneo – Le navi sospette – Gli episodi oscuri – Il muro di gomma – Le richieste di Legambiente*, Roma, February 2, Roma: Legambiente, 1996.

lodges. The same source indicated that at the port of La Spezia, there was a former Russian KGB ship, the motor vessel *Latvia*, which was being prepared for departure and subsequent sinking, similar to what had occurred with the *Rigel* and *Jolly Rosso*. The ship's planned route was reportedly: La Spezia–Naples–Strait of Messina–Malta, and finally the Ionian Sea, where it was to be sunk.

The information provided by the source was of fundamental importance as it offered, for the first time, the opportunity to monitor a departing ship, potentially uncovering evidence of illicit sea trafficking and disposal operations. Such evidence had been challenging to obtain up to that point, given the difficulty of investigating ships that had already disappeared[94].

The investigations scheduled for December 12, 1995, were never conducted following Captain De Grazia's death. His death appeared suspicious, as De Grazia had always been in good health, according to his family and colleagues. However, the cause of death was definitively determined in court proceedings. Based on the expert opinion of the court-appointed medical examiner, it was established that the death was due to natural causes, as toxicological and histological tests found no anomalies to suggest homicide[95].

Captain De Grazia's death marked a significant setback for the investigations into the *navi a perdere*, as it was followed by the disbandment of the investigative team. Specifically, Rino Martini took on a new position, Moschitta retired, and Francavilla was reassigned. Six months later, Prosecutor Neri transferred the case to the Prosecutor's Office at the Reggio Calabria Tribunal due to territorial jurisdiction regarding the offenses under Articles 428 of the Italian Penal Code (*Shipwreck, sinking, or air disaster*) and 434 of the Italian Penal Code (*Collapse of buildings or other intentional disasters*).

This resulted in two separate cases: no. 100/1995 R.G.N.R., concerning arms trafficking, and no. 1680/1996 R.G.N.R., related to the illegal trafficking of radioactive waste through the sinking of ships, with Giorgio Comerio and other suspects named as defendants. However, both proceedings ended with dismissal orders[96].

An additional element must be noted: during the investigation, all members of the investigative team reported experiencing surveillance, intimidation, and delays in their activities due to administrative tasks that seemed pretextual. However, there is no objective proof of these claims, apart from the testimonies of the investigators and the magistrates' security details, nor has the

[94] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVI legislatura, *Relazione sul fenomeno delle "navi a perdere"*, op. cit., pp. 40–43.
[95] Ibid., pp. 70–72.
[96] Ibid., p. 69.

identity of any possible perpetrators been established, although references were occasionally made to members of organized crime in Calabria.

Equally significant is Legambiente's report, which, in a 1996 dossier, referred to a *"muro di gomma"* (rubber wall), highlighting the repeated silence from the government at the time. The government had never taken a position on the 20 parliamentary questions and interpellations presented to the Chamber of Deputies and the Senate concerning the illicit trafficking of waste and the disappearance of ships in the Mediterranean[97].

The narrative provided thus far constitutes a summary of some of the most significant events within a much broader and more complex context. The events described are representative of situations involving various actors and interests, all driven by a logic of profit—a pattern consistently observed when delving into the study of this topic.

Indeed, the importance of referencing the cases of the *navi dei veleni* and *navi a perdere*, while acknowledging that no legal truth has ever been established on the matter, lies in the historical and sociological reconstruction it offers.

Starting in the 1980s, within the Italian context, industrial and productive progress was not accompanied by an evolution in the environmental sustainability of the economic model. Even when initial attempts were made to regulate the issue, the desire to avoid costs while simultaneously focusing solely on profits resulted in a search for new, convenient loopholes.

Essentially, the cases of the *navi dei veleni* and *navi a perdere* offer a snapshot of a business world that, initially, exploited regulatory gaps. Faced with the need to address the issue of waste disposal, it devised solutions to offload the problem onto others. Subsequently, once waste classification regulations were introduced, this same sector engaged in fraud and falsification of documentation. This constitutes the very premise for what later transpired within Italy—this time judicially confirmed—as already illustrated in the cases related to Campania.

Thus, in framing the phenomenon of illicit waste trafficking and disposal, a common thread emerges that seems to connect all the events described. Industrial waste poses a problem because it represents a "cost" for those who produce it, for the environment that receives it, and for those tasked with finding solutions. When this baseline issue is compounded by the slow development of specific regulations and adequate infrastructure to address the problem, it becomes evident how the logic of

[97] Legambiente, *L'intrigo radioattivo. I traffici internazionali – L'affare O.D.M. – I cimiteri di rifiuti nel Mediterraneo – Le navi sospette – Gli episodi oscuri – Il muro di gomma – Le richieste di Legambiente*, op. cit.

profit and cost-cutting can lead to illicit paths. These paths disregard other fundamental assets they impact, such as the environment and human health.

Finally, whenever efforts are made to find solutions that circumvent or violate the law, criminal actors inevitably become involved. These individuals possess the necessary expertise to exploit every opportunity and, particularly in Italy, are often affiliated with organized crime of a mafia-like nature.

Chapter 2. Phenomenology and Criminal Methodology of the Illicit Waste Cycle.

2.1. Legal Waste Cycle

In the previous chapter, the phenomenon was framed by investigating the structural and conjunctural factors of the waste cycle and analyzing the origins of the illicit waste cycle. Moving forward, it is essential to delve deeper into the topic within the context of the contemporary socioeconomic landscape.

In this regard, to produce a comprehensive analysis of the methods used to perpetrate offenses related to the trafficking, treatment, and disposal of waste, it is necessary, to begin with an examination of environmental regulations, which fall within the scope of administrative law and govern this field.

Only through the study of the legal framework regulating waste management is it possible, first, to understand how these rules are violated or circumvented and, consequently, how the perpetrators of these criminal activities operate, outlining their phenomenology and methodology.

First and foremost, it is important to clarify that, concerning environmental policy, the European Union has been granted shared competence, as per Article 4(2) TFEU, in coordination with the Member States. This means that both the EU and the Member States have the authority to adopt regulatory acts. However, when the European Union intervenes, Member States are no longer permitted to adopt legislative or legally binding acts in areas already governed by EU sources, in compliance with the principle of sincere cooperation (Article 4(3) TFEU).

As the European Union has legislated on the matter under consideration, Italian law incorporates the provisions established by the EU.

The entire regulatory framework in question is based on the general principles set forth by Directive 2008/98/EC, as amended by Directive 2018/851/EU. The latter, in defining its objectives and scope, states:

> This Directive lays down measures to protect the environment and human health by preventing or reducing the generation of waste and the adverse impacts of the generation and management of waste, reducing overall impacts of resource use, and improving the efficiency of such use, which are crucial for the transition to a circular economy and to ensuring the Union's long-term competitiveness[98].

[98] Directive (EU) 2018/851 of the European Parliament and of the Council of May 30, 2018, amending Directive 2008/98/EC on waste, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L0851.

Specifically, Directive 2018/851/EU, in amending the previous legislative text, aimed to promote the sustainability of product production and consumption by considering the entire product lifecycle. Additionally, it sought to improve resource efficiency by viewing waste itself as a resource.

The Italian legal system transposed the directive under consideration with Legislative Decree no. 116/2020, which entered into force on September 26, 2020.

At the European level, Regulation (EC) no. 1013/2006 on transboundary movements of waste is also relevant to this matter. It states:

> The objective and principal and predominant component of this regulation is environmental protection, with its effects on international trade being merely incidental[99].

Recently, Regulation (EU) 2024/1157 was issued, repealing the previous Regulation (EC) no. 1013/2006. The latter significantly improved the European legal framework for environmental protection concerning waste shipment practices. However, over the years, certain challenges and gaps have emerged that need to be addressed through new legislative provisions. The new regulation will apply starting from May 21, 2026[100].

Additionally, Directive 2018/850/EU on landfill waste, which amends the previous Directive 1999/31/EC, is worth noting. In its preamble, this regulation states:

> The progressive reduction of landfilling is essential to prevent harmful impacts on human health and the environment and to ensure the gradual and efficient recovery of waste materials with economic value through their proper management, in line with the waste hierarchy set out in Directive 2008/98/EC[101].

The regulation of waste in Italy is primarily contained in Part Four of Legislative Decree No. 152/2006. Known as the Environmental Code (*Testo Unico Ambientale*, or TUA), the decree incorporates EU principles by

> providing measures aimed at protecting the environment and human health, preventing or reducing the generation of waste, the adverse impacts of waste production and management, reducing the overall impacts of resource use, and improving their effectiveness and efficiency, which are fundamental elements for the transition to a circular economy and ensuring the Union's long-term competitiveness. Waste is managed without endangering human health and without using processes or methods that could harm the environment, and in particular:
> a) without posing risks to water, air, soil, as well as fauna and flora;

[99] Regulation (EC) no. 1013/2006 of the European Parliament and of the Council of June 14, 2006, on shipments of waste, available at: https://www.mase.gov.it/sites/default/files/archivio/normativa/rifiuti/regolamento_CE_1013_2006.pdf.
[100] Regulation (EU) 2024/1157 of the European Parliament and of the Council of April 11, 2024, on shipments of waste, amending Regulations (EU) no. 1257/2013 and (EU) 2020/1056 and repealing Regulation (EC) no. 1013/2006, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AL_202401157.
[101] Directive (EU) 2018/850 of the European Parliament and of the Council of May 30, 2018, amending Directive 1999/31/EC on the landfill of waste, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0850&from=EN.

b) without causing nuisances from noise or odors;
c) without damaging landscapes and sites of particular interest, protected under current legislation[102].

Part Four of the TUA also establishes that waste management is an activity of public interest and is guided by the

> principles of precaution, prevention, sustainability, proportionality, responsibility, and cooperation among all parties involved in the production, distribution, use, and consumption of goods from which waste originates, in compliance with the principle of competition, as well as the 'polluter pays' principle. To this end, waste management is carried out according to criteria of effectiveness, efficiency, economy, transparency, technical and economic feasibility, and in compliance with current regulations on participation and access to environmental information[103].

Finally, among the general principles governing the subject, Article 179(1) of Legislative Decree No. 152/2006 establishes the hierarchy to be followed in waste management, as outlined in the previous chapter. The priority order to be observed places prevention first, followed, in descending order of preference, by preparation for reuse; recycling; other forms of recovery; and disposal.

Therefore, disposal, as per Article 182 of Legislative Decree No. 152/2006, represents a residual phase to be carried out exclusively when a competent authority has verified the technical and economic impossibility of performing recovery operations[104].

Having outlined the guiding principles of the matter, we can now proceed to a detailed analysis of the regulatory framework.

It has already been stated that both EU and national regulations define waste. At this stage, it is important to add that case law has clarified that the definition, "any substance or object which the holder discards or intends or is required to discard", cannot be applied from a subjective perspective, as this would conflict with the principles and objectives of waste regulations. Indeed, a subjective approach to defining what constitutes waste would fail to align with the goal of mitigating the negative consequences and harm caused by such materials, thereby protecting the environment and human health[105].

It has already been noted that waste is classified based on its origin—municipal waste and industrial waste—and its hazardous characteristics—hazardous and non-hazardous waste.

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[102] Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.
[103] Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.
[104] *Ambiente 2021, Manuale normo-tecnico*, E. Blasizza (ed.), Milano: Wolters Kluwer, 2021, pp. 447–461.
[105] Italian Supreme Court, Section III, judgment no. 50309/2014, December 18, 2014.

Second, waste is identified through a six-digit code known as the European Waste Catalogue Code (EWC), which replaced the European Waste Catalogue (EWC) following Regulation No. 1357/2014/EU.

The code must be assigned by the waste holder based on the production process. The codes currently in force, updated by Law No. 108/2021, must be determined following a specific order of precedence. First, the source that generated the waste must be identified by consulting chapters 01 to 12 or 17 to 20 to determine the six-digit code corresponding to the specific waste, excluding codes from chapters ending with the digit 99. If none of the codes in chapters 01 to 12 or 17 to 20 is applicable, chapters 13, 14, and 15 are consulted. Should this step also yield no result, the waste must be classified using the codes listed in chapter 16. Finally, if the waste cannot be classified even with the codes from chapter 16, code 99 (waste not otherwise specified) is used, preceded by the digits of the chapter corresponding to the activity identified in the first phase[106].

Additionally, waste is considered hazardous, according to Decision No. 2014/955/EU of the European Commission, when marked with an asterisk (*). Furthermore, Directive No. 2008/98/EC, in Annex III, classifies the hazardous characteristics to be attributed to waste and defines the criteria for their assessment. Specifically, the hazardous characteristic is indicated with HP followed by a number ranging from 1 to 15, depending on the properties of the material, for example: HP 1 explosive, HP 2 oxidizing, and so forth.

Regarding the attribution of hazardous characteristics to waste, both EU and national case law have emphasized the importance of adhering to the precautionary principle. Specifically:

> In terms of waste management, in light of the European Court of Justice's ruling of March 28, 2019 (joined cases C-487/2017 to C-489/2017), the holder of waste that can be classified with so-called 'mirror codes'—that is, codes corresponding respectively to hazardous or non-hazardous waste—is required to identify only those hazardous substances that may reasonably be present. This does not solely involve the use of sampling and chemical analyses. If, after conducting a risk assessment as thoroughly as possible considering the specific circumstances of the case, the holder is unable to determine the presence of hazardous substances or evaluate the existing hazardous characteristics, they are required, under the precautionary principle, to classify the waste as hazardous[107].

Continuing, materials that qualify as by-products, provided they meet the conditions established under Article 184-bis of Legislative Decree no. 152/2006, are excluded from waste regulations[108].

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[106] Ministero dell'Ambiente e della Sicurezza Energetica, *Albo nazionale gestori ambientali, Classificazione dei rifiuti e attribuzione del codice EER*, available at: https://www.albonazionalegestoriambientali.it/Public/Iscrizione/CER.
[107] Italian Supreme Court (Cass.), Criminal Section III, judgment no. 47288/2019.
[108] "*A by-product and not waste within the meaning of Article 183, paragraph 1, letter a), is any substance or object that meets all the following conditions:*

Equally relevant to this analysis is the regulation regarding the end-of-waste status under Article 184-ter of Legislative Decree No. 152/2006. The law states that waste ceases to be considered as such when it undergoes a recovery operation, including recycling, and meets specific criteria adopted in compliance with certain conditions, such as use for specific purposes; the existence of a market or demand for the substance or object; the substance or object meets technical requirements for specific purposes and complies with relevant laws and standards; and the use of these materials does not result in adverse impacts on the environment or human health.

Once waste no longer qualifies as such, the corresponding waste management regulations no longer apply.

In light of the foregoing, it becomes evident that those tasked with classifying materials as waste may face significant challenges. To address this, Article 184(5) of Legislative Decree No. 152/2006 stipulates that:

> The proper attribution of waste codes and hazardous characteristics shall be carried out by the producer based on guidelines drafted by the National System for Environmental Protection and Research by December 31, 2020, and approved by a decree of the Ministry of Environment and Land and Sea Protection.

Having clarified the starting point—what constitutes waste and how it is classified—it is now possible to analyze the set of rules governing its management.

First, within the national territory, the division of responsibilities among the State, Regions, Provinces, and Municipalities regarding the functions of guidance and coordination, the definition of criteria, methodologies, and guidelines, as well as waste planning and control, is regulated by Articles 195–198 of Legislative Decree no. 152/2006[109].

Central to waste management is the principle of extended producer responsibility, established by Directive 2008/98/EC and transposed into Article 178-bis of Legislative Decree No. 152/2006.

According to Article 183 of Legislative Decree No. 152/2006, a producer is defined as

> any natural or legal person who professionally develops, manufactures, transforms, processes, sells, or imports products", while the extended producer responsibility regime

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a) the substance or object is generated by a production process, of which it constitutes an integral part, and whose primary purpose is not the production of that substance or object;
b) it is certain that the substance or object will be used in the course of the same or a subsequent production or use process, by the producer or third parties;
c) the substance or object can be used directly without any further treatment other than normal industrial practice;
d) the further use is lawful, meaning the substance or object meets, for the specific use, all relevant requirements concerning products and the protection of health and the environment and will not lead to overall negative impacts on the environment or human health", Article 184-bis, Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette No. 88 of April 14, 2006), op. cit.

[109] *Ambiente 2021, Manuale normo-tecnico*, E. Blasizza (ed.), op. cit., p. 490.

> refers to "measures designed to ensure that producers of products bear the financial responsibility or both the financial and organizational responsibility for the management of the phase of the product's life cycle when it becomes waste[110].

As previously mentioned, the producer is the party required or obligated to identify and classify waste. Once the category of the waste (municipal or industrial) has been determined, the producer must fulfill a series of obligations, including assigning the identification code for the material; storing it in compliance with regulations on temporary storage; registering with the SISTRI system (later RENTRI); maintaining a waste tracking register; and issuing a waste identification form for transportation[111].

Clearly, for the proper categorization of waste, particularly when hazardous characteristics need to be identified, chemical analysis is essential. Such analyses, conducted by qualified technicians with appropriate expertise, determine the concentration of substances.

Subsequently, the regulations governing waste management require that the initial producer or other holder must either directly treat the waste or entrust it to an intermediary, trader, or an entity or company specializing in waste treatment. Alternatively, it can be handed over to a public or private collector or transporter. The costs of waste management are borne by the initial producer and subsequent holders throughout the product's lifecycle.

Under the extended producer responsibility regime, delivering waste to any of the aforementioned parties does not automatically absolve the producer of responsibility for recovery or disposal operations. Conversely, liability is excluded when waste is delivered by the producer to a public collection service or an authorized recovery or disposal entity, provided the producer receives the relevant form as per Article 193 of Legislative Decree no. 152/2006 within three months of delivery.

On this topic, the case law of the Supreme Court has clarified the so-called principle of shared responsibility in waste management. Specifically:

> In terms of waste management, under the so-called principle of shared responsibility, all parties involved in the production, holding, transport, and disposal of waste, including those who collect it for recovery, have a general duty to oversee the proper execution of the preceding and subsequent phases of the process, by carrying out (at the very least) the necessary formal checks[112].

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[110] Art. 183, Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.

[111] Consiglio Superiore della Magistratura, Nona Commissione – Tirocinio e Formazione Professionale, *Incontro di studio sul tema: I crimini in danno dell'ambiente e del territorio, "Le tecniche investigative e l'acquisizione della prova in materia ambientale"*, 22 maggio 2012, Roma, available at: https://www.pierobon.eu/wp-content/uploads/2012/08/i-crimini-in-danno-dellambiente-e-del-territorio-CSM.pdf, pp. 9-10.

[112] Italian Supreme Court, Criminal Section III, judgment no. 5912/2019.

Continuing with the regulation of the matter, to counteract offenses related to waste management and to simplify documentary obligations for producers, the *Sistema di controllo della tracciabilità dei rifiuti* (SISTRI, Waste Traceability Control System) was introduced by ministerial decree in 2009. This digital tool was intended to geolocate and track authorized vehicles transporting the waste, enabling law enforcement agencies to monitor waste management operations in real time. This was particularly crucial given that waste transportation has always been a critical point highly susceptible to illicit activities.

However, SISTRI never became fully operational due to technical difficulties and the Ministry's decision to place the financial burden for installation, assistance, and maintenance on companies[113].

For this reason, Law no. 12/2019 permanently abolished SISTRI and established the *Registro elettronico nazionale per la tracciabilità dei rifiuti* (RENTRI, National Electronic Register for Waste Traceability).

RENTRI is directly managed by the Ministry of Environment and Energy Security and aims to definitively implement a system for waste traceability and the digitalization of waste transport and movement documents. Entities required to register include those producing hazardous waste, entities and companies that collect or transport hazardous waste professionally or act as traders and intermediaries, consortia established for the recovery and recycling of specific types of waste, and, concerning non-hazardous waste, the entities listed in Article 189(3) of Legislative Decree no. 152/2006[114].

Other obligations for those managing waste, aimed at ensuring proper administration of the sector, include the Waste Register (*Catasto dei rifiuti*) and the Single Environmental Declaration Form (*Modello Unico di Dichiarazione Ambientale*, or MUD).

The *Catasto dei rifiuti* was introduced in 1988 by Decree-Law no. 397 and consists of a National Section, headquartered in Rome, as well as Regional Sections and sections for the autonomous provinces of Trento and Bolzano. The objective of the *Catasto* is to ensure comprehensive knowledge and continuous updates on waste management throughout the national territory, including for future planning purposes.

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[113] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., pp. 45–46.

[114] *"Anyone who professionally engages in the collection and transport of waste, waste traders and intermediaries without possession, companies and entities that carry out waste recovery and disposal operations, consortia and recognized systems, institutions for the recovery and recycling of packaging and specific types of waste, as well as companies and entities that are the initial producers of hazardous waste and companies and entities that are the initial producers of non-hazardous waste referred to in Article 184, paragraph 3, letters c), d), and g)",* Article 189(3), Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.

The data reported for updating the *Catasto* includes the quantities and qualitative characteristics of waste, as well as authorizations and notifications related to waste management activities. These are communicated through the MUD to the territorially competent Chamber of Commerce, Industry, Handicrafts, and Agriculture by April 30 of each year. The entities obligated to report and the regulation of the MUD are governed by Article 189 of Legislative Decree no. 152/2006.

Additional requirements include the compilation of the *Waste Tracking Register* (*Registro di carico e scarico*), as per Article 190 of Legislative Decree No. 152/2006. This document records, for each type of waste, the quantity, nature, origin of the waste, and the quantity of products and materials obtained from treatment operations (preparation for reuse, recycling, recovery). Obligated entities include by way of example, those professionally engaged in collection and transport, waste traders and intermediaries without possession, and companies and entities carrying out recovery and disposal operations.

The registers must be maintained and made accessible at facilities for waste production, storage, recovery, and disposal, as well as at the premises of companies engaged in collection and transport activities. This ensures they are available for inspection by the competent control authorities at any time.

Regarding the transport of waste, Article 193 of Legislative Decree no. 152/2006 stipulates that during transportation, entities and companies involved must carry a *Waste Identification Form* (*Formulario di identificazione rifiuti*, FIR), which must include: the name and address of the producer and holder; the origin, type, and quantity of the waste; the destination facility; the date and route of transportation; and the name and address of the recipient.

If the waste is subject to transboundary shipments, the form is replaced by the documentation specified in EU regulations.

The offices of the *Agenzia delle Entrate* (Italian Revenue Agency), the Chambers of Commerce, Industry, Handicrafts, and Agriculture, or the competent regional and provincial waste management offices must number and validate the identification forms. Furthermore, the purchase invoice for the forms must be recorded in the VAT purchase register before the form is used.

Also relevant to this analysis are: the prohibition on mixing (Article 187 of Legislative Decree no. 152/2006), which forbids mixing hazardous waste with different hazardous characteristics or hazardous waste with non-hazardous waste; and the prohibition on abandonment (Article 192 of

Legislative Decree no. 152/2006), which prohibits the abandonment and uncontrolled disposal of waste on land and the discharge of any type of waste into surface or groundwater[115].

Having outlined the obligations and responsibilities of waste producers or holders, it is essential to clarify the meaning of waste management. Article 183(1)(n) of Legislative Decree no. 152/2006 defines it as:

> The collection, transportation, recovery—including sorting—and disposal of waste, including the supervision of such operations and subsequent interventions following the closure of disposal sites, as well as operations carried out in the capacity of trader or intermediary[116].

To carry out the above-mentioned waste management activities, authorization is required. Specifically, anyone wishing to undertake such activities must apply for authorization from the competent Regional Authority, attaching the project related to the waste disposal or recovery facility and the technical documentation required for urban planning, environmental protection, health, workplace safety, and public hygiene, necessary for the implementation of the project itself. This initiates a complex evaluation process that concludes with either authorization or a reasoned denial.

Article 198-bis of Legislative Decree no. 152/2006, introduced by Legislative Decree no. 116/2020, provides that the Ministry of Environment, with the support of ISPRA (Italian National Institute for Environmental Protection and Research), prepares the National Waste Management Program. This program aims to outline macro-objectives, define criteria, and set strategic guidelines that Regions and Autonomous Provinces must follow in drafting Regional Waste Management Plans. It includes information such as data on waste production across the national territory, categorized by type, quantity, and source, and data on the national facility inventory, categorized by type and region. The program must be updated every six years and approved, in agreement with the Standing Conference for Relations between the State, Regions, and Autonomous Provinces of Trento and Bolzano, by decree of the Ministry of Environment.

In compliance with the National Program, the Regions prepare and adopt Regional Waste Management Plans (Article 199 of Legislative Decree No. 152/2006), which must also be updated every six years. These Regional Plans must be communicated to the Ministry of Environment through the online platform *MonitorPiani* and subsequently transmitted to the European Commission.

The plans must include specific data, such as:

[115] *Ambiente 2021, Manuale normo-tecnico*, E. Blasizza (ed.), op. cit., pp. 493–515.
[116] Art. 183(1)(n), Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.

> an analysis of existing waste management within the relevant geographic area, measures to be adopted to improve the efficiency of the various waste management operations, as well as an assessment of how the plans contribute to achieving the objectives and provisions of Part Four of this decree[117].

Regarding municipal solid waste (MSW), its management is organized based on Optimal Territorial Areas (*Ambiti Territoriali Ottimali*, ATOs), as defined in the Regional Plan and following the guidelines issued by the State.

Additionally, Regions must regulate and oversee all MSW management operations, including substitute controls, the functionality of facilities, and compliance with the limits and requirements outlined in the relevant authorizations (Article 200 of Legislative Decree no. 152/2006).

The management of MSW is awarded by the Territorial Authority through a public tender process, governed by the principles and provisions of EU law regarding the awarding of local public services. In awarding contracts, the Authority takes into account technical guarantees and the specific prior experience of the bidders, in compliance with the procedures and deadlines established by decree of the Ministry of Environment and respecting regional competencies in the matter (Article 202 of Legislative Decree no. 152/2006).

In all established Optimal Territorial Areas, or in each municipality, the separate collection of MSW must be ensured, adhering to the following minimum percentages of waste produced: at least 35% by December 31, 2006; at least 45% by December 31, 2008; and at least 65% by December 31, 2012 (Article 205 of Legislative Decree no. 152/2006).

It is important to note that, according to Law no. 225/1992, there is a prohibition on disposing of non-hazardous municipal waste in regions other than where it is produced unless specific regional or international agreements are in place to meet optimal levels of service based on territorial considerations and technical-economic feasibility. This prohibition does not apply if the Regional President deems it necessary to send certain municipal waste for disposal outside the region to address emergencies caused by natural disasters for which a state of civil protection emergency has been declared, provided this complies with EU regulations[118].

The analysis presented thus far has aimed to provide a general and simplified overview of the extensive regulatory framework governing waste management, facilitating an understanding of the comprehensive rules that must be observed throughout the lifecycle of these materials.

[117] Art. 199(2), Legislative Decree April 3, 2006, no. 152, *Environmental Regulations* (Official Gazette no. 88 of April 14, 2006), op. cit.
[118] *Ambiente 2021, Manuale normo-tecnico*, E. Blasizza (ed.), op. cit., pp. 515–542.

From the examination conducted, the inherent complexity of this sector's regulatory framework becomes evident. This complexity reflects the outcome of balancing diverse and often competing interests, such as economic and industrial development, environmental sustainability and protection, and the safeguarding of human health.

It follows that violating the rules discussed requires a deep understanding of the field. Even legal practitioners often struggle to navigate the intricate landscape of waste management regulations. This difficulty implies that those who seek to circumvent these rules illicitly are likely to possess a comparable level of awareness and expertise. Such actors are not only well-versed in the specifics of the regulatory framework but are also skilled in exploiting its nuances to facilitate illegal activities while attempting to evade detection and accountability.

2.2. Illegal Waste Cycle

As previously indicated, in analyzing the phenomenon addressed in this section of the research, the decision was made to contrast the legal and illegal management of waste. This methodological choice was intended to emphasize that, alongside the lifecycle of the materials in question—outlined by legislation and correctly implemented within the national territory—a parallel cycle exists.

To understand the latter, it is necessary to first understand the former. Although, for analytical purposes, it is preferable to examine them separately, in practice, these cycles overlap and mutually reinforce each other.

The phenomenon under scrutiny is not characterized by being entirely illegal or carried out exclusively by criminal actors. Instead, it is a legal sector where legitimate actors opportunistically operate within and beyond the boundaries of the law, either benefiting from the services of mafia-affiliated criminal actors or acting directly themselves.

More specifically, the criminal network operating within the waste cycle comprises not only individuals with mafia status but also entrepreneurs, professionals, politicians, and public officials. Eco-criminal structures are typically not hierarchically organized, as in traditional mafias, but rather form horizontal networks with a flexible organization. Each participant in the criminal scheme plays a strategic role within an informal system that can be adapted to specific circumstances. These characteristics make the network particularly adept at exploiting opportunities that arise in the economic market[119].

In this regard, Antonio Pergolizzi explained:

[119] A. Pergolizzi, *L'economia avvelenata del crimine ambientale*, in *Moneta e Credito*, vol. 71, no. 284, 2018, p. 338.

> Eco-criminal networks usually operate across both legal and illegal markets, combining and alternating lawful practices with irregular ones. The companies primarily responsible for illegal waste trafficking, for example, are typically registered with Chambers of Commerce, hold valid VAT numbers, enjoy ISO 9001 or even environmental certifications (such as EMAS or others), and also participate in public tenders in the field of municipal solid waste management[120].

This is, therefore, a far cry from other criminal sectors, such as drug trafficking, where the objects of exchange, commercial transactions, and sector agents are all marked by obvious illegality.

It becomes clearer why understanding environmental regulations is a necessary prerequisite for identifying illegal activities. Additionally, the difficulty of combating eco-criminal phenomena becomes evident, as it is not always possible to distinguish lawful actions from unlawful ones.

Certainly, from the criminal perspective, operating in this manner—navigating skillfully within and beyond the bounds of complex environmental regulations—requires a very high level of professionalism.

Furthermore, the situation is further complicated by the fact that the intricate technical and legal framework is not accompanied by an equally effective system of oversight and traceability for management operations. An example of this is the failure of SISTRI, as explained above.

Indeed, in the field of waste management, compliance with regulations and EU standards primarily relies on a system of self-certification, making case-by-case verification challenging.

For example, compliance with regulations concerning waste classification through the assignment of the EER code and the subsequent treatment of the material rests solely with those managing such materials. Thus, adherence to the prescribed rules is left in the hands of industry operators, with no mandatory verification by public authorities.

Any control activities, typically planned in advance, are conducted only by the Regional Environmental Protection Agencies (*Agenzie Regionali di Protezione Ambientale*), which, however, do not possess law enforcement powers. Effective verification of conduct can only occur once a criminal report has been filed—at which point it is often too late, as the offense has presumably already been committed.

As a result,

> to the eco-criminals' abilities are added the criminogenic aspects inherent in the regulatory and control system, which, particularly in the case of environmental protection, have effectively opened the door to predatory models, corruption, and maladministration. By adopting a parasitic approach as their sole method, eco-criminals exploit gaps and

[120] Ibid.

> oversights in control systems, fueling corruption and clientelism to the point of establishing monopolistic mechanisms for the management of public services, as in the case of waste[121].

At this point, it is necessary to focus on the two fundamental elements underlying the environmental criminal business.

On the one hand, there is the regulatory system which, as previously discussed, is extremely complex and challenging to monitor on a case-by-case basis from an administrative law perspective. From a criminal law standpoint, as will be seen, it has historically been delayed and faced significant difficulties in adequately countering the phenomenon. It is sufficient to note here that until 2015, the criminal sanctions system was composed almost exclusively of minor offenses (in the Italian legal system, *contravvenzioni*, a category of lesser crimes distinct from *delitti*, or felonies). As a result, individuals engaging in environmental offenses faced minimal risks. Sanctions were predominantly monetary and, within a cost-benefit framework, could be viewed as a business expense.

On the other hand, there is the economic component, which serves as the true driver of environmental crime, given the high revenues inherent in waste management—both in terms of profit maximization and cost containment within the sector.

The crimes examined are, in fact, economic-financial in nature, carried out through an individualistic and rational logic. As such, they conflict with the collective interest of protecting the environment and public health.

The aforementioned considerations allow us to take a further step in understanding the topic. The analysis outlined in the previous chapter presented the issue of waste as problematic—a challenge to be addressed by any means, including illegal ones, if deemed advantageous. While this is undoubtedly true, an additional aspect must be considered: the economic value of waste.

Waste materials may appear to be the least appealing aspect of the capitalist production cycle, an unavoidable issue to be managed. However, they simultaneously represent a product with economic value. Indeed, because their management incurs costs, these costs can be converted into both profit and savings. Hence, where there is potential for gain—particularly substantial as in this case—there is also criminal interest.

This concept was explicitly confirmed in the most recent report, *Ecomafia 2024*, published by Legambiente in the section authored by the General Command of the Guardia di Finanza:

> The waste sector, as repeatedly emphasized by major global economic institutions, is one of the key components of the so-called ‘circular economy’, as it can generate value and

[121] A. Pergolizzi, *L’economia avvelenata del crimine ambientale*, op. cit., p. 339.

> provide benefits to businesses and, consequently, to society as a whole. In other words, it is an economy in which the 'waste' produced by some becomes a resource for others, generating wealth for the entrepreneurial world while simultaneously attracting the attention of criminal elements[122].

2.2.1. Criminal Methodology

After the general characteristics of the illegal waste cycle have been introduced, the criminal methodology involved in carrying out such offenses can now be analyzed.

The operational context is the waste management supply chain, characterized by its breadth and the variety of stages it encompasses, including production; service allocation; collection; transportation; treatment; and disposal.

The actors involved are equally diverse: waste producers; public entities responsible for assigning collection and treatment services; intermediaries; transporters; storage and treatment facilities; analysis laboratories; and disposal operators.

The Direzione Investigativa Antimafia DIA (Anti-Mafia Investigation Directorate), in a dedicated focus on the subject, reports that the methods employed to commit these offenses have become so specialized that they now constitute a modus operandi applicable to any territorial context and skillfully adaptable when necessary by altering practices and waste routes[123].

Law enforcement and judicial authorities tasked with countering and repressing these offenses have found that illegal activities occur at every stage of the supply chain, from production to disposal, and are carried out not only by actors with a mafia-related criminal status but also by other 'legal' operators.

As extensively examined in the first chapter, the involvement of mafia-type criminal organizations and other actors operating illegally but external to such criminal syndicates is facilitated by the complexity of the waste management system and the excessive length of the supply chain.

The critical points primarily include:

- the inefficiency of structures tasked with managing the waste cycle;
- the high costs associated with waste disposal;
- the uneven distribution of waste management facilities across different regional territories;

[122] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, Milano: Edizioni Ambiente, 2024, pp. 115–116.
[123] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia"*, op. cit., p. 582.

- the predatory exploitation of profit opportunities afforded by an inefficient system[124].

Examining the stages of illegal waste management and the key actors involved in such malpractices, it becomes evident that offenses can arise either at the source or during subsequent phases.

They originate at the source when waste producers entrust their waste treatment to companies offering services at competitive prices without verifying their reliability or when producers underreport the quantity of waste generated, diverting a portion for illegal disposal to cut costs.

Indeed, waste producers, positioned at the upstream point in the waste lifecycle, play a crucial role in deciding how to handle their inherent need to dispose of production residues.

As explained during the discussion of environmental regulations, producers are subject to an extended responsibility regime, requiring them to fulfill a series of obligations and bear the costs of waste treatment. Consequently, producers may, to minimize costs and obligations, resort to clandestine waste disposal. This practice allows them to gain a competitive edge in the market, engaging in unfair competition against those who comply with legal requirements.

Immediately following the producer, another group of actors playing a central role in the perpetration of offenses are the so-called brokerage companies. These entities coordinate the criminal logistics, identifying the most cost-effective solutions for waste disposal while acting as intermediaries between those requesting the service and those executing it. To perform this type of consultancy role, specific professional expertise is required, including a detailed understanding of the relevant regulatory framework.

When the offense is not initiated at the source, it is typically committed during the transportation phase or when the waste reaches storage sites.

Transportation represents the most critical point of the entire supply chain, primarily due to the extensive movement of waste across the territory. This is exacerbated by the regional imbalance of facilities and the resulting inability of certain regions to complete the waste cycle within their own borders. Additionally, the difficulty in tracking waste movements, stemming from the failure of SISTRI, further compounds the issue.

Moreover, beyond being a particularly vulnerable phase, transportation is also highly attractive for criminal infiltration, as it serves as the link between the other stages of the supply chain.

[124] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia"*, op. cit., p. 592.

However, for criminal involvement to materialize, the participation of transport operators in illicit activities is indispensable. These operators typically act under the direction of brokerage companies.

Storage sites also represent a critical juncture for the execution of criminal schemes. According to Article 183 of Legislative Decree No. 152/2006, these facilities are designated for disposal activities, which include preliminary waste storage operations, and recovery activities, which involve reserve storage operations. However, in the parallel illegal cycle, storage sites are exploited for falsification of waste classification documents, which entails altering accompanying documentation and falsifying European Waste Codes (EER), formerly CER codes. In some cases, transport operators even simulate the delivery of waste to storage sites by falsifying documentation, when, in reality, the waste is neither unloaded nor even transported to the site.

The final stage, disposal, is where the definitive illegal operations occur. These include the concealment of waste, dumping in unauthorized sites, and, more generally, releasing waste into the environment in violation of regulations.

For all the aforementioned practices to be effectively carried out, the core of these criminal activities lies with companies, whether linked to mafia organizations or not, that perform the services associated with illicit waste management.

With regard to the operations of mafia groups, the aforementioned illegal activities are facilitated by their ability to establish connections with professionals, public administration representatives, politicians, and the entrepreneurial sector present in their areas of influence.

In practice, companies tasked with waste management are inserted into the described supply chain. These businesses are often set up ad hoc and swiftly driven to bankruptcy, aiming to maximize profits in the shortest time possible by lowering the quality of services provided and engaging in fraudulent activities.

Furthermore, mafia organizations manipulate public procurement processes, intimidate competing firms to discourage them from pursuing waste management contracts, and secure monopolies through agreements and relationships with institutional and business figures.

During the execution phase of waste management services, mafias impose the hiring of workers affiliated with their criminal organizations, directly allocate activities to mafia-run businesses, or demand extortion payments to avoid damage or violence.

Regarding their relationship with the entrepreneurial sector, mafias exploit such collaborations to secure influential positions in strategic areas of the national economy, thereby distorting free market

dynamics. In doing so, they achieve substantial financial gains and reinforce their territorial control[125].

In more recent times, an additional method of infiltration into the waste management sector has been identified: the instrumental exploitation of so-called *bad companies*. Specifically, this involves the functional use of companies to burden them with debt, draining their liquidity and assets, and ultimately driving them to bankruptcy.

This practice was identified, for instance, in April 2024 by the Provincial Command of the Guardia di Finanza in Rome, leading to the imposition of house arrest on the de facto administrator of a social cooperative operating in the environmental sector. According to the allegations, the administrator gradually drained the company's assets, stripping it of its most valuable resources, while simultaneously using the same assets to assume debts incurred by other entities, which were legally traceable back to the administrator. Furthermore,

> the scheme included the transfer of a branch of the company and the leasing of another, enabling newly established entities to continue the lucrative waste collection activities, armed with a portfolio of contracts worth approximately 14 million euros in several municipalities in Lazio[126].

Passing to the analysis of illicit waste management techniques, the most commonly employed is the so-called "giro-bolla", which involves the fraudulent reclassification of waste documentation. This technique exploits the fact that transportation is the most favorable phase for criminal infiltration. During this phase, unscrupulous actors manipulate the Waste Identification Form (Formulario di Identificazione Rifiuti, or FIR), which must accompany waste during its transport across the territory.

The FIR, as previously explained, is a paper-based document that must be prepared in four copies, dated and signed by the producer or holder, and countersigned by the transporter. Upon delivery, one copy is retained by the producer or holder, while the other three, signed and dated upon receipt by the destination facility, are distributed as follows: one to the destination facility, one to the transporter, and the final copy is returned to the producer or holder by the transporter. These FIR copies must then be retained for three years (Article 193, Legislative Decree No. 152/2006).

Given this system, the alteration of FIRs is relatively straightforward. Criminal operators merely modify the waste's identification code, now referred to as the European Waste Code (EER), previously known as the European Waste Catalogue (CER). This code is intended to specify the waste's hazard level and, consequently, the appropriate disposal method. By altering the code,

[125] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., p. 119-120.
[126] Ibid., p. 215.

hazardous special waste is fraudulently reclassified as non-hazardous without undergoing any actual treatment. Such manipulations are carried out to conceal the waste's true hazardous nature or to falsify the occurrence of treatment processes that never actually took place.

The execution of such fraudulent activities often requires the complicity or active involvement of analysis laboratories. These laboratories are tasked with measuring the chemical concentrations within the waste materials to determine their proper classification.

Such a practice is particularly advantageous because the more hazardous or toxic a waste material is, the more expensive the processes of treatment and final disposal become. Consequently, by altering the code, the waste will follow the least costly treatment and/or disposal pathway. This generates significant savings for the producer and considerable profits for those involved in the fraudulent reclassification and management of the waste.

For instance, ink sludges, which contain hazardous substances and are identified under the CER code 80314, or insulating and thermal transfer oils containing PCBs, classified under CER code 130301, have, in criminal practices, been fraudulently reclassified as soil and rocks (CER code 200202), paper and cardboard (CER code 200101), or biodegradable waste (CER code 200108).

Another criminal methodology involves the mixing of toxic waste with non-hazardous waste, assigning the final product a European Waste Code (EWC), or previously a CER code, corresponding to non-hazardous waste. This tactic is used to bypass the stricter and more expensive regulations required for the treatment of hazardous waste[127].

The practices related to the falsification of waste classification—such as altering the documentation to misrepresent the nature or danger level of waste—implicate various actors mentioned earlier: producers, intermediary companies, transporters, and chemical analysts. These activities typically occur in treatment, storage, and composting facilities.

The subsequent stage pertains to illegal disposal activities, which may include depositing waste in illegal dumpsites, agricultural fields, abandoned quarries, rivers, or seas. Other methods involve the incineration of waste to eliminate evidence and make room for additional incoming waste.

Furthermore, instances have been documented where hazardous waste, with falsified identification codes, is deposited in authorized landfills intended exclusively for municipal solid waste[128].

Additional practices include introducing waste into industrial production cycles, such as cement factories and brick kilns, where materials like industrial sludge, flue gas dust, ashes, and slags from

[127] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., p. 45.
[128] A. Pergolizzi, *Toxicitaly: ecomafie e capitalismo: gli affari sporchi all'ombra del progresso*, op. cit., pp. 65–67.

metal processing are incorporated. Other cases involve the spreading of untreated waste on land under the guise of fertilizers, despite their unsuitability for agricultural use, or the use of hazardous special waste for environmental restoration projects[129].

This entire system operates largely due to the inherent difficulty of verifying each activity within the waste management cycle, particularly ensuring that every waste shipment complies with applicable regulations and authorization requirements.

Another criminal method identified by investigators involves the creation of businesses that carry out waste management activities under a simplified regime, an alternative to the standard procedure, intending to circumvent oversight and regulatory requirements.

Specifically, the standard procedure, as previously outlined, requires that anyone intending to engage in waste management must apply for authorization from the competent regional authority. Upon approval, they are required to register with the *Albo Nazionale Gestori Ambientali* (National Register of Environmental Managers).

In contrast, the simplified procedure allows, in cases explicitly specified by law, waste management activities to commence 90 days after the notification of activity commencement is submitted to the relevant provincial authority (art. 214, Legislative Decree No. 152/2006). This simplified regime, intended as an exception to the general rule, has become a popular tool among criminal operators. These entities often present themselves as legitimate businesses but, in practice, bypass the authorization process and preemptive controls, thereby engaging in illegal waste management practices.

This is evidenced by the progressive increase in businesses operating under the simplified regime, many of which are involved in illegal trafficking[130].

In other instances, companies operate under the standard regime, having formally obtained authorization from the competent authority and submitted the legally required project documentation. However, in practice, such operations are often facilitated through the corruption of public officials, enabling the issuance of fraudulent authorizations. These forged permits allow waste management activities to be conducted by businesses that fail to meet the requirements established by environmental regulations.

[129] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia"*, op. cit., pp. 595–605.
[130] A. Pergolizzi, *Toxicitaly: ecomafie e capitalismo: gli affari sporchi all'ombra del progresso*, op. cit., pp. 68–69.

Focusing on municipal solid waste (MSW), its management is assigned to public administration, which delegates waste collection and disposal services through public procurement procedures.

In this context, illegal operators, particularly mafia-type criminal organizations, aim to influence public officials' decisions to secure these contracts. This objective is achieved through the typical criminal toolkit of such organizations, including corruption and infiltration, with the ultimate aim of operating directly within public administrations[131].

Regarding the procurement processes for MSW collection and disposal services, as well as public contracts in the environmental sector, the President of the National Anti-Corruption Authority (ANAC), in testimony before the Parliamentary Commission in 2019, reported numerous, significant, and recurrent irregularities across all stages of the procurement process: planning, awarding, bidding, and execution. Specifically, the President stated:

> The situation concerning waste management tenders, from north to south, without significant regional differences, is marked by systematic violations of procurement code regulations; by a significant and improper use of the technical extension mechanism, which, as is well known, does not exist in the procurement code; by a significant number of emergency and urgent ordinances, which themselves form the basis for extensions, despite the fact that such ordinances, by their nature, should not be extended; and by considerable difficulties during the execution phase, often involving informal variant mechanisms that greatly affect costs[132].

What is widely observed is a consistent irregularity in the management and drafting of public procurement notices. In practice, while the tendering process is formally conducted, the winning bidder is often predetermined.

The core issue lies in the challenge of conducting procurement processes that are genuinely competitive, transparent, and designed to identify entities capable of adequately delivering the service.

Indeed, the existence of large business entities has been confirmed, sometimes directly linked to mafia associations and other times vulnerable to infiltration. These entities establish themselves in specific territorial contexts, effectively barring access to the sector for other companies. These unscrupulous enterprises have been operating for years, often exploiting the system of contract extensions. Contrary to the temporary nature of services as stipulated by law, they, in effect, maintain monopolistic operations.

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[131] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale,* op. cit., p. 44.

[132] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti su illeciti ambientali ad esse correlati, XVIII Legislatura, Verbatim Report No. 10, Session of Tuesday, January 30, 2019, available at: https://www.camera.it/leg18/1364?id_commissione=39&annomese=201901&view=filtered_scheda_bic&shadow_organo_parlamentare=3015.

On this subject, the President of the National Anti-Corruption Authority (ANAC) explained:

> Until the public procurement system is regularized, we will continue to witness [...] another of the significant issues in the waste cycle procurement system: the massive infiltration of criminal organizations. This issue has led to extraordinarily high numbers of companies being subjected to anti-mafia interdictions, which no longer concern only the southern regions of Italy. [...]The issue of mafia or mafia-like (paramafia) infiltration into the waste management system has, therefore, become an almost constant phenomenon, despite the efforts [...] of prefectures, which often, even in the face of interdictions, fail to effectively replace the companies involved[133].

From the outlined analysis, it emerges that beyond the offenses violating environmental regulations—constituting criminal offenses that will be examined in the next chapter and causing evident repercussions on the ecosystem—the criminal phenomenology also involves additional illicit acts, commonly referred to as "satellite crimes"[134].

In this regard,

> disposal aimed solely at cost reduction, therefore, increasingly remains a residual option and, in any case, in the hands of less organized networks, while more resourceful actors demonstrate their ease in utilizing accounting and financial tools, exponentially multiplying profit margins[135].

First among these "satellite crimes" are tax offenses, including issuing false invoices to justify declared but non-existent operations. This activity is typically carried out by so-called *società cartiere* ("shell companies"), a term used in Italy to describe entities managed by straw men and established exclusively to issue invoices without conducting actual business operations.

Another widespread practice involves the falsification of documents to simulate the recovery or treatment of waste, falsely certifying compliance with procedures that were never executed.

Following this are the so-called triangulation cases, wherein the documentation related to the category and type of waste is intentionally falsified.

Central to the criminal methodology are fraudulent and money-laundering activities, often carried out with the assistance of professionals who act as intermediaries between public and private operators.

Moreover, corrupt practices targeting public officials remain a crucial element. These actions are aimed at securing fraudulent authorizations, rigging public procurement processes to ensure the awarding of contracts, and facilitating the disbursement of public or European Union funds.

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[133] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti su illeciti ambientali ad esse correlati, XVIII Legislatura, Verbatim Report No. 10, op. cit., p. 5.
[134] A. Pergolizzi, *Toxicitaly: ecomafie e capitalismo: gli affari sporchi all'ombra del progresso*, op. cit., pp. 584-585.
[135] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 215.

Finally, criminal organizations make strategic use of intermediary companies, which serve as a link between producers and final disposers. These entities, without physically handling the waste, engage in practices designed to obstruct regulatory oversight and hinder the traceability of shipments.

With regard to the commission of tax-related offenses, a dual detriment can be observed. Firstly, there is a reduction in tax liabilities due to the deduction of fictitious expenses related to non-existent operations from the taxable base. Secondly, the exorbitant costs associated with remediating illegal waste disposal sites, where environmental damage has occurred, ultimately burden the entire community[136].

In this regard, interventions by the Guardia di Finanza in 2023 resulted in:

> the identification of additional taxable bases amounting to approximately 120 million euros and VAT owed to the Treasury of about 60 million euros; the reporting to judicial authorities of 69 individuals responsible, in various capacities, for offenses involving the use and issuance of invoices for non-existent transactions pursuant to Articles 2 and 8 of Legislative Decree No. 74/2000; and the detection of violations related to the non-payment of the so-called eco-tax, amounting to approximately 1.2 million euros[137].

The eco-tax is a special levy introduced by Article 3 of Law No. 549/1995, payable to the regions in cases of landfill disposal of solid waste by final storage operators. These operators are, in turn, required to recover the amount from those who carried out the waste delivery. This instrument was designed to discourage landfill disposal to reduce waste production and promote waste recovery[138].

What has been outlined so far constitutes an explanatory account of the criminal methodologies employed in the illegal waste cycle, from the phenomenon's origin to the present day, to the extent that it has consolidated into a modus operandi applicable in any territorial context.

To confirm this, the latest report published by Legambiente states:

> Investigations confirm the particular propensity of criminal groups to infiltrate all stages of the waste management cycle, particularly in scrap metals, from collection to transportation, and even recovery or disposal, aiming to exploit the immense profit opportunities by distorting the proper functioning of the market. All this is facilitated by shell companies issuing false invoices; professionals providing sophisticated systems of fraud and laundering of related illicit proceeds; corruption of 'disloyal public officials' [...]; and intermediary companies operating on an international scale[139].

[136] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 115–119.
[137] Ibid., p. 118.
[138] A. Pergolizzi, *Toxicitaly: ecomafie e capitalismo: gli affari sporchi all'ombra del progresso*, op. cit., pp. 584-585.
[139] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 20-21.

2.3. Evolution of Criminal Phenomenology

To comprehensively outline the analysis at hand, it is essential to focus on the developments, ascertained through investigations and judicial proceedings, in criminal phenomenology.

This process of transformation is closely tied, from a parasitic exploitation perspective to the parallel evolution of society, which has increasingly embraced recycling and the recovery of waste materials to achieve the ecological transition.

As highlighted multiple times throughout this discussion, to mitigate the impact of human activities on the environment and to slow down and reverse climate change processes, the European Union has emphasized that waste disposal should be a residual option. Instead, priority must be given to preparation for reuse, recycling, and recovery, aiming to establish a circular economy for materials. Consequently, in the parallel illegal cycle, those operating unlawfully have long recognized that the new frontier of business lies in waste treatment operations. These are incentivized by institutions, tend to garner greater acceptance from the community, and thus attract higher economic investments and yield greater profits.

A distinctive characteristic of Ecomafie—understood here to encompass the entire criminal phenomenon, with particular attention to its mafia-related component—is their extraordinary adaptability and ability to readjust. This includes identifying new opportunities for profit offered by social transformations and the legal economy.

Mafias do not remain mere spectators to these evolutionary processes but instead constitute active participants. However, their involvement does not result in any development or gain from a perspective of collective benefit, except for their advantage. On the contrary, it can lead to regression for society, the economy, and the environment.

In this context, eco-criminals increasingly avoid directly engaging in illegal waste disposal, except in a residual manner, and instead participate in waste treatment processes, thereby engaging in so-called ‘illegal recycling’. The methods applied to this new business are the same as those previously tested, such as the use of facilities to simulate fake treatments, document falsification, and the *giro bolla* scheme[140].

As previously mentioned, the modus operandi and operational structures of waste criminals are so well-established that they can easily adapt to new waste management techniques introduced by regulatory systems and operational practices.

[140] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., p. 217.

The concept of new phenomenology is used to distinguish it from the initial manifestations of the phenomenon, which were primarily focused on the concealment of waste, the use of illegal landfills, irregular dumping in nature, and all operations preliminary to this final illegal process. However, it is important to note that new forms of illegal waste treatment have been experimented with and implemented for several years now.

From a temporal perspective, the emergence of these new techniques and regulations related to the implementation of sustainability and circular economy principles has been paralleled by the rise of new related phenomenologies that circumvent and exploit them for personal gain.

An illustrative example of this can be found in the context of end waste processes, namely the cessation of waste status for a material after it has undergone a recovery or recycling operation, as provided for under Article 184-ter of Legislative Decree No. 152/2006.

The end of waste regulation is based precisely on defining what constitutes waste and what no longer qualifies as such, as the applicable use and legal framework differ significantly.

It is precisely along this boundary—determined by the classification of the material and characterized by broad and insufficiently detailed regulation—that eco-criminals intervene, making it their most profitable venture in environmental plunder.

Judicial investigations have uncovered the simulation of treatment processes, such as recovery or recycling, aimed at falsely classifying waste as no longer such, thereby transforming it, on paper only, into regenerated raw materials or materials suitable for landfill covering. In reality, however, the waste remains unchanged, without any actual treatment, and enters production cycles, posing serious environmental and health risks.

As a result, by using the same methods of falsification and simulated treatment previously employed, it is no longer merely the appearance of a transition from special waste to non-special waste that is created, but also from waste to non-waste, allowing reintegration into production processes.

To better understand the points just illustrated, it is helpful to refer to some of the recent investigations carried out by law enforcement agencies.

As part of a complex investigation coordinated by the Carabinieri Group for Environmental Protection and Energy Security in Venice, the Environmental Operational Unit (Noe, *Nucleo Operativo Ecologico*) of Trento, at the end of 2023, seized approximately four tons of contaminated fertilizers intended for the organic market at several agricultural consortia in Trentino-Alto Adige.

Carabinieri officers discovered that in some cogeneration plants in Alto Adige, waste consisting of ash residues from pyrolysis/gasification processes was being managed illegally. Instead of being treated as waste in compliance with regulations on waste management, these residues were partially sent to a composting facility and subsequently used to produce fertilizers for organic farming.

This waste was introduced into the market as the end of waste, specifically as a new material intended to enrich the soil. However, in reality, it consisted of a mixture of the aforementioned ashes with other composted green waste and manure. The sale took place through retail outlets at agricultural consortia in Trentino[141].

Another significant investigation concerning false recycling operations and circular economy practices is the so-called "Fangopoli" case, conducted by the Environmental Operational Unit (Noe, *Nucleo Operativo Ecologico*) of Catanzaro and coordinated by the District Anti-Mafia Directorate (Dda, *Direzione Distrettuale Antimafia*) of Catanzaro. As a result of the investigation, the Dda identified the alleged commission of the crime of organized activities for the illegal trafficking of waste (Article 452-quaterdecies of the Italian Penal Code), specifically involving sewage sludge, and obtained the imposition of precautionary measures on twenty suspects.

The accusation involves three companies operating in the provinces of Catanzaro and Crotone, which were responsible for transporting and storing: organic waste from the separate collection of certain municipalities in Calabria and Sicily; sewage sludge from municipal treatment plants in Calabria; and other types of waste, such as mixed materials produced from the mechanical treatment of waste.

In their transport activities, the companies aimed to minimize the number of trips and associated service costs, often filling vehicles to maximum capacity and, in some cases mixing waste of different types.

Regarding the treatment of waste, recovery processes were simulated but never actually performed. The waste was passed through the facilities solely to create the appearance of treatment, but it remained unchanged and did not lose its status as waste.

Subsequently, the materials resulting from the fake recovery process, particularly sewage sludge, were mixed with other materials, typically inert ones, and used for road and infrastructure construction. In other cases, they were intended for agricultural use.

[141] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 218–219.

The movement of materials was accompanied by the issuing of a number of Waste Identification Forms (*Formulari di Identificazione dei Rifiuti*, FIR) that exceeded the actual quantities of waste stored and processed at the facilities. The companies documented the receipt and treatment of large amounts of waste, which, in reality, were disposed of through incineration, destruction, or burial at facilities used as illegal landfills.

Indeed, a significant portion of the fake end of waste materials was also used to fill open pits[142].

Particularly significant and alarming is the issue concerning the management of textile waste, to the extent that the Parliamentary Commission of the XVIII legislature, in its final report, explained:

> how the specificity of the sector and its production realities necessitate an adequate level of controls, an end-of-waste regulation that is technically and legally sound, and a coordination of investigative activities that considers both the overall national dynamics and the transnational nature of illegal activities[143].

Indeed, in the field of used clothing and textile waste collection and recovery, the existence of structured illegal operations has long been established. In particular, it has been noted that the interest of mafia associations in this business is growing, given the substantial profit opportunities, especially considering the NRRP (*National Recovery and Resilience Plan*) funds allocated by the European Union.

The Parliamentary Commission on waste-related offenses of the XVIII legislature also found that this sector is dominated by criminal organizations operating along a well-defined route: Prato–Ercolano/Caserta and Tunis. Illegal activities are carried out through the operations of a significant number of companies that are difficult to trace back to those responsible, thanks to a mechanism of "Chinese boxes" and intermediary companies.

To better understand the topic, it is necessary to start with some clarifications.

In general, used clothing and accessories discarded by their holder are legally classified as waste. However, a portion of these materials is excluded from waste management regulations because they are destined for individuals in need, as established by Law No. 166/2016. Therefore, materials not intended for charitable purposes, fall under the municipal separate collection system. According to Legislative Decree No. 152/2006, this system must be entrusted by municipal administrations, through public tenders, to single entities or those grouped in temporary associations of companies (*Associazioni Temporanee di Imprese*, ATI). As a result, being classified as municipal waste, the

[142] Ibid., pp. 222–223.
[143] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., p. 173.

clothing collected in this way cannot be further marketed unless subjected to specific controls until the product's final destination.

However, in practice, unauthorized entities often collect large quantities of used clothing without municipal authorization. In such cases, this type of waste is not subjected to any recovery, treatment, or sanitization process but is instead sent abroad or sold as secondary raw material, without ever losing its status as waste, end of waste.

This occurs due to the loophole created by Law No. 166/2016, namely, the possibility of illicitly exploiting the fine line between used clothing that must be classified as waste and that which is not, as it is intended for donation.

Specifically, Law No. 166/2016 was introduced to reduce waste involving goods that can be reused, while simultaneously pursuing a goal of social solidarity. In this regard, the law provides that, under certain conditions, used clothing is not classified as waste but rather as goods ready for reuse. However, this legislation has some weaknesses.

First, the law stipulates, differently from the previous regulation under the Ministerial Decree of February 5, 1998, that the sanitization of clothing for reuse is only a conditional requirement—i.e., only when necessary to meet specific technical standards indicated by the aforementioned decree. This regulatory change has created a critical issue in the sector, as investigations have found that, in most cases, criminal organizations engage in illegal activities precisely by failing to sanitize clothing collected and classified as waste. These illicit practices were carried out even when sanitization was mandatory, and even more so after 2016, with the introduction of the optional requirement.

A second weakness concerns the management of the residual portion of clothing not intended for donation, to which waste regulations must therefore apply. In this regard, Article 14 of Law No. 166/2016 provides:

> 1. The donation of used clothing and accessories is considered to occur when such items are delivered directly by private individuals to the operational locations of recipient organizations.
> 2. Items that are not intended for donation under paragraph 1 or are deemed unsuitable for subsequent use shall be managed in accordance with the waste regulations provided by Legislative Decree No. 152 of April 3, 2006[144].

The second paragraph of Article 14 thus establishes that the portion of waste not intended for donation must fall under the application of waste regulations, thereby qualifying as waste. However,

[144] Law No. 166 of August 19, 2016, Provisions concerning the donation and distribution of food and pharmaceutical products for social solidarity purposes and to limit waste, https://www.gazzettaufficiale.it/eli/id/2016/08/30/16G00179/sg.

it is precisely about these fractions of materials that criminal activities arise. Specifically, there is evidence of entities that aim to collect such waste, which neither enters the separate collection system nor is destined for donation. Essentially, this creates a grey area conducive to the involvement of criminals who exploit these materials for illicit purposes by diverting them into illegal channels.

Judicial cases are rife with actors involved in the collection and recovery of used clothing who systematically commit illegal acts while maintaining connections with criminal organizations, yet are fully in possession of all the necessary legal authorizations.

It has often been established that the first link in the criminal chain is represented by nonprofit social cooperatives (*Onlus*), which are responsible for procuring the materials in question. Specifically, these entities interfere with the allocation of services for the collection of urban textile waste. This occurs through the ability of these *Onlus* to influence and pressure public officials responsible for awarding contracts, ensuring that such contracts are granted to specific entities that reciprocate by donating substantial sums of money to be reinvested in charitable projects. These clientelist mechanisms favor companies with good relationships with nonprofit social cooperatives, regardless of whether they meet the necessary requirements to perform the service. Moreover, they attract criminal interests from unscrupulous actors.

To disrupt this illegal chain, which appears to have become deeply rooted and structured in the sector under examination, the Parliamentary Commission of the XVIII legislature and the National Association of Italian Municipalities (*Associazione Nazionale Comuni Italiani*, ANCI) suggest the introduction of a register listing qualified operators, along with the adoption of guidelines for awarding contracts for textile waste management. Additionally, it is crucial to clarify the conditions for correctly distinguishing which items qualify as waste and which are subject to donation. Finally, to draw a clear line between the portion of materials to be sent to the separate collection system for municipal solid waste (MSW) and those intended for donation, the latter should be directly allocated to those in need, without the involvement of intermediaries[145].

Another sector of public interest—and thus, consequently, attractive to criminal operators—is the shift away from fossil fuels in favor of renewable energy sources as part of the ecological transition. This process also involves the management of specific streams of special waste associated with renewable energy production. Even in this innovative sector, environmental criminals have skillfully infiltrated.

[145]Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., pp. 165–174.

An illustrative case in this regard is the “Oro verde” (“Green Gold”) investigation conducted by the Environmental Operational Unit (Noe, *Nucleo Operativo Ecologico*) of Ancona between 2021 and 2023, which exposed the involvement of Camorra clans in a new and highly lucrative criminal enterprise.

In this case, the focus of interest is used vegetable oils, nicknamed “green gold” due to the high profits generated from their illegal trafficking.

Used vegetable oils are particularly valuable because they can be recovered through numerous processes, enabling various new applications. First, they can be used as a renewable energy source in cogeneration plants in their existing state. Alternatively, they can be transformed into biolubricants for use in agricultural or nautical machinery, or utilized in the production of cosmetics, industrial soaps, inks, tanning greases, and car waxes.

Despite the wide-ranging opportunities for the reuse of this material, its primary application is its regeneration for biodiesel production. Biodiesel is a type of biofuel derived from renewable sources, such as vegetable oils and animal fats, through a chemical process, and it is similar to diesel fuel obtained from petroleum.

From a business perspective, the biomass obtained from the processing of used vegetable oils represents an attractive investment, as it carries a lower business risk compared to other renewable energy sources. This is because the initial capital investments are smaller, and the activity has a lower environmental visibility impact compared to wind or solar farms.

Additionally, acquiring the raw material is not particularly challenging, as the supply chain for this material—including collection, storage, processing, and final use—is primarily regulated by private agreements within mandatory consortia.

Additionally, the regulation of the sector provides that:

> Fossil fuel producers are required to place predetermined quantities of biofuel into the market; this obligation is supported by a system of public and economic incentives. For the production of biofuel, it is possible to use used vegetable oil, a material necessary for obtaining biodiesel. The obligation to produce a minimum quantity of biodiesel for market placement, supported by public incentives, therefore assigns economic and commercial value to used vegetable oils. Their management—in terms of collection, transport, storage, processing, and delivery to fossil fuel producers—becomes an economically advantageous opportunity[146].

[146] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 94–95.

All these factors, which can be summarized as the ease of entry into the sector combined with the potential for substantial profits, have proven to be an irresistible draw for criminal organizations.

In this context, the "Oro verde" investigation confirmed the presence of illicit interests within the sector. The inquiry was coordinated by the National Anti-Mafia and Counter-Terrorism Directorate (*Procura Nazionale Antimafia e Antiterrorismo*) and the District Anti-Mafia Directorates (*Direzioni Distrettuali Antimafia*, Dda) of Ancona and Naples. It led to the application of precautionary measures against eight individuals suspected of the crimes of criminal association aggravated by the mafia method, organized activities for the illegal trafficking of waste aggravated by the aim of facilitating the Moccia clan of Afragola, aggravated theft, unlawful competition through threats or violence in complicity.

The investigation revealed the involvement of the Camorra clan based in the province of Naples and certain administrators of companies engaged in the recovery and collection of used vegetable oils, who were affiliated with the mafia association[147].

The used vegetable oils were stolen from urban collection containers, then stored in designated warehouses located in the Marche region, and finally transported to companies outside the region without the documentation required by law to prevent traceability[148].

The analysis outlined above, which examines some of the most recent investigative activities into waste-related criminality, presents a rather alarming picture. Reading the preceding pages, the efforts undertaken by institutions and society to protect the environment in pursuit of full economic circularity and ecological transition appear to be in vain.

Eco-criminals demonstrate exceptional skill in keeping pace with new socio-economic developments, even when this requires mastering complex regulatory and operational technicalities.

Where human progress is projected in a positive direction, it seems to simultaneously cast a shadow that pulls it back, marked by a ruthless pursuit of profit in blatant disregard for collective values of ecosystem protection.

[147] Ibid., pp. 92–97.
[148] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia"*, January – June 2023, p. 107, https://direzioneinvestigativaantimafia.interno.gov.it/relazioni-semestrali/.

2.3.1. International Trafficking and the Illegal Management Cycle of WEEE (Waste Electrical and Electronic Equipment)

In analyzing the phenomenological evolution of criminal waste management, with particular attention to its most dangerous and significant manifestations, it is impossible to overlook what is happening concerning Waste Electrical and Electronic Equipment (*WEEE*).

Before becoming waste, these materials are characterized both by their impact on the market in terms of efficiency and innovation and by their composition, which includes highly valuable secondary raw materials such as copper, gold, aluminum, lithium, and nickel.

Their significant economic value represents an irresistible lure for eco-criminals, making them a central focus of illicit interests that surpass any other type of waste on both national and international scales. To describe the magnitude of this phenomenon, industry operators refer to it as a true "cannibalization" of these materials[149].

> Environmental crime, therefore, is fully aware of the economic value of WEEE, to the extent that their capacity for interception is positively correlated with the international market value of raw materials derived from treatment processes, including iron, aluminum, copper, and, more broadly, Critical Raw Materials. The higher the value of these materials in international markets, the greater the activity of parallel markets, especially illicit ones. Unsurprisingly, the scope of reference for various eco-criminal networks is becoming increasingly globalized[150].

As before, to understand the phenomenology of criminal activity, it is preferable to begin with an analysis of the regulations governing the sector.

For this type of material as well, the regime of Extended Producer Responsibility applies, introduced by Legislative Decree No. 151/2005 and subsequently by Legislative Decree No. 49/2014.

The regulations stipulate that producers are financially and organizationally responsible for the entire lifecycle of the electrical and electronic equipment (*EEE*) they place on the market, including the point at which these items become waste.

Furthermore, a system of shared responsibility exists, involving a wide range of stakeholders in their management, including citizens, retailers, distributors, transport companies, treatment plants, and local authorities.

With regard to the collection of Waste Electrical and Electronic Equipment (*WEEE*), it is mandatory for both local authorities, through recycling stations and municipal collection centers, and commercial operators selling electrical and electronic equipment (*EEE*) to consumers, i.e.,

[149] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., p. 182.
[150] Legambiente, Ecomafia 2024. *Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 235.

distributors. For distributors, the collection is carried out through the "One-for-One" and "One-for-Zero" mechanisms.

Concerning the collection performed by public entities, the critical issues identified include: the shortage of recycling stations and collection centers, particularly in southern Italy; the limited opening hours of these facilities; and difficulties related to certain types and quantities of materials accepted. These problems result in significant practical barriers for citizens trying to access municipal facilities.

In contrast, collection systems operated by distributors provide, under the "One-for-One" mechanism, that the seller must collect WEEE from the consumer free of charge when purchasing equivalent equipment, whether the purchase occurs in physical stores or online. Additionally, if the distributor has a display area exceeding 400 square meters, they are obligated to collect WEEE smaller than 25 cm even when no equivalent purchase has been made, under the "One-for-Zero" mechanism[151].

Moreover, the regulations require that for each type of EEE placed on the market, a fee must be paid, which is included in the price charged to the final consumer.

The "One-for-One" and "One-for-Zero" systems, introduced to streamline the collection of this type of waste, also present several challenges, primarily concerning the complexity of the activities that must be undertaken by the responsible entities.

By way of example:

> If a distributor, such as a large shopping center, exceeds 400 square meters, it is required to implement the 'One-for-Zero' mechanism, meaning that any citizen can bring a small-sized WEEE there. [...] However, if the shopping center also operates the 'One-for-One' mechanism or generates its own waste, during the final transportation phase, it must prepare three transport documents, three different load and unload registers specific to each mechanism, maintain separate storage areas with dedicated spaces, and manage a range of complications that, in practice, significantly discourage the application of this mechanism[152].

Therefore, in light of the above, sector operators strongly call for a simplification and standardization of procedures to ensure their effective implementation.

In general, it is observed that this collection system, which aims for efficient and sustainable outcomes, has not achieved success in practice. In fact, in 2023, it was found that EEE producer consortia managed to collect only 34% of the materials introduced to the market—a disappointing

[151] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., pp. 176–190.
[152] Ibid., p. 184.

result considering that the law requires a target of 65%. Additionally, in 2023, there was a 3.5% decrease in collection compared to 2022.

To this situation, another factor must be added: the high costs associated with the treatment, extraction, and recovery of WEEE, which necessitate ongoing innovation and technological research.

Another significant factor is the legislative provision allowing anyone authorized to treat WEEE, even if not part of the EEE producer consortia, to purchase such waste from local authorities and distributors that collect it. This measure is aimed at promoting free competition in the market under examination.

All these elements—such as the complexity of the regulations, high management costs, easy accessibility to waste, and the parallel high value of the materials contained—constitute factors that exert an irresistible attraction for eco-criminals[153].

> Paradoxically, therefore, although formally centered on the principle of extended producer responsibility, this supply chain has, in practice, allowed the creation of two distinct markets: an official one, managed by the consortium system and subject to monitoring and oversight by the ministry and relevant authorities; and an alternative one, driven solely by profit motives, operating in a more opaque manner, beyond effective controls and traceability systems, and entirely indifferent to environmental concerns[154].

To understand the scale and danger of the parallel illegal market for WEEE, it is crucial to consider some quantitative data. Legambiente, citing information gathered by the United Nations and published in the *Global E-waste Monitor (GEM)*, reports that 62 million tons of WEEE are generated globally each year, with a steady annual growth rate of approximately 2.6 million tons. This growth represents an 82% increase since 2010 and is projected to rise by an additional 32% by 2030.

Concerning these substantial quantities, the collection rate is slightly above 22%, meaning that the remaining 78% presumably follows informal and illegal channels.

According to the *Italian Coordination Center for WEEE (Centro di Coordinamento RAEE, CdC RAEE)*, in Italy, the gaps in the collection of this waste are primarily due to three factors: the incorrect assignment of European Waste Catalogue (EWC) codes, the extensive operation of parallel flows, and the failure of citizens to dispose of small WEEE properly[155].

Concerning the international trafficking of WEEE, Italian law enforcement agencies have documented a systematic increase in the transport and illicit export of such waste to foreign countries. The destinations most favored by traffickers are Eastern Europe, Northern and Central Africa, and

[153] Legambiente, Ecomafia 2024. *Le storie e i numeri della criminalità ambientale in Italia,* op. cit., pp. 235–240.
[154] Ibid., p. 240.
[155] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., pp. 240-242.

the Middle East. In these regions, the materials are officially classified as functioning electronic equipment (EEE) but, in reality, fall under the definition of waste as per Article 183 of Legislative Decree No. 152/2006 and WEEE under Article 4 of Legislative Decree No. 49/2014.

Supervisory authorities believe that these illegal practices are aimed at transferring such waste to territories where environmental protection regulations are less stringent and, consequently, where the costs and bureaucratic burdens associated with disposal are lower, thereby creating the phenomenon of environmental dumping referenced in Chapter One.

These criminal activities not only cause devastating impacts on the surrounding environment but also distort the domestic market of the Italian state and the European Union as a whole[156].

In 2022, the Italian Customs and Monopolies Agency intercepted 2.2 thousand tons of waste, 37.5% of which consisted of WEEE. Of these, 45% were destined for Pakistan, 35.4% for Africa, and 14% for Japan.

It is worth noting that Italy plays a strategic role in these illicit trades, acting not only as an exporting country but also as a pivotal node in the international criminal scheme, due to its geographical position, as already highlighted in previous analyses.

By way of example, reference can be made to one of the most recent investigations concluded by law enforcement on Italian territory. In January 2024, the *Guardia di Finanza* and the Customs and Monopolies Agency intercepted a container at the Bologna Inland Port (*Interporto di Bologna*) containing a large quantity of WEEE, including smartphones, computers, televisions, refrigerators, washing machines, industrial kitchens, microwave ovens, and other household appliances.

According to law enforcement reconstructions, the waste was intended to be shipped by sea to African villages along the Atlantic coast, particularly to the Gulf of Guinea, to feed some of the numerous illegal dumpsites in those areas.

Three Italian companies are implicated in this international waste trafficking operation and are suspected of fraudulently falsifying customs documentation. As a result, they have been charged with the offenses of organized activities for the illegal trafficking of waste (Article 452-quaterdecies of the Italian Penal Code) and ideological falsity committed by a private individual in a public document (Article 483 of the Italian Penal Code)[157].

[156]Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., p. 182.
[157] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 242-245.

Equally concerning and widespread is the phenomenon of illicit WEEE management that remains confined within national borders, without taking routes beyond them.

The nature of these criminal activities primarily involves the recovery of secondary raw materials contained in WEEE, achieved through the dismantling of technological devices or household appliances. These operations are part of an illegal circuit and, as such, are conducted inefficiently and without adherence to environmental precautions or safeguards for those performing the work. The outcome typically includes the creation of illegal dumpsites, particularly for materials deemed of low value, which are often burned to make room for subsequent waste.

The most significant investigations conducted by law enforcement in this specific sector—particularly the one carried out by the *Carabinieri del NOE* in Milan in 2020, which uncovered an illicit trade involving 24,000 tons of WEEE—have helped reconstruct the typical modus operandi of eco-criminals in committing these offenses.

The criminal methodology required to orchestrate waste trafficking on such a scale involves numerous steps.

First, the perpetrators need facilities where they can carry out their illegal activities. Typically, they aim to gain control of plants that are legally authorized to receive, recover, and dispose of hazardous waste. These facilities are then used to simulate the performance of legitimate waste management activities.

The possession of abandoned warehouses is also crucial. These locations, lacking the necessary authorizations for waste management and safety measures, are used to unlawfully stockpile waste.

The second step involves obtaining authorization, issued by the competent public authorities, for the simplified management of non-hazardous waste. This method serves to create an appearance of legality regarding the actual illegal activities conducted within the aforementioned warehouses.

Typically, the warehouses used to store the waste belong to individuals without the required authorizations and who are not directly affiliated with the criminal organization. These individuals make their properties available to those who possess authorizations—often fraudulently obtained—in exchange for cash payments or prepaid cards registered to third parties.

Once equipped with the facilities and the necessary authorizations, the criminals procure forklifts to unload and stack the waste.

Regarding the execution of operations, the work is typically assigned to non-EU laborers, who are often willing to work under unfavorable economic conditions and without proper contracts. The

transportation of waste, either from the producer to the facility controlled by the criminal organization or directly to the warehouses, is carried out by individuals and companies linked to and involved in the illegal trafficking.

To avoid detection by law enforcement, eco-criminals favor alternative communication systems, such as WhatsApp, and register phone lines under names untraceable to those responsible for the offenses.

Finally, this sector also exhibits the practice of *giro-bolla* through the alteration of European Waste Catalogue (EWC) codes. Specifically, waste is classified as plastic and rubber or as mixed material packaging—categories suitable for recovery—when, in reality, the waste is WEEE destined for illegal disposal[158].

An analysis of the criminal methodology in the organized trafficking of WEEE, though equally applicable to other types of waste, reveals the presence of a well-structured organization. The "winning card" for eco-criminals is their ability to create an appearance of legality, where operators formally possess the authorizations and qualifications required by law to carry out waste management activities. A regulatory system based on self-certifications makes it exceedingly difficult to distinguish illegal activities from legitimate ones and to prevent these crimes.

Another fundamental aspect of this specific sector must also be considered. As noted:

> One of the most detrimental consequences of the hemorrhaging of WEEE into illicit and parallel channels to the official system is the net loss of valuable and scarce resources, as rare as they are difficult to access, in a geopolitical context that makes them particularly strategic for the future of the ecological transition. Not by chance, this is referred to as urban mining, meaning urban mines potentially available in our cities, if only we could fully intercept all the WEEE in circulation[159].

2.4. The Role of Mafia-Type Criminal Organizations

In describing the subject of the research, the analysis began with its definition, specifically that of Ecomafie, to immediately clarify the scope and focus of the investigation. This was necessary because the term, commonly and consistently used in Italy, includes the word *mafie*, thus emphasizing the central role played by this type of criminal organization in the perpetration of environmental crimes within the waste management cycle.

As a result, any thorough analysis of the phenomenon must consider its perpetrators, who clearly represent, from sociological, legal, and historical perspectives, a central and defining element.

[158] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 246-249.
[159] Ibid., p. 259.

However, it was important to specify from the outset, first, that the definition also reflects the historical context in which it was conceived—namely, the period of discovery and public exposure of illegal waste trafficking, which predominantly targeted Campania and was orchestrated by Camorra clans. Second, attention was immediately drawn to the multitude of actors and interests involved. Thus, while maintaining the central role played by mafia organizations, as highlighted throughout this study, the phenomenon cannot be regarded as exclusively attributable to this category of criminals.

The waste management sector represents one of the most concerning instances of mafia infiltration into the legal economy, not only because of its distorting effect on the market but, above all, due to the harmful consequences it inflicts on the environment and human health—consequences that are often difficult to quantify.

Specifically, the trafficking, processing, and illegal disposal of waste fall within those activities of mafia organizations that are classified as predatory, and aimed at generating significant sources of income to reinvest in the legal economy.

The primary goal pursued by mafia groups in these infiltration activities is, first and foremost, to legitimize and utilize financial capital that would otherwise remain unproductive. Secondly, it is to invest large sums of money into the legal economic system, thereby reaping its associated benefits while embedding themselves into common networks of relationships and acquiring a socially acceptable image to leverage in socioeconomic interactions.

As highlighted in the preceding analysis, the waste management business, aimed at securing revenue streams for criminal organizations, materializes in the execution of legal activities by parties unauthorized under the law—or only formally authorized through fraud and corruption—and/or in the provision of illegal services to legitimate businesses[160].

In this regard, it is important to emphasize once again that, particularly in the sector of special waste, the mafia cannot claim "credit" for having invented such a profitable business. Rather, they have responded to the demand for quick and advantageous services originating from the business world, which arose due to the inadequacy of the economic and political system to provide effective and efficient solutions.

This reality remains current; however, it is also necessary to highlight how the criminal phenomenon has evolved from a subjective perspective.

[160] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., pp. 29-40.

Individuals unaffiliated with criminal organizations have always been involved—not only as beneficiaries of the illegal services offered but also as active participants in the criminal scheme, driven by shared economic interests and/or their professional expertise. Nonetheless, within this well-established criminal network, a new evolution has brought forth "new" players in these illicit activities. Specifically, businesses themselves have emerged as self-sufficient actors in meeting their demand for illegal services.

The Deputy Prosecutor of the Brescia Prosecutor's Office, during a 2017 hearing before the Parliamentary Commission on illegal activities related to the waste cycle, explained the concept as follows:

> The defining aspect of many businesses operating in this sector is that, nowadays, it is no longer necessary, in certain respects, to rely exclusively on organized criminal groups of a 'Ndrangheta or Camorra nature ... It has become a cunning and 'intelligent' way of doing business for some operators in the sector. I define it as ... a corporate crime, where northern entrepreneurs have learned how to do it themselves[161].

In light of the foregoing, while the investigation has consistently analyzed the phenomenon in parallel with the involvement of mafia organizations in its execution, it is now essential to focus in detail on the role these organizations continue to play in committing environmental crimes, highlighting the evolutions observed.

In this regard, it is useful to begin with some general considerations about the characteristics and operations of mafia organizations, both within national borders and beyond.

Particularly noteworthy are the insights recently published by the Direzione Investigativa Antimafia (DIA) in its 2023 semi-annual report. In this context:

> The analysis of investigative and intelligence elements extracted from the DIA's information database for the first half of 2023 provides a picture of Italian organized crime that confirms how mafia organizations, long engaged in a process of adapting to the changing socio-economic contexts and the advantageous penetration of entrepreneurial sectors, have enhanced their relational capacities. They have replaced the use of violence—which is increasingly residual but never disavowed—with strategies of silent infiltration and corruptive actions. [...] Today, the mafias prefer to direct their attention to business and entrepreneurial spheres, leveraging the availability of substantial capital accumulated through traditional illegal activities[162].

Similarly, the National Anti-Mafia and Counter-Terrorism Prosecutor, Giovanni Melillo, during a hearing before the Parliamentary Commission of Inquiry into the Mafia phenomenon, explained how

[161] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia", Gennaio – Giugno 2019*, op. cit., p. 589.
[162] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia", Gennaio – Giugno 2023*, op. cit., p. 4.

a profound transformation has long been underway in the relationship between markets and businesses, on the one hand, and mafia organizations, on the other.

To understand this evolutionary process, it is essential to move beyond the prejudices that view mafias as a factor of underdevelopment in the economic system. Even the concept of mafia infiltration into the legal economy must be used cautiously, as what is occurring is, rather, a gradual and alarming process of assimilation between parts of the structures managing economic circuits and the more sophisticated components of mafia organizations[163].

Mafia organizations are not merely an expression of a segment of society characterized by a weak and underdeveloped economic fabric. Instead, they are entities that engage in processes of profitable wealth accumulation and consequent speculative expansion. Therefore, it can be said that these criminal organizations do not merely represent a factor of oppression of legal markets but also function as an element that sustains financial processes and fosters relationships with the business system, even beyond Italian borders.

For this to be possible, it follows that there are

> significant transformations within criminal organizations. […] An organization aiming to enter sectors such as financial services, insurance, labor market intermediation, consulting, logistics, or commercial distribution knows that it must integrate into complex systems. This necessitates mitigating the rigid structural profiles and cultural homogeneity typical of their original configurations. They must adopt more flexible models, which are also better shielded from the risks of judicial repression. At the same time, the adoption of these more agile and flexible organizational models within criminal groups not only multiplies opportunities for illicit enrichment but also expands the schemes of collaboration needed for a mafia organization to reinvest its illicit profits. All this underscores the intrinsic and inextinguishable connection between the world of organized crime and the business world—a relationship that can, of course, take on diverse forms[164].

Building on the last statement cited, it is worth focusing attention on the relationships that form between criminal organizations, as described, and entrepreneurial components. A key aspect of the transformation process analyzed is the residual presence of relational schemes characterized by mafia intimidation on one side and victimized entrepreneurs on the other. Far more frequently, these relationships are defined as an exchange of mutual benefits[165].

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[163] Commissione parlamentare di inchiesta sul fenomeno delle mafie e sulle altre associazioni criminali, anche straniere, XIX Legislatura, *Resoconto stenografico, Audizione n. 2, Seduta di mercoledì 21 giugno 2023*, available at: <https://www.camera.it/leg19/1364?id_commissione=24&annomese=202306&view=filtered_scheda_bic&shadow_organo_parlamentare=3881>, p. 6.

[164] Commissione parlamentare di inchiesta sul fenomeno delle mafie e sulle altre associazioni criminali, anche straniere, XIX Legislatura, *Resoconto stenografico, Audizione n. 2, Seduta di mercoledì 21 giugno 2023*, op. cit., pp. 6-7.

[165] For further insight on the topic, see S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., pp. 146-166.

The analysis of the mafia phenomenon as a whole must necessarily include its manifestation within the specific sector of the waste management cycle. Indeed, this dynamic has already emerged repeatedly throughout this discussion, particularly given that the offenses under investigation qualify as corporate crimes.

Waste management represents a field of public interest and an integral part of the legal economy. In this sector, the role played by mafias, although initially developed as an illegal service to meet the demand of legitimate operators, quickly revealed the vast business opportunities it entailed and the strategic centrality it allowed in terms of territorial control and influence over a critical portion of the market. This is even more relevant considering societal evolutions that have driven investments in ecological transition, the realization of a circular economy, and the race to secure Critical Raw Materials.

To penetrate this lucrative business, mafia organizations have leveraged their most advanced entrepreneurial components, blending in, assimilating, and forging connections with other sector operators.

As if that were not enough, the modus operandi of the illicit waste cycle, refined and structured over the years, has proven to be adaptable to any territorial context and the evolution of waste management techniques. Furthermore, it is now being replicated independently by individuals with no formal criminal status.

Having clarified the foundational concepts necessary for understanding the phenomenon of ecomafie within the waste cycle, it is now possible to analyze its most recent manifestations and the role played by mafia organizations therein.

Firstly, as already highlighted in the analysis of the criminal phenomenology outlined above, crimes related to waste management—originally confined to Southern Italy, traditionally characterized as territories under mafia influence and control—have subsequently spread to Central and Northern Italy and beyond national borders.

In this regard:

> The counteraction activities carried out by the Direzione Investigativa Antimafia in recent years confirm the strong interest of mafia organizations in the business generated by environmental crimes, particularly in the waste sector. This criminal field, in addition to ensuring high profitability, demonstrates a modus operandi no longer confined to Southern regions but almost always replicable regardless of the territorial context in which it operates. [...] For this reason, based on the investigative know-how developed over time and considering the high level of regulatory technicality within which it

> operates, the counteraction methodologies adopted undoubtedly align with those applied in the broader fight against organized crime[166].

Proceeding in an orderly manner, the 'Ndrangheta plays a central role in the illicit waste business, making this sector one of the most profitable for the organization, even in non-traditional territories.

This criminal syndicate has long expanded beyond its original Calabrian territory, demonstrating remarkable skill in operating and establishing itself in any context, with a particular affinity for economic, financial, and entrepreneurial sectors[167].

Nando Dalla Chiesa refers to this as a true colonization capacity, noting that among other mafia organizations, the 'Ndrangheta has uniquely succeeded in replicating, outside its traditional territories, dynamics of territorial control and influence over social, economic, political, and administrative life[168].

> The clans' ability to adapt to different locations and times (and thus to socio-economic contexts distinct from their origin) makes the 'Ndrangheta competitive in markets outside its regional boundaries. In illegal contexts, it boasts 'authority and reliability', while also managing to expand into legal markets through a dense network of collusion. At the same time, the organization exhibits a high regenerative capacity, periodically producing a new criminal generation capable of taking up the baton and advancing a more sophisticated concept of mafia entrepreneurship[169].

The body of knowledge acquired through law enforcement investigations portrays a mafia that remains a dominant force in international drug trafficking while simultaneously expanding its interests by exploiting sectors of significant social impact—those central to the economy, administrative management, and the country's financial systems. Among these, the disposal of municipal solid waste and special waste has always been a pivotal area.

This dynamic has manifested with particular intensity in the Lombardy region, especially in the province of Milan.

By replicating the model of interconnection between the cement and earth-moving sectors and the waste management cycle, the 'Ndrangheta effectively established an oligopoly of companies operating monopolistically in these fields within the province of Milan, particularly during the years 2008–2010.

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[166] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., p. 131.
[167] Commissione parlamentare di inchiesta sul fenomeno delle mafie e sulle altre associazioni criminali, anche straniere, XIX Legislatura, *Resoconto stenografico, Audizione n. 2, Seduta di mercoledì 21 giugno 2023,* op. cit., p. 19.
[168] N. dalla Chiesa, *Passaggio al Nord. La colonizzazione mafiosa*, Torino: Edizioni Gruppo Abele, 2016.
[169] Commissione parlamentare di inchiesta sul fenomeno delle mafie e sulle altre associazioni criminali, anche straniere, XIX Legislatura, *Resoconto stenografico, Audizione n. 2, Seduta di mercoledì 21 giugno 2023,* cit., p. 21.

Specifically, the Calabrian clans have restructured the logistics of the waste management supply chain by shortening its route. Instead of following the traditional North-South trajectory, waste disposal now remains confined within the region where the waste is produced. This criminal strategy has been made possible through the connection between the construction and waste management cycles, whereby waste is disposed of by burying it in numerous construction sites controlled by the clans.

This practice carried out in non-traditional territories, echoes the methods previously employed by the Camorra in Campania; however, it differs in a fundamental respect. The Camorra adopted a form of mediation with sector operators, collaborating to pursue the common goal of profit. By contrast, the 'Ndrangheta opted for a more invasive approach to managing relationships, involving direct infiltration into construction companies to manipulate their operations in favor of illegal waste disposal practices.

This unfolds according to a standard pattern: the clans identify a company in financial distress and offer liquidity to support it. However, those who present themselves as benefactors soon reveal their true intentions, forcing the entrepreneur out of the business and redirecting its activities toward illicit ends[170].

An illustrative example of the dynamics described above is the case of Perego, a construction company based in Cassago Brianza, which had been one of the most active firms in the construction sector in Lombardy. At a certain point, however, Perego faced a severe financial crisis, making the economic capital offered by the 'Ndrangheta appear to be the best possible solution.

> When mafia capital enters Perego, the company does secure contracts for significant projects; but simultaneously, people without roles start being hired, union activities are banned, and trucks begin being used to transport toxic waste. Within a month, everything has already changed[171].

To understand the scale of the business orchestrated by the criminal organization, the statements of a former employee of the company can be considered:

> According to the witness, the excavations carried out by Perego—which, it should be noted, worked on construction sites for significant public works—were filled with substances known to be polluting and hazardous, such as asbestos. [...] Specifically, investigations conducted on the forms used by the company for transporting demolition waste to facilities that were supposed to receive the materials for disposal revealed that the waste (produced or collected from various sites, primarily in Lombardy) had actually been diverted to Perego, which then reused it in various open construction sites, resulting

[170] L. Bonzanni, *Ecomafie, oggi: l'inversione della rotta dei rifiuti illeciti*, op. cit., pp. 10-11.
[171] N. dalla Chiesa, *L'impresa mafiosa. Tra capitalismo violento e controllo sociale*, Milano: Cavallotti University Press, 2012, p. 72.

> in the repeated commission of crimes such as falsification of public documents and waste trafficking[172].

As a result, from the moment the Calabrian clan entered its corporate structure, Perego engaged in organized activities for the illegal trafficking of waste. This operation not only involved the illicit disposal of its waste but also included accepting waste from other companies and arranging its final destination within its construction sites.

Continuing the analysis, more recently, authorities tasked with combating criminal offenses have identified additional emerging trends in the waste management business. The Deputy Chief Prosecutor at the Milan Tribunal, Alessandra Dolci, testified before the Parliamentary Commission in 2020, explaining that, starting with the investigation named "Feudo", it became evident that illegal activities related to the waste cycle can be categorized into two distinct types.

The first type involves fully illegal activities, consisting of the management of waste originating from the Campania region, which is stored in abandoned warehouses and subsequently set on fire. The second type pertains to the operations of companies that hold regular authorizations for waste management and treatment. These companies, under their lawful status, attract the interest of the Calabrian organized crime syndicates, which take control of them following a previously examined pattern.

These businesses, while ostensibly operating in compliance with regulations, may face periods of economic hardship due to liquidity shortages or insufficient infrastructure. Such circumstances represent the turning point that enables criminal intervention.

As for the company investigated in the "Feudo" case, it had been subjected to a seizure order and was therefore unable to continue its operations.

> Following this measure issued by the judicial authority of Como, an individual linked to Calabrian criminal families intervened, offering to resolve the problems of the entrepreneur in question. This led to illicit activities culminating in the disposal of waste in Calabria, specifically in the Gizzeria area of Lamezia Terme, at unauthorized quarries[173].

Particularly noteworthy is the emergence of yet another shift in the waste routes exploited by criminal organizations. Previously identified routes include North-South, North-North, and now also South-North (Campania-Lombardy). Moreover, a route has been observed whereby waste is formally

[172]Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti, *Relazione territoriale sulle attività illecite connesse al ciclo dei rifiuti nella regione Lombardia*, XVI Legislatura, approvata dalla Commissione nella seduta del 12 dicembre 2012, Doc. XXIII, n. 13, available at: <https://documenti.camera.it/_dati/leg16/lavori/documentiparlamentari/IndiceETesti/023/013/INTERO.pdf>, pp. 96-97.
[173] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti su illeciti ambientali ad esse correlati, XVIII Legislatura, op. cit., p. 4.

transported from Campania to Lombardy, only to be unlawfully disposed of in Calabria, following a South-North-South trajectory.

In this latter case, it may occur that companies holding regular authorizations for waste management find themselves overwhelmed by excessive workload. Lacking the necessary facilities to process all waste, they may choose to engage in unlawful behavior, "benefiting" from the services offered by criminal organizations[174].

The analysis above provides a comprehensive understanding of the previously mentioned ability of criminal associations to adapt their modus operandi to the specific needs arising in individual cases.

Even more recently, an investigation by the Milan Anti-Mafia District Directorate (DDA) in April 2024 led to the arrest of fourteen individuals connected to the Piromalli clan of Gioia Tauro. They were charged with mafia association, extortion, robbery, fraudulent transfer of assets, and illegal waste trafficking.

The precautionary measures order, as reported by Legambiente, highlights the criminal group's operations, led by Salvatore Giacobbe, in various economic sectors. Specifically, Giacobbe, after being released from prison in 2019, reportedly revived his criminal activities by strategically exploiting businesses to expand into more profitable economic ventures, with illegal waste trafficking emerging as a central focus.

This investigation also shed light on new operational strategies employed by 'Ndrangheta clans in non-traditional territories.

> The 'Ndrangheta always thinks big to ensure its survival and growth. It no longer limits itself to the so-called 'locali'[175] or the 'strictly territorial distribution of illicit trades,' but instead operates based on 'functional competencies.' When necessary, as in the case of waste, it does not hesitate to engage with top experts in the field, such as the Casalesi clan[176].

In practice, the criminal organization operated through two companies, registered under the names of nominee owners and holding the necessary permits for waste transportation and management. These companies were used to acquire large quantities of waste, both hazardous and non-hazardous.

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[174] Ibid.

[175] "*The 'Ndrangheta is hierarchically organized, with the 'Provincia' or 'Crimine' at its apex, which oversees the so-called 'mandamenti' in the province of Reggio Calabria. These 'mandamenti' cover three geographically identifiable macro-areas: the 'Ionian,' 'Tyrrhenian,' and 'Central' zones, within which the so-called 'locali' and 'ndrine' operate, as they do in the other provinces of Calabria and the regions where they project their influence*", Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, "*Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia", Gennaio – Giugno 2023,* op. cit., p. 19.

[176] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., p. 209.

The transportation of materials was carried out using vehicles owned by one of the two companies or with the collaboration of small transport businesses, which in most cases were complicit. The waste was subsequently dumped in unauthorized sites[177].

The Lombardy region is not the only area affected by the presence of the 'Ndrangheta. For example, reference can be made to the Lazio region, where first-instance judgments no. 37240/2022 RGNR and no. 34731/2022 RG GIP (*Giudice delle Indagini Preliminari* – Judge for Preliminary Investigations), issued by the Rome Tribunal on 23 February 2023, confirmed the existence of a 'locale' of the 'Ndrangheta operating in the area.

This criminal group gained control over extensive territories along the southern coast of Rome. Its primary activities included managing international drug trafficking operations and infiltrating the local economic and productive fabric.

Regarding the latter aspect, the criminal organization attempted to influence public administration processes to secure the awarding of strategic contracts, such as waste management services[178].

Additionally, the waste management sector remains a critical focus for the 'Ndrangheta in its traditional territory of Calabria.

This is evidenced by the "Glicine-Acheronte" maxi-investigation, which led to the arrest of 43 individuals in June 2023. They were suspected of participating in a business committee founded on a widespread patronage system aimed at securing public contracts, including those for waste management.

Several entrepreneurs operating in the waste sector were implicated in this scheme.

> What alerted the antimafia authorities was the entire management of the waste cycle in Calabria and the alleged unjust profits obtained through a 'system' that reportedly enabled a de facto monopoly in waste management, disposal, and transportation. According to the prosecution, waste was allegedly processed by mechanical-biological treatment (MBT) plants in such a way as to be reclassified with EWC (European Waste Catalogue) codes compatible with the landfill under investigation. This occurred in the absence of alternative facilities and a virtuous integrated cycle based on separate waste collection". Furthermore, "it was allegedly the entrepreneurs and their managers under investigation who dictated 'the rules to regional officials and politicians,' who acted according to their directives, rather than the other way around, despite the fact that this involves an essential public service[179].

[177] Ibid.
[178] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia", Gennaio – Giugno 2023*, op. cit., p. 153.
[179] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 210-211.

Also noteworthy is the outcome of the trial conducted under summary proceedings in the "Mala Pigna" case. The trial resulted in a conviction for six defendants, either members or associates of the Piromalli clan, for crimes including mafia association, environmental disaster, illegal waste trafficking, fictitious asset registration, extortion, and receiving stolen goods, with sentences totaling over 30 years of imprisonment[180].

Finally, particularly noteworthy for the interconnection of the interests involved is the "Petrolmafie" operation conducted by the Guardia di Finanza of Catanzaro, which led to the conviction of 18 defendants by the Catanzaro Tribunal on 5 October 2022.

The trial specifically confirmed the operational involvement of the Mancuso clan in the trade of carbure-lubricants and in controlling public and private construction projects. This was achieved through the inclusion of complicit or colluding companies engaged in construction, waste disposal, and fuel distribution.

Additionally, the criminal scheme also implicated entrepreneurs from Naples, Catania, and Reggio Calabria, who were found to be involved in the activities of criminal organizations from their respective territories. These included Camorra clans such as the Casalesi and Moccia, as well as the Catanian clans Mazzei and Pillera[181].

Continuing, it is not only the 'Ndrangheta that intervenes in the waste management sector, although, as previously explained, its focus on this cycle is particularly significant. This explains the extensive attention devoted to it in the investigation.

Another prominent role is played by the Camorra, for which the waste sector has always been one of the areas of greatest interest and activity. In particular, investigative findings by the DIA report how Camorra clans maintain a hegemonic position in the management of these materials within their traditional territories.

For completeness, it is important to note that the Camorra

> actually consists of a plurality of criminal manifestations characterized by heterogeneity due to various historical, economic, and social factors that have influenced its territories of origin over time. [...] The provinces of Naples and Caserta remain areas of the highest and most significant mafia density. This is where the major Camorra cartels and the most structured criminal groups are concentrated. In addition to managing all illicit activities,

[180] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia", Gennaio – Giugno 2023*, op. cit., p. 71.
[181] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Luglio – Dicembre 2022*, pp. 53-55, available at: https://direzioneinvestigativaantimafia.interno.gov.it/wp-content/uploads/2023/09/DIA_secondo_semestre_2022Rpdf.pdf.

> they have gradually evolved into the so-called 'mafia enterprises,' becoming both competitive and highly attractive in various sectors of the legal economy[182].

Moreover, these more developed criminal groups have progressively expanded their economic activities beyond the Campania region, including territories outside national borders. Specifically, with regard to the Casalesi clan, judicial findings have confirmed its presence in various regions of Italy, primarily in Veneto and Emilia-Romagna, as well as abroad[183].

As for the recent involvement of the Camorra in the waste management sector, the significant investigation known as "*Oro Verde*", concerning the trade of used vegetable oils, has already been examined.

By way of example, the case involving a company awarded the contract for the collection of solid urban waste in several municipalities in the province of Caserta can be cited. This company was banned in January 2021 by the Prefect of Naples. The same Prefect, on 9 January 2023, rejected the company's application for inclusion in the list of suppliers, service providers, and contractors not subject to mafia infiltration attempts (the so-called White List), according to Article 1, paragraph 52, of Law no. 190/2012. These measures followed the determination of the company's proximity to individuals linked to organized crime, specifically the Schiavone clan.

This criminal faction has been responsible for numerous extortion activities targeting supermarkets, construction sites, and companies engaged in waste collection and disposal services[184].

Also significant is the final asset forfeiture ordered in May 2023 by the Supreme Court of Cassation against a businessman involved in the waste management cycle. The measure resulted in the seizure of five companies operating in the construction, waste collection and disposal, and management of commercial areas and activities, as well as seven properties, with a total value of approximately 5 million euros.

Specifically, the businessman was found to be colluding with Camorra criminal organizations operating in the Mondragone area, in the province of Caserta. He had already been convicted in 2010 for external participation in a mafia association, as the business representative of the Camorra clan, for which he managed the waste business[185].

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[182] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Gennaio – Giugno 2023*, op. cit., pp. 27-28.
[183] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Luglio – Dicembre 2022*, op. cit., p. 155.
[184] Ibid., pp. 154-155.
[185] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 212.

About non-traditional territories, the Prefect of Padua issued an interdiction order on 29 May 2023 against a company engaged in the collection, transportation, and disposal of waste. The measure was justified based on documentation indicating commercial relationships with businesses subject to anti-mafia interdiction orders issued by the Prefecture of Naples. Furthermore, the presence of employees with connections to the Falanga clan of Torre del Greco, in the province of Naples, was identified[186].

Another non-traditional territory where the Camorra exerts significant influence and manages its operations is Tuscany. In this region, investigations by the DIA have confirmed that one of the main businesses pursued by the clans is illegal waste trafficking and disposal[187].

These cases exemplify the Camorra's ongoing interest in the waste sector, ranging from urban solid waste to special waste, from traditional territories to newly expanded areas, and even extending to the most innovative sectors of material treatment essential for the ecological transition.

Also deserving of attention is the situation in Sicily, where multiple mafia-like organizations operate. In the Sicily region, the presence of Cosa Nostra is evident; however, it is still seeking leadership, which has not been re-established since the death of Salvatore Riina in 2017.

Equally notable is the Stidda, which controls the areas of Caltanissetta, Agrigento, and Ragusa. It is characterized by a horizontal structure comprising autonomous groups. Additionally, in the Catania area, the presence of numerous criminal consortia has been identified, some of which are branches of Cosa Nostra, while others are not directly linked to it but share its mafia-like nature.

In general, regarding the areas of interest of Sicilian organized crime groups:

> Judicial activities highlight the preference of Cosa Nostra and other Sicilian mafia organizations to infiltrate business and entrepreneurial sectors where they can invest the substantial illicit capital at their disposal. Beyond traditional forms of subjugation and territorial control, the period under review has continued to show a pronounced tendency to permeate the socioeconomic fabric and to infiltrate and 'control' local political-administrative structures[188].

What has been outlined regarding the infiltration and control of political administrative bodies by criminal consortia is particularly evident in the waste management cycle of the Sicilian region. Indeed, the Parliamentary Commission of Inquiry into the Waste Cycle of the XVIII Legislature, in its final report, observed:

> The management of the integrated waste cycle in Sicily, and the vicious circle of inactivity, cannot be attributed solely to mere managerial and/or administrative

[186] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *"Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Gennaio – Giugno 2023"*, op. cit., p. 317.
[187] Ibid., p. 302.
[188] Ibid., pp. 25-26.

> incompetence. Instead, it must be concretely linked to what can be defined as an unhealthy intertwining of poor management, political incapacity—both at the regional and local levels—collusion, and, in some cases, collaboration between public administration and organized crime[189].

This is further corroborated by statements made by the Prosecutor of Catania, Carmelo Zuccaro, to the Parliamentary Anti-Mafia Commission in June 2022. He stated that mafia associations directly or indirectly control almost all companies involved in waste collection in Eastern Sicily[190].

Similarly, in the ATO3 (Optimal Territorial Area 3) of Messina, the infiltration of a criminal organization engaged in numerous environmental crimes was identified. Among these, the illegal trafficking of waste was confirmed, partly carried out through the unlawful disposal of leachate by discharging it into a wastewater treatment plant pipeline.

The organization, in this case as well, employed its usual modus operandi, including the falsification of Single Environmental Declaration Forms (MUD), transport documents, waste registers, and the manipulation of EER codes (European Waste Codes). Additionally, irregularities were detected in the procedures for issuing legally required permits by administrative bodies[191].

Moreover, an operation conducted by the Guardia di Finanza in the provinces of Palermo and Agrigento in November 2022 uncovered serious corruption incidents involving entrepreneurs, politicians, and mafia members. These activities aimed to influence the operations of bureaucratic and administrative structures. Specifically, a regional official from Sicily and several entrepreneurs in the waste management sector were implicated. Their relationships were driven by the intention to manipulate, in favor of the entrepreneurs, administrative procedures handled by the Regional Waste Department.

Furthermore, the investigation examined is a continuation of the "Megawatt" operation carried out by the DIA in Trapani in 2019, which uncovered a holding company operating in the renewable energy sector. This investigation involved an entrepreneur known as the "King of Wind Energy", who was found to have connections with Messina Denaro[192].

[189] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., p. 160.
[190] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 212.
[191] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., p. 164.
[192] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Luglio – Dicembre 2022*, op. cit., pp. 83-84.

The analysis of several operations conducted in Sicily in recent years demonstrates how the sector under examination is also considered central by Sicilian mafia organizations and how their involvement has contributed to the inefficiency of the integrated waste cycle.

To understand the gravity of the situation, it is sufficient to note that, regarding wastewater treatment, eight out of ten urban agglomerations in Sicily are subject to infringement proceedings by the European Union for non-compliance with Directive 91/271/EEC.[193]

Concerning the illegal management of waste, troubling information also emerges from the Apulian region.

First, regarding the presence of mafia-like criminal organizations in this area, a continuously evolving scenario is observed. It primarily involves the operations of the Bari Camorra, the Foggian Mafias, and the Sacra Corona Unita. However, these distinct groups have been found to collaborate in pursuing shared illicit interests[194].

In the waste management sector, the province of Foggia stands out. In the Capitanata area, particularly in the Basso Tavoliere, a significant surge in criminal activity has been detected. This territory is characterized by vast agricultural lands and its proximity to Campania, making it an important hub for the execution of illegal activities by the main Foggian mafia groups, often in collaboration with extra-regional clans, in the waste sector.

The most coveted area for the clans is the district of the *Cinque Reali Siti*—Orta Nova, Ordona, Carapelle, Stornara, and Stornarella—due to its strong economic development and extensive agricultural lands, which are often used for waste dumping and disposal[195].

As evidence of the aforementioned points, the presence of the Masciavè family, linked to the Cerignola criminal network, has been confirmed in the Basso Tavoliere. This family is involved in illegal waste trafficking activities.

Another criminal group operating in the sector is the Moretti family from the Foggian criminal organization. This group was targeted in the "Jackpot" operation conducted by the Guardia di Finanza of Foggia on 20 March 2023. The investigation led to the issuance of precautionary measures against 13 individuals charged with conspiracy to commit fraud in the hydrocarbons sector[196].

[193] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, p. 161.
[194] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Gennaio – Giugno 2023*, op. cit., p. 33.
[195] Ibid., p. 213.
[196] Ibid., p. 231.

To complete the analysis comprehensively, it is important to also consider foreign mafias in Italy and their potential interest in the waste management business.

In this regard, the involvement of Chinese criminal organizations has emerged. Specifically:

> Chinese criminal groups in Italy are structured according to essentially hierarchical models, primarily centered on familial and solidaristic relationships. These organizations are characterized by a high degree of impermeability, making them resistant to external contamination or collaboration. Functional agreements with Italian criminal organizations or the establishment of multi-ethnic consortia are rarely observed[197].

Investigative activities by the DIA have confirmed the interests of Chinese criminal groups in illegal waste trafficking, particularly in carrying out international trafficking operations abroad.

In conclusion, the investigation outlined thus far presents a picture in which mafias operating across the national territory show a strong interest in the waste management cycle. The involvement of these organizations in the lucrative business of waste has remained steadfast since its inception in the 1980s up to the present day. Rather, a phenomenological evolution is observed, as highlighted earlier. No longer limited to transportation, illegal disposal, and infiltration in public contracts for urban solid waste management, their activities now extend to borderline operations that are increasingly difficult to uncover and consequently to prosecute judicially.

> By following the movements of companies that appear to comply with regulations, investigators first uncover unsuspecting figureheads, then wives, children, and relatives of high-ranking mafia members. It takes years of investigations to reach their doorstep, during which the trails left by trafficked waste are often convoluted and difficult to follow. In this sector, mafias tend to blend in until they 'disappear' within companies that appear to operate legally. This is evidenced by the growing number of antimafia interdiction measures in this sector as well. [...] The distinction between right and wrong thus tends to blur, making it increasingly challenging for investigators to track their developments[198].

At this point, if one were to investigate the reasons behind such a strong interest in this sector, reference must inevitably be made to its economic value. Each year in Italy, 200 million tons of waste are produced, according to data published by ISPRA, and the management of these materials generates a turnover exceeding 23 billion euros.

Moreover, it should be noted that these are not illegal products. Compared to drug trafficking, which remains the most profitable business for mafias, the management of waste does not involve procuring or handling entirely illegal materials, with all the inherent difficulties this entails. In contrast, waste consists of byproducts that are naturally and continuously generated by the entire

[197] Relazione del Ministro dell'Interno al Parlamento, Direzione Investigativa Antimafia, *Attività svolta e risultati conseguiti dalla Direzione Investigativa Antimafia, Gennaio – Giugno 2023*, op. cit., p. 51.
[198] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., p. 213.

community and must always, by necessity, be dealt with. From the perspective of the mafia criminal, this is perceived as a constant profit opportunity that, moreover, carries far fewer risks compared to drug trafficking. These enormous and illicit profits are, furthermore, reinvested into the legal economy[199].

2.5. The New Players in the Illegal Waste Cycle.

Throughout this discussion, reference has often been made to the behavior of certain entrepreneurial actors who appear to have emancipated themselves from the services offered by mafia consortia in the context of waste management.

As examined earlier, the sector remains strongly controlled by mafias, as it represents an enormous source of income and serves as a strategic market segment for expanding their control over territory, as well as economic and administrative state functions.

However, considering its economic nature—here understood as cost savings in light of high management expenses and a lack of suitable facilities for waste treatment—it remains an area of significant interest for the business world.

Indeed, the origin of this phenomenon can be traced back to the industrial sector's need to reduce the economic burden of managing production waste.

Furthermore, those engaging in illegal waste management activities achieve cost savings that enable them to exert overwhelming and unfair competition against those who bear the legally established costs.

It is precisely from this starting point that a profitable business has emerged, which has always involved mafias but, naturally, also entrepreneurs, either as beneficiaries of the services or as active participants in criminal schemes.

Subsequently, investigations in this sector have also revealed how, over the years, certain entrepreneurial figures have emerged who independently engage in illegal waste management activities, without relying on the criminal logistics of mafia consortia. In this sense, it is provocatively appropriate to refer to new players, namely those economic actors who have learned to operate independently, without seeking external assistance.

This represents a case of

[199] Ibid., p. 214.

> endogenous deviance, in which a company that was originally legal systematically resorts to illicit practices without any (criminal) external pressures but rather as a result of decisions made autonomously by its management[200].

It is crucial to focus on this point, as it underscores how the waste management sector is marked by a multiplicity of interests, all driven by a profit-oriented logic and indifferent to the immeasurable harm inflicted on the environment and human health.

Throughout the analysis outlined thus far, cases of crimes related to waste management have already been examined where no connection to mafia consortia was evident. In particular, however, the autonomous role of the entrepreneurial sector in the waste management cycle has emerged in the phenomenon of fires at waste management facilities, which has posed a significant concern for Italy during the years 2017–2021.

The issue of fires at waste management facilities is a nationwide phenomenon that, following a thorough investigation by the Parliamentary Commissions of Inquiry into the Waste Cycle, has revealed certain distinctive characteristics.

First, there is a close correlation between fire incidents and the failure to complete the waste management cycle. Second, an inverse geographical pattern compared to the past has been observed, with a flow of waste moving from the South to the North. Finally, while it has not been possible to identify a single explanation for these incidents, some common factors have been detected: lack of surveillance and control at facilities; structural fragility of plants; and waste overloading. These factors have led to the belief that these were intentional "disposal fires"[201].

Legambiente has documented fires at waste treatment, disposal, and recovery facilities across Italy from 1 January 2013 to 30 April 2024, reporting the following numbers: 537 in the North; 334 in the Center; 395 in the South; and 265 in the Islands.

Nevertheless, there has been a decline in these incidents after 2021 (220 fires), dropping to 122 in 2022 and 74 in 2023[202].

This point is further supported by the following statement:

> The information provided by judicial authorities and judicial police does not support the reconstruction of the phenomenon of fires at waste treatment facilities or waste fires as the result of a 'strategic' decision by criminal organizations. It is a non-unified

[200] L. Bonzanni, *Ecomafie, oggi: l'inversione della rotta dei rifiuti illeciti*, op. cit., p. 12.
[201] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati. *Relazione sull'evoluzione del fenomeno degli incendi negli impianti di gestione di rifiuti.* XVIII Legislatura, approved during the session of 4 August 2021. Available at: <https://www.camera.it/leg18/1364?id_commissione=39&annomese=202108&view=filtered_scheda_bic&shadow_organo_parlamentare=3015>, p. 3.
[202] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 228-232.

> phenomenon in terms of the perpetrators of these illicit acts, but it nonetheless warrants preventive attention because it cuts across a series of issues related to the proper completion of the waste cycle, its weaknesses, and the potential for organized criminal groups to exploit these vulnerabilities[203].

Consequently, based on the findings of the investigations, it was ruled out that this phenomenon could be attributed to a deliberate plan by mafia organizations. Instead, it was discovered to be the tip of the iceberg concerning alarming illegal waste trafficking carried out by 'legal' operators.

The investigative deep dive revealed that, in addition to mafias, unscrupulous entrepreneurs also play a significant role in the waste cycle as economic agents within the sector. These individuals first purchase large quantities of waste, sometimes at prices that deviate significantly from market rates and in violation of the permits they hold. Subsequently, they perform no treatment on the materials, instead assigning them false European Waste Codes (EWC, formerly CER) through the established practice known as *giro bolla*. Finally, to dispose of the excess waste that accumulates, they resort to arson, which allows them to avoid cleanup costs and evade potential inspections by authorities.

In connection with these illegal activities, it has been observed that these entrepreneurs actively seek out abandoned warehouses where waste can be stored. This practice enables the perpetrators to obscure the origin and traceability of the materials. The majority of these warehouses, which are repurposed for criminal purposes, have been identified in Piedmont, Lombardy, and Veneto and effectively function as illegal landfills.

To achieve these illicit purposes, perpetrators often rely on other entrepreneurs who own fully authorized facilities, using them to secure waste contracts and create the appearance of legal operations, when in fact the materials are disposed of unlawfully.

In other cases, it has emerged that fires have been used to extend states of emergency in specific national territories, thereby pressuring local public administrations to assign waste management services through direct awards or by extending existing contracts[204].

Furthermore, it has been observed that certain national and international policy decisions have indirectly contributed to fostering these criminal waste disposal strategies. In this regard, the analysis of the so-called structural factors of the waste cycle becomes relevant once again.

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[203] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, *Relazione sull'evoluzione del fenomeno degli incendi negli impianti di gestione di rifiuti*, XVIII Legislatura, op. cit., p. 166.

[204] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, *Relazione sull'evoluzione del fenomeno degli incendi negli impianti di gestione di rifiuti*, XVIII Legislatura, op. cit., pp. 157-158.

Specifically concerning the Lombardy region, particular attention must be given to the so-called *Sblocca Italia* decree of 2014. This legislative measure promoted the use of waste-to-energy plants and resulted in a significant influx of waste from southern to northern regions, where such facilities were more prevalent.

The consequence of this policy was the overburdening of the waste management system in northern Italy. Indeed, due to the inability to process all materials through waste-to-energy facilities, a backlog of waste accumulated in temporary storage sites.

In response to this crisis, some entrepreneurs allegedly resorted to setting warehouses on fire. This allowed them to eliminate waste without incurring costs, profit from the fees paid by waste producers, and, in some cases, collect insurance payouts. Additionally, this created space to accommodate new waste.

A similar situation arose following the Chinese government's 2018 ban on plastic imports, which once again caused congestion and overloading in the national waste management system[205].

From the analysis outlined above, it emerges that a series of recurring elements underpin the illegalities in the waste cycle. These include the relentless pursuit of profit and the parasitic yet simultaneously predatory exploitation of the structural factors of the sector. These structural factors consist of long-term challenges, such as reducing waste quantities and introducing appropriate facilities.

Environmental crime is adept and swift at exploiting every difficulty and gap left by authorities and the community as a whole. It applies a structured and well-tested modus operandi, regardless of the perpetrators, and adjusts its criminal routes in response to situational opportunities and circumstances.

> If in the past illegal activities moved from the North to the South of the country, today it is waste from the South that fuels criminal businesses centered (both geographically and as the headquarters of the consortia managing them) in the North. The unidirectional flow of interactions between formally legal entrepreneurship and criminal groups has been disrupted: now it is no longer (or rather, no longer only) entrepreneurs seeking out criminal groups, but entrepreneurs turning to other entrepreneurs. [...] Today, therefore, environmental crime is an arena, an organizational field where mafia actors and legal operators coexist and interact, surrounded by a diverse network of technicians, public officials, and local administrators[206].

[205] L. Bonzanni, *Ecomafie, oggi: l'inversione della rotta dei rifiuti illeciti*, op. cit., pp. 13-15.
[206] Ibid., p. 16.

2.6. The Global Routes of Waste Trafficking

The analysis of the phenomenology of the illegal waste cycle must necessarily include the international dimension of environmental crime, which is not confined within the borders of individual states.

In outlining the investigative methodology, it was specified that the research perspective is national, and aimed at examining the phenomenon within the territory of the Italian State. That said, to fully understand the extent of the phenomenon, it is essential to consider that waste-related crimes, particularly the trafficking of these materials, may also involve exchanges with actors located in foreign states. Therefore, while maintaining the perspective adopted thus far, it is appropriate to focus on waste trafficking in which Italy acts as either an exporting or importing country.

This aspect should be contextualized and interpreted in light of the broader concept of market globalization. Waste, like other products, has economic value and can therefore be the subject of commercial transactions on a global scale. However, unlike other materials, waste management is an activity of public interest with significant consequences for the surrounding environment and human health.

The intrinsic importance of waste treatment has led to the gradual adoption of specific regulations on the matter by various countries worldwide, which naturally differ based on the socioeconomic development stage of the respective communities.

In this context, criminal organizations exploit the disparities in regulations across countries, identifying the most favorable destinations for waste based on where the least restrictive—and therefore economically advantageous—regulations exist. This approach aligns with the principles of supply and demand in commercial exchanges, whereby efforts are made to minimize costs to achieve the highest possible profit. This reaffirms the economic nature of crimes related to waste[207].

This creates the phenomenon of environmental dumping previously mentioned, whereby commercial operators from more developed countries—both in terms of production and environmental legislation—take advantage of the lack of adequate regulation and customs controls in less developed countries. In practice, waste is sold abroad at a lower price than that mandated by domestic regulations, thereby cutting costs and gaining a competitive edge in the market[208].

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[207] EUROPOL. *EU SOCTA 2021 - Serious and organized crime threat assessment, A corrupting influence: the infiltration and undermining of Europe's economy and society by organized crime*, available at: <https://www.europol.europa.eu/cms/sites/default/files/documents/socta2021_1.pdf>, p. 54.

[208] M. Palmisano, *Il traffico illecito di rifiuti nel Mediterraneo: fenomenologie e strumenti di contrasto*. In *Contemporary Criminal Law*, (2018) n. 1, available at: <https://archiviodpc.dirittopenaleuomo.org/d/6056-il-traffico-illecito-di-rifiuti-nel-mediterraneo-fenomenologie-e-strumenti-di-contrasto>, p. 96.

Operating in this way requires a thorough understanding of the regulations in the target countries, as well as access to both material and human resources capable of operating across distinct and geographically distant territories. This underscores the dangerousness of such a phenomenon, which evidently involves transnational criminal organizations.

Indeed, it is noted that waste traffickers operating on an international scale are most successful when they can control the entire lifecycle of materials, from the source to their final destination. To achieve this goal, they typically rely on a network of formally legal commercial entities, either owned directly or registered under trusted individuals. These companies frequently change leadership and are often dissolved after brief periods of activity. Additionally, the various entities handle different stages of the waste lifecycle and are physically located in countries with diverse jurisdictions.

Finally, the execution of such a criminal scheme inevitably involves a range of associated offenses, including document fraud, financial fraud, tax evasion, corruption, money laundering, theft, and the disposal of waste resulting from the illegal production of drugs[209].

Confirming the extent of interests surrounding waste management, this form of crime ranks third among the most significant globally, according to data reported by the European Union within the framework of EMPACT (European Multidisciplinary Platform Against Criminal Threats).

Additionally, concerning the economic scale of the business, the illicit waste market in Europe generates annual revenues ranging between 4 and 15 billion euros[210].

It is worth mentioning here—though the topic will be explored in greater detail later—that national states have equipped themselves with regulatory tools to address such criminal phenomena. Foremost among these is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted in 1989 and ratified by 189 countries. This is followed by the OECD Decision (Organisation for Economic Co-operation and Development), a legally binding text governing the control of transboundary movements of waste intended for recovery operations.

Both normative frameworks have been implemented within the European Union through Regulation (EC) No. 1013/2006 on shipments of waste within Member States and between Member States and third countries. This regulation was recently repealed with the entry into force, on 20 May 2024, of the new Regulation (EU) No. 2024/1157.

[209] EUROPOL, *EU SOCTA 2021 - Serious and organized crime threat assessment, A corrupting influence: the infiltration and undermining of Europe's economy and society by organized crime*, op. cit., p. 54.
[210] Council of the European Union, *Environmental crime: how does the EU fight it?*, available at: https://www.consilium.europa.eu/en/infographics/eu-fight-environmental-crime-2018-2021/.

According to Article 1 of the new regulation, its purpose is to strengthen the protection of the environment and human health, contribute to climate neutrality, and achieve a circular economy. Additionally, it aims to meet the zero-pollution target by preventing or reducing negative impacts from waste shipments and waste treatment at shipment destinations. To this end, it establishes procedures and control regimes for waste shipments based on the origin, destination, and route of shipment, the type of waste, and the type of treatment to be applied to the waste at the destination site[211].

To understand the scale of the phenomenon, it is useful to refer to the data provided by the Italian Customs and Monopolies Agency regarding seizures of waste intended for illegal trafficking.

First, during the period from 2020 to 2023, a progressive decrease in the quantity of waste in kilograms was recorded, alongside an increase in the number of items. Specifically, the volume dropped from 7,314,202 kg in 2020 to 2,209,024 kg in 2023, while the number of items increased from 29 in 2020 to 3,385 in 2023. The economic value of the seizures was €1,990,211 in 2020 and €1,068,400 in 2023.

In 2023, 95% of the seizures involved goods intended for export. Regarding the type of waste, a decrease in plastics and metals was observed, while there was a significant increase in electrical and electronic waste (WEEE), amounting to 37.5%.

Specifically, the waste classified under the "Other" category—paper and cardboard, metal scraps, cast iron, iron or steel residues, and used tires—was predominantly destined for Pakistan and various African countries. Regarding WEEE, this waste was primarily destined for Pakistan and Japan, but also for African countries such as Ghana, Senegal, Mali, and Egypt. It is noteworthy that, concerning WEEE exports, the quantities shipped to Thailand, Singapore, and Turkey—key destinations in previous years—have decreased.

Illegal waste trafficking shipments are typically carried out by sea, with the most affected ports being those of Genoa, Ancona, Salerno, and Marina di Carrara[212].

Among the most concerning and illustrative cases of international waste trafficking is the one involving Italy and Tunisia. The case pertained to the export of waste by the company S.R.A. (Sviluppo Risorse Ambientali) based in Polla (SA), to a recovery facility located in Sousse, Tunisia, owned by SOREPLAST S.u.a.r.l.—a facility that was later discovered to be non-existent.

[211] Regulation (EU) 2024/1157 of the European Parliament and of the Council of April 11, 2024, on shipments of waste, amending Regulations (EU) No. 1257/2013 and (EU) 2020/1056 and repealing Regulation (EC) No. 1013/2006, op. cit.
[212] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 171-173.

The waste in question was classified under EWC code 191212—other waste (including mixed materials) resulting from mechanical waste treatment—and originated from the separate waste collection of several municipalities in the provinces of Salerno and Potenza.

S.R.A. falsely declared that the waste was recoverable when, in reality, it contained no recoverable components. The company shipped the waste for €48.00 per ton, plus €5.00 per ton in eco-tax, for a total of 7,900 tons, to SOREPLAST, which disposed of it in a public landfill for €6.00 per ton.

The scheme orchestrated by the two commercial entities resulted in significant economic profits for both parties. Specifically, S.R.A. achieved substantial cost savings, as disposal in Italy would have cost €205.00 per ton compared to the €48.00 charged in Tunisia. Similarly, SOREPLAST reaped significant profits from the difference between the €48.00 per ton it was paid and the €6.00 per ton it spent to dispose of the waste in a landfill.

For the described scheme to be carried out, the two companies engaged in a series of fraudulent practices.

First, they falsely identified the Tunisian authority responsible for authorizing the transboundary shipment of waste.

SOREPLAST falsified the authorization of its alleged facility, which, in reality, was not even authorized to receive waste classified under EWC code 191212. This code had been fraudulently added to the documentation.

Furthermore, the owner of the SOREPLAST facility falsely claimed the existence of equipment and machinery suitable for waste recovery at the site, which in fact did not exist. There was also complicity from certain Tunisian officials within the agency responsible for waste management and facility authorizations, the Agence Nationale de Gestion des Déchets (ANGED).

Finally, the Tunisian consul in Naples, who was also complicit, confirmed to the Campania region the identification of the supposed Tunisian authority responsible for authorizing the transboundary shipment of waste, which was, in fact, not the appropriate entity.

The criminal network falsely identified the competent authority as API Sousse (National Agency for Industrial Promotion), instead of the actual authority, the General Directorate for the Environment and Quality of Life (DGEQV), responsible for authorizing the disposal of waste imported from abroad.

All of this was made possible by the superficiality and negligence with which the officials of the Campania region investigated to authorize the transboundary shipment of waste. These officials relied

on the indication of the Tunisian competent authority provided by S.R.A., rather than verifying the information on the Basel Convention website, which lists all the actual competent authorities of the member states.

As a result, S.R.A. successfully shipped a significant quantity of waste to Tunisia, falsely declaring it recoverable, when in reality, it was disposed of in landfills abroad rather than in Italy, allowing the company to achieve substantial cost savings[213].

The criminal acts were committed between May 14 and July 16, 2020, involving four shipments for a total of 282 containers.

To facilitate the investigation, an Institutional Cooperation Agreement was signed in February 2022 between the Republic of Tunisia and the Campania Region. In February 2024, the first precautionary measures were issued for crimes including organized activities for the illegal trafficking of waste (Article 452-quaterdecies of the Italian Penal Code), fraudulent registration of assets (Article 512-bis of the Italian Penal Code), unauthorized waste management activities (Article 256, paragraphs 1 and 3, Legislative Decree 152/2006), and fraud in public procurement (Article 356 of the Italian Penal Code)[214].

Another case, different in its operational methods but illustrative of the ability of international waste traffickers to organize and manage multimillion-euro businesses, is the investigation known as *Black Steel*.

This large-scale operation, given its international significance, was monitored by Europol (European Union Agency for Law Enforcement Cooperation) and Eurojust (European Union Agency for Criminal Justice Cooperation). It was coordinated by the Public Prosecutor's Offices of Milan and Reggio Calabria, along with the Public Prosecutor's Office in Munich, and carried out by the Environmental Protection and Ecological Transition Unit of the Carabinieri in Milan, in collaboration with the Federal Criminal Police Office (BKA) in Munich.

The criminal network orchestrated an international illegal waste trafficking operation, primarily involving scrap metal, valued at €100,000,000. The proceeds from environmental crimes were funneled into the accounts of Italian, German, and Hungarian companies, which laundered and reinvested the funds into further activities, primarily illegal ones.

[213] Commissione parlamentare di inchiesta sulle attività illecite connesse al ciclo dei rifiuti e su illeciti ambientali ad esse correlati, XVIII Legislatura, *Relazione conclusiva sull'attività svolta nella XVIII Legislatura*, op. cit., pp. 210-212.
[214] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., pp. 233-234.

According to authorities' findings, the operational nucleus of the criminal association was a scrap recovery, processing, and trading company registered to an entrepreneur from Cutro (KR), with its legal headquarters in Milan and operational locations in Cressa (NO), Paderno Dugnano (MI), and Dairago (MI). This company, in collaboration with another firm based in Turin, repeatedly procured large quantities of undeclared scrap metal, amounting to approximately 165,000 tons. The scrap was purchased either from other companies active in scrap recovery or directly from the black market. Subsequently, the scrap metal was reintroduced into the legal economy through sales to steel mills and foundries.

In essence, the importation of these materials was simulated. They were artificially "purchased" from another company owned by the same entrepreneur from Cutro, located in Germany. In reality, the German company was entirely inactive and established solely to issue false invoices, functioning as a so-called 'paper company'. Based on the invoices issued by this entity, repeated bank transfers were made as payments for the fictitious purchases, amounting to approximately €90 million.

After simulating purchases from the German company, the scrap metal underwent, on paper only, recovery operations to be falsely classified as end of waste material and was subsequently sold to steel mills and foundries. The supposed treatments were documented through falsified declarations of conformity and altered transport documents.

The same criminal network also engaged in the illegal trafficking of special waste, including hazardous waste, by falsifying documentation. These materials were exported abroad for disposal in unauthorized landfills or facilities.

As a result of the investigations, a precautionary custody order was issued against 18 individuals deemed responsible for organizing a criminal association aimed at committing crimes, including organized activities for the illegal trafficking of waste (Articles 416 and 452-quaterdecies of the Italian Penal Code), self-laundering (Article 648-ter of the Italian Penal Code), money laundering (Article 648-bis of the Italian Penal Code), fraudulent declaration through the use of false invoices (Article 2 of Legislative Decree 74/2000), and issuance of invoices for non-existent transactions (Article 8 of Legislative Decree 74/2000)[215].

The analysis of international waste trafficking once again highlights the application of the established modus operandi previously identified, along with the ability of criminal organizations to extend their operations beyond their home state's borders.

[215] Legambiente. *Ecomafia 2023. Le storie e i numeri della criminalità ambientale in Italia.* Milano: Edizioni Ambiente, 2023, pp. 98-101.

Formally legal companies simulate lawful waste management practices, operating not only within and outside regulatory frameworks as convenient but also across different national jurisdictions. These entities are adept at seizing every profit opportunity, thereby complicating the enforcement and counteraction efforts of authorities.

2.7. The Numbers Behind the Illegal Waste Cycle

For the sake of completeness, and to conclude the investigation outlined in this chapter on the phenomenology and methodology of the illegal waste cycle, it is appropriate to present the latest quantitative data collected by the relevant authorities on the subject.

First, noteworthy is the significant increase in offenses recorded in 2023, reversing the downward trend observed the previous year. Specifically, 9,309 offenses were recorded in 2023, marking a 66% increase compared to the previous year[216]. In contrast, 2022 had seen a significant decline in offenses, with 5,606 recorded, representing a 33.8% decrease compared to 2021 (8,473 offenses)[217].

The increase observed in 2023 could be partially explained by the rise in inspections conducted (+60.8%), which led to 247 arrests (+162.8%), 10,708 complaints (+75.9%), and 2,900 seizures (+54.8%).

The only recorded decrease was in the number of administrative violations (-20%) and, consequently, administrative sanctions (-12.5%).

Regarding regions with a traditional mafia presence (Campania, Calabria, Sicily, and Apulia), a 46% increase was recorded, amounting to 4,295 offenses, along with 4,686 complaints, 99 arrests, and 1,508 seizures.

Focusing on the regions with the highest number of criminal offenses, Campania ranks first (1,859 offenses), followed by Apulia, Calabria, Sicily, Lazio, and Sardinia. In northern Italy, Lombardy leads (566 offenses), followed by Piedmont and Tuscany.

Thus, illegality in the waste cycle is notably widespread and affects both the management of urban waste and that of special waste. The economic value of this business can, in part, be estimated by examining the amount of tax evasion calculated by the Guardia di Finanza, which totaled €294 million in 2023.

Particularly important is the information collected regarding the crime of organized activities for the illegal trafficking of waste (Article 452-quaterdecies of the Italian Penal Code), as it represents the most concerning offense, typically carried out by highly structured organizations. In 2023, this

[216] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 199.
[217] Legambiente, *Ecomafia 2023. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 89.

crime was recorded 26 times, leading to 159 arrests, 46 complaints, and the involvement of 64 companies across 14 different regions. Additionally, in the first four months of 2024, nine cases have already been recorded.

Finally, noteworthy is the cumulative calculation of offenses recorded from 1997—the year Legambiente first began collecting this data—to 2023, amounting to a total of 136,320 criminal offenses[218].

The data presented paints an especially alarming picture, highlighting the need to maintain heightened vigilance over this phenomenon. As will be explored in the following chapter, legislation and enforcement tools have positively evolved; however, eco-criminals appear to remain strongly—and, in the past year, exponentially—interested in this highly lucrative illegal business.

[218] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia,* op. cit., pp. 199-208.

Chapter 3. Regulatory Framework: The Criminal Protection of the Environment

3.1. Environmental Protection as a Shared Goal

This chapter provides an overview of the regulatory frameworks designed to protect the environment. The analysis adopts a historical perspective, examining how the Italian legal system has progressively developed legislation to counteract the phenomenon under study. To this end, the chapter will first examine international and European regulatory sources that have influenced Italian legislation, including conventions to which Italy has adhered and other mandatory European frameworks.

The focus is on criminal law, as the European Community—and consequently the Italian legal system—has increasingly recognized that environmental harm constitutes such a significant threat that it necessitates the introduction of the most effective and punitive tools available within legal systems for prevention and repression.

When addressing the analysis of the criminal protection of the environment, which clearly encompasses the phenomenon of the illegal waste cycle, it is essential to bear in mind that environmental preservation cannot be effectively achieved by a single state alone. Instead, it must be a shared goal of the global community to ensure the attainment of the desired outcome.

The statement above is accurate for at least two reasons and encompasses the entire field of environmental protection, not just its criminal law aspects.

First, it is essential to consider the actions carried out by international criminal organizations or large multinational corporations, which conduct their legal, quasi-legal, or illegal activities across the territories of different states. These activities can potentially cause environmental damage that cannot be confined within national borders.

In this context, an asymmetry arises between the capacity of an individual state to prevent and/or counteract such actions and the operational abilities of these transnational entities[219]. For this reason, the effectiveness of repressive measures cannot be entrusted to a single state; rather, a collective response is desirable.

Secondly, the concept of state sovereignty and its relationship with territory must be considered. It is important to note that, over the course of societal evolution, the concept of sovereignty has undergone a parallel transformation, as is the case with all legal and social concepts, influenced by human events. However, what has remained undisputed is its connection to territory. Indeed, territory

[219] L. Cornacchia, *Diritto penale dell'ambiente. Diritto penale d'impresa e reati ecologici,* Torino: Zanichelli Editore, 2024, pp. 7-8.

is a fundamental component of the state, defined by borders that delimit the operational space of state sovereignty.

Nevertheless,

> territory is not merely a legal concept; it is a tangible reality, consisting of static natural resources, such as land and flora, and dynamic ones, such as fauna, rivers, seas, and air, which cannot be confined by imaginary lines like borders, as they are necessarily shared among different political entities[220].

In this sense, as already mentioned, environmental damage may not remain confined to the specific territory over which a state exercises its power. This inevitably entails the assumption of state responsibility, the adoption of shared tools for the preservation of natural resources, and, consequently, the limitation of national sovereignty.

An illustrative example is the second principle enshrined in the Rio Declaration on Environment and Development of 1992:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction[221].

In this regard, the International Court of Justice, in 1996, recognizing for the first time the existence of general rules of international environmental law, stated that

> general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment[222].

Furthermore, actions that harm the environment, particularly those with international repercussions, are considered by some within the scientific community to be comparable to attacks on human rights. Consequently, within the public debate, there is increasing advocacy for extending the jurisdiction of the International Criminal Court[223] to include environmental crimes, as currently, environmental harm is addressed only within the scope of war crimes under Article 8, paragraph 2, letter (b), point IV of the 1998 Rome Statute[224].

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[220] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente*, Bologna: Zanichelli, 2018, p. 9.
[221] United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, 1992, available at: https://www.isprambiente.gov.it/files/agenda21/1992-dichiarazione-rio.pdf.
[222] P. Sands, J. Peel, *Principles of International Environmental Law*, Cambridge: Cambridge University Press, 2018, p. 4.
[223] The International Criminal Court, located in The Hague, Netherlands, is the first permanent international jurisdiction. It has the authority to prosecute individuals responsible for the most serious crimes of international concern. The Statute of the International Criminal Court was adopted on July 17, 1998, at the Rome Diplomatic Conference and entered into force on July 1, 2002. There are 123 States Parties to the Statute.
[224] L. Cornacchia, *Diritto penale dell'ambiente. Diritto penale d'impresa e reati ecologici*, op. cit., pp. 7-8.

The inability to contain activities with environmental impacts within defined borders, combined with the scale of the effort required to protect the environment, has led the international community to progressively recognize the indispensability of a unified response. It is important to note from the outset that such recognition was slow to materialize and has not always been adequate.

> The most significant challenge facing the inhabitants of our planet during this century undoubtedly concerns environmental issues. Ultimately, it is necessary to preserve an ecosystem that provides suitable conditions for all forms of life interacting with humans. This goal can only be achieved through enhanced international cooperation, which must develop and extend to all scientific fields, with the continuous sharing of experiences and the results of relevant scientific and technical research[225].

To achieve such a goal, the first step is to adopt common definitions for fundamental concepts of interest, so that the resulting rules and guiding principles tend toward universality.

In this regard, the first shared notion to be established at the international level must be that of the environment itself.

In various national legal systems, legal debates have long sought to identify a definition of the environment capable of encompassing all its relevant elements, both concretely and abstractly. Within this framework, the concept typically includes both tangible assets, such as flora, fauna, natural resources, habitats, air, seas, and soil, as well as intangible assets, such as cultural heritage and the outcomes of urban and territorial planning. However, such a classification remains incomplete, as it does not consistently lead to universally accepted outcomes.

In any case, the discussion has largely focused on a fundamental and indispensable question for qualifying a shared notion of the environment. Specifically, it is first necessary to determine whether the tangible and intangible assets mentioned above should be included in the definition based on their relevance and utility to humans or whether they should be considered and protected autonomously.

> In other words, the relationship between humans and the environment must first be clarified to develop a notion of the latter that goes beyond an anthropocentric perspective and evolves toward a more accurate vision, one that some now describe, using a neologism, as naturocentric. This vision assigns intrinsic value to the environment, considering it as an entity external to the individual[226].

The idea of recognizing the environment's intrinsic value and protecting it independently of its functional relationship with humans has gradually gained traction within the public debate. However, the discussion remains ongoing.

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[225] R. Giuffrida, F. Amabili, *La tutela dell'ambiente nel diritto internazionale ed europeo.* Torino: Giappichelli Editore, 2018, p. 5.
[226] Ibid., pp. 5-6.

More specifically, in recent centuries, the mechanistic view of the human-nature relationship has predominated. This perspective essentially strips the environment of any independent significance, regarding it solely in terms of its utility to humans. Furthermore, the advent of industrialization and technological advancements has further entrenched this utilitarian perspective, evaluating the environment primarily through an economic lens.

In contrast, a more recent organicistic conception of the human-environment relationship has emerged, which is divided into a more moderate and a more radical school of thought. The former emphasizes the need for more mindful use of natural resources while maintaining a utilitarian approach. The latter, however, rejects anthropocentrism and advocates for ecocentrism, promoting the protection of the environment for its own sake, independent of its relationship with humans[227].

As previously mentioned, the discussion is ongoing, and consequently, the uncertainty surrounding the very definition of the environment also affects the legal instruments adopted for its protection.

To better understand the subject, one may refer, for example, to the context of the European Union. Indeed, given the uncertainties in this area, the European legal framework has opted not to establish a unified definition of the environment. Instead, it has focused on setting objectives to be achieved and delegated the task of implementing environmental policy to the relevant EU institutions.

Nevertheless, the prevailing international approach, albeit not without challenges, appears to favor a unified notion of the environment. This notion includes

> two complementary interpretations: that of the environment in a narrow sense, as something that surrounds and encompasses, a concept referring to the set of external conditions in which individuals develop and where plant and animal life occurs, as understood in other European languages, and that of the ecosystem, which pertains to the network of living organisms within a specific, bounded area that are interconnected[228].

The adoption of such a unified notion implies the establishment of various legal situations for individuals and public bodies. Therefore,

> it is legitimate to envisage both individual rights and a general duty of protection for so-called collective and widespread interests, a duty not tied to the satisfaction of particular interests but aimed at establishing a relationship, based on principles of equal dignity, between humans and the ecosystem considered as an entity in itself[229].

Furthermore, it must be noted that the definition provided should be interpreted following the principle of sustainable development, established at the Rio de Janeiro Conference in 1992 and collectively pursued by the international community.

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[227] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., p. 3.
[228] R. Giuffrida, F. Amabili, *La tutela dell'ambiente nel diritto internazionale ed europeo,* op. cit., p. 7.
[229] Ibid.

Following the attempt to adopt a common definition of the environment, an additional effort on a transnational level has been the establishment of shared principles aimed at preventing environmental damage, achieving equitable resource management, and fostering collective responsibility for pollution-related harm. The most significant principles, which have gradually become legally binding, include: the principle of integration, the principle of environmental impact assessment, the principle of prevention, the principle of precaution, the principle of due diligence, and the "polluter pays" principle.

In sequence, the principle of integration requires environmental protection to be considered an integral part of the development process. The principles of environmental impact assessment and prevention are aimed at averting environmental harm. The principle of precaution imposes the obligation to consider, ex-ante, the risks that may cause environmental harm, and thus, before initiating any activity. Additionally, the principle of due diligence requires diligent conduct aimed at preventing environmental pollution. Lastly, the "polluter pays" principle establishes the rule that environmental costs, corresponding to the expenses for repairing the damage caused to the environment, must be borne by those responsible for the event.

These fundamental principles were gradually developed starting from the Stockholm Conference of 1972 and the repeatedly referenced Rio de Janeiro Conference of 1992. However, it was only later that they acquired binding force through their incorporation into universal or regional treaty agreements.

About the European Community, these principles were established in the Maastricht Treaty in 1992 and subsequently formally codified in Article 191 of the Treaty on the Functioning of the European Union (TFEU)[230]. This article, consistent with the concepts outlined, states that European policy:

> shall be based on the precautionary principle and on preventive action, on the principle that environmental damage should as a priority be rectified at its source, and on the polluter pays principle[231].

What has been illustrated so far pertains to the issue of environmental protection as a whole, emphasizing the importance of providing a collective response to the safeguarding of natural resources. As explained, this goal cannot be achieved by individual operators, even when they are nation-states. It follows, therefore, that the same reasoning must apply to the most severe and aggressive acts of environmental plunder, which can be classified as environmental crimes.

[230] R. Giuffrida, F. Amabili, *La tutela dell'ambiente nel diritto internazionale ed europeo,* op. cit., pp. 5-12.
[231] Treaty on the Functioning of the European Union (TFUE), op. cit.

In this specific area, the necessity of a shared approach to combating crime—and thus mitigating its harmful consequences—is even more critical, as these represent the most dangerous manifestations of environmental harm.

In this regard, and to adopt shared definitions to facilitate international cooperation, it should be clarified from the outset that there is no universally accepted definition of environmental crime.

The United Nations and Interpol (The International Criminal Police Organization) have stated:

> Although the definition of 'environmental crime' is not universally accepted, it is most commonly understood as a collective term to describe illegal activities that harm the environment and aim to benefit individuals, groups, or companies through the exploitation, damage, trade, or theft of natural resources, including but not limited to serious crimes and transnational organized crime[232].

At the European level, Europol and the Environmental Crime Network (EnviCrimeNet) [233] emphasize that:

> Any illegal action with a negative and harmful impact on the environment can be defined as an environmental crime, including offenses involving endangered species[234].

The urgency of developing and implementing a shared framework to combat this form of illegality is heightened by the fact that it represents, in economic terms, the fourth most serious criminal threat globally. Indeed, environmental crime is growing at a rate of 5–7% per year, generating enormous annual revenues worldwide, estimated in 2016 to range between $91 billion and $258 billion[235].

3.2. Environmental Protection in International Law

In line with the analysis outlined in the previous section, regarding the importance of developing a common strategy by the international community to safeguard the environment from all activities that endanger and harm it, this section continues with an examination of international legal sources[236].

It is worth noting that, until the 1960s, no uniform and shared environmental strategy had been adopted at the international level. Instead, the regulatory landscape of the time was characterized by

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[232] United Nations Environment Programme, *The rise of environmental crime: A growing threat to natural resources peace, development and security*, 2019, available at: <https://wedocs.unep.org/20.500.11822/7662>, p. 17.

[233] EnviCrimeNet is an informal European network created to improve cooperation between law enforcement agencies and other competent authorities in the fight against environmental crimes. Its main goal is to facilitate the exchange of information and promote coordinated actions among member countries to combat offenses such as illegal waste trafficking, poaching, and illegal deforestation. The network works closely with Europol and other international organizations to tackle transnational environmental crimes, available at: https://www.envicrimenet.eu/.

[234] A. Scarcella, *La 'nuova' Direttiva 2024/1203 sulla tutela penale dell'ambiente,* in *Ambiente & Sviluppo,* (2024), n. 7, p. 488.

[235] Ibid.

[236] For an introduction to international law, see Dinah L. Shelton, Alexandre Kiss, *Guide to International Environmental Law*, Leiden, Boston: Martinus Nijhoff Publishers, 2007, pp. 1-29.

a multiplicity of fragmented sectoral rules, featuring sanctioning systems that were neither particularly punitive nor dissuasive[237].

The first indications of a, albeit gradual, environmental awareness date back to the mid-19th century. During this period, the advent of industrialization, which required an increasing use of environmental resources, led to a growing awareness of the potential consequences for the surrounding environment, particularly in terms of pollution and the depletion of flora and fauna. This was followed by the gradual adoption of national legislation and bilateral international conventions aimed at establishing an initial form of environmental protection. However, these early measures were predominantly utilitarian and economically oriented in their approach.

An example is the *Treaty between the United States and Great Britain Relating to Boundary Waters*, concluded in 1909 in Washington, aimed at regulating the management of boundary waters. The treaty also established a prohibition on the pollution of cross-border waters, a measure designed to safeguard health and property. Particularly noteworthy is the *London Convention Relative to the Preservation of Fauna and Flora in their Natural State*, which was the first to acknowledge the link between industrialization and the resulting risks of permanent harm to flora and fauna across various countries, especially in Africa. It sought to protect these by creating protected areas and national parks[238].

The establishment of the United Nations in 1946 was a crucial step towards the development of a unified international environmental law framework. From this point onward, a rational strategy for managing environmental resources was devised, connecting environmental protection with safeguarding human rights.

This was followed, in 1948, by an important international conference dedicated to environmental issues, which led to the creation of the *International Union for the Conservation of Nature and Natural Resources* (IUCN), the most significant international organization addressing environmental matters.

The gradual establishment of international regulations aimed at protecting the environment was soon accompanied by judicial decisions. A significant example in this regard is the ruling of the USA-Canada Mixed Arbitral Tribunal in the *Trail Smelter* case in 1941, which stated:

> under the principles of international law, no State has the right to use or permit the use of its territory in such a manner as to cause injury to the territory of another State or to the persons or property therein[239].

[237] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., p. 17.
[238] Ibid., pp. 12–14.
[239] Ibid., pp. 16–17.

Subsequently, in 1972, the United Nations General Assembly convened a United Nations Conference on the Human Environment, through Resolution No. 2398, intending to address the connection between environmental degradation and the deterioration of human living conditions. The conference took place in Stockholm and concluded with the adoption of an Action Plan and a Declaration of Principles on the Human Environment. The former aimed to establish a global environmental assessment program- intended to provide guidelines for the use of environmental resources through monitoring and information exchange. Conversely, the Declaration sought to outline fundamental principles of international environmental law, driven by the intention to preserve the environment for present and future generations[240]. The merit of this normative source lies in its consolidation of the most important existing principles—specifically, 26—in a single, universally applicable document[241].

Subsequently, another significant milestone in the development of cooperation for environmental protection was the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992.

The Conference concluded with the adoption of three non-binding instruments: a plan of action, *Agenda 21*; the *Rio Declaration on Environment and Development*; and the *Forest Principles*. Additionally, during this event, the opportunity was given to sign two previously negotiated conventions, namely the *Framework Convention on Climate Change* and the *Convention on Biological Diversity*.

The objective pursued during this second Conference was to enhance the level of international cooperation by adopting a series of agreements aimed at safeguarding the interests of all inhabitants of the Earth while simultaneously respecting the environment and fostering development.

In examining the actions taken by nation-states within the United Nations framework, a positive stance on the relevant issues can be observed. However, the limitation of the instruments adopted thus far lies in their form as soft law, that is, non-binding norms. Indeed, this normative approach

> on the one hand, facilitates the participation of a greater number of nations and the achievement of almost universal consensus on the recognition of a shared problem and the need to initiate forms of international cooperation. On the other hand, as it is a non-binding recommendatory tool, it proves inadequate to effectively compel participants to comply with specific standards and obligations[242].

[240] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., pp. 14–20.
[241] United Nations, *Declaration of the United Nations Conference on the Human Environment* (Stockholm Declaration), 1972, Available at: https://legal.un.org/avl/pdf/ha/dunche/dunche_ph_e.pdf.
[242] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., p. 21.

Subsequently, noteworthy is the *United Nations Framework Convention on Climate Change* (UNFCCC), whose first session was held in 1995 in Berlin. In this context, the goal of regulating the concentration of greenhouse gases, derived from the use of fossil fuels, in the atmosphere was established. To ensure the achievement of this goal, a permanent negotiating body was created. On the same topic, the *Kyoto Protocol* of 1997 is also significant, as it represents one of the most important international regulations addressing climate change. The Protocol consolidates the commitments undertaken by industrialized countries to reduce greenhouse gas emissions responsible for global warming. This Protocol was ratified by the European Union on 31 May 2002; however, it was not ratified by the United States and Australia.

More recently, in 2015, the United Nations countries convened at the 21st Conference of the Parties (COP 21) in Paris, where they adopted the *Paris Agreement*, signed by 177 countries.

This legal instrument was ratified by the European Union, as well as by the United States and China, and came into force in November 2016. The aim of the Agreement, as in previous cases, is to effectively combat climate change, setting the objective of limiting global warming to below 2°C through measures such as reducing emissions, increasing CO2 capture, and fostering international cooperation.

Particularly noteworthy is a new principle introduced by the Agreement: environmental resilience.

> In ecology, 'resilience' refers to the ability of an ecosystem, including human ecosystems such as cities, to restore its balance following an external intervention (such as human activity) that modifies the environment and depletes resources. If exploitation exceeds this regenerative capacity, it creates an ecological deficit[243].

The inclusion of this concept in the normative framework aims to caution countries about the irreversible consequences of human actions. It seeks to impose on the Agreement's parties an obligation to ensure sustainable development and, in the event of environmental harm, to guarantee its regeneration.

The analysis outlined regarding some of the main normative sources and international initiatives allows us to understand how environmental protection has progressively become a unified goal, as envisioned at the beginning of this chapter. For this reason, it can be argued that environmental policy has been gradually ceded by States, which have taken on a significant number of conventional obligations to be respected following the principle of *pacta sunt servanda*[244].

However, it is important to highlight an additional element, as

[243] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente*, op. cit., p. 24.
[244] Ibid., pp. 20–25.

> the analysis of international environmental protection instruments shows that they are characterized by a positive drive toward the goal of universalization, which is countered, however, by a certain judicial localism and, consequently, a fragmentation in the protection of the environment[245].

This situation could be mitigated, as already mentioned in the previous section, through an extension of the jurisdiction of the International Criminal Court to include environmental crimes. This would ensure not only the unification of regulations but also the assurance that such regulations are adequately enforced.

Moving forward, some of the key stages in achieving the shared international objective of environmental protection have been outlined thus far[246].

The following section will focus on international sources specifically addressing the management of waste at a transnational level and its consequent impact on the ecosystem.

> The issue of waste disposal and proper management, particularly of waste classified as hazardous, cannot be resolved solely at the national level but often requires cooperation among different countries. This is due to a heterogeneous set of factors that vary on a case-by-case basis, such as the geographical size and configuration of the territory, the development of the best techniques to enable the environmentally sound management of waste, the availability of appropriate facilities for waste disposal, the existence of a more or less extensive number of enterprises in the sector, their degree of efficiency, the level of involvement of the social base, and, last but not least, the adoption of a clear and adequate regulatory framework[247].

The first significant convention on this matter, both in terms of timing and the indispensability of its content, is the Basel Convention of 22 March 1989. This legal instrument has already been mentioned in this research when discussing the events known as "*navi dei veleni*." Indeed, the Convention regulates the transboundary movement of waste, and the need to introduce a regulatory framework for such practices became particularly evident following the discovery of illegal waste shipments from highly industrialized countries to those in the Global South.

Maintaining the need for a shared regulatory framework as the guiding thread of this analysis, it is clear that waste shipments from one country to another cannot be effectively addressed without a concerted effort to harmonize applicable regulations. In this regard, the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal* has been ratified by

[245] Ibid., p. 34.
[246] For a more comprehensive analysis of the origins of international environmental law, see P. Sands, J. Peel, *Principles of International Environmental Law*, op. cit., pp. 21-51.
[247] S. Francario, *Movimenti transfrontalieri di rifiuti pericolosi e giurisdizione amministrativa*. In *Federalismi.it Rivista di diritto pubblico italiano, comparato, europeo*, (2021), n. 16, available at: <https://www.federalismi.it/nv14/articolo-documento.cfm?Artid=45611>, p. 71.

190 countries, including the European Union, making it one of the most widely endorsed international agreements.

The Preamble of the Convention immediately establishes some key concepts pertaining to the subject matter. Indeed, the signatory Parties to the legal text declare themselves aware

> of the damage that hazardous wastes and other wastes, as well as their transboundary movements, are likely to cause to human health and the environment," "of the growing threat posed to human health and the environment by the increasing complexity and development of hazardous waste and other waste production, as well as their transboundary movements," "of the fact that the most effective way to protect human health and the environment from the dangers posed by such wastes is to minimize their production in terms of both quantity and/or potential hazard, convinced that States should take the necessary measures to ensure that the management of hazardous and other wastes, including their transboundary movements and disposal, is compatible with the protection of human health and the environment, regardless of the place where such wastes are disposed of[248].The scope of application of the Convention is specified in Article 1 in conjunction with Article 3 and concerns those wastes classified as hazardous either by the annexes of the Convention or by the national legislations of the signatory States.

The decision not to introduce a common definition of hazardous waste has led to certain practical weaknesses. Indeed, if waste is not classified as hazardous under the annexes of the Convention but solely under the legislation of the exporting or importing State, it can generally be shipped without adhering to the guarantees provided by the legal text under consideration. This was the case, for example, with plastic, which was not classified as hazardous waste by the Convention. Consequently, some economic operators from States whose legislation classified such material as hazardous shipped large quantities of this waste to States that did not regard it as hazardous, resulting in significant cost savings[249].

Moving forward, the legal framework under examination does not prohibit the movement of hazardous wastes between States. Rather, it establishes a procedure, consisting of rules and limitations, for such activities, which is based on the principle of prior informed consent by the importing States.

In this regard, a series of general obligations are set out (Article 4). First,

> Parties exercising their right to prohibit the import of hazardous wastes or other wastes for disposal shall inform the other Parties,

[248] *Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal* (Basel Convention), 22 March 1989, Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A21993A0216%2802%29.
[249] S. Francario, *Movimenti transfrontalieri di rifiuti pericolosi e giurisdizione amministrativa*, op. cit., pp. 77–78.

while conversely,

> Parties shall prohibit or shall not permit the export of hazardous wastes or other wastes to Parties which have prohibited the import of such wastes.

Moreover, to strengthen and clarify the principle of prior informed consent, it is established that

> Parties shall prohibit or shall not permit the export of hazardous wastes or other wastes if the importing State has not given its written express consent to the import of such wastes, unless that importing State has prohibited the import of such wastes.

Another fundamental principle enshrined in the Convention is the principle of proximity (Article 4, paragraph 9), according to which Parties may engage in the movement of wastes exclusively

> if the State of export does not have the technical capacity and the necessary facilities or sites required to dispose of the wastes in question in an environmentally sound and efficient manner, or if the wastes in question are needed as raw materials for recycling or recovery industries in the State of import, or if the transboundary movement in question complies with other criteria to be decided by the Parties provided that these criteria do not contradict the objectives of this Convention.

Also significant is the provision of a series of information obligations among the Parties (Article 4, paragraph 2, letters f) and h)), whereby the States concerned must require information on the transboundary movements of hazardous and other wastes in order to assess the potential consequences for human health and the environment. Additionally, the interested Parties and any involved organizations must cooperate in disseminating information on transboundary waste movements, with the aim of improving their management from an ecological perspective and preventing illegal trafficking.

Finally, the Convention also regulates a potential remedy for unsuccessful transboundary waste movements (Article 8). It is established that, if a shipment cannot be completed in accordance with the contractual terms agreed upon by the Parties involved, the State of export must ensure that the economic operator exporting the waste returns it to the State of origin, unless it is possible to dispose of the waste using environmentally sound methods within a period of 90 days[250].

Connected to the Basel Convention is the Bamako Convention, concluded by the Organization of African Unity (OAU) in 1991. This second legal instrument was adopted by the majority of African countries, whose expectations were left unfulfilled by the provisions of the Basel Convention. Consequently, they agreed upon a set of stricter rules regarding the importation of waste into the African continent, which at that time—and subsequently, as discussed in the previous chapter—was a primary destination for illicit transboundary waste trafficking. In this regard, Article 4 of the

[250] S. Francario, *Movimenti transfrontalieri di rifiuti pericolosi e giurisdizione amministrativa*, op. cit., pp. 75–82.

Convention establishes that Parties must prohibit the importation of waste into Africa if it originates from states that have not signed the Bamako Treaty.

The main objectives pursued are: to limit the importation of radioactive and hazardous wastes into Africa; to control the transboundary movement of hazardous materials already present on the continent; to prohibit the dumping or incineration of hazardous wastes in seas or inland waters; to promote safer waste management practices; and to establish precautionary measures for the disposal of toxic waste.

However, it is worth noting that, despite the commendable intentions of the Convention, the lack of funding and inadequate governance have led to difficulties in its realization and implementation[251].

Another regulation of interest is the Stockholm Convention, adopted in 2001 within the framework of the United Nations Environment Programme (UNEP). This Convention aims to protect human health and the environment from the harmful effects arising from the management and disposal of waste containing Persistent Organic Pollutants (POPs), which are chemical substances used in pesticides and industrial processes. These materials remain intact in the environment for extended periods and can accumulate in the adipose tissue of humans and wildlife. The Convention has been ratified by 182 countries, including the European Union, which incorporated it through Decision 2006/507/EC and implemented it via Regulation (EU) 2019/2021[252].

The regulatory framework addresses the production and intentional use of POPs by requiring the elimination of the production, use, import, and export of the chemical substances listed in Annex A of the Convention, or by limiting the production and use of the substances listed in Annex B. Regarding the unintentional production and use of POPs, the signatory States must adopt a detailed action plan within two years to minimize or eliminate the substances listed in Annex C.

Furthermore, the Convention provides for the elimination or reduction of stocks and waste containing the substances specified in Annexes A or B. The objectives of the Stockholm Convention also include the exchange of information, the promotion of public awareness and education, and the implementation of research and development at both national and international levels[253].

Moving forward, particularly significant is the United Nations Convention against Transnational Organized Crime, commonly known as the Palermo Convention. As the title of the treaty suggests,

[251] UN Environment Programme, *The Bamako Convention*, Available at: https://www.unep.org/bamako-convention.
[252] Ministero dell'Ambiente e della Sicurezza Energetica, *Convenzione di Stoccolma*, available at: https://www.mase.gov.it/pagina/convenzione-di-stoccolma.
[253] European Union, *Tackling threats posed by chemicals (Stockholm Convention)*, available at: https://eur-lex.europa.eu/EN/legal-content/summary/tackling-threats-posed-by-chemicals-stockholm-convention.html.

the focus of this normative instrument is not on environmental issues but rather on transnational organized crime.

However, it has important practical implications for environmental crimes committed by international criminal organizations, including those related to the waste management cycle. Throughout this analysis, it has been repeatedly emphasized that the phenomenon of Ecomafie finds its most dangerous expressions in activities carried out by criminal organizations operating transnationally, particularly in the illicit trafficking of waste.

For this reason, the Palermo Convention serves as a fundamental tool for combating these crimes. The Convention was signed in Palermo in 2000, came into force in 2003, and currently has 190 signatories out of the 193 United Nations member states. This legal instrument represents the most important form of international collaboration in combating organized crime, realizing the vision of Judge Giovanni Falcone, who consistently argued that stopping mafias required international cooperation[254].

With regard to the scope of application of the Convention from an objective perspective, Article 3 establishes that the Convention applies to the prevention, investigation, and prosecution of the offenses outlined in Articles 5, 6, 8, and 23, as well as serious crimes as defined in Article 2. Essentially, this includes offenses related to organized crime, as defined by the Convention itself, as well as money laundering, corruption, obstruction of justice, and all serious crimes carrying a maximum penalty of at least four years of imprisonment. By way of example, regarding the topic of interest, the crime of organized activities for the illicit trafficking of waste (Article 452-quaternities of the Italian Penal Code) carries a maximum penalty of six years and thus falls within the scope of application of the Convention.

However, two additional conditions are required: the offenses must be transnational and must involve an organized criminal group. A transnational offense is defined as one that is committed in more than one State; or is committed in one State but a substantial part of its preparation, planning, direction, or control takes place in another State; or is committed in one State but involves an organized criminal group engaged in criminal activities in more than one State; or, finally, is committed in one State but has substantial effects in another State[255].

[254] Ministero dell'Interno, *Convenzione di Palermo: venti anni di lotta alla criminalità internazionale*, 13 December 2020, Available at: https://www.interno.gov.it/it/notizie/convenzione-palermo-venti-anni-lotta-alla-criminalita-internazionale.
[255] M. A. Accili Sabbatini, *La Convenzione di Palermo e i negoziati per il rafforzamento della cooperazione internazionale*, in *Rivista di studi e ricerche sulla criminalità organizzata*, 5 (2020), n. 4, available at: <https://doi.org/10.13130/cross-13095>.

Also of paramount importance is the definition of an "organized criminal group" adopted by the Convention, as it is particularly broad and thus applicable in numerous contexts. Specifically, it is defined as:

> a structured group, existing for a while, composed of three or more persons acting in concert with the aim of committing one or more serious crimes or offenses established in accordance with this Convention, to obtain, directly or indirectly, financial or other material benefits[256].

Concerning the impact of the Convention on the topic of interest, it is worth noting Resolution 10/6 adopted by the Conference of the Parties to the Palermo Convention, through which the member states committed to including environmental crimes among the serious offenses covered by the scope of the Convention. It is positively observed that

> this highlights the essential link between most environmental crimes and criminal organizations operating on a transnational scale. […] Above all, the States Parties acknowledge that crimes affecting the environment have become some of the most profitable transnational criminal activities and are often closely interconnected with corruption and money laundering. From this perspective, the criminalization of the offenses under consideration aligns with the goal of achieving sustainable development, based on eco-friendly industrial policies and fair competition[257].

The resolution in question therefore confirms the findings of this research so far, namely that offenses against environmental resources constitute one of the most concerning criminal phenomena on a transnational scale. This is due to the involvement of well-structured organized groups capable of skillfully operating and maneuvering across different national jurisdictions. For this reason, effective counteraction cannot overlook the introduction of specific criminal offenses, the imposition of effective and dissuasive sanctions, and, above all, investigative and judicial cooperation at the international level. Accordingly, while preserving national sovereignty over natural resources within the relevant territory, the resolution establishes an obligation for States to prevent, investigate, and adequately punish environmental crimes falling within the scope of the Palermo Convention.

This is because, even outside the Italian context—where awareness has long existed both of the operations of Ecomafie and their structural and operational peculiarities, determined by the widespread presence of mafias in the territory and the resulting body of knowledge developed by jurisprudence and legal scholarship—other countries have also come to understand that environmental criminal phenomena have shifted

[256] United Nations General Assembly, *United Nations Convention against Transnational Organized Crime*, signed during the Palermo Conference, 12–15 December 2000, Available at: https://uif.bancaditalia.it/normativa/norm-antiricic/convenzioni/conv-palermo.pdf.gners

[257] A. Balsamo, A. Mattarella, *Criminalità organizzata: le prospettive della normativa europea*, in *Sistema Penale*, (2023), n. 3, available at: <https://www.sistemapenale.it/pdf_contenuti/1615757850_balsamomattarella-2021a-criminalita-organizzata-nuove-prospettive-normativa-europea.pdf>.

> from a so-called 'occasional-individual' dimension to a so-called 'organized-complex' one, adopting the typical methods of mafia-type associations that operate under the guise of businesses[258].

At this point, additional elements can be introduced to underscore the necessity of judicial cooperation in criminal law. Indeed, criminal organizations operating across multiple countries create challenges in determining the *locus commissi delicti*, a fundamental step in establishing the jurisdiction of a judicial body. This obstacle can be overcome if States agree upon and adopt rules to identify the competent authority.

Moreover, legislative discrepancies regarding the criminalization of such conduct and variations in the effectiveness and severity of sanctions could encourage and facilitate the practice known as 'forum shopping'. This is a common strategy employed by international criminal organizations to select the jurisdiction in which to commit offenses based on the lowest associated risk. In this context as well, a uniform legal framework ensuring consistency in treatment is the most effective tool for countering such illicit practices.

Another fundamental element of the resolution is the recommendation

> to include environmental crimes falling within the scope of the Convention among the predicate offenses for money laundering so that assets derived from transnational organized crimes can be confiscated. In other words, as a complement to the tools for combating ecomafie, the resolution encourages the prevention of the misuse of financial systems for money laundering purposes, thereby eliminating incentives for transferring illicit proceeds abroad, recovering such proceeds, and cutting off the financial support enjoyed by criminal groups[259].

A collective stance on the phenomenon of Ecomafie is positively observed, following the recognition that it represents one of the most profitable international criminal activities. This is due to its involvement of a wide range of diverse interests and its detrimental impact on the achievement of sustainable development, with disastrous implications for the environment and human health. Furthermore, as previously noted, the phenomenon in question is closely tied to the legal economy, as business entities benefit from choosing illegal waste management services, and pursuing corporate policies aimed at maximizing profit. Therefore, counteraction measures must not be directed exclusively at criminal organizations but must also target legal enterprises operating illegally in waste management.

In this regard, the resolution under consideration refers to Article 10 of the Palermo Convention, which requires States to introduce appropriate forms of liability for legal persons.

[258] Ibid., p. 56.
[259] A. Balsamo, A. Mattarella, *Criminalità organizzata: le prospettive della normativa europea*, op. cit., p. 58.

> It has thus been understood that, in the face of the systematic use of corporate structures to carry out illegal activities, criminal sanctions imposed on natural persons are insufficient, as individual members can easily be replaced without affecting corporate policy. Consequently, financial or prohibitory sanctions targeting the entity itself are indispensable, with genuine deterrent effects to prevent the recurrence of illegal activity[260].

Before concluding this section of the research, it is important to highlight the most recent strategies adopted by the United Nations in the fight against environmental crime and illicit waste trafficking. These initiatives, primarily advanced by the United Nations Office on Drugs and Crime (UNODC), are designed to address environmental crimes, which increasingly exhibit a transnational character.

The United Nations has recognized the need to integrate environmental crimes into international crime-fighting frameworks. In particular, the inclusion of environmental offenses in the UNODC's programs enhances the capacity of states to address the challenges posed by transnational organized crime, often in collaboration with criminal organizations involved in illegal waste trafficking.

A central pillar of the UNODC's approach is the promotion of coordinated action at both the national and international levels. In response to the growing complexity of transboundary waste trafficking, the Office has developed a global strategy to support the identification, investigation, and prosecution of related offenses. This framework provides legal instruments and capacity-building tools for states, grounded in the understanding that environmental crime requires a holistic and integrated response, combining criminal justice mechanisms with environmental policy objectives.

The UNODC's environmental crime division offers technical assistance to member states in strengthening domestic legislation and enhancing cross-border cooperation. Through capacity-building programs, intelligence-sharing, and the facilitation of joint investigations, the UNODC seeks to reinforce enforcement capabilities. In parallel, it promotes the implementation of the United Nations Convention against Transnational Organized Crime, which constitutes a foundational legal basis for multilateral efforts to counteract the environmental consequences of illicit waste activities.

In recent years, the UNODC has further advocated for the recognition of waste trafficking and other environmental crimes as serious transnational offenses. These efforts form part of a broader agenda aligned with the United Nations Sustainable Development Goals (SDGs), particularly Goal 16, which aims to foster peace, justice, and effective institutions. By supporting the imposition of stricter sanctions and financial penalties on entities involved in unlawful waste operations, the Office seeks to disincentivize environmental exploitation by criminal enterprises[261].

[260] Ibid.
[261] United Nations, *Sustainable Development Goals, Goal 16: Peace, Justice and Strong Institutions*, available at: https://www.un.org/sustainabledevelopment/peace-justice/

The UNODC also highlights the critical role of private sector engagement in the prevention of environmental crime. This includes promoting corporate accountability and encouraging the adoption of transparent, environmentally responsible practices in areas such as waste disposal and recycling. A multi-stakeholder approach is considered essential to advancing a sustainable and legally compliant global economy.

In conclusion, the United Nations, through the UNODC, continues to play a pivotal role in addressing environmental crime, particularly the illicit trafficking of waste. Its comprehensive strategy fosters international collaboration and supports the development of legal, institutional, and policy responses aimed at mitigating the far-reaching environmental and social harms caused by such illegal activities[262].

3.3. The Evolution of Environmental Criminal Law in the European UnionThis section continues the analysis by narrowing the focus to the context of the European Community, given that Italy is a member state and is subject to specific obligations of harmonization with European environmental policy.

First and foremost, the necessity of establishing a European environmental policy was enshrined in Article 2 of the founding Treaty, which states:

> The European Community shall have as its task to promote the harmonious development of economic activities throughout the Community and continuous and balanced growth; this can no longer be conceived without effective action against pollution and other harmful factors, nor without the qualitative improvement of living conditions and the protection of the environment[263].

Secondly, environmental protection in the European Union is based on general principles that serve both as guiding criteria for the entire regulatory framework and as objectives to be pursued.Primarily, the principle of integration, established by the Amsterdam Treaty of 1997, takes center stage. It states:

> Environmental protection requirements must be integrated into the definition and implementation of the Community's policies and actions […], in particular, to promote sustainable development[264].

[262] United Nations Office on Drugs and Crime (UNODC), *Environment and Climate*, available at: https://www.unodc.org/unodc/en/environment-climate/

[263] E. Napoletano, *Manuale di diritto penale ambientale*. Torino: Zanichelli Editore, 2024, p. 1.

[264] Treaty of Amsterdam amending the Treaty on European Union, the Treaties establishing the European Communities, and certain related acts, 1997, Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:11997D/TXT.

The significance of this principle becomes evident when referring to Articles 37 and 51 of the Charter of Fundamental Rights of the European Union, which elevate the principle of integration to a standard of legitimacy for any intervention by the European Community and its Member States.

Subsequently, the objective of sustainable development, enshrined in Article 3 of the TEU, comes to the forefront:

> The Union shall establish an internal market. It shall work for the sustainable development of Europe, based on balanced economic growth and price stability, a highly competitive social market economy aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological progress[265].

This principle underscores that economic development, viewed through the lens of utilizing natural resources to improve the living conditions of the community, must take place with respect to the preservation of the global ecosystem.

The precautionary principle, derived from international law and formally introduced by the Maastricht Treaty, refers to

> activities of risk analysis and management, finding practical application in cases where scientific evidence is insufficient, inconclusive, or uncertain, and where a preliminary scientific evaluation indicates reasonable grounds for concern that potentially dangerous effects on the environment and human, animal, or plant health are incompatible with the high level of protection identified by the EU[266].

The principle of preventive action, fundamental to the evolution of European environmental protection and particularly relevant to the issue of waste management, was established as early as Directive 75/442/EEC. Article 4 of the Directive required Member States to dispose of their waste in ways that posed no danger to human health and did not harm the environment.

The aim pursued is to prevent pollution at its source, rather than intervening after a damaging event has already occurred[267].

Of paramount importance is the 'polluter pays' principle, also of international origin, which was first incorporated into EU law with the First Environmental Action Programme on November 22, 1975. This principle obliges the party responsible for pollution-related damage to bear the costs of environmental restoration, ensuring that such costs do not burden state budgets. At the same time, it

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[265] Consolidated version of the Treaty on European Union and the Treaty on the Functioning of the European Union, *Official Journal of the European Union* C 202/1, June 7, 2016, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12016ME%2FTXT.

[266] R. Giuffrida, F. Amabili, *La tutela dell'ambiente nel diritto internazionale ed europeo,* op. cit., p. 32.

[267] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., p. 1.

seeks to ensure that this perspective of environmental sustainability is factored into economic policy development by the business sector, within the framework of a competitive market economy.

Additionally, the principle of correction, as a priority at the source of environmental damage, introduced with the First Environmental Action Programme in 1973, must be applied in conjunction with the principles of prevention and 'polluter pays'. This fundamental criterion was applied in the Wallon Waste case by the Court of Justice in 1992.

Indeed, the Court was called upon to rule on the discriminatory nature of a national measure limiting the importation of waste originating from another Member State.

> In this case, the Court observed the (clearly) discriminatory nature of the restrictive national measures but admitted their justification for overriding reasons of environmental protection. This decision was based on both the criteria of self-sufficiency and proximity established by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and, specifically, on the principle that waste management should take place as close as possible to the location where the waste is generated[268].

Finally, environmental protection itself has been elevated to a fundamental principle. Indeed, it has been included in the text of the Charter of Fundamental Rights of the European Union, which, in Article 37, states:

> A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development[269].

Having outlined the fundamental principles that underpin the entire field, the analysis can now turn to a specific examination of European environmental criminal law to understand how these values are protected within this branch of law.

From this point onward, the focus will primarily be on this area of both European Union and national law, as the phenomenon examined in this research has progressively been deemed so serious as to necessitate the classification of certain acts as criminal offenses. Criminal law, in fact, represents the most effective tool for repressing conduct that harms fundamental community interests, both by dissuading individuals from committing such acts out of fear of negative consequences and by enforcing afflictive sanctions.

[268] Ibid., p. 35.
[269] Charter of Fundamental Rights of the European Union, available at: https://www.europarl.europa.eu/charter/pdf/text_en.pdf.

First and foremost, it should be noted that the European Union's criminal law competence is the final result of a process that developed over the years. Initially, in respect of the sovereignty of the Member States, the possibility for EU institutions to legislate in this area had not been conceived.

> For many years the categorical assertion in the Treaty of Rome that the Community legal order could have no criminal competence was strictly upheld. This remained the case until the evolution of the Community's (and later the Union's) legislative role began to extend into the sphere of national criminal sovereignty, as a consequence of the undeniable need to adequately protect interests no longer shared exclusively by individual Member States but of a supranational nature inherent to the Community itself[270].

The introduction of the possibility for the European Union to intervene in the field of criminal law was officially established with the Treaty of Lisbon. This treaty granted shared competence between Member States and EU institutions in the area of justice and home affairs (the area of freedom, security, and justice).

Currently, there exists both a typical and an atypical European criminal law competence. The latter is based on the jurisprudential interpretation, predating the Treaty of Lisbon, of the duty of sincere cooperation (Article 4 TEU).

The typical competence, introduced by the Treaty of Lisbon, is established in Article 83 TFEU, which states:

> The European Parliament and the Council may, by means of directives adopted in accordance with the ordinary legislative procedure, establish minimum rules concerning the definition of criminal offences and sanctions in the areas of particularly serious crime with a cross-border dimension resulting from the nature or impact of such offences or from a special need to combat them on a common basis[271].

As for the atypical criminal competence, which allowed the European Union to intervene in criminal matters even before the Treaty of Lisbon, it now finds its basis in Article 83(2). This article states:

> If the approximation of criminal laws and regulations of the Member States proves essential to ensure the effective implementation of a Union policy in an area which has been subject to harmonisation measures, directives may establish minimum rules with regard to the definition of criminal offences and sanctions in the area concerned[272].

With these concepts clarified, it is now possible to examine the evolution and gradual development of a European criminal law aimed at protecting the environment.

[270] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., p. 59.
[271] Treaty on the Functioning of the European Union (TFEU), Art. 83, cit.
[272] Ibid.

The first stance on the matter dates back to Resolution No. 28/1977 of the Committee of Ministers of the Council of Europe, concerning the contribution of criminal law to the protection of the environment. This text clarified:

> (I) that criminal law should intervene in this sector as a last resort, when other measures have not been observed, have proven ineffective, or have been inadequate,
> (II) that, precisely for these reasons, criminal intervention must be as effective and stringent as possible,
> (III) that, in particular, it is necessary to duly punish acts committed intentionally or through gross negligence that cause, or are likely to cause, lasting damage to the quality of the air, soil, and water, to animals or plants, or that may result in death or serious injury to persons,
> (IV) that the principles of criminal liability should be reviewed with a view to introducing, in certain cases, the liability of legal persons,
> (V) that sanctions should include imprisonment, the restoration of the original state of the environment […], community service, professional disqualifications, and the publication of convictions[273].

The above-mentioned recommendations were adopted with Resolution No. 1/1990 of the Council of Europe, which focused on drafting guidelines for the Member States to establish endangerment offenses aimed at protecting the environment. Additionally, the resolution emphasized the need to prevent and combat environmental crimes both in the State where the offense occurred and in the State(s) where harmful environmental consequences were experienced.

Subsequently, in 1998, a Conference of the Council of Europe was held—the first conference dedicated to criminal law as a measure of environmental protection. During this event, the so-called Strasbourg Convention was discussed. This was a draft convention prepared by a committee of experts established in 1991 by the Committee of Ministers of the Council of Europe. However, the Strasbourg Convention never entered into force due to the insufficient number of ratifications by Member States.

The draft text listed intentional and negligent behaviors that Member States would have been required to criminalize within their national legal systems, accompanied by appropriate sanctions, including imprisonment, fines, and environmental restoration measures.

A fundamental step in the establishment of a European criminal law on environmental protection was the Treaty of Amsterdam, which led to the approval of the Tampere Programme. This programme identified environmental protection as one of the priorities of European criminal policy.

Subsequently, in 2000, the necessity of introducing environmental protection was acknowledged by the Justice and Home Affairs Council, which led to the adoption of a framework decision, initiated

[273] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., p. 68.

by Denmark. This framework aimed to harmonize Member States' legislation and included a proposal for a directive (proposal 2001/0076(COD)).

However, the proposal was rejected by the Council in 2003, which instead approved Framework Decision 2003/80/JHA. This legal instrument incorporated the content of the Strasbourg Convention, providing for the introduction of seven intentional offenses, which could also potentially be punished in cases of negligence.

With regard to sanctions, the framework decision stipulated the need for effective, proportionate, and dissuasive penalties. However, it did not specify the type or range of penalties, leaving Member States significant discretion in defining the sanctions[274].

However, the Commission, supported by the European Parliament, challenged Framework Decision 2003/80/JHA before the Court of Justice, arguing that the legal instrument chosen by the Council to regulate the matter was unsuitable for establishing a general standard for environmental criminal law.

The case concluded with the annulment of the framework decision by the Court of Justice (judgment of 13 September 2005, Case C-176/03). The Court held that the competence regarding the determination of the type and level of criminal penalties did not belong to the European Community but remained exclusively under the sovereignty of Member States[275].

It should be noted that this ruling predates the Treaty of Lisbon, which introduced a European Union criminal law competence.

3.3.1. The Directives 2008/99/EC and (EU) 2024/1203

The long path toward the establishment of European environmental criminal law, described in the previous paragraph, culminated in the adoption of Directive 2008/99/EC of the European Parliament and the Council on the protection of the environment through criminal law.

The objective of this new legal instrument was to strengthen Member States' legislation while establishing a minimum level of environmental criminal protection across the Union, without prejudice to the possibility of national legal systems adopting more stringent rules.

The adoption of the Directive thus marked a pivotal step forward in promoting and consolidating stronger environmental safeguards against the most severe acts of exploitation of this common good.

[274] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., pp. 67–70.
[275] Ibid., pp. 70–72.

The necessity of such an intervention also stemmed from the recognition of the inadequacy of existing sanctioning mechanisms, such as administrative penalties and forms of compensation for damages, in achieving the desired results.

In this regard, the introductory recitals of the Directive state:

> (2) The Community is concerned at the rise in environmental offences and at their effects, which are increasingly extending beyond the borders of the States in which the offences are committed. Such offences pose a threat to the environment and therefore call for an appropriate response.
> (3) Experience has shown that the existing systems of penalties have not been sufficient to achieve complete compliance with the laws for the protection of the environment. Such compliance can and should be strengthened by the availability of criminal penalties, which demonstrate a social disapproval of a qualitatively different nature compared to administrative penalties or a compensation mechanism under civil law.
> (4) Common rules on criminal offences make it possible to use effective methods of investigation and assistance within and between Member States.
> (5) In order to achieve effective protection of the environment, there is a particular need for more dissuasive penalties for environmentally harmful activities, which typically cause or are likely to cause substantial damage to the air, including the stratosphere, to soil, water, animals or plants, including to the conservation of species[276].

More specifically, the Directive imposes an obligation on national legal systems to introduce criminal sanctions for serious violations of European law provisions concerning environmental protection. In this regard, the European legislator's guidelines follow two main directions: the first aims to identify unlawful behaviors that must constitute criminal offenses, while the second focuses on introducing the criminal liability of legal persons.

A legal person is defined as

> any legal entity having such status under the applicable national law, except for States or public bodies exercising state authority and for public international organizations[277].

This is in line with the recognition, as already noted during the analysis of international law, that an effective system to combat environmental illegality cannot be limited to punishing natural persons, as it would fail to address the complexity of criminal realities.

The behaviors that Member States must consider and introduce, if not already present, as criminal offenses are listed in Article 3 of the Directive.

Focusing on those related to waste management, which are the subject of this research, the Directive includes the following:

[276] Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0099.
[277] Ibid.

> (b) the collection, transport, recovery or disposal of waste, including the supervision of such operations and the aftercare of disposal sites, and including action taken as a dealer or a broker (waste management), which causes or is likely to cause death or serious injury to any person or substantial damage to the quality of air, the quality of soil or the quality of water, or to animals or plants; (c) the shipment of waste, where this activity falls within the scope of Article 2(35) of Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste and is undertaken in a non-negligible quantity, whether executed in a single shipment or in several shipments which appear to be linked[278].

It should be clarified that, for such behaviors to be punishable under criminal law, they must violate the EU legislation referenced in the same Directive; there must be the presence of the psychological element of the offense, such as intent or negligence, the latter in the form of gross negligence; and the actions taken must result in harm or a concrete danger.

Additionally, Article 4 stipulates that those who participate in the offense by means of incitement or aiding and abetting must also be punished[279].

Concerning sanctions, Article 5 of the Directive merely requires Member States to adopt the necessary measures to ensure that the offenses listed are punishable with effective, proportionate, and dissuasive criminal sanctions.

About the criminal liability of legal persons, Article 6 establishes the obligation for Member States to ensure that entities can be held liable for the offenses provided for in the Directive. This must occur when the offenses

> have been committed for their benefit by any person who has a leading position within the legal person, acting either individually or as part of an organ of the legal person, based on: (a) a power of representation of the legal person; (b) an authority to take decisions on behalf of the legal person; or (c) an authority to exercise control within the legal person[280].

Furthermore, legal persons must also be held liable in cases where the lack of supervision or control by any of the aforementioned individuals has enabled the commission of one of the offenses by a person under their authority, provided this occurs to the benefit of the legal person.

Finally, it is clarified that the prosecution of the criminal liability of a legal person does not exclude the possibility of pursuing criminal action against natural persons who qualify as perpetrators, inciters, or accomplices of the offenses.

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[278] Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law, op. cit.
[279] R. Giuffrida, F. Amabili, *La tutela dell'ambiente nel diritto internazionale ed europeo*, op. cit., pp. 153–156.
[280] Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law, op. cit.

As mentioned at the beginning of this section, the introduction of the Directive under discussion represented a pivotal moment for the establishment of environmental criminal law, following the long and unproductive path that had characterized the preceding years. However, the results achieved with this legal instrument and its subsequent transpositions into national legal systems have not been satisfactory or aligned with initial expectations.

This is due to the ongoing increase in environmental crime and the corresponding inadequacy of the measures introduced to effectively hinder the national and international expansion of environmental crime.

For instance, with regard to the illicit waste market, this sector generated annual profits ranging from €3.7 billion to €15.3 billion between 2014 and 2016. Additionally, this extremely high profitability has attracted criminal organizations engaged in illegal activities such as smuggling, terrorism, money laundering, and corruption[281].

As a result, the low risk of prosecution, the substantial revenues, and the lack of adequate countermeasures by the judiciary and law enforcement agencies have facilitated the expansion of environmental crime, particularly in sectors such as wildlife trafficking, the timber trade, and waste trafficking.

In this context of widespread illegality, the European Union stands at the center and plays a crucial role, as it represents one of the world's largest economic and trading blocs. Consequently, it has become a primary target, both as a destination and as a transit hub, for the most dangerous forms of environmental crime. This is also due to the fact that it possesses unique natural resources, such as in Romania and Poland, and because there is significant demand for low-cost waste disposal services in countries like Italy, Hungary, and Germany.

Given such an emergency, European states, even after the adoption of the Directive, still lack a common definition of environmental crime and are characterized by discrepancies in the regulations adopted within their national legal systems.

Indeed, these regulations are marked by their heterogeneity, with unlawful conducts in some cases falling under administrative law and in others under criminal law. Moreover, the sanctions provided are generally too low to deter offenders from engaging in environmental exploitation[282].

[281] A. Scarcella, *La 'nuova' Direttiva 2024/1203 sulla tutela penale dell'ambiente*, op. cit., pp. 488–489.
[282] L. Colantoni, M. Bianchi, *Fighting Environmental Crime in Europe, Preliminary Report*, Istituto affari internazionali, 2020, available at: <https://www.iai.it/sites/default/files/ambitus_pr.pdf>. pp. 5–9.

Continuing, to confirm that offenses related to the waste cycle are not an issue exclusive to Italian territory, it is noteworthy that among the most significant environmental crimes committed across Europe are the improper collection, transportation, recovery, and disposal of waste. All Member States have reported issues linked to waste trafficking, driven by the demand for low-cost waste disposal services, both for hazardous and household waste, and by the attractive profitability of the sector. The situation has significantly worsened following the import ban on waste imposed by the Chinese government in 2018.

More specifically, according to the European Commission, 25% of waste shipments are illicit. The European Environmental Bureau (EEB) estimates that the annual revenues from illegal waste trafficking within the Union range from €1.5 to €1.8 billion for hazardous waste and from €1.3 to €10.3 billion for non-hazardous waste.

Significant cases also include the illegal disposal of toxic waste in abandoned quarries, as observed in Brandenburg, Germany, further confirming that such practices are not exclusive to Italian territory[283].

The widespread prevalence of environmental crime and the delay in devising an appropriate counterstrategy can also be partially explained by the inadequate recognition of these phenomena by public opinion. Indeed, while the main criminal episodes that generate debate among institutions and the general public are typically those that cause the greatest concern, it must be noted that environmental crimes are largely perceived as "victimless crimes", and therefore, less dangerous.

This perception stems from the fact that the harm resulting from such conduct is often collective and arises from a cumulative process that takes a long time before its consequences become visible. Nonetheless, considering them victimless is entirely incorrect, as the repercussions on the environment are alarming and directly linked to harm to human health. Specifically, they can include pollution and degradation of ecological balance, a reduction in biodiversity, and contamination of the food chain—all factors that impact the lives of local communities and their development[284].

In addition, environmental crimes undermine the rule of law as well as the social, economic, and political framework of the European Union and its Member States. For instance, considering the illegal waste cycle, the competitive imbalance created between businesses that use illegal services and those that comply with legislative obligations results in a significant market distortion.

[283] L. Colantoni, M. Bianchi, *Fighting Environmental Crime in Europe, Preliminary Report*, op. cit., pp. 10–12.
[284] Ibid., pp. 8–9.

> Legitimate businesses generate lower revenues, leading not only to distorted competition but also to a loss of tax revenue, which in turn negatively impacts society and public services for EU citizens[285].

In light of the seriousness of the situation, as just described, the EU institutions have gradually undertaken new efforts to strengthen the regulatory framework to counter this phenomenon.

In this context, with a 2013 resolution on organized crime, corruption, and money laundering, the European Parliament, recalling the conclusions of the Special Committee on Organized Crime, Corruption, and Money Laundering (CRIM), specifically established for this purpose, highlighted the involvement of organized criminal groups in the illegal management of waste and the trafficking of wildlife and natural resources[286].

Specifically, it stated that:

> Organized and mafia-type criminal activities related to the environment—in their various forms of trafficking and illegal disposal of waste and the destruction of environmental, landscape, artistic, and cultural heritage—have now acquired an international dimension that requires a joint effort by all European countries for a more effective common action to prevent and combat the so-called ecomafie[287].

In light of the content of the aforementioned resolution, it is evident that the Italian neologism ecomafie has gained international recognition. This confirms the transnational nature of the criminal phenomenon examined thus far, characterized by specific typologies related to the methods of committing offenses and the involvement of widespread interests. It can no longer be considered exclusive to Italian territory, nor, even more so, solely linked to the traditional areas of mafia activity.

In turn, in 2016, the Council of the European Union recognized environmental crime as one of the most serious threats within the EU territory and included it within EMPACT as a priority for the Union in combating serious organized crime.

In this regard, it urged Member States to:

> where appropriate, systematically address the organized crime aspect of environmental offenses, particularly in the areas of wildlife trafficking, waste trafficking, as well as illegal chemicals and pesticides"; "establish public-private partnerships in line with applicable national legislation to share knowledge, experience, information, and capabilities in combating environmental crimes, mainly in detecting wildlife trafficking and illegal waste-related activities, where possible, with the involvement of non-governmental organizations[288].

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[285] A. Scarcella, *La 'nuova' Direttiva 2024/1203 sulla tutela penale dell'ambiente*, op. cit., p. 489.
[286] Ibid., p. 49.
[287] European Parliament resolution of 11 June 2013 on organised crime, corruption, and money laundering: recommendations on action and initiatives to be taken, available at: https://www.europarl.europa.eu/doceo/document/TA-7-2013-0245_EN.html.
[288] Council of the European Union, Council Conclusions on countering environmental crime, 8 December 2016, available at: https://data.consilium.europa.eu/doc/document/ST-15412-2016-INIT/en/pdf.

Moreover, in 2019, during the discussion of the report on the eighth cycle of mutual evaluations in criminal matters, the Council of the European Union focused specifically on environmental crime.

In this context, it was noted that:

> To effectively prevent and combat environmental crimes, including those related to waste, the evaluation highlighted that it is essential to define relevant priorities and adopt a multi-agency approach involving various national authorities, and to ensure effective coordination of their efforts based on a strategically oriented policy. However, in most Member States, these forms of crime suffer from a general lack of prioritization at the political level, and in the majority of Member States, there is no comprehensive national strategy defining relevant priorities and involving all competent authorities[289].

This led to a series of recommendations for national legal systems, including the need to strengthen efforts to utilize state-level enforcement and criminal law tools fully, the indispensability of involving all relevant stakeholders, and the importance of establishing international cooperation[290].

In line with the evaluations and subsequent outcomes achieved by other institutions, the European Commission decided to conduct a public consultation and stakeholder engagement regarding the implementation of Directive 2008/99/EC and the new challenges of environmental crime. The consultation took place from 10 October 2019 to 2 January 2020, followed by the publication of the Commission's assessment and the preparation of a roadmap aimed at improving the Directive. This phase was followed by another consultation, from February to May 2021, which gathered a majority of positive opinions in favor of reforming the Directive[291].

Consequently, the Commission drafted a proposal to reform the legislation in question. This initiative is based on a thorough analysis of the issues with the previous legislative text, conducted using four evaluation criteria: effectiveness, efficiency, coherence, and relevance to today's needs.

The investigation highlighted the main weaknesses of Directive 2008/99/EC. Specifically: the complexity and outdated nature of the Directive's purpose; the lack of clarity in certain definitions, particularly that of environmental crime; the inadequacy of sanctions in terms of effectiveness and deterrence; the lack of adequate transnational cooperation and coordination; the absence of a reliable, accurate, and comprehensive system for collecting statistical data on environmental crime proceedings; and a weak enforcement chain, from investigations to trials[292].

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[289] Council of the European Union, *Final report of the Eighth round of mutual evaluations on environmental crime - Information and discussion at the Council*, 15 November 2019, available at: https://data.consilium.europa.eu/doc/document/ST-14065-2019-INIT/en/pdf.

[290] A. Scarcella, *La 'nuova' Direttiva 2024/1203 sulla tutela penale dell'ambiente*, op. cit., p. 491.

[291] Ibid.

[292] B. Onofrj, *Proposta per una direttiva del Parlamento Europeo e del Consiglio sulla protezione dell'ambiente attraverso il diritto penale: nuove frontiere nella lotta ai crimini ambientali in Europa*, in *Sistema penale*, 5 July 2022,

It is worth noting that the renewal of the primary European legislative instrument for combating environmental crime aligns with the ambitious program proposed by the Von Der Leyen Commission, known as the European Green Deal. This initiative also aims to

> protect, conserve, and enhance the EU's natural capital, and protect the health and well-being of citizens from environmental-related risks and impacts, while promoting EU, Member State, and international community action to intensify efforts against environmental crimes[293].

This long revision process reached its final conclusion with the adoption of the new Directive 2024/1203 on the protection of the environment through criminal law, dated 11 April 2024, which replaces Directives 2008/99/EC and 2009/123/EC.

The new legislative text primarily aimed to explicitly outline its purpose, clarify the definition of environmental crime, and add new relevant categories of environmental offenses.

Firstly, the purpose is identified as

> providing common definitions of environmental offenses and ensuring the availability of effective, dissuasive, and proportionate criminal sanctions[294].

Regarding the clarification of what constitutes an environmental crime, it is established:

> Member States shall ensure that criminal offences relating to conduct listed in paragraph 2 constitute qualified criminal offences if such conduct causes:
> (a)the destruction of, or widespread and substantial damage which is either irreversible or long-lasting to, an ecosystem of considerable size or environmental value or a habitat within a protected site, or
> (b) widespread and substantial damage which is either irreversible or long-lasting to the quality of air, soil, or water[295].

A second aspect of the reform concerns the sanctioning framework, aimed at making it effective, dissuasive, and proportionate. To this end, unlike the previous text, the new directive explicitly specifies, in Article 5, the sentencing framework by indicating minimum and maximum penalties for the offenses, distinguishing among various categories.

Additionally, it provides a list of ancillary sanctions that must be introduced by Member States. By way of example, the following are mentioned: the obligation to restore the environment within a specified timeframe if the damage is reversible; or to compensate for the environmental damage if the damage is irreversible or if the offender is unable to carry out such restoration; exclusion from

available at: <https://www.sistemapenale.it/it/documenti/proposta-direttiva-parlamento-consiglio-europeo-protezione-ambiente-penale-crimini-ambientali>.

[293] L. Colantoni, M. Bianchi, *Fighting Environmental Crime in Europe, Preliminary Report*, op. cit., pp. 34–35.

[294] Directive (EU) 2024/1203 of the European Parliament and of the Council of 11 April 2024 on the protection of the environment through criminal law, replacing Directives 2008/99/EC and 2009/123/EC, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AL_202401203.

[295] Ibid.

access to public funding, including tender procedures, grants, concessions, and licenses; and disqualification from holding a leading position within a legal person of the same nature as that used to commit the offense.

Subsequently, the new directive focused on enhancing cooperation by introducing two new articles. Article 19 concerns coordination and cooperation among the competent authorities within a Member State. It stipulates that Member States must take the necessary measures to establish appropriate mechanisms for strategic and operational coordination and cooperation among all authorities competent and involved in preventing and combating environmental offenses.

Article 20, on the other hand, addresses cooperation among Member States, the Commission, and other EU bodies and agencies. It specifies that, in cases where environmental crimes are deemed to have a cross-border nature, national competent authorities should consider the possibility of transmitting information to the relevant EU bodies. Furthermore,

> Without prejudice to the rules on cross-border cooperation and mutual legal assistance in criminal matters, the Member States, Eurojust, Europol, the European Public Prosecutor's Office, the European Anti-Fraud Office and the Commission shall, within their respective competences, cooperate with each other in the fight against the criminal offences referred to in Articles 3 and 4. To that end, Eurojust shall, where appropriate, provide the technical and operational assistance needed by the competent national authorities to facilitate coordination of their investigations. The Commission may, where appropriate, provide assistance[296].

Continuing, the recent legislative development, aimed at improving information flows on environmental crime, introduced an article dedicated to the collection of statistical data (Article 22). This provision requires Member States to establish a system for recording, producing, and providing anonymized statistical data on the stages of reporting, investigation, and prosecution related to the offenses covered by the Directive, specifying the minimum content of such data. Consequently, the Commission will be required to publish a report based on the information provided every three years.

Furthermore, to enhance national enforcement strategies in combating crimes, Article 21 establishes an obligation for Member States to develop and publish a national strategy to combat environmental crimes by 21 May 2027. Additionally, the strategy must be reassessed and updated at least every five years, applying a risk-based approach.

Particularly significant are Articles 17 and 18, respectively dedicated to *Resources* and *Training*. The former stipulates that Member States must ensure that the national authorities responsible for detecting, investigating, prosecuting, and adjudicating environmental crimes are provided with

[296] Directive (EU) 2024/1203 of the European Parliament and of the Council of 11 April 2024 on the protection of the environment through criminal law, op. cit.

adequate financial, technical, and technological resources to effectively perform their duties. The latter requires the adoption of appropriate measures to ensure the periodic provision of specialized training to all competent authorities involved in criminal proceedings.

Regarding the primary focus of this research, namely the illegal management of waste, the new directive, in its preamble, states in Recital 18:

> Unlawful collection, transport and treatment of waste and the lack of supervision of such operations and of the after-care of disposal sites, including action taken as a dealer or a broker, can cause devastating effects on the environment and human health. Such effects can be caused by unlawful conduct which concerns harmful waste from pharmaceutical products, narcotic drugs, including components to produce narcotic drugs, chemicals, waste containing acids or bases or waste containing toxins, heavy metals, oil, grease, electrical and electronic waste, end-of-life vehicles or plastic waste. Member States should, therefore, ensure that unlawful waste management constitutes a criminal offence where such conduct concerns hazardous waste in a non-negligible quantity, or it concerns other waste and such other waste causes or is likely to cause substantial damage to the environment or human health[297].

Regarding the classification of offenses related to the waste cycle, Article 3 includes the following behaviors:

> (f) the collection, transport or treatment of waste, the supervision of such operations and the after-care of disposal sites, including action taken as a dealer or a broker, where such conduct:
> (i) concerns hazardous waste as defined in Article 3(2) of Directive 2008/98/EC of the European Parliament and of the Council and it concerns a non-negligible quantity of such waste; or
> (ii) concerns waste other than that referred to in point (i) and causes or is likely to cause the death of, or serious injury to, any person or substantial damage to the quality of air, soil or water, or substantial damage to an ecosystem, animals or plants;
> (g) the shipment of waste, within the meaning of Article 2, point (26), of Regulation (EU) 2024/1157 of the European Parliament and of the Council, where such conduct concerns a non-negligible quantity, whether executed in a single shipment or in several shipments which appear to be linked[298].

In conclusion, Member States are required to introduce the necessary legislative, regulatory, and administrative provisions to comply with the directive by 21 May 2026. Therefore, an assessment of the suitability and effectiveness of the new enforcement tools must necessarily be deferred to the near future.

The hope is that individual legal systems will make full use of the guidance provided by European legislation and seize the opportunity to outline a regulatory framework that, fully aware of the

[297] Directive (EU) 2024/1203 of the European Parliament and of the Council of 11 April 2024 on the protection of the environment through criminal law, op. cit.
[298] Ibid.

growing threat posed by environmental crime, is adequately equipped to combat it with renewed strength.

For now, it can already be said that the new text of the directive has been positively received in public debate[299].

3.4. The Evolution of Environmental Criminal Law in the Italian Legal System

After examining the supranational sources concerning environmental protection as a whole, with particular reference to criminal law aspects, it is now possible to move on to the study of the Italian legal framework.

To structure the analysis in this chapter, the starting point has been international and EU sources, as Italian legislation is partly the result of their transposition.

This methodological choice is driven by the aim of simplifying the examination of national regulations. Only after understanding the guidance provided at the international level can the national framework be fully appreciated. Additionally, adopting this perspective allows for an evaluation of how the Italian legal system has aligned with the obligations and recommendations issued by supranational bodies, both positively and negatively.

Once again, the approach initially adopted will focus on investigating the evolution of legislation concerning the criminal protection of the environment.

The Italian legal system has been characterized by a rather lenient regulatory and sanctioning framework concerning the phenomenon under examination. Indeed, at least until the enactment of Law No. 68 of 22 May 2015, environmental violations, with a few limited exceptions, were classified exclusively as administrative offenses or minor offenses (*contravvenzioni*) in the form of abstract danger.

This means that the forms of administrative or criminal offenses were framed in a legal structure typically used for less severe violations, as opposed to felonies (*delitti*), which correspond to more serious offenses warranting greater social condemnation. Consequently, the sanctions provided were minimally punitive, consisting primarily of monetary penalties.

Linking back to the analysis of criminal phenomena, it has been highlighted that offenses related to the waste cycle are largely committed by businesses addressing their inherent need to dispose of production waste by choosing a cheaper, albeit illegal, service. This choice is made to reduce

[299] A. Scarcella, *La 'nuova' Direttiva 2024/1203 sulla tutela penale dell'ambiente*, op. cit., p. 497.

expenses and, consequently, to achieve greater competitiveness in the market, following the logic of maximizing profit.

As a result, a penalty system that primarily includes monetary sanctions leads to the possibility that such penalties may be viewed as a business expense by these entities. This is even more true when the financial burden of the sanction remains advantageous compared to the profit that can be gained through illegal waste management practices.

An additional effect of the inadequacy of the legislative and sanctioning framework to effectively counter the illegal waste cycle has been the proliferation of criminal activities. Indeed, within the logic of the rational criminal, the low probability of being punished and the mild severity of sanctions, compared to the exceptionally high profits attainable through such practices, have served as an incentive to invest in this illicit sector rather than others.

Furthermore, the almost total absence of adequate legislative tools to define and prosecute unlawful acts of environmental harm has led to an increasing supplementary intervention by the judiciary. Courts had progressively included such conduct within the minor offenses of *'Disturbance of people's occupations or rest'* (Article 659 of the Criminal Code) and *'Dangerous throwing of objects'* (Article 674 of the Criminal Code) to sanction minor cases of noise and odor pollution.

Alternatively, the judiciary applied the criminal offenses of *'Willful removal or omission of safety measures against workplace accidents'* (Article 437(2) of the Criminal Code) and *'Collapse of buildings or other willful disasters'* (Article 434 of the Criminal Code), also known as the *unnamed disaster*, to punish environmentally harmful actions carried out by businesses, depending on whether the damage affected only workers or the general population[300].

By way of example, in 2008, the Third Section of the Italian Supreme Court of Criminal Law deemed the offense of unnamed disaster applicable in a case involving confirmed pollution caused by waste management activities. Specifically, it stated:

> The duration in temporal terms and the extent in spatial terms of the pollution activities (in particular, the illegal management of waste) justify the classification of the specific case under the alleged offense of unnamed disaster; this offense involves damage, or the risk of damage, of exceptional gravity to the environment, which is not necessarily irreversible but certainly irreparable through normal remediation measures[301].

[300] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., p. 5.
[301] Italian Supreme Court, Section III, judgment no. 9418, 16 January 2008.

However, it must be noted that, with particular reference to the application of Article 434 of the Italian Criminal Code to cases of damage to the environment, a significant debate arose regarding the legitimacy of this interpretative approach.

In examining this issue further, Article 434 of the Italian Criminal Code outlines two criminal offenses. The first punishes anyone who,

> outside the cases provided for in the preceding articles, commits an act intended to cause the collapse of a building or part of it or another disaster, and if the act results in a danger to public safety, shall be punished with imprisonment from one to five years.

The second stipulates that

> the penalty is imprisonment from three to twelve years if the collapse or disaster occurs.

The necessity of subsuming instances of severe environmental damage—so-called environmental disasters—under this criminal provision in the absence of a specific statutory offense required the judiciary to undertake a detailed identification of the typical elements of Article 434 of the Italian Criminal Code. This resulted in extensive doctrinal and jurisprudential debate.

Initially, the so-called "unnamed disaster" was deemed to be constituted only in cases of large-scale environmental pollution events. However, following the disaster at Porto Marghera, its application was extended to instances of so-called "micro-events".

Specifically, the Fourth Section of the Italian Supreme Court (Criminal Division) clarified:

> The offense of negligent unnamed disaster (Articles 434 and 449 of the Italian Criminal Code) is constituted by a 'macro-event', which includes not only catastrophic events of great and immediate visibility (collapse, shipwreck, derailment, etc.) that may occur over a short period, but also those events not immediately perceptible, which may take place over a very extended period, yet result in a compromise of the characteristics of safety, protection of health, and other values of the individual and the community. Such a compromise affirms the existence of harm to public safety[302].

In any case, the interpretative uncertainty surrounding the provision in question led to an intervention by the Constitutional Court, which was called upon to rule on the lack of precision and specificity of Article 434 of the Italian Criminal Code. First and foremost, the Court characterized the article as a residual provision within the chapter dedicated to

> offenses of common danger by violence". Furthermore, the Constitutional Court "adopted a 'bipolar' conception of disaster, defining it—dimensionally—as a destructive event of extraordinary, though not necessarily immense, proportions, capable of producing serious, widespread, and complex harmful effects; and—offensively—as an event capable of causing danger to the life or physical integrity of an indeterminate number of

[302] Italian Supreme Court, Section IV, judgment no. 4675, 17 May 2006.

people, without requiring the actual occurrence of death or injury to one or more individuals[303].

Finally, the Constitutional Court expressed its reservations regarding the classification of environmental disasters within this criminal provision and urged the legislature to introduce a specific ad hoc offense.

Specifically, the main critical issues identified pertained to the fact that the scenarios contemplated in Article 434 of the Italian Criminal Code refer to violent and instantaneous conduct.

Therefore, it is challenging to include episodes of environmental disasters, which more commonly result from slow, widespread, silent, and repeated actions over time[304].

Tracing the legislative evolution of the Italian legal system concerning waste management, the first relevant legislative text in this area is Legislative Decree no. 22/1997, the so-called "Ronchi Decree", which implemented Directives 91/156/EEC on waste, 91/689/EEC on hazardous waste, and 94/62/EC on packaging and packaging waste. This legislative act marked a significant turning point for Italian law, as it constituted the first comprehensive intervention in regulating the complex matter of waste management. The Ronchi Decree also included the first penalties for unlawful conduct. Specifically, it provided for certain administrative offenses and misdemeanors (contraventions), such as the abandonment of waste (Article 50), unauthorized waste management activities (Article 51), violations of obligations related to communication, record-keeping, and forms (Article 52), and the failure to organize a system to meet the obligations by packaging producers (Article 54).

Particularly relevant to the criminal phenomena examined in this research was the provision contained in Article 53, concerning the illegal trafficking of waste. The norm provided for two offenses: the first pertained to the illegal trafficking of waste involving the shipments of waste listed in Annexes II, III, and IV of EEC Regulation 259/93, punishable by a fine ranging from three million lire to fifty million lire and imprisonment of up to two years. The second provided for an increased penalty in cases where the shipments involved hazardous waste[305].

It should be noted, however, that the punitive provisions conceived were entirely inadequate to effectively address the unlawful conduct committed during those years, as exemplified by the events involving the Campania Region or the so-called "*navi dei veleni*".

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[303] M. Riccardi, *I 'Disastri ambientali': la Cassazione al crocevia tra clausola di salvaguardia, fenomeno successorio e concorso apparente di norme*, in *Diritto Penale Contemporaneo*, (2018), n. 10, available at: <https://archiviodpc.dirittopenaleuomo.org/upload/3605-riccardi2018a.pdf>, p. 326.
[304] Ibid., pp. 321–328.
[305] Legislative Decree of 5 February 1997, no. 22, Implementation of Directives 91/156/EEC on waste, 91/689/EEC on hazardous waste, and 94/62/EC on packaging and packaging waste, available at: https://www.parlamento.it/parlam/leggi/deleghe/97022dl.htm.

Subsequently, Legislative Decree no. 152/2006, now known as the Environmental Code or Consolidated Environmental Text, was adopted. This decree constituted the sole comprehensive text governing environmental criminal law until the enactment of Law no. 68/2015. Over the years, the decree has undergone multiple amendments, including the addition of two further parts: Part V-bis, "Provisions for Particular Installations", and Part VI-bis, "Sanctioning Rules for Administrative and Criminal Offenses in Environmental Protection Matters", the latter introduced by Law no. 68/2015.

In general, concerning environmental protection, the decree primarily addresses administrative offenses. As for criminal aspects, the provisions are structured according to a minor offenses (*contravvenzioni*) based model of incrimination. Consequently, the Italian legislator opted for a political-administrative approach rather than a criminal law-oriented one.

In other words, the safeguarding of the environment is entrusted to public administration, which balances environmental interests with other human interests through the identification of general and abstract standards to be observed, such as limits on acceptable levels of pollutants. Furthermore, the provisions are framed within the scheme of abstract endangerment offenses (*reati di pericolo astratto*)[306], in the form of minor offenses (*contravvenzioni*), and criminal offenses remain residual within the decree.

Criminal offenses under the Environmental Code can be grouped into four main categories. The first involves the conduct of activities without authorization or with authorization that has been suspended or revoked. For instance, Article 256, paragraph 1, punishes anyone who engages in the collection, transport, recovery, disposal, trade, or brokerage of waste without the required authorization.

The second category concerns the failure to report certain relevant information to the public authority.

The third pertains to exceeding limit values for the emission and/or discharge of harmful substances into the environment, which typically involves reference to tables periodically updated by the competent administrative authorities.

[306] The structure of abstract or presumed endangerment offenses implies that it is the legislator who makes, in advance, the assessment of dangerousness concerning the conduct of the perpetrator. Consequently, danger is not a constitutive element of the offense but rather the reason for incrimination; therefore, the judge must ascertain the existence of the unlawful conduct regardless of whether it has concretely caused danger to the protected interest.

Finally, the most frequent category includes cases of non-compliance with specific and concrete measures issued by supervisory authorities. These measures may include permits, injunctions, or orders, as exemplified by Article 256, paragraph 4, concerning waste management[307].

Continuing, a further intervention in this area occurred with Legislative Decree no. 121 of 7 July 2011, which implemented Directive 2008/99/EC on the criminal protection of the environment and Directive 2009/123/EC, amending the earlier Directive 2005/35/EC concerning pollution caused by ships. This legislative text was, in fact, adopted belatedly by the Italian State, which had been issued a formal notice of infringement by the European Commission on 26 January 2011.

Additionally, it is characterized by a minimal transposition of the directives. The Italian legislator limited itself to introducing the provisions necessary to comply with the obligations imposed by the European Community, rather than undertaking an organic reorganization of environmental criminal law, which would have been desirable.

Indeed, as early as the Explanatory Report accompanying the decree, the Government clarified that, in light of the penalty limits established by the enabling act (Law no. 96/2010), a reorganization of the legislative framework was not feasible and could only be addressed in a future intervention. As a result, two new criminal offenses were added to the Italian Criminal Code in the form of minor offenses (contravvenzioni), which were, according to the legislator, the only ones not yet included in the Italian legal framework. These are Article 727-bis, concerning the killing, destruction, capture, or possession of specimens of protected wild animal and plant species, and Article 733-bis, concerning the destruction or deterioration of habitats within a protected site.

Regarding the transposition of Directive 2009/123/EC, the Explanatory Report clarified that the Italian legal system already provided for adequate sanctions in this area, and therefore, no further adjustments were necessary. The reference is to Legislative Decree no. 202 of 6 November 2007, which implemented Directive 2005/35/EC on ship-source pollution and associated penalties.

This decree prohibited the discharge of pollutants into the sea by ships, penalizing intentional pollution (Article 8) and negligent pollution (Article 9), with sanctions including imprisonment (only for the former) and fines.

Noteworthy, however, is the inclusion, by Legislative Decree no. 121/2011, of certain environmental crimes—previously excluded—within the list of predicate offenses for establishing

[307] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., pp. 6–8.

corporate administrative liability under Article 25-undecies of Legislative Decree no. 231 of 8 June 2001. This regulatory framework will be discussed in detail in the following chapters.

It is important to emphasize from the outset that, since 2011, this category has included the two new criminal offenses under Articles 727-bis and 733-bis of the Italian Criminal Code, as well as a series of offenses related to waste management.

Specifically, these include unauthorized waste management activities (Article 256), failure to remediate contaminated sites (Article 257), illegal waste trafficking (Article 259), and organized activities aimed at illegal waste trafficking (Article 260), all contained in Legislative Decree no. 152/2006.

This stance by the legislator, although in compliance with a European directive obligation, should be welcomed as it allows for the prosecution of legal entities, such as companies and businesses, that engage in unlawful conduct harming the environment—a particularly widespread issue in the context of illegal waste cycles.

Moreover, it should be noted that the sanctioning framework includes both administrative pecuniary sanctions, which can be particularly severe, and interdictive sanctions, which may become permanent if the company has been systematically used to violate waste trafficking regulations. Consider, for instance, the cases involving the ad hoc establishment of companies for illegal waste management, where criminal organizations with mafia characteristics often hide behind the corporate structure.

In conclusion to this section, it should be noted that the possibility of an organic reform of environmental criminal law, aimed at the enhancement of the sanctioning framework, had been considered even before the adoption of Legislative Decree no. 121/2011. On 24 April 2007, a draft bill titled *"Provisions concerning crimes against the environment"* was introduced, which would have entailed the addition of Title VI-bis to Book Two of the Italian Criminal Code, under the heading *"Crimes against the Environment"*. However, the early dissolution of the legislature in 2008 prevented the completion of this project, which was not resumed in subsequent years[308].

3.4.1. Law No. 68 of 22 May 2015

In light of the analysis outlined in the previous section, it becomes evident that a lack of systematic and punitive measures has characterized the Italian legal system's criminal protection of the environment.

[308] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., pp. 9–11.

Furthermore, there was a delay in aligning with European obligations, followed by a partial implementation of such requirements. As a result, the need for an organic reconsideration of this matter was strongly felt across the jurisprudential and academic community. This was especially true considering that eco-criminals faced no significant deterrents under the existing provisions; rather, they were incentivized to invest in this sector, where, in a cost-benefit logic, the profit potential was extraordinarily high. The long-awaited turning point came with Law No. 68 of 22 May 2015, titled *"Provisions on Crimes Against the Environment."* This law also marked a deeper attempt to align with the level of protection required by European institutions.

Specifically, the legislative reform was integrated into the pre-existing legal framework through three distinct lines of intervention.

First and foremost, the most significant innovation is the introduction of the new autonomous Title VI-bis, *"Crimes Against the Environment"*, into the Italian Criminal Code—the so-called eco-crimes (*ecoreati*). Secondly, the amendment of Legislative Decree No. 152/2006 introduced the new Part VI-bis, containing provisions for the extinction of administrative and criminal offenses related to environmental protection. Lastly, the tightening of sanctions for offenses harming endangered animal and plant species, provisions originally introduced under the Washington Convention of 1973, were implemented by the European Union through Regulation (EEC) No. 3626/82 and ratified in Italy by Law No. 874 of 19 December 1975.

It is worth noting that the reform did not solely take a repressive approach by introducing new crimes and sanctions, but also incorporated new incentive mechanisms aimed at encouraging remedial actions for the damaged environmental components. In this regard, part of the academic doctrine has highlighted how the legislative intervention has created a sort of *"*micro-system*"* of criminal protection for the environmental good[309].

The most significant aspect of the 2015 law is undoubtedly its aim to introduce new criminal offenses for the repression of unlawful conduct in the more severe form of felonies, as long hoped for, given the inability, until that point, to adequately penalize the conduct of eco-criminals.

Indeed, in Bill No. 342-C, preceding the reform proposed by Hon. Realacci, it was explained that the need for such a reform arose from the realization that

> the ecomafie in Italy […] have a business turnover exceeding 16 billion euros. Cement and waste continue to be key sectors of the lucrative eco-crime business. […] The need

[309] *L'Architettura punitiva degli eco-delitti nel prisma delle attività economiche. Infelice formulazione o binomio inconciliabile?*, in *Lexambiente Rivista trimestrale di diritto penale dell'ambiente*, (2023) n. 3, available at: <https://lexambientetrimestrale.it/index.php/it/2023-3/larchitettura-punitiva-degli-eco-delitti-nel-prisma-delle-attivita-economiche-infelice-formulazione-o-binomio-inconciliabile>, p. 47.

> to introduce a homogeneous group of rules into the criminal system to protect the environment has now been generally acknowledged, which would overcome the plurality of disorganized regulations scattered across various legal texts, making them extremely difficult to comprehend both for citizens and interpreters[310].

It is worth highlighting, from a systematic perspective, the choice to introduce the new Title VI-bis, dedicated to the protection of the environmental interest, immediately after the crimes safeguarding public safety. This placement underscores the connection between these two legal interests. While this might partially indicate the persistence of an anthropocentric approach to environmental protection, it simultaneously reflects a more conscious understanding of the interconnection between harm to environmental components and their repercussions on human health.

Turning to the criminal offenses introduced, these include environmental pollution (Article 452-bis of the Italian Criminal Code); death or injury as a consequence of environmental pollution (Article 452-ter); environmental disaster (Article 452-quater); environmental pollution and disaster committed with negligence (Article 452-quinquies); trafficking and abandonment of high-radioactivity material (Article 452-sexies); obstruction of monitoring (Article 452-septies); and failure to remediate (Article 452-terdecies). These provisions constitute offenses of concrete endangerment or harm, adding to the pre-existing punitive framework, which was almost exclusively populated by abstract endangerment minor offenses (*contravvenzioni*), as required by Directive 2008/99/EC. Furthermore, all these offenses are punishable when committed intentionally, except for environmental pollution and disaster, which can also be committed with negligence.

The introduction of the new body of eco-crimes provoked a fervent public debate, marked by highly divergent positions. In the political arena, Hon. Realacci commented on the enactment of the reform by stating that it was "a great day for those who love Italy, the environment, and the future". Conversely, the scientific community engaged in extensive discussion, at times particularly critical[311], to the point of describing the reform's text as "incoherent, obscure, and, in some parts, deeply flawed"[312].

[310] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., pp. 11–12.
[311] P. Patrono, *La tutela penale dell'ambiente: dal diritto penale del rischio al rischio di diritto penale*, op. cit., pp. 597–609.
[312] F. Palazzo, *I nuovi reati ambientali. Tra responsabilità degli individui e responsabilità dell'ente*, in *Diritto Penale Contemporaneo*, (2018) n. 1, available at: <https://archiviodpc.dirittopenaleuomo.org/d/6074-i-nuovi-reati-ambientali-tra-responsabilita-degli-individui-e-responsabilita-dellente>, p. 329.

In general, examining the legislative reform and its consequences on the Italian legal system, certain positive aspects can be identified, such as its underlying choices and reform objectives, alongside negative aspects, primarily related to legislative drafting techniques[313].

Regarding the positive aspects, the decision to introduce a set of crimes into the Criminal Code and to position them following the offenses against public safety, as noted above, is particularly welcomed.

This reflects that the legislator responded to longstanding suggestions from jurisprudence and legal scholarship, which had called for specific criminal provisions aimed at protecting the environmental interest.

However, it should be noted that this initiative should have been preceded by a reconsideration of the pre-existing sanctioning framework, including the elimination of certain minor offenses (*contravvenzioni*) that penalize conduct which causes neither harm nor concrete danger. In fact, precisely for such cases, Law no. 68/2015 introduces a mechanism for extinction.

Among the merits of the reform, the positive impacts on a politico-criminal level affecting the entire community should be highlighted.

These are evident both in terms of attributing greater significance to environmental protection—no longer safeguarded solely by minor offenses (*contravvenzioni*) and administrative violations—and in terms of discouraging the commission of conduct now subject to stricter penalties.

Noteworthy is also the provision contained in Article 452-decies of the Italian Criminal Code, titled *"Active Repentance"*. In line with the reform's incentive-based character, this article allows for the reduction of the penalties provided for the crimes under Title VI-bis and for the offense of criminal association pursuant to Article 416, aggravated under Article 452-octies. Such reductions are applicable if the perpetrator takes action to prevent further consequences of the criminal activity, ensures safety measures, carries out remediation efforts, and, if possible, restores the site to its original condition; or, alternatively, provides forms of procedural cooperation[314].

Similarly, the new Article 452-duodecies of the Italian Criminal Code, "Restoration of the State of the Environment" is also noteworthy. According to this provision, after issuing a conviction for a crime under the Title in question, the judge must order the recovery and, if technically feasible, the

[313] E. Lo Monte, *I profili sostanziali della riforma in materia di ambiente (l. n. 68/2015): tra istanze di effettività e simbolismo repressivo*, in *Iura and Legal System*, 8 (2021), n. 2, available at: <https://www.rivistagiuridica.unisa.it/uploads/14830/interventi_2021-2_lo_monte_profili_pronto.pdf>, p. 16.
[314] E. Napoletano, *Manuale di diritto penale ambientale*, op. cit., pp. 12–13.

restoration of the state of the environment, assigning the costs to the convicted party. This reflects a positive implementation of the internationally recognized principle of "the polluter pays".

Aligned with this logic of environmental restoration is also the criminal offense of "Failure to remediate" (Article 452-terdecies of the Italian Criminal Code), which penalizes those who fail to comply with the obligation to remediate, restore, or recover the state of the environment as required by law, a judicial order, or a public authority directive.

Also positive is the provision contained in Article 452-undecies of the Italian Criminal Code concerning the possibility of adopting forfeiture measures, such as confiscation and confiscation by equivalent. However, these measures are contingent upon the determination of damage or profit, which entails challenges in establishing these elements in relation to environmental crimes, as will be further discussed below[315].

Turning to the negative aspects, it appears that these are more numerous and of such a magnitude as to risk rendering the much-anticipated reform ineffective. The main criticisms concern the drafting technique of criminal offenses, which conflicts with the constitutionally significant criminal law principles of the offensiveness of the crime, the principles of specificity and definiteness, the principle of legality, and the principle of proportionality.

This is partly due to the technical complexity of ensuring effective protection against objective elements that are difficult to define and elusive, such as the environment. In this regard, reference can be made to the previously mentioned debate that took place at the international level to reach a common definition of the environment.

In any case, as already highlighted, the uncertainty of such fundamental concepts is reflected in the rules dedicated to their protection. In particular, in this case, it gives rise to numerous critical issues concerning the identification of the event of harm or concrete danger to the environment and the determination of the causal link between the conduct and the event[316].

This occurs primarily because of the two key offenses introduced by the legislative reform, namely environmental pollution and environmental disaster. These offenses are considered to be affected by an excessive breadth of offensiveness, making it unlikely that they can be effectively established in judicial proceedings, particularly concerning the causal link[317].

[315] E. Lo Monte, *I profili sostanziali della riforma in materia di ambiente (l. n. 68/2015): tra istanze di effettività e simbolismo repressivo*, op. cit., pp. 16–18.
[316] Ibid., p. 18.
[317] F. Palazzo, *I nuovi reati ambientali. Tra responsabilità degli individui e responsabilità dell'ente*, op. cit., p. 329.

Once again, the regulatory uncertainty was followed by a supplementary and clarifying intervention through judicial interpretation. By way of example, concerning the elements required to establish the offense of environmental disaster under Article 452-quater of the Italian Criminal Code, the Third Section of the Italian Supreme Court intervened to clarify that the definition of "environment" must be understood in a broad sense. Specifically, it stated:

> the notion of environment under consideration must in any case be understood in a broad sense, not limited exclusively to natural aspects, but also extended to the consequences of human intervention, namely the transformations carried out by humans and deserving of protection. This is demonstrated not only by the guidance provided by constitutional case law but also by the aggravating circumstances provided for in Articles 452-bis, paragraph 2, and 452-quater, paragraph 2, of the Criminal Code, insofar as they refer to situations in which the punishable acts occur in areas subject to landscape, historical, artistic, architectural, or archaeological protection[318].

Delving deeper, it emerges that, in order to typify unlawful conduct, the legislator employed a series of terms characterized by significant breadth and limited clarity, effectively delegating to interpreters the task of understanding how to apply them to concrete cases. The primary reference is to the adverb *"abusivamente"* (unlawfully), which appears in the offenses outlined in Articles 452-bis, 452-ter, 452-sexies, and 452-quaterdecies of the Italian Criminal Code. For these offenses to be established, the conduct must be committed *"abusivamente"*. This has led to a multiplicity of interpretations, not always consistent with one another.

In this case, as well, the Italian Supreme Court intervened intending to guide legal practitioners and prevent the risk of conflicting judicial interpretations. The Supreme Court clarified that

> the adverb abusivamente, in line with the provisions of Directive 2008/99/EC, must be understood in a broad sense, encompassing the violation of state or regional laws, even if not strictly related to the environmental sector, as well as the violation of administrative regulations[319].

Equally questionable are the expressions *"compromissione"* (impairment), *"deterioramento"* (deterioration), *"significativi e misurabili"* (significant and measurable), *"porzioni estese o significative del suolo o del sottosuolo"* (extensive or significant portions of soil or subsoil), and *"ecosistema"* (ecosystem), all of which are contained in Article 452-bis.

Indeed, it is difficult to discern the specific meaning to be attributed to one term over another — for instance, *"compromissione"* as opposed to *"deterioramento"*.

[318] Italian Supreme Court, Section III, judgment no. 29901/2018, 18 June 2018.
[319] Italian Supreme Court, Section III, judgment no. 46170/2016, 21 September 2016.

Consequently, the offense is characterized by redundancy and vagueness. The scope of these expressions was clarified by the aforementioned ruling, which stands out as a particularly complex and challenging hermeneutic effort. Specifically, it was established that:

> the impairment and deterioration of the environmental matrix or the ecosystem — which do not imply a condition of irreparability — both result in a modification of the environmental asset. In the first case, it entails a condition of functional imbalance, as it affects the natural processes related to the specific characteristics of the environmental matrix or ecosystem. In the second case, it entails a structural imbalance, characterized by a decline in the condition or quality of the environmental matrix or ecosystem. In assessing the significance (understood as impact and relevance) and measurability (understood as quantitative or objectively relevant appreciability) of the impairment or deterioration of the environmental matrix or ecosystem, the judge is not bound by the parameters imposed by sectoral regulations, although these may serve as useful elements for the evaluation[320].

About the critical remarks raised thus far, the issue of constitutional legitimacy has also been raised about Article 452-bis, alleging a violation of the principles of specificity and definiteness under Article 25 of the Italian Constitution and Article 7 of the ECHR.

However, the Italian Supreme Court deemed the issue manifestly unfounded, stating that:

> the expressions used to describe the prohibited conduct are sufficiently unambiguous, both concerning the events, which refer to a harmful act and for which the specification that they must be 'significant' and 'measurable' excludes those that do not appreciably affect the protected interest, and about the object of the conduct, which is precisely described in points 1) and 2) of the incriminating provision[321].

Proceeding further, regarding Article 452-quater of the Italian Criminal Code, it is established that an environmental disaster may alternatively consist of:

> the irreversible alteration of the balance of an ecosystem; the alteration of the balance of an ecosystem, the elimination of which proves particularly burdensome and achievable only through exceptional measures; or harm to public safety due to the seriousness of the act in terms of the extent of the impairment or its harmful effects, or due to the number of people harmed or exposed to danger.

Once again, the legislative wording employs expressions — such as "irreversible alteration of the balance", "particularly burdensome," and "extent of the impairment" — which render it excessively vague and broad. As a result, it ultimately describes a macro-event that poses significant challenges in judicial proceedings[322].

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[320] Ibid.

[321] Italian Supreme Court, Section III, judgment no. 9736/2020, 30 January 2020.

[322] E. Lo Monte, *I profili sostanziali della riforma in materia di ambiente (l. n. 68/2015): tra istanze di effettività e simbolismo repressivo*, op. cit., pp. 18-20.

The range of criticisms outlined has led the legal doctrine to issue a harsh overall critique of the reform, which appears to reflect a persistent inability on the part of the state legislator to effectively assume responsibility for environmental protection. The effectiveness of the reform seems to be entirely entrusted to the sanctioning framework, which is marked by particular severity. However, this aspect has also been strongly criticized, as it appears disproportionate when compared to the protection of other legal interests.

The prevailing impression is that the reform embodies a form of repressive symbolism, where the severity of the penalties — aimed at elevating the environment to a primary-rank legal interest — clashes with the difficulty of applying the offenses to concrete cases. This is due to the complexity of establishing both the occurrence of the event and the causal link[323].

This assertion appears to be confirmed by the discrepancy between procedural data, relating to proceedings involving charges of committing one of the offenses under Title VI-bis, and the data collected and reported by environmental associations and non-governmental organizations.

In quantitative terms, the former are lower than the latter, highlighting the existence of a dark figure of environmental crimes, which are presumably more numerous than those that are actually detected and prosecuted. In this regard, the offense of environmental disaster (Article 452-bis) is particularly significant, as it has resulted in an extremely limited number of convictions.

In any case, it should be noted that these offenses were introduced less than ten years ago, and thus, it may still take time for a more effective application to be observed[324].

Added to this is the peculiar nature of the sector, since the external manifestation of an environmental harm event — in the form of pollution or disaster — may require a considerable lapse of time to materialize. This is because such events often result from a series of harmful actions repeated over the years.

The Ministry of Justice, starting from February 2016, initiated a monitoring activity aimed at collecting data on environmental crimes recorded by Italian Public Prosecutor's Offices and Courts. The objective was to develop a comprehensive overview of the effectiveness of the regulatory system in addressing the most significant environmental threats and, if necessary, to propose legislative amendments.

[323] Ibid., pp. 20-21.
[324] F. Montanaro, *L'Architettura punitiva degli eco-delitti nel prisma delle attività economiche. Infelice formulazione o binomio inconciliabile?*, op. cit., pp. 52-54.

Considering the data collected from Public Prosecutor's Offices for the period from 2021 to 2023, it should be noted that, out of 165 Public Prosecutor's Offices in Italy (136 ordinary offices and 29 Juvenile Prosecutor's Offices), 148 offices responded in 2023, 150 in 2022, and 143 in 2021.

With regard to cases of environmental pollution and environmental disaster, it emerges that the proceedings initiated against known persons are as follows:

- Article 452-bis (environmental pollution):
  - 233 in 2023;
  - 237 in 2022;
  - 207 in 2021.
- Article 452-quater (environmental disaster):
  - 32 in 2023;
  - 24 in 2022;
  - 23 in 2021.
- Article 452-quinquies (negligent offenses):
  - 48 in 2023;
  - 37 in 2022;
  - 59 in 2021.

The number of individuals under investigation is as follows:

- Article 452-bis (environmental pollution):
  - 681 in 2023;
  - 913 in 2022;
  - 626 in 2021.
- Article 452-quater (environmental disaster):
  - 93 in 2023;
  - 64 in 2022;
  - 200 in 2021.
- Article 452-quinquies (negligent offenses):

- 98 in 2023;
- 141 in 2022;
- 138 in 2021.

The number of proceedings with a request for case dismissal against known persons is as follows:

- Article 452-bis (environmental pollution):
  - 116 in 2023;
  - 124 in 2022;
  - 78 in 2021.
- Article 452-quater (environmental disaster):
  - 14 in 2023;
  - 14 in 2022;
  - 4 in 2021.
- Article 452-quinquies (negligent offenses):
  - 26 in 2023;
  - 36 in 2022;
  - 26 in 2021.

The number of proceedings in which criminal prosecution was initiated is as follows:

- Article 452-bis (environmental pollution):
  - 75 in 2023;
  - 75 in 2022;
  - 85 in 2021.
- Article 452-quater (environmental disaster):
  - 7 in 2023;
  - 7 in 2022;
  - 7 in 2021.
- Article 452-quinquies (negligent offenses):
  - 25 in 2023;

- 23 in 2022;
- 14 in 2021[325].

The reported data can clearly be interpreted in various ways and must be analyzed while taking into account the timeframes of judicial proceedings and the workload of the different Public Prosecutor's Offices across Italy.

This analysis focuses on two key aspects. First, it is observed that the number of individuals under investigation tends to be consistently higher than those formally charged, i.e., those against whom criminal prosecution is initiated at the end of the investigation. While it should be noted that there is not necessarily a direct correspondence between these two groups, this trend could nonetheless be indicative of the difficulties in gathering sufficient evidence to support an accusation in court. Such a difficulty may stem from the complexity of establishing the occurrence of the criminal event and the causal link between the conduct and the resulting harm.

A similar consideration can be drawn from the fact that the number of proceedings for which a request for case dismissal is made is generally higher than the number of cases in which criminal prosecution is initiated.

Taking into consideration the data collected from the Courts during the 2021-2023 period, particularly noteworthy information emerges. It should be noted that, out of a total of 301 offices (136 Preliminary Investigation Judges, 136 Trial Courts, and 29 Juvenile Courts), 250 offices responded in 2023, 241 in 2022, and 216 in 2021.

An analysis of this data reveals a significant finding: the only environmental crimes introduced by Law no. 68/2015 for which information was collected during this period are those under Articles 452-bis and 452-ter. Therefore, considering that not all offices responded, it appears that no trials were conducted for the other environmental crimes (*ecodelitti*) over these three years.

With regard to Article 452-bis (environmental pollution), the relevant data on proceedings against known persons is as follows:

- Proceedings with a request for case dismissal:
  - 36 in 2023;
  - 233 in 2022;

[325] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 3 – Serie storica anni 2021-2023 – aggiornata al 10 giugno 2024*, available at: https://www.giustizia.it/cmsresources/cms/documents/procure_serie_storica_II_2021_2023.pdf.

- 60 in 2021.

- Proceedings concluded with a conviction:

- 26 in 2023;

- 20 in 2022;

- 14 in 2021.

- Proceedings concluded with an acquittal:

- 26 in 2023;

- 7 in 2022;

- 10 in 2021[326].

Regarding Article 452-ter (death or injury as a consequence of the environmental pollution offense), data is only available for the year 2023. The figures are as follows:

- Proceedings with a request for case dismissal: 17;
- Proceedings concluded with a conviction: 3;
- Proceedings concluded with an acquittal: 0[327].

Considering that these statistical data provide a partial rather than a comprehensive picture, they illustrate the limited application of the newly introduced environmental crimes (*ecodelitti*). Indeed, over three years, only two of these crimes are relevant, and only a limited number of proceedings result in a conviction.

This information appears to be significantly inconsistent with the figures reported by environmental organizations.

It should be noted, however, that this analysis does not consider the offenses provided for in Legislative Decree no. 152/2006 nor the crime of "Organized activities for the illegal trafficking of waste".

As of now, the long-awaited reform appears to have shown a certain degree of ineffectiveness.

[326] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 13 – Serie storica anni 2021-2023 – aggiornata al 10 giugno 2024*, available at: https://www.giustizia.it/cmsresources/cms/documents/tribunali_serie_storica_II_2021_2023.pdf.
[327] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 11 – Serie storica anni 2021-2023 – aggiornata al 10 giugno 2024*, available at: https://www.giustizia.it/cmsresources/cms/documents/tribunali_riepilogo_2023.pdf.

Before concluding this paragraph, it is worth highlighting an additional innovation introduced by Law no. 68/2015. Of particular relevance to the phenomenon examined in this research, namely, Ecomafie, is the introduction of a new aggravating circumstance under Article 452-octies of the Criminal Code, commonly referred to as the "ecomafia aggravating circumstance".

The so-called eco-mafia aggravating circumstance entails an increase in penalties when criminal associations under Articles 416 and 416-bis of the Criminal Code aim to commit offenses governed by Title VI-bis.

Specifically, about mafia-type criminal associations, the wording of the provision states:

> When the association referred to in Article 416-bis is aimed at committing any of the crimes provided for under this Title or at acquiring the management or, in any case, control of economic activities, concessions, authorizations, public contracts, or public services in the environmental sector, the penalties provided for in the same Article 416-bis are increased.

Therefore, the new article, following the statutory framework established by Article 416-bis, encompasses not only the objective of committing environmental crimes (*ecoreati*) but also a broad range of preparatory activities aimed at acquiring the management and control of sectors related to environmental matters.

It is noteworthy that the legislator has recognized the need to criminalize infiltration activities, such as those linked to the management of the waste cycle, which are described in the chapter dedicated to criminal phenomenology and methodology. These activities, which are typical of mafia-type criminal associations, might not, if considered in isolation, constitute criminal offenses on their own.

The introduction of this provision has, in turn, prompted a series of criticisms from the scientific community.

First, it has been noted that the ecomafia aggravating circumstance, conceived as an aggravating factor, could have been incorporated into the text of Articles 416 and 416-bis, rather than being placed within Title IV-bis, in line with a logic of coordination and rationalization of incriminating provisions.

Second, part of the scholarly doctrine argues that certain issues of constitutional legitimacy may arise, particularly regarding potential violations of the principles of proportionality, equality, and reasonableness. This concern stems from the fact that a harsher punitive regime is envisaged for associations aimed at committing environmental crimes. However, these crimes are subject to lower statutory penalties compared to other offenses typically committed by criminal organizations.

Therefore, this provision also reflects the repressive symbolism previously highlighted. While recognizing the seriousness of the phenomenon under examination, the legislative intervention is characterized by a lack of systematic and coherent integration within the broader framework of the criminal justice system.

Another significant criticism concerns the fact that Article 452-octies exclusively refers to the offenses provided for under Title VI-bis, meaning it does not apply to the offenses contained in Legislative Decree no. 152/2006 (Environmental Consolidated Act). Moreover, the offenses contained in the Environmental Consolidated Act are, for the most part, classified as minor offenses (contravvenzioni) and, as such, cannot serve as predicate offenses for the associative crimes governed by Articles 416 and 416-bis.

This is particularly significant considering that most of the incriminating provisions that are regulated and prosecuted in legal proceedings, especially in the specific area of waste management, are precisely those provided for under the Environmental Consolidated Act.

In conclusion, this legislative reform is unlikely to withstand the criticism of being predominantly symbolic rather than genuinely effective. While it appears to address societal concerns regarding the phenomenon, it fails to exhibit a coherent and comprehensive normative rationale[328].

3.4.2. Recent Developments in Environmental Protection Law

Before concluding this part of the analysis, dedicated to examining the evolution of Italian legislation on the criminal protection of the environment, it is essential to highlight the most recent legislative developments.

A pivotal reform in this regard is the amendment of the Italian Constitution, introduced by Constitutional Law no. 1 of 11 February 2022, which modified Articles 9 and 41 of the Constitution, explicitly elevating environmental protection to a fundamental principle of the Italian legal system.

Specifically, Article 9 of the Constitution was amended to include, among the Republic's obligations of protection, the following provision:

> the environment, biodiversity, and ecosystems, also in the interest of future generations. The State law regulates the methods and forms of animal protection.

Given that Article 9 is situated within the Fundamental Principles of the Constitution, this reform underscores the significance attributed to environmental protection as the result of a long socio-legal

[328] M. Palmisano, *Il traffico illecito di rifiuti nel Mediterraneo: fenomenologie e strumenti di contrasto*, op. cit., pp. 101-103.

evolution. Furthermore, it is noteworthy that this part of the constitutional text had never been amended before[329].

It should be noted that the jurisprudence of the Constitutional Court had long since recognized the constitutional status of environmental protection. However, the explicit inclusion of this principle in the Fundamental Charter carries significant symbolic value and has a range of practical implications.

It can therefore be argued that, through this constitutional amendment, the legislator aimed to move beyond an anthropocentric approach to environmental protection, thereby granting the environment an autonomous and intrinsic legal status.

Moreover, it is worth reflecting on the fact that the amendment does not merely refer to the environment but also explicitly includes biodiversity and ecosystems, all of which are to be protected in the interest of future generations.

Concerning the amendment of Article 41 of the Constitution, a provision dedicated to the protection of the freedom of economic initiative, a new limitation was introduced, stipulating that such activity must not be carried out "in contrast with health and the environment".

Moreover, in the second paragraph of the same article, where it is established that the law shall determine appropriate programs and controls to ensure that economic initiative is directed and coordinated toward social objectives, an explicit reference to environmental objectives was also added.

With regard to this Second Amendment, the scientific community refers to it as a "green graft". By introducing new limitations on the exercise of economic initiative, it necessarily requires consideration of the environment when balancing the competing interests at issue in shaping the guidelines of economic policy[330].

The new Article 41 of the Constitution is particularly significant for the analysis conducted in this research, as it establishes the fundamental principles that must be taken into account in shaping business and production policies.

The research carried out so far has highlighted how, all too often, corporate strategies are primarily aimed at maximizing profits, pursuing cost reduction regardless of the rights that are compromised in the process, including those related to the environment and human health.

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[329] F. Montanaro, *L'Architettura punitiva degli eco-delitti nel prisma delle attività economiche. Infelice formulazione o binomio inconciliabile*, op. cit., p. 93.

[330] C. Ruga Riva, *L'ambiente in Costituzione. Cambia qualcosa per il penalista?*, in *Sistema Penale*, 16 February 2023, available at: <https://www.sistemapenale.it/it/opinioni/ruga-riva-lambiente-in-costituzione-cambia-qualcosa-per-il-penalista>.

Currently, the constitutional reform officially establishes that such methods of exercising free economic initiative are manifestly unconstitutional, meaning that they are contrary to the most fundamental legislative text of the legal system, which enshrines the core values of the social community.

Considering the impact of this reform on environmental criminal law, it is first noted that the new Articles 9 and 41 of the Constitution will have a far greater influence on the legislator's obligation to ensure environmental protection than in the past.

In this regard, when defining endangerment offenses, which are typical of environmental crime provisions, the legislator will be required to consider a broader time horizon — namely, that of future generations. This element will also have to be taken into account by judges when assessing the actual risk of environmental harm resulting from unlawful conduct.

Within the scientific community, some scholars have even argued that, with respect to the term "abusively" — which appears in the defining elements of environmental crimes — following the reform, a certain conduct could be deemed abusive solely by virtue of its inconsistency with the new provisions of Articles 9 and 41 of the Constitution[331].

The majority opinion, however, appears to hold that the reform should not have any effect on the interpretation of the constitutive elements of the offense—fault, position of guarantee, and abusiveness—since, due to their nature and function, these elements require clear and precise statutory provisions.

In general, the recent constitutional reform, which strengthens environmental protection, is expected to have a significant impact on judicial interpretation. In this regard, some commentators hope that an appropriate balance will be maintained between the principles of criminal law guarantees and the environmental protection demands stemming from the European Union and environmentalist ideology[332].

Continuing, a recent amendment to the subject under examination was introduced by Article 6-ter of Decree-Law no. 105/2023, which was incorporated during the process of conversion into Law no. 137/2023.

[331] G. Amendola, *L'ambiente in Costituzione. Primi appunti*, in *Osservatorio sulla criminalità nell'agricoltura e sul sistema agroalimentare*, available at: <https://www.osservatorioagromafie.it/lambiente-in-costituzione-primi-appunti/?_waf=1>. Last consultation on January 7, 2025.
[332] C. Ruga Riva, *L'ambiente in Costituzione. Cambia qualcosa per il penalista?,* op. cit.

This legislative reform modifies Legislative Decree no. 152/2006, converting certain administrative offenses in the field of waste management into minor offenses (*contravvenzioni*), thereby bringing them within the scope of criminal law. Specifically, it provides that:

> Without prejudice to the provisions of Article 256, paragraph 2, anyone who, in violation of the provisions of Articles 192, paragraphs 1 and 2, 226, paragraph 2, and 231, paragraphs 1 and 2, abandons or deposits waste or discharges it into surface or underground waters shall be punished with a pecuniary penalty ranging from one thousand euros to ten thousand euros. If the abandonment concerns hazardous waste, the penalty is increased up to double[333].

A series of amendments to the Criminal Code are also envisaged. In particular, Article 240-bis, paragraph 1, of the Criminal Code, which governs the offenses for which, in the event of conviction or plea agreement (patteggiamento), the confiscation of money or assets may be ordered when the convicted person cannot justify their origin and possesses them in a disproportionate amount relative to their income, has been expanded to include Articles 452-bis, 452-ter, 452-sexies, and 452-quaterdecies.

Previously, the so-called "confiscation for disproportion" was only applicable to Articles 452-quater and 452-octies, paragraph 1.

Furthermore, within Article 452-bis, the act of causing pollution in a protected natural area or an area subject to landscape, historical, artistic, architectural, or archaeological protection, or causing harm to protected animal or plant species, has been reclassified as a special aggravating circumstance. This entails an increase in the penalty by one-third to one-half.

A new special aggravating circumstance has also been introduced, entailing an increase in the penalty by one-third to two-thirds. This occurs when pollution results in the deterioration, compromise, or destruction of a habitat within the same areas mentioned in the previously established aggravating circumstance.

Finally, concerning Article 452-quater, the act of causing an environmental disaster in a protected natural area or an area subject to landscape, environmental, historical, artistic, or archaeological protection, or causing harm to protected animal or plant species, has been reclassified as a special aggravating circumstance, resulting in an increase in the penalty by one-third to one-half[334].

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[333] Law of 9 October 2023, no. 137, Conversion into law, with amendments, of Decree-Law of 10 August 2023, no. 105, containing urgent provisions on criminal procedure, civil procedure, the fight against forest fires, recovery from drug addiction, health, and culture, as well as on matters concerning judicial and public administration personnel, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2023-10-09;137.

[334] A. Scarcella, *Le modifiche penalistico/ambientali introdotte dalla legge n. 137/2023,* in *Ambiente & Sviluppo,* (2024), n. 1, pp. 22-23.

In conclusion, the recent reforms examined highlight the growing attention given to environmental issues, including criminal law aspects, in recent years. This trend aligns with the gradual recognition of the environment as a fundamental value essential for the healthy survival of the community and as an element worthy of protection in its own right.

Nevertheless, while acknowledging the significance of this progressive affirmation of a regulatory framework for environmental protection, it is essential to emphasize the need for ongoing monitoring of the application of environmental crime provisions, as well as a possible systematic reconsideration of environmental criminal law.

3.5. The Crime of Organized Activities for the Illegal Trafficking of Waste

Within the study of the regulatory instruments provided by the Italian legal system for the protection of the environment and the criminalization of the most serious forms of harm to this good, particular and independent attention must be given to the crime of "Organized activities for the illegal trafficking of waste".

This criminal offense is fundamental to a comprehensive analysis of the subject of this research, as it is considered to have been specifically introduced to counter and repress the phenomenon of Ecomafie, particularly regarding the illegal trafficking and disposal of waste[335].

The crime was first introduced by Law no. 93 of 23 March 2001 under Article 53-bis of Legislative Decree No. 22/1997, known as the "Ronchi Decree". It represented the first criminal offense aimed at environmental protection within the Italian legal system, until the introduction of Article 256-bis, "Illegal combustion of waste", by Decree-Law No. 136/2013[336].

Subsequently, the offense was transposed, with the same wording, into Article 260 of Legislative Decree No. 152/2006 and, finally, included within Title VI-bis, "Crimes against the environment". Article 452-quaterdecies, through Legislative Decree no. 21 of 1 March 2018, following the principle of codification reservation" (principio di riserva di codice).

The wording of the criminal offense states:

> Anyone who, to obtain an unjust profit, through multiple operations and by setting up organized, continuous activities and means, sells, receives, transports, exports, imports, or otherwise unlawfully manages large quantities of waste shall be punished with imprisonment from one to six years.

[335] B. Paterra, *Il delitto di traffico di rifiuti tra profili di indeterminatezza e interpolazioni giurisprudenziali*, in *Rivista trimestrale di diritto penale dell'economia*, (2023), n. 3-4, p. 573.
[336] A. Galanti, *Il traffico illecito di rifiuti: il punto sulla giurisprudenza di legittimità*, in *Diritto penale contemporaneo*, (2018) n. 12, available at: https://archiviodpc.dirittopenaleuomo.org/d/6375-il-traffico-illecito-di-rifiuti-il-punto-sulla-giurisprudenza-di-legittimita, p. 31.

The introduction of this offense as a specific type of crime aimed at penalizing the Ecomafie phenomenon initially led some commentators to believe that it was intended to protect the legal interest of public safety. However, the prevailing opinion has gradually shifted toward considering it a multi-offensive crime, capable of endangering not only the environment but also public order.

The definitive inclusion of this offense within Title VI-bis appears to mark the abandonment of an anthropocentric perspective on environmental protection and the recognition of the environment as an autonomous legal interest harmed by the conduct typified in the provision. Consequently, public order and public safety remain encompassed within the protective scope of Article 452-quaterdecies, but they are now considered residual elements compared to when the offense was initially introduced as a tool to combat environmental organized crime.

This shift is partly influenced by the evolution of case law, which has long established that, to constitute the offense, it is irrelevant whether the primary nature of the activity carried out by the perpetrator is lawful or unlawful. In other words, the offense is applicable not only in contexts of complete clandestinity, typically associated with the activities of criminal organizations, but also in the context of operations carried out by legitimate businesses.

Indeed,

> The offense is commonly found in predominantly lawful contexts, typically entrepreneurial, far removed from the traditional criminal manifestations of trafficking, which are more closely associated with the activities of criminal organizations[337].

Proceeding in an orderly manner, it is first necessary to clarify that most of the legal scholarship is critical of the legislative technique used for this offense, considering that its constitutive elements share the same vagueness found in several of the provisions contained in Title VI-bis.

The first issue concerns the identification of the active subject of the offense. The provision establishes that it can be committed by "anyone", which would suggest that it should be classified as a common offense. However, the requirement for the arrangement of means and the organization of continuous activities seems to allude to the figure of the entrepreneur as defined in Article 2082 of the Civil Code, thereby suggesting that it may instead be classified as a special offense. Nevertheless, the latter interpretation is supported by only a minority of scholars within the academic debate[338].

[337] B. Paterra, *Il delitto di traffico di rifiuti tra profili di indeterminatezza e interpolazioni giurisprudenziali*, op. cit., p. 574.

[338] A. Onore, *Ambiente e dinamiche delittuose. Traffico illecito di rifiuti e fattispecie associative*, in *Archivio Penale*, (2022), n. 2, available at:<https://archiviopenale.it/ambiente-e-dinamiche-delittuose-traffico-illecito-di-rifiuti-e-fattispecie-associative/articoli/35352>, pp. 15-16.

Continuing, the offense requires the commission of multiple operations, which is why case law is unanimous in classifying it as a continuous offense. Therefore, the conduct necessary to establish the offense under Article 452-quaterdecies must not be occasional. Rather, it must be aimed at obtaining a profit through multiple acts of unlawful waste management, even if such management is not the exclusive activity of the offender(s)[339].

Indeed, the provision further requires the arrangement of means, meaning a professional organization of resources and capital suitable for the continuous management of a substantial quantity of waste, through a plurality of actions. The Italian Supreme Court has clarified that the organization of means may also be rudimentary, provided it is adequate for carrying out multiple operations over a continuous period[340].

Moreover, Article 452-quaterdecies requires the performance of continuous and organized activities, which can be linked to a serial entrepreneurial-type conduct. On this point, as previously mentioned, the Italian Supreme Court has long clarified that this element should not be understood as the exclusive performance of unlawful activities, which may also be marginal in relation to a primary lawful activity.

In this regard, a paradigmatic example is judgment no. 2117/2011, which states:

> The law does not require that the trafficking of waste be carried out exclusively by a structure operating entirely unlawfully. Criminal activities may well occur within a broader context that also includes legitimate commercial operations concerning waste that are carried out lawfully. [...] The offense can be committed both by a structure operating without any authorization and in a manner entirely contrary to the law, as well as by a structure that regularly incorporates unlawful conduct within an activity carried out under authorization and, in part, in compliance with the law. [...] What matters is the existence of waste trafficking that is intentionally diverted from lawful channels, and its inclusion within an official entrepreneurial framework may even be a deliberate strategy aimed at concealing the illegal conduct within a legitimate and authorized business structure[341].

The excerpt from the judgment provided above illustrates how Article 452-quaterdecies serves as the criminal provision used by case law to penalize the phenomenon of the illegal waste cycle, as examined in this research.

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[339] A. Galanti, *Il traffico illecito di rifiuti: il punto sulla giurisprudenza di legittimità*, op. cit., p. 33.

[340] Italian Supreme Court, Section III, judgment no. 52838/2016, 14 July 2016, "*To constitute the offense, it is necessary to have, even if rudimentary, a professional organization (means and capital) capable of managing large quantities of waste continuously, that is, through multiple operations carried out over a continuous period, which must be assessed as a whole: the plurality of actions, which is a constitutive element of the offense, corresponds to a single violation of the law, and therefore the offense is habitual since its completion requires the commission of multiple acts of the same nature (ex plurimis, Section III, judgment no. 44449 of 15 October 2013, Rv. 258326; Section III, judgment no. 29619 of 8 July 2010, Rv. 248145; Section III, judgment no. 46705 of 3 November 2009, Caserta, Rv. 245605)*".

[341] Italian Supreme Court, Section IV, judgment no. 2117/2011, 19 October 2011.

The analysis of criminal phenomenology has revealed that such activities are, for the most part, carried out by legally established companies that choose to reduce waste management costs as a business strategy, following the logic of profit maximization. As a result, the primary challenge lies in detecting unlawful conduct, especially when it is committed by formally lawful companies that hold the necessary authorizations, pursue primarily legitimate economic objectives, and only residually engage in illegal practices to reduce operational costs.

Continuing with the analysis of the elements of the offense, it is required that the conduct be abusive. This element has been heavily criticized by legal scholars, as it was argued that it would prevent the punishment of a range of actions that are lawful in themselves but are nonetheless aimed at organizing the illegal trafficking of waste.

However, case law has progressively addressed this issue with numerous rulings, gradually broadening the concept of abusiveness to include even violations of authorizations, provided that such violations are significant. As an illustrative example, reference can be made to the Italian Supreme Court, judgment no. 9133/2017, which establishes that:

> The 'abusive' nature of an organized waste management activity, capable of constituting the offense, can be established when it is carried out continuously in violation of the provisions of authorizations. It is further specified that this can occur not only in cases where such authorizations are entirely absent (in which case the activity is described as 'clandestine') but also when authorizations have expired, are manifestly unlawful, or are otherwise inadequate for the type of waste being managed, especially if the waste differs in nature from that authorized[342].

Another requirement for the configuration of the offense is the large quantity of waste, which has also been the subject of extensive doctrinal and jurisprudential debate, as it is considered to violate the principles of clarity and specificity[343].

On this point, the issue of constitutional illegitimacy was raised due to an alleged violation of Article 25 of the Constitution, arguing that the wording of the provision entrusted the identification of the quantity to the judge, as it was not predetermined by the legislator.

This issue was deemed manifestly unfounded by the Italian Supreme Court in judgment No. 47918/2003, which stated that:

[342] Italian Supreme Court, Section III, judgment no. 9133/2017, 13 January 2017.

[343] For further analysis, C. Buongiorno, *La lotta alle ecomafie tra tutela dell'ambiente e dell'ordine pubblico: un equilibrio precario attraverso l'(ab)uso di concetti elastici, Nota a Corte di Cassazione, sezione III, 14 luglio 2011 (dep. 13 dicembre 2011), n. 46189, Pres. Squassoni, Rel. Rosi, Ric. Passariello*, in *Diritto penale contemporaneo*, (2012), n. 3-4, available at: <https://archiviodpc.dirittopenaleuomo.org/d/1755-la-lotta-alle-ecomafie-tra-tutela-dell-ambiente-e-ordine-pubblico-un-equilibrio-precario-attraverso>.

> The assessment is influenced, from time to time, by the type of waste, its quantity, and the specific circumstances of the case[344].

In general, through a series of subsequent rulings, the Italian Supreme Court has taken the position that the quantity of waste cannot be identified a priori, but must be assessed in the specific case based on a comprehensive evaluation. This evaluation takes into account the specific purposes pursued by Article 452-quaterdecies, the nature of the offense, and the risks posed to the environment and human health, with the quantity of waste serving as just one of the relevant parameters for this assessment[345].

Finally, the provision under examination requires the pursuit of an unjust profit, thereby qualifying it as a specific intent offense. As a result, the conduct is punishable only if the perpetrator acts with the specific aim of achieving such an objective. This requirement is interpreted broadly, meaning it is not limited to the generation of financial revenue but also includes the mere reduction of costs or the pursuit of other types of advantages, regardless of whether these advantages are achieved[346].From the analysis of the essential elements of Article 452-quaterdecies, it emerges that, like other environmental crimes, it has been the subject of extensive doctrinal and jurisprudential debates, which have prompted multiple interventions by the Italian Supreme Court to clarify the scope of application of the provision.

As a result, these crimes are generally considered to be affected by an excessive indeterminacy of the concepts they encompass. Such indeterminacy appears to delegate to the judge the task of concretizing flexible terms, thereby risking conflicting judgments and, consequently, legal uncertainty. Doubts remain as to whether these flaws in the environmental criminal system are due to the intrinsic difficulty of typifying inherently broad concepts or whether they stem from the legislature's inability to counter the phenomenon under examination effectively.

In any case, the legal provision is particularly significant, as it has long represented the only adequate tool to counter a particularly aggressive and widespread form of criminality.

Furthermore, as previously mentioned, although this criminal offense is generally considered to have been introduced with the specific aim of sanctioning Ecomafie — understood as mafia-type criminal organizations engaged in illegal waste management — it has subsequently found a much broader application.

[344] A. Galanti, *Il traffico illecito di rifiuti: il punto sulla giurisprudenza di legittimità*, op. cit., p. 38.
[345] Italian Supreme Court, Section III, judgment no. 47229/2012, 6 November 2012; Italian Supreme Court, Section III, judgment no. 46950/2016, 9 November 2016.
[346] Italian Supreme Court, Section III, judgment no. 40827/2005, 10 November 2005.

Indeed, from the very outset of the research, it was clarified that the criminal phenomenon is not exclusively composed of perpetrators with mafia status. The analysis revealed that it predominantly constitutes a corporate crime, involving a plurality of actors.

Consequently, limiting the applicability of this offense solely to cases involving exclusively illegal activities would prevent a comprehensive understanding of the broader context of environmental crime. This type of criminality is firmly situated within what is commonly referred to as the "grey area", where distinguishing perpetrators and conduct, as well as drawing a clear line between lawful and unlawful activities, proves to be particularly challenging.

The Italian Supreme Court has intervened on the matter to dispel any doubts regarding the exclusive application of the provision to purely illegal activities, explicitly outlining the reasons for the unfoundedness of such a thesis:

> a) because it requires, as an interpretative method, the use of sociological models that go beyond the letter of the law and presuppose the legislature's intent to sanction the 'type of offender' rather than the specific conduct objectively described by the provision;
> b) because it excludes, in the process of reconstructing the facts, the very constitutive (and qualifying) elements of the offense, namely: the organized and continuous exercise of waste management activities, the performance of such activities without authorization, the awareness of the absence of authorization, and the aim of obtaining an unjust profit[347].

In any case, it should be noted that the conception of the offense of organized activities for the illegal trafficking of waste as a provision aimed at countering Ecomafie has led to the adoption of a particularly repressive regulatory framework, both in substantive and procedural terms, similar to the approach taken in combating mafia-type phenomena.

Indeed, Article 452-quaterdecies is subject to the so-called "dual-track procedural regime", as it is included in the list provided by Article 51, para. 3-bis of the Code of Criminal Procedure, which identifies the competent Public Prosecutor's Office.

Firstly, this implies that the competence for the preliminary investigation phase lies with the District Anti-Mafia Directorate (Direzione Distrettuale Antimafia, DDA) and, consequently, the competence for the preliminary hearing phase falls to the district court.

Furthermore, this entails a series of substantive, procedural, and penitentiary consequences that deserve to be briefly outlined. These include the doubling of the limitation period (which, following Law no. 68/2015, applies to all offenses under Title VI-bis); the inapplicability of the limitation on the extension of the limitation period in cases of suspension or interruption; the absence of notification to the suspect regarding the request for an extension of the preliminary investigation period; the

[347] Italian Supreme Court, Section III, judgment no. 35567/2017, 23 May 2017.

preclusion, except in specific circumstances, of the re-examination at trial of a witness who has already provided statements; the possibility of conducting interceptions of communications through the use of an IT interception tool, the so-called 'Trojan horse'; and the possibility of carrying out preventive interceptions of communications, including through telematic means.

Moreover, there is the rebuttable presumption of the adequacy of pre-trial detention in prison; the preclusion from accessing the so-called "extended plea agreement" procedure; the application of the provisions of the so-called Anti-Mafia Code concerning the administration and allocation of seized and confiscated assets; and the application of Articles 18-bis (interviews for investigative purposes), 30-bis (measures and appeals concerning prison leave), and 47-ter (preclusion of sentence execution under house arrest for inmates over the age of seventy) of Law no. 354/1975 (Penitentiary System)[348].

Therefore, it consists of a set of provisions that impose particular caution and rigor in the conduct of all phases of the proceedings, up to the execution of the sentence, which were typically designed to ensure an effective response to mafia-type associations.

The inclusion of Article 452-quaterdecies within Article 51, para. 3-bis of the Code of Criminal Procedure further entails the application of additional provisions concerning the criminal effects of the conviction and the preventive measures established for organized crime. As a result, there are disqualifications, prohibitions, and forfeitures affecting relations with the Public Administration.

About personal preventive measures (Legislative Decree no. 159/2011), these may be applied, in the presence of conditions indicating social dangerousness, to offenses under Article 51, para. 3-bis, and entail the preclusion or forfeiture — if already granted — of licenses, authorizations, public contributions, and public funding (Article 67). Such preclusions and forfeitures automatically apply in the event of a final conviction for one of the offenses listed under Article 51, para. 3-bis (Article 67, para. 8).

Additionally, the existence of one of the grounds for forfeiture, suspension, or prohibition under Article 67 must be reported in the antimafia communication and information notice (Article 68).

The same individuals may also be subject to preventive asset measures. Article 19 provides for the possibility for officers of the District Anti-Mafia Directorate (Direzione Distrettuale Antimafia, DDA) to conduct investigations into the standard of living, financial resources, and assets of the individuals concerned. The aim is to ascertain whether they hold licenses, authorizations, concessions, or qualifications to operate business or commercial activities, or if they benefit from

[348] R. Losengo, *Attività organizzate per il traffico illecito di rifiuti e diritto vivente: ancora attuale e ragionevole la collocazione tra i reati di cui all'art. 51, comma 3 bis c.p.p.?*, in *Lexambiente Rivista trimestrale di Diritto penale dell'ambiente*, (2020), n. 4, <https://lexambientetrimestrale.it/Rivista/9-2020/losengo_4-2020.pdf>, pp. 6-8.

public contributions or funding. The relevant documentation may be requested from the Public Administration, credit institutions, and businesses.

The possible imposition of preventive measures constitutes a ground for exclusion from participation in public procurement procedures according to Article 80 of Legislative Decree no. 50/2016, the so-called Public Procurement Code.

Indeed, this article establishes the existence of grounds for forfeiture, suspension, or prohibition under Article 67 of Legislative Decree no. 159/2011, or an attempt at mafia infiltration under Article 84, para. 4 of Legislative Decree no. 159/2011, constitutes a reason for exclusion[349].

The provisions outlined are part of a regulatory framework typically designed for mafia-type associations, which distinguishes the Italian legal system as one of the most effective worldwide in combating this form of criminality.

However, it should be noted that the inclusion of the offense under Article 452-quaterdecies among the cases to which this set of measures applies has sparked considerable debate within the academic community.

In this regard, it is emphasized that the inclusion of this provision as an autonomous offense, rather than as an instrumental crime linked to associative offenses under Article 51, para. 3-bis results in the automatic application of disqualifying and forfeiture measures in the event of a conviction.

This approach has been challenged by a significant portion of the legal scholarship, as, in practice, the offense of organized activities for the illegal trafficking of waste is not primarily linked to the operation of mafia-type associations but rather to economic and corporate crime. Consequently, questions have been raised about the appropriateness of applying such a regulatory framework, originally designed for mafia-type associations, in cases where these associations are not involved, a situation that, notably, does not arise for other offenses, including environmental crimes.

This criticism is grounded in the notion that such a legislative choice may violate the principle of equality enshrined in Article 3 of the Italian Constitution[350].

The critical reflections raised by legal scholarship are well-founded, and the need to apply automatic mechanisms with caution is shared. However, it is essential to highlight certain elements that cannot be overlooked.

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[349] R. Losengo, *Attività organizzate per il traffico illecito di rifiuti e diritto vivente: ancora attuale e ragionevole la collocazione tra i reati di cui all'art. 51, comma 3 bis c.p.p.?*, op. cit., pp. 8-9.

[350] For further analysis, R. E. Omodei, *Spunti di riflessione in materia di reati di gestione e traffico di rifiuti. Le necessità di un ripensamento normativo*, in *Sistema Penale*, (2023), n. 5, <https://www.sistemapenale.it/it/articolo/omodei-spunti-di-riflessione-in-materia-di-reati-di-gestione-e-traffico-di-rifiuti-le-necessita-di-un-ripensamento-normativo>, pp. 37-56.

Firstly, the phenomenon of Ecomafie, as the term itself suggests, is marked by the constant presence of mafia-type associations. These organizations have identified the waste management business as an excellent sector for generating substantial profits with minimal risk of sanctions, as well as a strategic arena for controlling and influencing a segment of the economic market, serving as an entry point to Public Administrations and the legal economy.

That said, mafia-type associations have never been the sole actors in the waste business, as has been extensively explained throughout this research.

The illicit waste cycle, so named for explanatory purposes, has always been characterized, particularly in its modern developments, as a sector where the conduct of perpetrators alternates between lawful and unlawful activities. Those involved operate within a horizontally structured criminal network, where each actor has a specific "professional" role (such as entrepreneur, professional consultant, transporter, chemist, or public official) and represents a crucial node in the system. This is because mafia-type associations are not self-sufficient in committing this type of offense.

These clarifications are essential to understanding that, in challenging the application of anti-mafia enforcement tools to this criminal offense, it is necessary to consider that, in this sector, the operational dynamics of the mafia phenomenon — referred to as Ecomafie — have exhibited peculiar characteristics since its inception.

Continuing with the criticisms, it is acknowledged that the establishment of the offense in question often occurs even in contexts where the presence of mafia-type criminal organizations is not detected, as has been reiterated on multiple occasions. The offense is characterized as a corporate crime, meaning it represents a business strategy aimed at maximizing profit while harming other legally protected interests, such as the environment and public health, which are deemed expendable within the logic of market competition.

However, it is important to emphasize that the absence of mafia involvement does not make the commission of such crimes any less dangerous to the legally protected interests. This is evidenced by the fact that the methods of commission are the same as those employed by mafia-type associations and are continuously evolving. Furthermore, the perpetrators have demonstrated the ability to operate in territorial contexts that go beyond national borders, thereby organizing genuine international illicit trafficking operations.

These assertions are supported by data collected by both institutional and non-institutional organizations at the global and national levels regarding the scale of the phenomenon. Such data place

it among the most alarming criminal threats worldwide and, in Italy, indicate an increase in the number of confirmed cases over the past year.

Furthermore, the review conducted in the previous chapter revealed that the interest of mafia-type associations in this business is far from waning.

Therefore, these considerations aim to highlight that, while a reconsideration of the regulatory tools may have valid arguments, it must be approached with caution. Otherwise, there is a risk of weakening the capacity to counter a phenomenon that remains widespread and continues to expand.

In conclusion to this section, it is deemed useful to refer to the information collected by the Ministry of Justice regarding proceedings involving charges under Article 452-quaterdecies.

From the outset, it is worth highlighting that, over the years, this offense has been applied in a significantly higher number of cases compared to other environmental crimes, even though it has been in force since 2001.

About the data provided by the Public Prosecutor's Offices for the years 2021 to 2023, the following figures are reported:

- Number of proceedings initiated against known suspects:
  - 192 in 2023;
  - 186 in 2022;
  - 196 in 2021.
- Number of individuals under investigation:
  - 1,204 in 2023;
  - 1,230 in 2022;
  - 1,035 in 2021.
- Number of proceedings with a request for dismissal against known suspects:
  - 67 in 2023;
  - 68 in 2022;
  - 62 in 2021.
- Number of proceedings in which criminal prosecution was initiated:
  - 57 in 2023;

- 48 in 2022;
- 66 in 2021.

- Number of individuals charged:
  - 459 in 2023;
  - 433 in 2022;
  - 497 in 2021[351].

Concerning the data collected by the Courts for the years 2021 to 2023, the following figures are reported:

- Number of proceedings dismissed against known suspects:
  - 64 in 2023;
  - 239 in 2022;
  - 64 in 2021.
- Number of proceedings resulting in a conviction:
  - 25 in 2023;
  - 52 in 2022;
  - 46 in 2021.
- Number of proceedings resulting in an acquittal:
  - 17 in 2023;
  - 32 in 2022;
  - 7 in 2021[352].

[351] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 2 – Serie storica anni 2021-2023 – aggiornata al 10 giugno 2024*, available at: https://www.giustizia.it/cmsresources/cms/documents/procure_serie_storica_I_2021_2023.pdf.
[352] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 13 – Serie storica anni 2021-2023 – aggiornata al 10 giugno 2024*, op. cit.

3.6. Offenses concerning waste management under Legislative Decree no. 152/2006To provide a comprehensive overview of the regulatory framework concerning the criminal phenomenon under examination, it is essential to consider the Consolidated Environmental Act (T.U. ambientale). This legislative instrument has long served as the primary source of law governing criminal offenses in this field and still contains the largest number of relevant provisions.

As previously mentioned, the section dedicated to waste management and the remediation of contaminated sites constitutes Part Four of the Legislative Decree, which transposes EU directives. This part is characterized as being particularly "troubled" due to the numerous legislative amendments it has undergone, partly as a result of the ongoing dialogue between national criminal jurisprudence and EU case law.

It is important to point out from the outset that the establishment of a criminal law system aimed at sanctioning conduct related to this subject matter reveals certain inherent critical issues.

Indeed, the definition of "waste" is pivotal for the classification of incriminating offenses. It has already been clarified in the course of this analysis how waste is defined and how it must be classified by the holder. Furthermore, reference has been made to the categories of by-products and End-of-Waste (EoW) materials. The requirement to distinguish these materials by identifying the correct category to which an object or substance should be attributed creates significant difficulties in practice.

In this regard, it is worth adding that the classification of a material or substance as waste or not has an indicative value, which will later be confirmed or refuted in the specific case, depending on its actual use, destination, or intended purpose. Therefore, in judicial proceedings, it is necessary to investigate not only the nature of the waste in question but, more importantly, its objective destination.

Case law on the matter has clarified that the presumption of waste status applies, and it is the defendant's burden to prove, through documentary evidence, that the material qualifies as a by-product or an End-of-Waste (EoW) material[353].

In this regard, it is useful to highlight certain unlawful practices, such as document falsification or pretended treatment processes (recycling or recovery), aimed at creating the appearance that the materials qualify as End-of-Waste, and therefore not as waste, to evade the regulatory framework applicable to waste.

[353] Italian Supreme Court, Section III, judgment no. 16727/2011, 13 April 2011.

Nevertheless, the relevant regulatory framework and the ensuing judicial interpretation have been deemed unsatisfactory by legal scholars. The critique is based on the claim that these provisions raise issues concerning the principles of precision and accessibility of criminal law norms.

As a result, once again, the difficulty faced by the legislature in defining criminal offenses in this area becomes evident. In this context, the legislator must strike a balance between the complexity of providing a comprehensive list of all possible types of waste and the need to uphold the principles of legality and culpability. This requires a careful compromise between the EU's demand for adequate environmental protection and the guarantees associated with individual rights.

Given the inherent difficulties in the regulatory framework, the law, to clarify the rules applicable to concrete cases, establishes in Article 184-ter of Legislative Decree no. 152/2006 that "the rules on waste management apply until the waste status ceases", that is, until the material has been "subjected to a recovery operation, including recycling", and meets certain specified conditions. This clarification aims to prevent abuse and unlawful conduct in waste management activities by regulating every stage of a product's lifecycle.

However, it should not be underestimated that the economic and bureaucratic costs associated with compliance with the aforementioned regulations are significantly higher than those linked to the illegal waste management carried out by Ecomafie. As a result, as has been extensively explained, a considerable portion of the economic market tends to favor unlawful routes[354].

In general, Italian criminal legislation on waste addresses both hazardous and non-hazardous waste. However, the former is subject to harsher penalties. This approach has been criticized in light of the principle of extrema ratio, as it has been argued that only administrative offenses should have been contemplated for the unlawful management of non-hazardous waste[355].

About by-products and End-of-Waste (EoW) materials, since the regulatory framework on waste does not apply to them, the corresponding criminal provisions on waste management will likewise not be applicable.

Nevertheless, it should be reiterated that if materials theoretically meet certain objective criteria for the cessation of waste status but are, in practice, abandoned or disposed of, they must still be classified as waste[356].

[354] C. Ruga Riva, *Diritto penale dell'ambiente. Parte generale: Principi beni e tecniche di tutela, Parte speciale: Reati contenuti nel d.lgs. n. 152/2006 e nel codice penale*, Torino: Giappichelli Editore, 2021, pp. 117-128.
[355] Ibid., p. 130.
[356] Ibid., pp. 148-149.

As for the potential offenders who may theoretically engage in conduct punishable under criminal law, it should be clarified that these are common offenses that can be committed by anyone. The only exception is provided in Article 256, para. 2, which refers to "business owners" and "managers of entities" who abandon or unlawfully deposit waste in an uncontrolled manner or discharge it into surface or underground waters, whether the waste originates from their production or other sources.

For the purpose of identifying the individuals responsible for criminal offenses, it is important to refer to the so-called principle of shared responsibility of all those involved in the waste management chain, as set out in Article 188, para. 4, of Legislative Decree no. 152/2006.

According to this provision, the producer or holder of waste retains responsibility for it throughout its entire lifecycle, except in cases where it is handed over to the public waste collection service or to entities authorized to carry out recovery or disposal activities. This exclusion serves to prevent the attribution of administrative and criminal liability for the unlawful conduct of third parties, provided that all control and reporting obligations outlined in Article 188 have been fulfilled.

The principle outlined can also be invoked to establish omissive liability in cases of complicity and cooperation in the commission of a criminal offense[357].

With regard to the sanctioning system is set out in a specific section (Title VI) of Part Four of Legislative Decree No. 152/2006. The majority of the sanctions provided are of a criminal nature, while administrative sanctions play an ancillary role, being imposed only for less serious conduct.

The latter includes the abandonment of waste by private citizens (Article 255, para. 1), violations of obligations related to communication, record-keeping, and the preparation of required forms (Article 258), and failure to comply with the obligation to collect packaging (Article 261).

Proceeding in an orderly manner, the criminal offenses provided under the aforementioned title will be outlined to present a comprehensive overview of the conduct deemed criminally unlawful under Italian law.

The first provision to be considered is Article 255, entitled "Abandonment of waste", which contemplates two hypotheses of criminal relevance.

The first penalizes those who fail to comply with the mayor's order under Article 192, para. 2, which concerns the obligation to remove, recover, or dispose of waste and to restore the affected sites.

[357] C. Ruga Riva, *Diritto penale dell'ambiente. Parte generale: Principi beni e tecniche di tutela, Parte speciale: Reati contenuti nel d.lgs. n. 152/2006 e nel Codice penale*, op. cit., pp. 149-155.

The second criminalizes the violation of Article 187, para. 1, which prohibits the mixing of hazardous waste belonging to different categories, as well as the mixing of non-hazardous waste with hazardous waste.

It should be noted that the obligation to separate waste is subject to two conditions: that such an activity is technically and economically feasible (Article 187, para. 3), and that it does not endanger human health or the environment (Article 177, para. 4).

If these conditions are met, the individual is exempt from the obligation to separate waste. However, this does not exempt them from the prohibition on mixing waste outlined in Article 256, para. 5, which establishes an autonomous criminal offense[358].

Of central importance are the cases governed by Article 256, entitled "Unauthorized waste management activities", which encompass a broad range of minor offenses (contravvenzioni).

Paragraph 1 penalizes anyone who engages in waste management activities (collection, transport, recovery, disposal, trade, or brokerage) without the required authorization, registration, or notification, thereby constituting an abstract endangerment offense. This is a case of non-compliance with administrative requirements, specifically the performance of activities in the absence of the necessary permits, meaning without prior verification by the Public Administration of the acceptability and risk posed by the conduct[359].

Paragraph 2, as previously mentioned, establishes a specific offense that sanctions business owners or managers of entities who abandon or deposit waste in an uncontrolled manner. This provision has raised issues concerning the principle of equality, prompting the question of whether it is reasonable to establish a differentiated sanctioning regime for the same conduct, depending on the status of the offender.

However, this distinction appears justified, as the conduct carried out in business contexts is considered both more dangerous and frequent compared to that committed by private citizens[360].

Paragraph 3 penalizes those who, outside the cases regulated by Article 29-quattuordecies of Legislative Decree no. 152/2006, create or manage an unauthorized landfill, with an increase in penalties if the landfill is intended, even partially, to accommodate hazardous waste.

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[358] Ibid., p. 156-159.
[359] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente, op.* cit., pp. 506-509.
[360] C. Ruga Riva, *Diritto penale dell'ambiente. Parte generale: Principi beni e tecniche di tutela, Parte speciale: Reati contenuti nel d.lgs. n. 152/2006 e nel Codice penale*, op. cit., p. 168.

It should be clarified that the Consolidated Environmental Act (T.U. ambientale) does not provide a definition of an unauthorized landfill, also referred to as an illegal landfill. Consequently, case law has addressed the issue.

For instance, in 2013, the Italian Supreme Court clarified that:

> To establish the offense of creating or managing an unauthorized landfill, it is necessary to demonstrate the accumulation of waste as a result of repeated conduct in a specific area, which is effectively transformed into a deposit or receptacle with a tendency toward permanence, taking into account the considerable quantity of waste and the space it occupies[361].

Furthermore, the clarifications provided by the Italian Supreme Court regarding the distinction between the concepts of creation and management of an unauthorized landfill are particularly significant.

In this regard, the Court stated that:

> The offense of creating an unauthorized landfill is established when an area is prepared through activities such as land leveling, opening access points, site preparation, perimeter marking, and fencing. On the other hand, the offense of managing an unauthorized landfill occurs when there is an organization, even if rudimentary, of people and resources aimed at the landfill's operation. In the latter case, the quantity of waste present on-site does not need to be particularly significant for the offense to be established[362].

Paragraph 5, as previously mentioned, sanctions the mixing of waste, referring to Article 187, para. 1, which identifies three scenarios: the mixing of hazardous waste with different hazardous characteristics, the mixing of hazardous waste with non-hazardous waste, and the dilution of hazardous waste.

Finally, paragraph 6 penalizes the temporary storage of hazardous healthcare waste at its place of production, in violation of Article 227, para. 1, letter b).

Moving forward, Article 256-bis, introduced by Decree-Law no. 136/2013, is particularly significant as it sanctions the unlawful burning of waste. This provision was part of a package of measures adopted to address the environmental emergency in the regions of Puglia and Campania, but it was immediately applicable throughout the entire national territory.

The introduction of this punitive measure was justified by the inadequacy of the previous sanctioning system in countering the widespread phenomenon of waste fires. Such conduct has serious polluting consequences, posing threats to both the environment and human health. Some commentators have argued that the provision also aims to protect agri-food safety.

[361] Italian Supreme Court, Section III, judgment no. 47501/2013, 13 November 2013.
[362] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., pp. 548-549.

The article establishes two distinct abstract endangerment offenses: one concerning the burning of waste, and the other concerning the abandonment, unlawful management, and unlawful shipment of waste with the aim of subsequent combustion.

This offense can be committed by any individual, but a one-third increase in penalties is provided when it is committed by business owners or by those responsible for organized activities of any kind[363].

Article 257 penalizes anyone who, unless the act constitutes a more serious offense, causes pollution of the soil, subsoil, surface water, or groundwater by exceeding the risk threshold concentrations and fails to carry out remediation in accordance with the project approved by the competent authority.

The penalty is increased if the pollution is caused by hazardous substances.

Article 258, entitled "Violation of obligations regarding communication, record-keeping, and the preparation of required forms", establishes a series of administrative offenses. Among these, by way of example, are the actions of those who fail to keep or maintain incompletely the waste loading and unloading register regulated by Article 190, those who transport waste without the required form under Article 193, and those who fail to register or register improperly with the Register referred to in Article 188-bis (RENTRI).

Furthermore, in cases of waste transport without the required form, or in cases of compilation of a waste analysis certificate containing false information regarding the nature, composition, and chemical-physical characteristics of the waste, or the use of a false certificate during transport, Article 258 provides that Article 483 of the Italian Criminal Code applies if the waste in question is hazardous. Article 483 concerns "False statements made by a private party in a public act" and provides for a penalty of imprisonment of up to two years.

It should be noted that, once RENTRI becomes fully operational, the latest version of Article 258 will come into effect. This version, by emphasizing the principle of harm (principio di offensività), excludes the criminal nature of purely formal violations related to waste transport and the preparation of false certificates for hazardous waste[364].

The full implementation of RENTRI will occur gradually shortly. Specifically, the registration obligation will begin on December 15, 2024, for companies with more than 50 employees and will

[363] C. Ruga Riva, *Diritto penale dell'ambiente. Parte generale: Principi beni e tecniche di tutela, Parte speciale: Reati contenuti nel d.lgs. n. 152/2006 e nel codice penale*, op. cit., pp. 185-189.
[364] Ibid., pp. 196-198.

expire on February 13, 2025. For other categories of producers, the obligations will follow in 2025 and 2026.

Finally, the last provision to be considered is Article 259, entitled “Illegal trafficking of waste”, which is particularly relevant to the criminal phenomenon examined in this research. Despite the rather generic title of the article, the provision is aimed at sanctioning the unlawful shipment of waste outside Italian territory, thereby targeting the phenomenon of cross-border waste trafficking.

Article 259 provides for two distinct punishable scenarios. The first sanctions those who carry out a shipment of waste that constitutes illegal trafficking under Article 26 of EEC Regulation No. 259/93. The term “illegal shipment of waste” was introduced by EC Regulation no. 1013/2006, which repealed the 1993 regulation, replacing the previous term “illegal trafficking of waste”.

A shipment is considered unlawful when the party responsible for it fails to submit the required notifications to the competent authorities or does not obtain the necessary authorizations.

In particular, under EU law, a shipment constitutes illegal trafficking when it is carried out under the following circumstances: when the shipment is executed without notifying all the competent authorities concerned; when it is carried out without the consent of the competent authorities concerned or with consent obtained through falsification, false declarations, or fraud; when it is accompanied by an incomplete transport document, resulting in disposal or recovery in violation of EU or international regulations; or when it is carried out in breach of the rules governing the import and export of waste within Member States.

The second punishable scenario concerns the shipment of waste listed in Annex II of the aforementioned 1993 regulation, in violation of Article 1, para. 3, letters a), b), c), and d) of the same regulation.

Following the amendments introduced by EC Regulation no. 1013/2006, such a shipment is considered illegal if one or more of the following alternative conditions are met: failure to notify all the competent authorities concerned, as required by EU regulations; lack of authorization from the competent authorities concerned; obtaining authorization through falsification, false declarations, or fraud; execution of the shipment in a manner not materially specified in the notification or movement documents; conducting recovery or disposal operations in violation of EU or international regulations; or violation of Articles 34, 36, 39, 40, 41, and 43.

Therefore, it is observed that the offenses under examination constitute an open-ended criminal provision, as they refer to non-criminal sources — in this case, EU regulations — to define the

specific conduct. These regulations are not always easily identifiable due to the continuous evolution of legislative sources over time.

It is important to emphasize that the conduct subject to sanctions is not limited to the mere transfer of waste from one location to another, but also includes the entire shipping process, which encompasses both the physical transport and the organization required for its execution[365].

For the sake of completeness, and as done previously, it is appropriate to conclude this section by referring to the data collected by the Ministry of Justice from Public Prosecutor's Offices and Courts.

With regard to the information provided by the Public Prosecutor's Offices for 2023 (148 offices out of 165), it emerges that the largest volume of criminal proceedings concerns offenses under Article 256, para. 3 (unauthorized landfill) and Article 256-bis (unlawful burning of waste), even when considering the eco-crimes provided for in the Italian Criminal Code.

About the offense under Article 256, para. 3 the data for 2023 are as follows:

- Number of proceedings registered against known suspects: 542;
- Number of individuals under investigation: 962;
- Number of proceedings with a request for dismissal against known suspects: 264;
- Number of proceedings in which prosecution was initiated: 274;
- Number of individuals charged: 629.

As for the offense under Article 256-bis, the data for 2023 are as follows:

- Number of proceedings registered against known suspects: 545;
- Number of individuals under investigation: 818;
- Number of proceedings with a request for dismissal against known suspects: 219;
- Number of proceedings in which prosecution was initiated: 317;
- Number of individuals charged: 565.

The data collected for the offense under Article 259 (illegal trafficking of waste) are also significant. The figures for 2023 are as follows:

- Number of proceedings registered against known suspects: 196;
- Number of individuals under investigation: 340;
- Number of proceedings with a request for dismissal against known suspects: 100;
- Number of proceedings in which prosecution was initiated: 117;

[365] N. Pisani, F. Barresi, L. Cornacchia, *Il nuovo diritto penale dell'ambiente,* op. cit., pp. 607-612.

- Number of individuals charged: 173[366].

With regard to the information provided by the Courts (250 offices out of 301), the offense for which the largest volume of data has been collected is the one established under Article 256, para. 3. Specifically, the figures for 2023 are as follows:

- Number of proceedings dismissed against known suspects: 174;
- Number of proceedings concluded with a conviction: 148;
- Number of proceedings concluded with an acquittal: 87.

The next most significant offense in quantitative terms is the one under Article 256-bis, para. 1, for which:

- Number of proceedings dismissed against known suspects: 123;
- Number of proceedings concluded with a conviction: 122;
- Number of proceedings concluded with an acquittal: 76.

Following this, the offense under Article 259 ranks third. The figures are as follows:

- Number of proceedings dismissed against known suspects: 78;
- Number of proceedings concluded with a conviction: 43;
- Number of proceedings concluded with an acquittal: 9[367].

Immediately following these three offenses contained in the Consolidated Environmental Act (T.U. ambiente), the offense with the largest volume of data about the information provided by the Courts for 2023 is the offense of organized activities for the illegal trafficking of waste (Article 452-quaterdecies of the Italian Criminal Code).

3.7. New Strategies to Combat Environmental Crime

In conclusion to this chapter, which has focused on an overview of the international and national legal frameworks aimed at establishing a criminal law system for the prevention and repression of environmental crime, it is also worth considering the new strategies designed to combat this phenomenon.

So far, it has been observed that the regulatory framework is marked by a gradual recognition of the importance of developing an effective system for the protection of the environment. While there

[366] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo di Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 1 – Riepilogo 2023 – dati aggiornati al 10 giugno 2024*, available at: https://www.giustizia.it/cmsresources/cms/documents/procure_riepilogo_2023.pdf.
[367] Ministero della Giustizia, Dipartimento per gli Affari di Giustizia, Ufficio del Capo di Dipartimento, *Reati ambientali – T.U. Ambiente, Codice penale (L. 68/2015), Tabella 11 – Riepilogo anno 2023 – aggiornata al 10 giugno 2024*, op. cit.

has been a delay in establishing a comprehensive and efficient intervention in this field, recent developments indicate significant commitments at all levels of legal systems.

A prime example is the recent adoption of the new EU Environmental Directive, which aims to overcome the previous EU criminal framework, deemed unsatisfactory. Another notable development is the reform of the Italian Constitution, which reflects a renewed commitment to environmental protection.

With regard to the Italian legal system, a procrastinatory approach has been observed in the development of an adequate regulatory framework to counter the expansion of Ecomafias. Despite the positive mobilization of civil society, including environmental associations, case law, and legal scholarship, as well as institutional action by Parliamentary Commissions, the legislator has proven unable to keep pace with the phenomenon.

Furthermore, when the legislator intervened with Law no. 68/2015, it appears that greater emphasis was placed on the symbolic impact of the reform rather than its practical effectiveness in terms of repression and deterrence.

As a result, the current Italian regulatory framework is fragmented across multiple legislative texts, with criminal offenses that are the subject of extensive debate. These offenses are either perceived as insufficiently severe or, when severe, as difficult to ascertain and apply in concrete cases.

Finally, significant enforcement tools are provided for the offense under Article 452-quaterdecies of the Italian Criminal Code, as it is considered to be linked to the operations of mafia-type associations. However, these tools are also the subject of intense debate, with their legitimacy being challenged because they violate the principle of equality.

As a result, the Italian criminal law system should undergo a systematic reconsideration, which it is hoped will take place during the transposition of Directive 2024/1203.

That said, the fight against environmental crime is not achieved solely through the establishment of criminal offenses, although these are of paramount importance. For unlawful conduct to be detected and subsequently established as a criminal offense, the role of law enforcement agencies responsible for conducting investigations is crucial.

This analysis will not delve into the specific rules governing the Italian criminal procedure, as it lies beyond the scope of this research. However, from a socio-legal perspective on the phenomenon, it is important to examine the developments in this area.

In this regard, it is particularly interesting to assess how the advent of new technologies has introduced innovative techniques for investigating environmental crimes.

More generally, in today's world, it is impossible to disregard the role of technology and artificial intelligence in any field of knowledge, as they have permeated every sector of human activity. For this reason, they will also be examined in the present research.

Information systems play a key role in contemporary environmental protection studies, particularly by performing tasks related to monitoring, data analysis, communication, information storage, and data retrieval.

The interconnections between computer science and environmental science have given rise to a new discipline known as environmental informatics. This field is characterized by its multidisciplinary nature, as it analyzes data to better understand the environment, as well as identifies and manages risks to assess the opportunities arising from the interconnection between natural systems, human activities, and society.

The emergence of environmental informatics is also linked to the growing awareness, particularly in industrialized countries, of the need to preserve natural resources by adopting new models of sustainable development.

The applications of new technologies in the environmental sector are countless. For example, automated data collection and robotic applications in agriculture allow for the early detection of crop diseases and disorders, thereby optimizing agricultural yield while reducing the use of water, fertilizers, and pesticides.

Furthermore, artificial intelligence (AI) serves as a crucial tool for improving weather forecasts and understanding the effects of climate change. At the same time, AI can be employed to measure and control energy and water consumption, as well as to monitor traffic and pollution levels in urban areas[368].

Shifting to the specific area of interest, it is evident that there is an increasing use of innovative tools to support the fight against environmental crime by a wide range of industrialized countries.

The decision to adopt technological tools to combat eco-criminals stems from the growing awareness of the impact of their actions on the environment, ecosystems, biodiversity, and human health, as well as the recognition of the global nature of the threat.

[368] W. D'Avanzo, *Le applicazioni dell'intelligenza artificiale a tutela dell'ambiente*, in *Diritto e giurisprudenza agraria alimentare e dell'ambiente*, (2019), n. 2, available at: <https://www.rivistadga.it/wp-content/uploads/2019/03/Davanzo-Intelligenza-artificiale-a-tutela-dellambiente.pdf>, pp. 3-4.

Furthermore, evidentiary findings reveal that the primary actors involved in these crimes are the industrial sector, large corporations, and organized crime, all of which have the capacity to operate across borders, making it challenging for individual States to tackle the problem on their own.

Additionally, the profits from this form of crime are frequently laundered through legitimate legal entities and reintroduced into the legal economy, generating unquantifiable hidden cash flows that are extremely difficult to trace[369].

These considerations have been reiterated several times throughout the research. What is of particular interest here are the new countermeasures that have been developed in recent years to tackle this phenomenon.

Without aiming for exhaustive coverage of a field that is both broad and highly technical, and whose understanding requires specific expertise, it is considered useful to highlight some key technological applications for combating environmental crime, with a particular focus on the European territory and legal framework.

In this regard, a particularly significant initiative is the European Union's Earth Observation Programme, Copernicus, previously known as GMES (Global Monitoring for Environment and Security). This program consists of a complex system of tools that collect information from a wide range of sources, including Earth observation satellites and ground-based, marine, and airborne sensors.

The program is managed by the European Commission and implemented in collaboration with EU Member States, the European Space Agency (ESA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the European Centre for Medium-Range Weather Forecasts (ECMWF), EU agencies, Mercator Océan, the European Environment Agency (EEA), and the Joint Research Centre (JRC).

The areas of interest of the Copernicus Programme are divided into six thematic sectors, namely: land, marine, atmosphere, climate change, emergency management, and security[370].

[369] Programme of the European Union, *Copernicus Europe's eyes on Earth*, *OBSERVER: Tracking environmental crime with Copernicus Land data*, 26 September 2024, available at: https://www.copernicus.eu/en/news/news/observer-tracking-environmental-crime-copernicus-land-data.

[370] ISPRA, Istituto Superiore per la Protezione e la Ricerca Ambientale, *Programma Copernicus*, available at: https://www.isprambiente.gov.it/it/programma-copernicus/programma-copernicus.

Through Copernicus, it is possible to collect an immense volume of data, which is then integrated and processed to support service providers, public authorities, and international organizations to improve citizens' quality of life. The information services are free and freely accessible to users[371].

In particular, the data provided by the Copernicus Land Monitoring Service (CLMS) can assist state authorities in monitoring conduct on the territory by supplying evidence to ensure compliance with regulations and to combat cross-border environmental crimes.

The use of this technology is based on the premise that the detection of environmental crime has traditionally relied on ground-based investigations carried out through the physical intervention of law enforcement authorities. However, this approach faces certain limitations, such as the significant expenditure of time and labor, the territorial restriction of the intervention area, the fact that reports often originate from the local population and may be insufficient, and the difficulty of accessing certain areas.

To overcome these obstacles, it is possible to conduct aerial surveys using both manned aircraft and drones[372]. These technologies are highly effective but involve high operational costs, which in turn reduce the number of inspections and, consequently, the ability to uncover illegal activities.

Therefore, for the European Copernicus Programme, the most effective solution is satellite observation. This approach allows for the acquisition of high-resolution images on a large scale, enabling the detection of illegal activities across extensive areas in a short period.

Specifically, the Copernicus Land Monitoring Service (CLMS) relies on data provided by the Sentinel satellites, which are part of the Copernicus mission. The information collected is open-access, meaning it can be used by governments, NGOs, and scientific researchers, promoting transparency and collaboration.

Nevertheless, this innovative method of information gathering for the real-time detection of illegal conduct in a transnational context is not without its challenges. Indeed, within the European Union, legal frameworks differ with regard to criminal procedure, and as a result, not all jurisdictions recognize satellite images as reliable evidence in judicial proceedings.

[371] Programme of the European Union, *Copernicus Europe's eyes on Earth*, *About Copernicus*, available at: https://www.copernicus.eu/en/about-copernicus.

[372] Drones are unmanned aircraft remotely controlled and represent a rapidly evolving sector of aviation. Within the European Community, their use is regulated by Regulation 1139/2018.

The main critical issues relate to the authenticity, accuracy, and interpretation of Earth observation data, particularly in cases where the goal is to prove the occurrence of criminal activities such as deforestation and pollution[373].

Moving forward, in light of the recent technological advancements in drone technology, which now offer greater autonomy and are more cost-effective, it is possible to use them to enhance satellite information. Specifically, drones equipped with infrared cameras can be paired with astronomical software, enabling them to capture clearer images and subjects through light detection.

However, complications also arise in this context. In certain countries, the use of drones is restricted by legislation due to concerns about privacy protection and the potential infringement of individuals' right to privacy.

Particularly useful for accelerating and enhancing investigations are the digitalization and rapid analysis of large databases, which have proven indispensable in areas such as poaching, waste trafficking, and the illegal trade of timber and wildlife[374].

This is linked to the growing awareness of the value of data — namely, the vast amount of data generated daily by human activities and technological processes, which, even when they appear meaningless, can be transformed into knowledge. This is made possible through big data analytics, a set of techniques and methods used to analyze large datasets, both structured and unstructured, to identify relationships between heterogeneous data. This process allows for the identification of connections between different phenomena and enables the creation of predictions, simulations, and predictive models.

The adoption of such tools by law enforcement agencies represents a significant qualitative leap in the conduct of investigations. These technologies enable the processing and reworking of vast quantities of information, uncovering connections and identifying lines of investigation that would be difficult for human operators to predict.

As a result, the advent of these technologies appears to be the only viable path for rapidly extracting knowledge and uncovering hidden information within the data already possessed by the authorities — a process often referred to as "extracting knowledge from raw data".

Nevertheless, even in this field, critical implications are not lacking, as the data in question must be reliable, accessible, analyzable, and consistently available for reuse. This is more easily achieved

[373] Programme of the European Union, *Copernicus Europe's eyes on Earth*, *OBSERVER: Tracking environmental crime with Copernicus Land data*, op. cit.
[374] L. Colantoni, M. Bianchi, *Fighting Environmental Crime in Europe, Preliminary Report*, Istituto Affari Internazionali, op. cit., pp. 33-34.

in the civil and commercial sectors, where the sources of big data analytics are often open-access, and the purchase of new data is assessed based on the advantage and value that the discovery of new knowledge may bring.

In contrast, in the public sector, and particularly in the criminal justice system, this process is far more challenging due to the guarantee-based safeguards associated with fundamental rights, where it is not possible to follow the logic of the free market.

Moreover, there is a lack of widespread and organized structures with the necessary resources and professional expertise required to implement such mechanisms for data collection and analysis[375].

More specifically, in the context of Italian criminal proceedings, during the preliminary investigation phase, the Public Prosecutor, assisted by the judicial police, is required to search for elements that may enable the exercise of criminal prosecution and, if necessary, support the prosecution's case at trial. These elements must therefore be capable of serving as evidence in criminal proceedings.

It is easy to understand the difficulty of introducing AI-processed data analysis into such a system, especially when it is not possible to demonstrate the functioning of the algorithm, the source of the data, its reliability, and the ability to access it. Without these guarantees, the defendant's right to a defense would be jeopardized.

Nonetheless, the usefulness of big data analytics remains undeniable, particularly for rapidly processing vast amounts of data, such as that contained in the databases held by law enforcement authorities. The goal is to identify connections and generate investigative hypotheses that human operators would be unable to detect on their own. However, this must be followed by a law enforcement activity aimed at gathering concrete evidence that can be submitted during judicial proceedings.

Focusing on the national context, it is clear that the use of new technologies to combat the commission of environmental crimes has already been employed for some time.

In this regard, a notable example is remote sensing (RS), a modern investigative tool that allows for the observation of an object without requiring direct contact between the object and the sensor. Its most widespread application is in the collection of information about the Earth's environment.

[375] S. Pellegrini, S. Benedetti, *L'utilizzo di strumenti di intelligenza artificiale nel contrasto alla criminalità organizzata di tipo mafioso*, in M. Palmirani, S. Sapienza (eds.), *La trasformazione digitale della giustizia nel dialogo fra discipline, Diritto e intelligenza artificiale*, Milano: Giuffrè, 2022, pp. 262-264.

Remote sensing refers to the set of techniques for capturing, processing, and interpreting data, enabling the analysis of surface behavior from a distance. This is achieved through the use of the electromagnetic energy emitted or reflected by objects, thereby enhancing human visual perception. The goal of this technology is to detect the nature and condition of investigated surfaces from a distance, as well as to track the evolution of non-surface phenomena.

By way of example, some of the technological tools used for remote sensing include radiometers and spectrophotometers, which provide measurements; cameras and scanning devices, which provide images; radiometer scanners, which act as passive sensors; and radar, which functions as an active sensor.

These techniques make it possible, for instance, to detect the energy emitted by natural bodies, thereby providing information on the surface temperature of these bodies. Additionally, it is possible to record the radiation emitted and reflected by the observed objects, which varies according to the nature of the observed material. This allows for the analysis of geophysical parameters that would otherwise be difficult to investigate, such as soil moisture.

As previously mentioned, one of the most significant application sectors for remote sensing is the monitoring, protection of the environment, and management of natural resources. Indeed, through remote sensing, it is possible to investigate soil and water pollution, detect landfills, identify surface alterations, and spot anomalies[376].

In the conduct of police investigations aimed at repressing environmental crimes, the use of drones has progressively increased. These tools are considered particularly useful because they allow for the monitoring of conduct without drawing the attention of the perpetrators. Moreover, they can access difficult-to-access areas that would otherwise be inaccessible and ensure higher-quality investigations with greater speed and efficiency.

For this reason, on June 13, 2022, the Ministry of the Interior, in coordination with the Ministry of Defense, the Ministry of Economy and Finance, and the Ministry of Infrastructure and Sustainable Mobility, adopted a decree on the "Methods of use of remotely piloted aircraft by the Police Forces".

Article 3 of the decree outlines the objectives for the use of such technologies, which include public security purposes, with specific reference to the fight against terrorism and the prevention of organized crime and environmental crime[377].

[376] *Le applicazioni del telerilevamento in campo ambientale*, A. Franza (ed.), in *Diritto all'ambiente*, available at: http://dirittoambiente.net/file/polizia_prontodiritto_10.pdf.
[377] Ministero dell'Interno, Decreto 13 giugno 2022, Modalità di utilizzo da parte delle Forze di Polizia degli aeromobili a pilotaggio remoto, available at: https://www.gazzettaufficiale.it/eli/id/2022/08/18/22A04722/sg.

Article 4 of the decree specifies that the use of such devices in territorial control activities must be planned as part of the coordinated territorial control plans, which are transmitted to the Police Forces through a directive issued by the Prefect.

These aircraft are registered and authorized for navigation through their inclusion in one of the registers provided for by the decree. Once available, they can be operated and are entrusted to qualified personnel. Such personnel must be certified either by the Air Force Center of Excellence for Remotely Piloted Aircraft (APR - Aeromobili a Pilotaggio Remoto) or hold a specific license issued by a training center certified by the National Civil Aviation Authority (ENAC - Ente Nazionale per l'Aviazione Civile).

In light of this concise analysis, it is clear that new technologies represent a significant opportunity for advancement and improvement in the field of criminal justice. Indeed, they serve as a facilitating factor by enhancing the efficiency and speed of police investigations, while also enabling the consideration of a much larger volume of information, data, and territorial contexts.

Furthermore, the criminal justice system must reflect the society in which it operates. Since society is undergoing a profound technological transformation, with no aspect of human life remaining unaffected, the legal system must, in turn, adapt to these changes[378].

On this last point, the Chief Prosecutor of Naples, Nicola Gratteri, has repeatedly spoken out, most recently during a United Nations conference. The Prosecutor emphasized that mafia organizations have been using highly sophisticated artificial intelligence systems for years to pursue their illicit interests and commit crimes.

Conversely, public authorities have so far failed to equip themselves with similar tools to develop an adequate counter-strategy. Therefore, Dr. Gratteri calls for investments in the adoption of artificial intelligence and new technologies by law enforcement agencies, through adequate funding, training, and the hiring of qualified personnel, since only in this way can authorities keep pace with criminal evolution.

However, despite the significant advantages and the indispensable role of technological evolution in combating crime, it is impossible to overlook the associated risks.

[378] C. Cesari, *L'impatto delle nuove tecnologie sulla giustizia penale – un orizzonte denso di incognite*, in *Revista Brasileira de Direito Processual Penal*, 5 (2019), n. 3, available at: <https://u-pad.unimc.it/retrieve/de3e5027-4887-83cd-e053-3a05fe0a1d44/Cesari_Editoriale-impatto-nuove-tecnologie_2019%20.pdf>, pp. 1171-1172.

Indeed, the new solutions offered by artificial intelligence are often difficult to reconcile with certain principles and guarantees of national legal systems, such as the protection of fundamental rights and the right to a fair trial.

In this regard, one can consider the challenges posed by the use of private-sector tools in the public sector of criminal justice. These tools, produced by private companies, are often based on proprietary algorithms, interception devices, and electronic surveillance systems. Their internal functioning is not transparent due to the protection of intellectual property rights, or the public authorities cannot manage them, making it necessary to rely on services offered by private companies. Such circumstances pose the risk of privatizing the administration of justice.

Moreover, the use of technological surveillance systems, such as the drones mentioned earlier, significantly conflicts with the protection of fundamental rights, particularly privacy.

It follows that, if the inclusion of these innovations within the legal system is unavoidable — given that every sector is affected and the judicial administration cannot afford to lag behind — then, first and foremost, there is a need for careful and strict regulation. Secondly, it requires a reconsideration and reinterpretation of the foundational norms and categories[379].

A similar effort has recently been made by the institutions of the European Union, which have introduced the first regulatory framework on artificial intelligence through Regulation 1689/2024, known as the AI Act. This new regulation establishes harmonized rules for the development and marketing of artificial intelligence systems within the EU.

The purpose of the Regulation is to balance different fundamental interests of the European community. On the one hand, it seeks to promote innovation and competitiveness in European markets. On the other hand, it aims to ensure a high level of protection for public interests, such as health, safety, and the protection of fundamental rights, including democracy, the rule of law, and environmental protection (recital no. 8)[380].

The European institutions adopt a risk-based approach, categorizing artificial intelligence systems into three groups based on the risk they pose to user safety and the protection of citizens' fundamental

[379] C. Cesari, *L'impatto delle nuove tecnologie sulla giustizia penale – un orizzonte denso di incognite*, op. cit., pp. 1174-1185.

[380] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 establishing harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139, and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797, and (EU) 2020/1828 (Artificial Intelligence Regulation), available at: https://www.sistemapenale.it/pdf_contenuti/1721236069_regolamento-unione-europea-ai-act-1689-2024.pdf.

rights, and consequently, specific obligations are identified for both suppliers and professional users, known as deployers.

The first category includes systems that pose unacceptable risks, and as such, these AI systems will not be allowed to be marketed in the European market (Article 5). The next category includes high-risk systems (Articles 6 and 7), which can only be marketed if they meet specific requirements (Articles 9, 10, 13, and 14). Finally, there are low-risk systems (Article 50), for which only compliance with certain transparency obligations is required[381].

Within its scope of application, the Regulation also covers the use of artificial intelligence systems for combatting criminal activity.

In recital no. 32, the Regulation addresses remote biometric identification systems "in real-time" for identifying individuals in public spaces (e.g., drones equipped with advanced facial recognition technology or other biometric sensors). Specifically, it explains that the use of such systems for counteracting crimes

> is particularly intrusive to the rights and freedoms of the concerned persons, to the extent that it may affect the private life of a large part of the population, evoke a feeling of constant surveillance and indirectly dissuade the exercise of the freedom of assembly and other fundamental rights.

Moreover, the same recital states that the technical inaccuracies of these AI systems can lead to distorted results and cause discriminatory effects regarding age, ethnicity, race, gender, or disabilities. This is because

> the immediacy of the impact and the limited opportunities for further checks or corrections in relation to the use of such systems operating in real-time carry heightened risks for the rights and freedoms of the persons concerned in the context of, or impacted by, law enforcement activities[382].

However, in the subsequent recital, no. 33, it is stipulated that the use of the aforementioned systems for counteracting crimes should be prohibited (they fall under the first category, Article 5, prohibited AI systems). However, there may be exceptions, which are exhaustively listed and rigorously defined, as their use is necessary to pursue a public interest that outweighs the associated risks.

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[381] B. Fragasso, *Pubblicato nella Gazzetta Ufficiale dell'UE il Regolamento sull'intelligenza artificiale (1689/2024)*, in *Sistema Penale*, 31 July 2024, available at: <https://www.sistemapenale.it/it/notizie/pubblicato-nella-gazzetta-ufficiale-dellue-il-regolamento-sullintelligenza-artificiale-1689-2024>.

[382] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 establishing harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139, and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797, and (EU) 2020/1828 (Artificial Intelligence Regulation), op. cit.

The exceptions provided for by the Regulation are

> the search for certain victims of crime including missing persons; certain threats to the life or the physical safety of natural persons or a terrorist attack; and the localisation or identification of perpetrators or suspects of the criminal offences listed in an annex to this Regulation, where those criminal offences are punishable in the Member State concerned by a custodial sentence or a detention order for a maximum period of at least four years and as they are defined in the law of that Member State[383].

The annex referenced in the recital is based on 32 crimes listed in Framework Decision 2002/584/JHA of the Council. Within this list, and about the scope of this research, there are environmental crimes, participation in a criminal organization, and illegal trafficking of nuclear and radioactive materials.

Thus, the crimes related to the phenomenon under study are included, meaning that AI systems normally prohibited can also be applied.

Furthermore, in recital no. 34, it is specified that such AI systems must always be used responsibly and proportionately, considering the nature of the situation and the impact on the rights and freedoms of all individuals involved. Therefore, their use should be authorized only when the competent law enforcement authority has carried out a preemptive assessment of the impact on fundamental rights and has ensured that the system is registered in the database regulated by the AI Act.

In general, regarding the use of AI systems by law enforcement authorities, not only those for real-time biometric identification, recital no. 59 explains that their use is characterized by a significant imbalance of power, as it may lead to surveillance, arrest, or deprivation of an individual's liberty. Specifically,

> if the AI system is not trained with high-quality data, does not meet adequate requirements in terms of its performance, its accuracy or robustness, or is not properly designed and tested before being put on the market or otherwise put into service, it may single out people in a discriminatory or otherwise incorrect or unjust manner. Furthermore, the exercise of important procedural fundamental rights, such as the right to an effective remedy and a fair trial as well as the right of defence and the presumption of innocence, could be hampered, in particular, where such AI systems are not sufficiently transparent, explainable, and documented[384].

[383] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 establishing harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139, and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797, and (EU) 2020/1828 (Artificial Intelligence Regulation), op. cit..
[384] Ibid.

For all the reasons outlined, within the AI Act, systems used for the repression of crimes are generally classified as high-risk systems, meaning their use is permitted subject to specific requirements.

Specifically, among these high-risk AI systems, the following are included: those used to assess the risk of an individual becoming a victim of a crime (e.g., polygraphs); those used to assess the reliability of evidence during the investigation and prosecution of crimes; and those used to determine the risk of crime or recidivism in relation to an individual.

In contrast, systems employed for administrative proceedings by tax authorities, customs authorities, and the financial intelligence unit, which analyze information regarding self-laundering, are not categorized as high-risk.

However, the Regulation specifies that it cannot be ignored, in the adoption of such tools, that they have an impact on the right of defense of the individuals under investigation, particularly with regard to the difficulty of obtaining meaningful information on how these tools work and the associated challenge of refuting their results in court.

Furthermore, Article 5 provides that the following are considered prohibited AI practices:

> (d) the placing on the market, the putting into service for this specific purpose, or the use of an AI system for making risk assessments of natural persons to assess or predict the risk of a natural person committing a criminal offence, based solely on the profiling of a natural person or on assessing their personality traits and characteristics; this prohibition shall not apply to AI systems used to support the human assessment of the involvement of a person in a criminal activity, which is already based on objective and verifiable facts directly linked to a criminal activity[385].

Finally, another important element to consider concerns the transparency obligations set out for the suppliers and deployers of certain AI systems, as outlined in Article 50. This article includes a range of exemptions when the system is used for the prevention of crimes. For example, it is stipulated that, when these systems are placed on the market and are intended to interact directly with individuals, they must be designed and developed in such a way that the individuals involved are informed that they are interacting with an AI system, unless it is evident to a reasonably informed, attentive, and prudent individual. However, the same article also specifies that this obligation does not apply to AI systems, authorized by law, which are entrusted with the task of detecting, preventing, investigating, or prosecuting crimes, in compliance with the freedoms and rights of third parties.

[385] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 establishing harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139, and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797, and (EU) 2020/1828 (Artificial Intelligence Regulation), op. cit..

The review of the contents of the AI Act regarding the use of technologies in combating crime reveals how European institutions have essentially allowed the use of such tools.

In presenting this information, it is evident that a significant effort has been made to carefully regulate their use while simultaneously safeguarding fundamental human rights.

Therefore, within the Regulation, there is an implicit recognition of the importance of technology in criminal justice, to the point that even AI systems, which would typically be prohibited, can be used in this field to counter specific criminal threats deemed particularly dangerous and relevant. Among these threats are environmental crimes and criminal organizations. It follows that an increasing introduction of technological systems is expected in the field of research.

While maintaining the points made about the usefulness and necessity of technology, the hope is that the variety of operators utilizing these tools will do so with particular caution, and that the Regulation will prove effective in mitigating the risks outlined above.

The AI Act will be implemented in the EU territory starting from 2 August 2026, although some provisions will be gradually applicable from 2 February 2025. Therefore, an analysis of the effectiveness and adequacy of the legislation will have to be postponed to the near future.

Chapter 4. Environmental Business Crime and the Administrative Liability of Legal Entities (Legislative Decree 231/2001)

4.1. Environmental Crime as Corporate Crime

Throughout the discussion, a recurring theme in the analysis of the phenomenon under examination has been the constant reference to the business environment, both as the operational context for the conduct and as the main actor carrying it out.

The examination of criminal phenomena and case law has highlighted how the illegal management of waste is closely linked to corporate crime.

This is evident in the case of business entities that are established ad hoc to carry out illegal activities, where a seemingly legitimate legal structure masks a wholly illegal reality.

The same can be said for companies targeted by mafia associations, where the latter infiltrate the enterprise through extortion or usurious loans, eventually taking full control of the company and diverting its business objectives towards criminal purposes (crime of exogenous origin).

However, the most widespread manifestation of environmental crime comes from legitimate business contexts or partially lawful enterprises that implement corporate policies treating environmental harm as a necessary or inevitable cost for carrying out economic activities aimed at achieving "profit at all costs"[386] (crime of endogenous origin).

Environmental criminal law is therefore inseparably linked to economic criminal law, with environmental harm being the consequence, usually unintended but accepted, of the production process.

In this regard, the main criminological studies on the phenomenon agree that environmental harm is the result of a society that places excessive value on economic growth[387].

Consequently, the phenomenon has its own political, economic, and cultural dimensions, and understanding it requires an investigation into the economic motives behind criminal processes. To better understand these concepts, the insights provided by organizational sociology are particularly useful.

[386] R. E. Omodei, *Spunti di riflessione in materia di reati di gestione e traffico di rifiuti. Le necessità di un ripensamento normativo*, op. cit., p. 54.
[387] L. Maldonato, *Il crimine ambientale come crimine delle corporations: cooperazione pubblico-privato e responsabilità indipendente dell'ente*, in *Rivista trimestrale di diritto penale dell'economia*, (2021) n. 3-4, pp. 530-531.

A prominent figure in this field is Richard Scott, who conducted a significant analysis of how organizations interact with the external environment and how they behave in relation to institutional and social contexts, a perspective that appears particularly relevant to the present investigation.

Specifically, the author integrates different approaches in the study of organizations, combining the rational, natural, and open systems perspectives. Through this method, he develops a classification of organizations.

Rational organizations are formal structures that pursue clearly defined goals through a precise division of tasks and roles, with the aim of maximizing operational efficiency.

Natural organizations consider informal dynamics in addition to the formal structure, which influence the conduct of the organization, such as social networks, shared values, and organizational culture. These are considered complex social systems where relationships and cohesion among members are essential for their functioning.

Open organizations focus on how organizations do not operate in isolation but are influenced by external forces, such as legislation, regulations, social norms, economics, and technology. Therefore, in this final stage, attention is placed on how organizations interact with the external environment, that is, how they respond to external influences to survive[388].

Taking into account all three perspectives on the study of organizations — seen as complex social structures that include business entities — it becomes possible to better understand decision-making and operational processes.

Specifically, a behavior, in this case a criminal act, is carried out in light of a set of factors: opportunity, motivation, and choice.

Opportunity refers to the occasion to commit a crime, which arises when non-compliance with environmental regulations becomes the most effective means to achieve the ultimate goal of profit.

Motivation lies in the preference given to economic and material interests associated with the illegal activity, rather than prioritizing other values, such as environmental protection and/or health.

Finally, the choice is made according to the cost-benefit logic. Depending on the economic situation of the company, more or less consideration will be given to environmental protection. Therefore, the decision to violate the law will depend on the extent of the cost savings and benefits achievable.

[388] For further insight, W. R. Scott, *Organizations: rational, natural, and open systems*, Upper Saddle River (N.J.): Prentice Hall, 1998

Therefore, the types of crimes committed in this manner result from a multi-subjective action carried out by an organization that may be more or less complex.

In light of this analysis, it is now easier to understand the underlying reason for the widespread presence of environmental crime within the corporate context. Indeed, the costs incurred in the event of non-compliance with regulations (i.e., sanctions) are significantly lower than the costs required to establish an organizational structure capable of balancing economic interests with environmental protection.

As a result, if it is established that, in a cost-benefit logic, it is more advantageous for a company to violate environmental regulations, then it would be necessary to either conceive more severe sanctions or shift the focus to shared values and organizational culture, as well as how these interact with external forces.

In other words, as of today, the commission of environmental crimes appears to be the most advantageous choice within the logic of maximizing profit. A proper balance can only be achieved by valuing other interests, such as environmental protection and human health, as equally worthy objectives to be pursued within corporate policy.

This shift can stem from a re-evaluation of internal values within the company, which are, in turn, influenced by pressures from the surrounding socio-legal context.

In this sense, criminology scholars have developed a definition of this form of crime, according to which:

> Environmental crime is behavior that causes harm to environmental matrices that is not unnecessary, as such harm could have been avoided through an organization of production activities different from the one that led to the occurrence of the adverse event[389].

In light of what has been explained so far, it follows that preventive and repressive actions aimed at combating the phenomenon cannot be directed solely at natural persons or, at least, not exclusively. Instead, they must also target the legal entity (the company), which qualifies as an autonomous subject.

Indeed, the corporate policy pursued and applied by the organization transcends the will of individuals. This inevitably affects the identification of the responsible party, as the person who carries out the conduct that violates environmental regulations is not necessarily the one who decided that such action should be taken.

[389] L. Maldonato, *Il crimine ambientale come crimine delle corporations: cooperazione pubblico-privato e responsabilità indipendente dell'ente*, op. cit., pp. 531-532.

Therefore, if environmental crime is classified as corporate crime, it is essential to devise a counter-strategy that takes into account the complexity of the corporate reality responsible for committing it. Moreover, such a strategy cannot be driven solely by punitive objectives but must aim to influence the organizational structure of the company itself[390].

4.2. The Administrative Liability of Legal Entities under Law No. 231/2001: General Aspects

Connecting with the conclusions of the previous paragraph and examining the relevant legislation, it is necessary to clarify that the Italian legal system still does not formally recognize criminal liability for legal entities, in accordance with the Roman law principle *"societas delinquere non potest"* (a corporation cannot commit a crime).

This legal cornerstone has been repeatedly challenged in scholarly debate, given that the most serious forms of crime are often the manifestation of corporate crime. In such cases, criminal conduct results from specific corporate decisions rather than the misconduct of an individual natural person.

Nevertheless, a new form of liability aimed at combating the commission of crimes within legal entities was introduced by the reform contained in Legislative Decree No. 231 of June 8, 2001. This decree regulates the administrative liability of collective entities for crimes committed by their governing bodies or subordinates.

It was adopted in the implementation of Enabling Law No. 300/2000, which, in turn, transposed certain international conventions on the corruption of foreign public officials in international business transactions.

The majority of legal practitioners assert that the classification of this liability as administrative stems from a legislative choice aimed at appeasing the concerns of the business sector, which was worried about the economic repercussions of the reform.

However, it is believed that, in substance, the liability introduced by the reform has a criminal nature, as it is directly linked to the commission of a crime and is ascertained within criminal proceedings.

In this regard, the Italian Supreme Court expressed a similar position when it was called upon to rule on the matter for the first time in 2006[391].

[390] Ibid., pp. 532-535.
[391] G. Fiandaca, E. Musco, *Diritto penale Parte generale*, Bologna: Zanichelli editore, 2014, pp. 171-175.

Turning to the analysis of the content of Legislative Decree No. 231/2001, the subjects to whom the reform applies (Art. 1 of Law No. 231/2001) are entities with legal personality, as well as companies and associations, even those without legal personality.

However, territorial public entities, other non-economic public entities, and entities that perform functions of constitutional importance are excluded from its scope.

Furthermore, the Italian Supreme Court has clarified that the provisions do not apply to sole proprietorships, as the system of liability introduced by the decree was specifically designed for collective entities[392].

Specific objective and subjective attribution criteria must be fulfilled to establish the administrative liability of a collective entity.

From an objective perspective (Article 5), it is required that at least one of the predicate offenses listed in the same law has been committed in the interest or to the advantage of the entity by a natural person meeting specific criteria.

Accordingly, two conditions are established for the objective attribution of liability to the entity. The first condition is met if the offense was committed in the interest or to the advantage of the legal person. Indeed, Article 5(2) stipulates that the entity is not liable if the natural persons acted exclusively in their interest or in the interest of third parties.

Concerning the concepts of 'interest' and 'advantage', a variety of judicial interpretations have emerged concerning the correct application of the relevant legislation. This interpretative uncertainty persisted until the intervention of the United Sections of the Italian Supreme Court with judgment No. 38343 of 2014, which clarified that the two concepts must be considered distinct.

The notion of interest focuses on the conduct of the natural person and does not require that the latter, in committing the offense, intended or was aware of pursuing the entity's interest. Consequently, it is an objective criterion. In contrast, the concept of advantage pertains specifically to the entity itself. Both concepts must jointly represent a benefit for the legal person. For the entity to be held liable for an offense, it is necessary to establish a functional link of utility between the offense and the entity.

Since both concepts must jointly represent a benefit for the entity, the distinction between them lies in that interest must be assessed ex-ante, in potential terms, when the conduct is carried out. Conversely, advantage is an outcome that must be evaluated ex-post, always concerning the conduct.

[392] Italian Supreme Court, Section VI, judgment no. 18941 of March 3, 2004.

This interpretation has made it possible to overcome the impasse related to the difficulty of identifying an interest and an advantage for the entity in connection with negligent offenses (where the volitional element is absent). This issue has arisen particularly in the fields of occupational health and safety and environmental protection. Indeed, the interest and advantage for the entity must not be linked to the (unintended) event, but rather to the conduct. In this context, the advantage must be assessed retrospectively in terms of cost reduction[393].

The overall benefit must be economically quantifiable, meaning it must have a patrimonial nature. This requirement is met, for instance, when there is a mere saving of resources or expenses, or an increase in productivity[394].

With specific reference to environmental offenses, the benefit may also consist of savings on administrative and organizational costs, which would otherwise have to be incurred to comply with the obligations established by environmental regulations[395].

By way of example, in 2019, the Italian Supreme Court held that:

> In the context of the liability of entities arising from environmental offenses (which are of a negligent nature), interest and advantage must be identified both in the economic savings for the entity resulting from the failure to adopt systems or devices suitable for preventing the exceedance of regulatory thresholds and in the elimination of downtime that the installation and maintenance of such systems would have caused, thereby achieving an overall economization of production activities. In this regard, it should be noted that the savings for the company may also consist solely in the reduction of processing times[396].

The second condition for objective attribution concerns the structural/functional relationship between the natural person committing the offense and the legal entity.

Article 5 distinguishes between two different categories of individuals. Letter (a) refers to 'persons who hold representative, administrative, or managerial positions within the legal entity or one of its organizational units with financial and functional autonomy, as well as persons who, even de facto, manage or control the entity' (individuals in an apical position).

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[393] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, in *Diritto penale contemporaneo*, (2021), n. 1, available at: <https://iris.luiss.it/retrieve/e163de42-d558-19c7-e053-6605fe0a8397/Birritteri_DPC_Riv.%20Trim._1_2021.pdf>.

[394] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, Torino: Giappichelli Editore, 2022, pp. 158-165.

[395] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 297.

[396] Italian Supreme Court, Section III, judgment no. 3157/2019, 4 October 2019.

In contrast, letter (b) refers to 'persons subject to the direction or supervision of one of the individuals referred to in letter (a)' (individuals in a subordinate position).

The distinction between the two categories of individuals, apical and subordinate, does not result in differences concerning the objective attribution of liability to the legal entity. However, it is significant for the subjective attribution criteria (Articles 6 and 7), as will be further discussed below. This is because the regulatory framework of Legislative Decree No. 231/2001, as a whole, considers the conduct of individuals in apical positions to be more relevant in terms of the benefit it generates for the entity[397].

Following the objective attribution criteria, the subjective attribution criteria must be satisfied for the offense to be imputed to the legal entity in terms of culpability. Moreover, these criteria serve as guiding principles for the development of corporate compliance systems, ensuring that they are oriented toward a system of positive values aimed at achieving substantive legality. This second aspect will be addressed in greater detail at a later stage.

The subjective attribution criteria are linked to the paradigm of culpa in vigilando, which is translated into a form of organizational negligence. This occurs when the safeguards and measures aimed at preventing the commission of offenses have not been put in place or have been inadequately implemented or applied, or when there has been a failure to properly monitor their functioning.

Specifically, Article 6 establishes that, if the offense is committed by individuals in an apical position, the legal entity will not be held liable if it can prove the following circumstances:

> a) the management body adopted and effectively implemented, before the commission of the offense, organizational and management models suitable for preventing offenses of the kind that occurred; b) the task of supervising the functioning and compliance with the models, as well as ensuring their updating, was assigned to a body within the entity endowed with autonomous powers of initiative and control; c) the individuals committed the offense by fraudulently circumventing the organizational and management models; d) there was no omission or insufficiency in the supervision carried out by the body referred to in letter b.

Conversely, for individuals in a subordinate position, Article 7 provides that 'the legal entity is liable if the commission of the offense was made possible by the failure to comply with supervisory or oversight obligations'. However, such non-compliance is excluded 'if, before the commission of the offense, the legal entity adopted and effectively implemented an organizational, management, and control model suitable for preventing offenses of the kind that occurred'.

[397] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 151-153.

Therefore, an analysis of the regulatory framework reveals that the identification of the subjective attribution criterion does not merely result from a failure to exercise control (culpa in vigilando). Instead, it requires proof that the commission of the offense by natural persons was facilitated by the absence of an organizational and management model (compliance systems) suitable for preventing the commission of the specific offense that occurred in the given case and/or by the absence of an independent body tasked with overseeing its implementation. This body is the Supervisory Body (Organismo di Vigilanza, ODV), which is responsible for monitoring the effectiveness and updating of compliance systems.

Furthermore, Article 7 specifies that the model must include adequate measures to ensure that the activities of the legal entity are carried out in compliance with the law and to promptly detect and eliminate potential risk situations. The content of this model varies according to the nature and size of the organization, as well as the specific activity it carries out.

The implementation of the model is considered effective if its content is subject to periodic review, with possible modifications in the event of significant violations or changes in the organization or activities of the legal entity. Moreover, the model must include a disciplinary system capable of sanctioning violations of the procedures prescribed therein[398].

The introduction of organizational and management models under Legislative Decree No. 231 is inspired by compliance programs from the U.S. legal system. However, they differ from the latter in two key respects.

First, the models in the Italian legal system are self-regulated by legal entities, whereas U.S. compliance programs are established by federal law. Adherence to U.S. compliance programs may result in a reduction of the sanction but does not eliminate it. By contrast, under Legislative Decree No. 231, the effective implementation of organizational and management models excludes the attribution of liability to the legal entity[399].

The analysis of the 231 models will be resumed in greater detail at a later stage.

With regard to the Supervisory Body (Organismo di Vigilanza, ODV), its members must be appointed by the same resolution of the management body that approves and adopts the model, or

[398] Article 7, Legislative Decree No. 231 of 8 June 2001, Rules on the administrative liability of legal entities, companies, and associations, including those without legal personality, pursuant to Article 11 of Law No. 300 of 29 September 2000, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2001-06-08;231.

[399] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 165-169.

through a separate resolution that also regulates its functioning, the subjective requirements its members must meet, as well as the criteria selected for their appointment.

The Supervisory Body must meet several requirements, including autonomy (specifically provided for by the decree), independence, professionalism, integrity, and continuity of action.

In particular, the ODV must have autonomous powers of initiative and control. This autonomy is ensured when there are no influences or pressures from the members of the legal entity and when the ODV is not involved in operational or management activities that could compromise its objectivity in decision-making.

Additionally, the Supervisory Body must possess decision-making autonomy, freedom of self-determination, powers of access and inspection within the premises of the collective entity, and its budget.

The members of the Supervisory Body (ODV) must possess specific professional expertise suitable for the performance of their duties, which are aimed at preventing the commission of criminal offenses within the legal entity.

Particularly significant is the provision of Article 2 of Legislative Decree No. 218/2012, which amended Article 85 of Legislative Decree No. 159/2011, known as the Anti-Mafia Code. This provision establishes that members of the ODV are required to self-certify that they are not subject to preventive measures when the legal entities participate in public procurement procedures.

Article 85 represents the first legislative act to explicitly require an integrity requirement for ODV members, a criterion that, until that point, had been developed exclusively by legal scholarship and case law.

Finally, with regard to continuity of action, the Supervisory Body must establish an operational plan before commencing its activities, which defines the frequency of its verification interventions.

In general, the ODV is responsible for monitoring the functioning and compliance with the 231 model within the legal entity. This requires a thorough process of planning, execution, and reporting of the activities carried out, ensuring that the results can serve as evidence of the effective performance of the oversight operations.

For the Supervisory Body to effectively carry out its function, it is essential to establish information flows that enable it to obtain the necessary data to verify the application and the ongoing adequacy of the model. The methods and procedures for communicating information to the ODV are

regulated within the 231 model itself and can be categorized into periodic communications and those triggered by specific events, which are not limited to the initiation of criminal proceedings.

With regard to information flows, particular importance is attached to the rules governing the so-called whistleblowing channel. This mechanism was first introduced into the Italian legal system by Law No. 190/2012 (the so-called Severino Law) exclusively within the context of public administration. It was later extended to the private sector by Law No. 179/2017.

Specifically, Article 6, paragraph 2-bis, states that 'the models […] provide, under the legislative decree implementing Directive (EU) 2019/1937 of the European Parliament and of the Council of 23 October 2019, internal reporting channels, a prohibition of retaliation, and a disciplinary system'.

Therefore, for the 231 model to be considered adequate, it must provide for information channels that enable both apical and subordinate individuals to submit detailed reports of unlawful conduct while safeguarding the confidentiality and anonymity of whistleblowers.

This implies the need to ensure protection against retaliation and discrimination based on the content of the report, so as not to undermine the employment position of those who choose to report misconduct, while also preserving the voluntary nature of the information.

To guarantee such protection, the disciplinary system must establish sanctions for those who violate the whistleblower protection measures, as well as for those who submit unfounded reports with intent or gross negligence.

Although the provision on whistleblowing does not specify the recipients of confidential reports, in the context of collective entities to which Legislative Decree No. 231/2001 applies, these recipients can only be members of the Supervisory Body (ODV)[400].

Furthermore, for the 231 model to have exonerating effectiveness, it must be properly communicated to all members of the corporate structure. Dissemination should take place through training and information activities, which vary according to the roles of the recipients. These practices are essential to fostering a corporate culture that embraces the values enshrined in the model[401].

It is also necessary to highlight an additional element: the need to establish a disciplinary system capable of sanctioning both apical and subordinate individuals in cases of violations of the procedures and measures outlined in the model. The disciplinary system must be implemented by the employer,

[400] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 237-246.
[401] Ibid., pp. 221-229.

i.e., the management body, and must comply with the principles of proportionality and adversarial procedure[402].

Particularly useful for a better understanding of the concepts analyzed so far regarding the 231 models, the Supervisory Body (ODV), and the disciplinary system, is a 2016 judgment of the Italian Supreme Court.

The Court clarified that:

> For exemption from administrative liability for an offense, the adoption of an organizational model, under Article 6 of Legislative Decree No. 231 of 2001, is not sufficient in itself. It is also necessary to establish a supervisory function over the functioning and compliance with the model, which must be entrusted to a body endowed with autonomous powers of initiative and control. In this regard, initiative and control can be considered effective and not merely formal only if it is clear that the supervisor is not subordinate to the controlled party. Indeed, Article 6(2)(d) of the aforementioned decree provides for a series of information obligations toward the supervisory body, with the clear purpose of enabling the 'autonomous' exercise of its supervisory power. Additionally, Article 6(2)(e) establishes the requirement for an adequate disciplinary system. Consequently, an organizational model cannot be considered suitable to exempt the company from administrative liability if it provides for the establishment of a supervisory body for the functioning and compliance with the adopted prescriptions that is not equipped with autonomous and effective powers of control but is instead subject to the direct authority of the supervised party[403].

Before concluding the analysis of the content of Legislative Decree No. 231/2001, it is necessary to address the categories of offenses. Indeed, the liability of legal entities does not arise from the commission of any offense provided for under Italian law, but only from those expressly listed in Articles 24 et seq. of the decree, known as predicate offenses.

Over the years, the catalog of predicate offenses has been significantly expanded as a result of multiple legislative interventions in the matter.

Furthermore, Article 8 of the decree establishes the independent nature of the liability of the legal entity concerning that of the natural person who committed the predicate offense. Specifically, the provision states that the liability of the entity exists even when 'the perpetrator of the offense has not been identified or is not imputable' and when 'the offense is extinguished for a reason other than an amnesty measure'.

This provision allows for the sanctioning of improper corporate policies regardless of the ability to identify the individual perpetrator. This aspect is particularly significant, as in complex

[402] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 254-260.
[403] Italian Supreme Court, Section II, judgment no. 52316/2016, 27 September 2016.

organizational systems, such as collective entities, it is often especially difficult to identify a responsible natural person due to the "depersonalization of decision-making centers" and the "disruption of causal processes"[404].

4.3. Liability of Legal Entities for Environmental Offenses

Concerning the possibility of establishing the liability of legal entities for the commission of environmental offenses — a clear and typical expression of corporate crime — it took ten years from the introduction of Legislative Decree No. 231/2001 to achieve this goal.

In this regard, the legislator of Law No. 300/2000 was aware of the role played by corporate entities in the commission of environmentally harmful conduct, including certain environmental offenses in the catalog of predicate offenses. However, in the text of Legislative Decree No. 231/2001, the Government chose not to incorporate this part of the enabling law, justifying the decision because it was more appropriate to allow companies an initial phase to experiment with the reform.

This choice appears justifiable in light of the groundbreaking nature of the decree. Therefore, the decision was made to limit the list of predicate offenses to

> contain, at least in the initial phase, its scope of application, also to promote the gradual establishment of a corporate culture of legality[405].

However, in light of the practical reality of corporate environmental crime, it soon became necessary to revisit the content of the regulatory framework. This shift was partly driven by pressure from supranational bodies, with particular reference to Directive 2008/99/EC, which explicitly required the adoption of sanctioning measures against legal entities for environmental offenses.

Nevertheless, a formal position on the matter was not taken until the introduction of Article 25-undecies into Legislative Decree No. 231/2001 by Legislative Decree No. 121/2011, which extended the administrative liability of entities to certain environmental offenses provided for in Legislative Decree No. 152/2006.

This legislative amendment marked a significant turning point in the national legal system, as it was the first time that legal entities could also be sanctioned for this type of offense. Moreover, from that moment on, entities were required to adopt 231 models, thereby playing a proactive role in the prevention of environmental crime.

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[404] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 260.

[405] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 290, note 3.

However, it is important to note that a significant part of the scientific debate did not consider Legislative Decree No. 121/2011 to represent a substantial shift toward the establishment of an effective protection system. Critics highlighted the lack of substantial alignment between the nature of the criminal offenses introduced and the requirements of European regulations. While the European Directive required offenses involving harm or concrete danger, the national legislation included only abstract endangerment minor offenses (*contravvenzioni*).

Essentially, scholars pointed out that the legislator's approach was aimed at fulfilling the new EU obligations "without disrupting the sanctioning framework for environmental protection"[406].

Indeed, the discrepancies identified concerned the national legal framework on environmental criminal law as a whole, affecting both natural persons and, consequently, collective entities.

Therefore, in this case, as well, a substantial change occurred with the adoption of Legislative Decree No. 68/2015, which extended the liability of legal entities by amending Article 25-undecies of Legislative Decree No. 231/2001.

During the preparatory works, legal practitioners and policymakers emphasized that

> in the field of environmental offenses, for example in the statistically more frequent cases of waste disposal and illegal construction, the most serious acts are committed in the interest of companies, and the imposition of financial penalties on them would allow for the direct counteraction of their economic interests. In certain circumstances, it would prove more effective both for prosecuting the individual incident and, more generally, in terms of deterrence, compared to the custodial sentence imposed on the natural person[407].

The final content of Article 25-undecies is structured according to a hypothetical "penal hierarchy"[408], with the most serious offenses at the top. These include the eco-crimes provided for in the Italian Penal Code, namely: the crime of environmental pollution (Article 452-bis); the crime of environmental disaster (Article 452-quater); negligent offenses against the environment (Article 452-quinquies); aggravated associative offenses according to Article 452-octies; and the crime of trafficking and abandonment of high-radioactivity material (Article 452-sexies).

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[406] F. Vizzino, *Responsabilità da reato in materia ambientale: profili di criticità e prospettive de iure condendo del modello 231 per la prevenzione dei reati ambientali*, in *La responsabilità amministrativa delle società e degli enti*, (2022) n. 4, p. 262.

[407] S. Petella, *Ecoreati e responsabilità degli enti. Criticità e prospettive*, in *Diritto penale contemporaneo*, (2018), n. 1, available at: <https://dpc-rivista-trimestrale.criminaljusticenetwork.eu/pdf/petella_1_18.pdf>, p. 323.

[408] M. Chilosi, M. Riccardi, *Profili penalistici dei modelli organizzativi. Ambiente interno e ambiente esterno: interferenze relative al catalogo '231'*, in *Diritto della Sicurezza sul Lavoro*, (2023), n. 1, available at: <https://journals.uniurb.it/index.php/dsl/article/view/4281>, p. 72.

At an intermediate level, there is the offense of organized activities for the illegal trafficking of waste (formerly Article 260 of Legislative Decree No. 152/2006, now Article 452-quaterdecies), although this specific offense has raised certain concerns that will be addressed later.

Finally, the framework is completed by the inclusion of minor offenses (*contravvenzioni*) from Legislative Decree No. 152/2006, which consist of conduct-based and abstract endangerment minor offenses. These include offenses related to the discharge of industrial wastewater, unauthorized waste management activities, failure to remediate contaminated sites, illegal waste trafficking, and exceeding certain emission thresholds into the atmosphere[409].

Despite the groundbreaking nature of Legislative Decree No. 68/2015, including in the area of liability for collective entities, doubts have been raised regarding the effectiveness of its intervention.

The criticisms primarily concern two main issues: the establishment of identical sentencing frameworks for distinct offenses and the absence of significant offenses in the catalog of predicate offenses.

About the first issue, it has been noted that the same financial penalty (ranging from 200 to 500 penalty quotas) is applied to the crimes of environmental disaster and negligent environmental pollution, despite the fact that, in cases involving natural persons, these offenses are subject to significantly different penalties[410].

Concerning the "notable omissions" certain offenses have not been included in the catalog of predicate offenses. These include offenses related to integrated environmental authorization (Article 29-quattuordecies of Legislative Decree No. 152/2006) and minor offenses (*contravvenzioni*) related to the abandonment and uncontrolled disposal of waste (Article 256(2) of Legislative Decree No. 152/2006).

As for the more serious offenses classified as eco-crimes, several key offenses are missing. These include the crime of death or injury as a consequence of environmental pollution (Article 452-ter of the Italian Penal Code), the crime of obstruction of supervision (Article 452-septies of the Italian Penal Code), and the crime of failure to remediate or restore (Article 452-terdecies of the Italian Penal Code).

[409] F. Vizzino, *Responsabilità da reato in materia ambientale: profili di criticità e prospettive de iure condendo del modello 231 per la prevenzione dei reati ambientali*, op. cit., p. 264.
[410] Ibid.

These offenses are particularly relevant in business contexts. For instance, the obstruction of supervision qualifies as an obstruction offense, which typically arises in companies subject to environmental oversight and inspections.

Furthermore, the absence of specific offenses is also noteworthy. These include offenses related to landfills (Article 16 of Legislative Decree No. 36/2003, as amended by Legislative Decree No. 121/2020, implementing Directive (EU) 2018/850); offenses concerning waste incineration or co-incineration activities (Article 261-bis of Legislative Decree No. 152/2006); criminal offenses related to violations of conditions for the treatment of end-of-life vehicles (Article 13(1) of Legislative Decree No. 209/2003, as amended by Legislative Decree No. 119/2020, implementing Directive (EU) 2018/849); and offenses related to the violation of obligations for the decontamination and disposal of equipment containing PCBs, as well as the prohibition on their use (Article 10 of Legislative Decree No. 209/1999).

Once again, these offenses are particularly relevant in the context of waste management and are statistically more likely to involve the operational activities of business contexts rather than the actions of natural persons[411].

To understand the critical issues related to the absence of certain environmental offenses from the catalog of predicate offenses for the liability of collective entities, reference can be made to the ILVA case.

In this judicial context, an attempt was made to address the legislative gaps by charging the entity with the crime of criminal association (Article 416 of the Italian Penal Code), which penalizes the creation of an organization of individuals who associate to commit multiple offenses. This crime is included among the predicate offenses, and within its scope, certain environmental offenses not listed in Legislative Decree No. 231/2001 were also included.

However, this in malam partem interpretation did not pass the scrutiny of the Italian Supreme Court. Criticism also emerged in legal scholarship, as it was argued that

> reasoning in this way, Article 24-ter of Legislative Decree No. 231 would become a sort of 'bridge provision' capable of attributing relevance to any offense, surreptitiously neutralizing the legislator's choice to limit the liability of the entity to only those offenses expressly listed in the corresponding catalog of Legislative Decree No. 231[412].

[411] M. Chilosi, M. Riccardi, *Profili penalistici dei modelli organizzativi. Ambiente interno e ambiente esterno: interferenze relative al catalogo '231'*, op. cit., pp. 73-74.
[412] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 296.

Continuing with the problematic aspects, doubts have arisen regarding the possibility of establishing the liability of legal entities for the offense of organized activities for the illegal trafficking of waste. This issue stems from the fact that, following Legislative Decree No. 21/2018, Article 260 of Legislative Decree No. 152/2006 was repealed, and its content was incorporated, unchanged, into the new Article 452-quaterdecies of the Italian Penal Code.

However, Article 25-undecies of Legislative Decree No. 231/2001 still refers to Article 260 of Legislative Decree No. 152/2006. As a result, some commentators have questioned whether it is possible to automatically interpret this reference as including the new article of the Italian Penal Code, as doing so might conflict with the principle of legality.

Nevertheless, Article 8 of Legislative Decree No. 21/2018 explicitly provides that references, wherever found — including those in Legislative Decree No. 231/2001 — to repealed provisions, including Article 260 of Legislative Decree No. 152/2006, must be understood as references to the new and corresponding provisions of the Italian Penal Code. Consequently, most commentators consider the issue to be resolved in this manner[413].

In general, the framework established by Legislative Decree No. 231/2001 shares the same limitations as the Italian environmental criminal system in terms of the accessibility of the content of criminal offenses. This is because these offenses criminalize violations of other administrative provisions, which, in turn, require familiarity with complex regulatory frameworks. This complexity is a result of the highly technical nature of environmental law.

However, this structure forces relevant stakeholders to constantly cross-reference legislative and regulatory texts, leading to significant practical difficulties. These issues become particularly evident in the drafting of 231 models, which involve mapping the risk of offenses being committed. In fact, the identification of such risks requires prior knowledge of the underlying unlawful conduct[414].

Noteworthy in the context of the administrative liability of legal entities for environmental offenses is the application of the principle of autonomy established by Article 8 of Legislative Decree No. 231/2001.

Indeed, in the environmental sector, it is quite common for the natural person who committed the unlawful conduct to remain unidentified and/or for the harmful event to be attributable to a single individual. As noted in the literature,

[413] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 294.
[414] Ibid., p. 296.

> violations and non-compliance with the relevant sector-specific regulations subject to criminal enforcement often originate — considering the complex structure and the so-called‘fragmentation of decision-making centers’ within complex organizations — from intricate dynamics and macro-level collective responsibilities that have developed over the years. In such cases, the individual’s culpability tends to fade or becomes difficult to reconstruct due to actions (and omissions) involving a multitude of individuals and corporate functions[415].

In light of these considerations, it becomes evident that the principle of autonomy of the liability of the legal entity serves to prevent violations of environmental regulations from being concealed behind the “veil” of the legal entity, as the latter will still be subject to sanctions for failing to prevent the offense, regardless of whether the perpetrator is identified.

However, the interpretation established in case law has limited the applicability of this principle. Even if the perpetrator of the offense is not identified, it is still necessary to ascertain both the commission of the conduct that constitutes the offense and the category to which the perpetrator belongs (apical or subordinate). Otherwise, it would not be possible to correctly apply Articles 6 and 7 of Legislative Decree No. 231/2001 to determine the subjective element of the offense.

This is confirmed by the Italian Supreme Court, judgment no. 28299/2015, which states that:

> Although Article 8 of Legislative Decree No. 231/2001 provides for the liability of the entity even in the absence of identification of the perpetrator, for the full application of the provision, it is necessary to ascertain the existence of an offense, as well as to identify the category to which the perpetrator belongs (so-called ‘apical’ subject or a person subject to the direction or supervision of the former) and to exclude that the perpetrator acted exclusively in their interest or to the advantage of a third party[416].

In any case, the Italian Supreme Court later clarified that it is not necessary to fully establish the individual criminal liability for the offense. Instead, it is sufficient to conduct at least an incidental assessment of the matter[417].

About the sanctioning system applicable to legal entities, Article 9 of Legislative Decree No. 231/2001 establishes that ‘the sanctions for administrative offenses are: financial penalties; interdictive sanctions; confiscation; and publication of the judgment’.

Specifically, the interdictive sanctions include the prohibition from carrying out business activities, the suspension or revocation of authorizations, licenses, or concessions that are functional to the commission of the offense, the ban on contracting with public administration, except for obtaining the provision of a public service, the exclusion from grants, funding, contributions, or

[415] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 298.
[416] Italian Supreme Court, Section VI, judgment no. 28299/2015, 10 November 2015.
[417] In this sense, see Italian Supreme Court, Section V, judgment no. 21640/2023, 2 March 2023.

subsidies, as well as the potential revocation of those already granted, and the ban on advertising goods or services.

Concerning the application of sanctions, the subsequent articles establish that, for the administrative offense of the collective entity deriving from a crime, a financial penalty is always applied.

This penalty must be determined by taking into account the seriousness of the offense, the degree of liability of the legal entity, and any measures taken to eliminate or mitigate the consequences of the offense and prevent the commission of further offenses.

Additionally, the amount of the penalty is calculated based on the economic and financial conditions of the legal entity, ensuring that the application of the sanction remains effective.

The financial penalty may be reduced if certain conditions are met. These include cases where the legal entity has fully compensated for the damage and eliminated the harmful or dangerous consequences of the offense, or when it has adopted and effectively implemented a 231 model capable of preventing offenses of the same type as the one committed.

Both of these circumstances must occur before the declaration of the commencement of the trial in the first instance of criminal proceedings.

On the other hand, interdictive sanctions may only be applied for those offenses for which this possibility is expressly provided. Additionally, at least one of the following conditions must be met:

> a) the legal entity has derived a significant profit from the offense, and the offense was committed by an apical subject or by a subordinate subject if, in this case, the commission of the offense was caused or facilitated by serious organizational deficiencies; b) in the case of repeat offenses.

However, Article 17 provides that, while financial penalties remain applicable, interdictive sanctions will not be imposed if, before the declaration of the commencement of the trial, certain conditions are met.

These conditions are as follows:

> a) the legal entity has fully compensated for the damage and eliminated the harmful or dangerous consequences of the offense or has otherwise made effective efforts to do so; b) the legal entity has remedied the organizational deficiencies that led to the offense by adopting and implementing organizational models capable of preventing offenses of the same type as the one committed; c) the legal entity has made available the profit obtained from the offense for confiscation purposes.

The scientific debate generally views the sanctioning system established by Legislative Decree No. 231/2001 favorably, considering it to be more effective than the system applicable to natural persons[418].

In general, with regard to the sanctioning framework of environmental criminal law, there has been a gradual shift toward a more restorative function, a characteristic typically associated with civil law. This shift is partly driven by the need to reduce the burden on the judicial system, but it is also linked to a growing awareness of the necessity to adopt a new approach that is better suited to providing a concrete and effective response to criminal phenomena[419].

An illustrative example of this approach is provided by Legislative Decree No. 68/2015, which introduced Part VI-bis into Legislative Decree No. 152/2006. This section, comprising seven articles (Articles 318-bis to 318-octies), addresses the "Sanctioning system for administrative and criminal offenses in the field of environmental protection."

The new regulatory provisions apply to minor offenses (*contravvenzioni*) contained in Legislative Decree No. 152/2006, which "have not caused harm or a concrete and actual danger of harm to the protected environmental, urban, or landscape resources" (Article 318-bis).

This legislative amendment regulates a procedure for the extinction of minor offenses (*contravvenzioni*), which is triggered when the responsible party carries out a series of actions prescribed and monitored by the specialized authority competent in the specific matter or by the judicial police, in addition to paying a financial penalty.

The actions to be undertaken may include, for example, the elimination of hazardous situations or the cessation of potentially dangerous activities[420].

However, it is important to acknowledge that certain critical issues have arisen regarding the relationship between the new procedure for the extinction of minor offenses (*contravvenzioni*) and its potential applicability to the administrative liability of legal entities, given that these minor offenses may constitute a predicate offense.

[418] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., p. 296.
[419] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 266-268.
[420] S. Petella, *Ecoreati e responsabilità degli enti. Criticità e prospettive*, op. cit., pp. 324-326.

For the sake of completeness, it should also be noted that similar concerns have been raised with regard to the institution of extinguishment by payment (*oblazione*)[421].

Indeed, the content of Article 8 of Legislative Decree No. 231/2001 prevents the exclusionary effect of non-punishability enjoyed by the natural person from being extended to the legal entity. This is because the extinguishment of punishment falls within the scope of cases governed by the principle of autonomy of the liability of the legal entity, except for amnesty measures.

This circumstance has been negatively criticized in the scientific debate, as it is considered to be affected by unreasonable aspects.

From a practical perspective, with regard to the commission of environmental offenses in corporate contexts, including the implementation of restorative measures, it is reasonable to assume that the cost will not be borne by the natural person, but rather by the legal entity.

Therefore, it is argued that the extinguishing effects provided for by Legislative Decree No. 152/2006 and the criminal legal system in general should also be extended to the legal entity.

Indeed, these mechanisms offer more favorable benefits compared to those provided by Legislative Decree No. 231/2001, which only allow for a reduction of financial penalties or the exclusion of the application of interdictive sanctions[422].

Commentators generally agree that the regulatory framework should be strengthened in terms of recognizing the restorative actions undertaken by collective entities. The goal is to achieve full and effective environmental protection, which, in some cases, is more effectively attained through the restoration of the previous condition rather than through the imposition of a penalty.

4.4. Prevention of Environmental Risks: The Organizational, Management, and Control Model

Within this analysis, it is essential to provide an independent examination of the Organizational, Management, and Control Models (MOG), as regulated by Legislative Decree No. 231/2001.

This is due to the central role they play in the regulatory framework governing the administrative liability of collective entities, as well as their strategic role in promoting the reassessment of corporate values. This reassessment is instrumental in defining a new corporate policy, as discussed in previous sections.

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[421] *Oblazione* is a legal institution governed by Italian criminal law that allows the defendant to extinguish minor offenses (*contravvenzioni*), if they are punishable exclusively by a fine or by arrest or a fine, through the payment of a sum of money.

[422] E. Birritteri, *La responsabilità da reati ambientali degli enti collettivi: profili dogmatici e tecniche di prevenzione*, op. cit., pp. 298-299.

To proceed systematically, it should first be noted that MOGs are an optional but essential element for establishing organizational negligence, as they can serve as an exemption if the legal entity demonstrates that it has effectively implemented a model capable of preventing the commission of offenses of the same type as the one that occurred in practice.

Furthermore, MOGs represent a central element for accessing the mitigation mechanisms provided for in Legislative Decree No. 231/2001 (Articles 12 and 17), namely, the reduction of financial penalties and the non-application of interdictive sanctions.

It is also noteworthy that the adoption of a 231 model produces a range of positive effects beyond the scope of the provisions contained in Legislative Decree No. 231/2001. For example, its implementation is one of the criteria that may contribute to obtaining a positive score in the assignment of the Corporate Legality Rating by the Italian Competition Authority (AGCM, Autorità Garante della Concorrenza e del Mercato), an institution established under Article 5-ter of Decree-Law No. 1/2012[423].

Furthermore, 231 models are also included in the non-financial disclosure (NFD) requirements that must be submitted by collective entities meeting certain criteria. This contributes to the implementation of EU-driven Corporate Social Responsibility (CSR) principles[424].

References to 231 models can also be found in the Public Procurement Code (Legislative Decree No. 50/2016), where the adoption of such instruments is regarded as a reputational factor that must be taken into account by contracting authorities.

These aspects will be further examined later in the analysis. For now, it is appropriate to delve deeper into the specific characteristics of 231 models regarding the context of the phenomenon under examination.

First and foremost, 231 models focus on a risk analysis aimed at identifying the business areas and activities most exposed to the potential commission of predicate offenses governed by Legislative Decree No. 231/2001.

This assessment is followed by the adoption of procedures, protocols, and organizational measures aimed specifically at preventing the commission of criminal activities. These tools regulate

[423] A. De Vivo, C. Zanichelli, *La (virtuosa) interazione tra rating di legalità e modello 231 tra premialità aggiuntive e percorsi etici d'impresa*, in *La responsabilità amministrativa delle società e degli enti*, (2021), n. 1, pp. 25-33.
[424] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 174.

operational methods and the necessary controls to minimize the likelihood of unlawful conduct occurring within the corporate environment.

Therefore, they must serve as preventive safeguards against the commission of offenses or, if offenses are nonetheless committed, they must be adequate to demonstrate that the company has taken all reasonable steps to prevent them.

To achieve these objectives — and for a model to be deemed adequate to prevent offenses — it is essential that the model is specifically designed for the business reality of the company adopting it. In this regard, it has been noted that:

> The model cannot reflect a pre-packaged format and must always be — as it were — 'tailor-made', customized, and shaped to fit the profile of the individual company and the 'concreteness' of its operations. It must be tailored to the specific activity it is meant to safeguard, to the particular governance models according to which the individual company is organized, and to the concrete evolution of the company's operations[425].

Furthermore, the 231 model is considered effective if it is consistently implemented and enforced, meaning it is not only formally adopted but also applied in the concrete operational context of the company. This approach aims to prevent cosmetic compliance, that is, mere superficial adherence to regulatory requirements.

Finally, the model is deemed efficient if it is capable of adapting to potential organizational changes within the legal entity. In this regard, it may be necessary to conduct periodic reassessments, which could lead to potential updates and adjustments[426].

With regard to the achievement of these objectives, and with specific reference to environmental matters, the Italian Supreme Court clarified that:

> In the context of environmental offenses […] the organizational and management model, in order to have an exonerating effect, must be adopted in relation to the specific structure and type of activity of the company, clearly and precisely defining the tasks, individual responsibilities, and concrete tools aimed at preventing the commission of environmental offenses. Moreover, it must be effectively implemented through the establishment of a supervisory body (except in the cases provided for in Article 6, paragraphs 4 and 4-bis, of Legislative Decree No. 231/2001) endowed with effective control powers and the provision of periodic review systems that ensure the 'sustainability' of the model over time[427].

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[425] V. Manes, *Realismo e concretezza nell'accertamento dell'idoneità del modello organizzativo*, in *Giurisprudenza commerciale*, 48 (2021), n. 4, p. 639.
[426] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente*. *Sviluppo sostenibile e climate change*, op. cit., p. 177.
[427] Italian Supreme Court, Section III, judgment no. 27148/2023, 17 May 2023.

The development of such a preventive tool requires the implementation of a series of procedural steps, namely: risk mapping, the adoption of protocols, the management of financial flows, and the monitoring of information flows.

A priority step is the identification of potential risks related to the commission of offenses within the legal entity. To achieve this, it is necessary to begin with a thorough analysis of the internal organizational structure and the operational context in which the company operates, including its core business activities.

Indeed, only through an in-depth examination of internal and external processes can the potential risks faced by the company be identified. This operation must be carried out for each offense individually, as there is no uniform implementation method applicable to entire groups of offenses.

This approach is particularly relevant to environmental offenses, as clarified by the Italian Supreme Court ruling previously cited[428]. Specifically, it was stated that:

> It is now a matter of common experience that the organizational and management model must be 'tailor-made' for each company and each distinct organization. This is particularly true, as highlighted in the literature, about the specific nature of environmental offenses, which necessitates that the risk mapping be conducted specifically for each offense. It is not possible to fully configure a uniform implementation method for this group of offenses, as they can be committed, within the scope of business activities, through methods that, in practice, may be extremely diverse and varied[429].

The next step involves the adoption of procedures aimed at minimizing the risk of committing offenses identified during the previous phase. These procedures are exemplified by the implementation of formalized practices, the division and delimitation of tasks, the establishment of delegations of functions consistent with the assigned organizational responsibilities, and the ex-post traceability of decision-making processes[430].

Another fundamental element is the implementation of specific controls over financial flows. These controls may include the quantification of spending powers, the establishment of authorization steps, and the traceability of financial transactions, allowing for ex-post verification that the adopted protocols have been followed. The effective implementation of such mechanisms can play a crucial role in the prevention of crimes.

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[428] M. Peta, *Responsabilità amministrativa dell'ente per i reati ambientali: il peso della dichiarazione di sostenibilità per gli aspetti inerenti, MOG e adeguati assetti*, in *La responsabilità amministrativa delle società e degli enti*, (2024), n. 2, p. 125.

[429] Italian Supreme Court, Section III, op. Cit.

[430] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 179.

Finally, the information flows directed to the Supervisory Body (ODV) are of fundamental importance. These tools are essential to enable the controlling body to carry out its monitoring duties regarding the correct implementation of the 231 model.

They must consist of constant connections between the operational units of the company and the Supervisory Body, ensuring the presence of direct and continuous communication channels[431].

The structuring, adoption, and implementation of the 231 model will be examined in detail in the following chapter, with reference to a specific case study. However, it is already possible to understand the inherent challenges involved in the development of a tool that meets the criteria of adequacy, effectiveness, and efficiency.

Indeed, this process involves a form of self-organization and self-regulation, for which there are no standardized guidelines, except with regard to the methodology for developing the models. As previously explained, these models cannot be generic; rather, they must be specifically tailored to the business reality in which they are implemented.

Oversight of 231 models occurs only after the potential commission of a predicate offense and is carried out by the judge during criminal proceedings.

In this regard, case law has clarified that the mere commission of the offense is not sufficient to demonstrate the inadequacy of the model, as this would result in a form of objective liability. Therefore, the model is considered adequate even if the offense is committed, provided it is established that the prevention system could only have been circumvented through fraudulent conduct by the perpetrator.

Consequently,

> the judge, in their assessment, must ideally place themselves at the moment when the crime was committed and verify its predictability and preventability had the 'virtuous' model has been adopted, according to the epistemic-evaluative mechanism of the so-called 'ex-post prognosis', already tested in other areas of criminal law. Moreover, this assessment must necessarily extend to verifying the implementation of the model in terms of effectiveness (Legislative Decree No. 231/2001, Articles 6 and 7), relying on concrete factual elements gathered during the investigation (testimonies, expert reports, scientific evidence)[432].

In any case, legal scholarship is particularly critical on the subject. This is because

> the non-standardization of such models, on the one hand, concretely reflects the organization to which they refer, but, on the other hand, raises an issue regarding their adequacy, thereby undermining the functionality and effectiveness of this mitigation

[431] Ibid., p. 179-180.
[432] Italian Supreme Court, Section VI, judgment no. 23401/2021, 11 November 2021.

> mechanism. There is no specific regulation that can serve as a reference for the structure and function of compliance, and even the provisions of Legislative Decree No. 231/2001 are rather vague in formulating guidelines on how the model should be drafted[433].

These issues are particularly evident in the prevention of environmental crimes, due to the specific technical complexity inherent in the sector. Indeed, in this area, the construction of 231 models must comply with established best practices and the applicable regulatory framework, and it also requires prior understanding of the incriminating offenses. Consequently, this process necessarily involves a preliminary verification of compliance with environmental administrative regulations, which are characterized by their complexity and breadth — as can be seen, for instance, in the field of waste management. This is because, in this sector, criminal law typically plays an ancillary role in ensuring compliance with technical regulations concerning environmental permits, emission levels, waste management, and other activities that have an environmental impact. In light of these considerations, legal scholarship has highlighted that, when the legislature extended the administrative liability of legal entities to environmental crimes, it should have regulated the minimum content of 231 models suitable for preventing such crimes, as it had done in the field of occupational health and safety (OHS).

Conversely, regarding standardization, Article 6, paragraph 3, of Legislative Decree No. 231/2001 merely states that models may be adopted on the basis of codes of conduct drawn up by representative associations of legal entities. These codes must be communicated to the Ministry of Justice, which, in agreement with other competent Ministries, may issue observations on their adequacy to prevent crimes within 30 days.

In this regard, the Italian Supreme Court has clarified that this regulatory provision serves to provide mechanisms that establish guiding parameters for companies, in order to avert the risk of interpretative and applicative inconsistency in the judicial assessment of the models. In other words, sector-specific guidelines aim to ensure uniformity at the national level regarding the fundamental characteristics of the models, on the one hand, guiding companies in their development, and on the other, tempering the judge's discretion in assessing their adequacy.

That being said,

> the guidelines developed by representative sectoral entities cannot constitute the sole and exhaustive organizational rule. […] It must be acknowledged that the process concerning the criteria for designing and implementing the model by the company is the result of a self-regulation process, whereby the company itself — also taking into account the indications provided by trade associations — identifies the precautions to be adopted to

[433] F. Vizzino, *Responsabilità da reato in materia ambientale: profili di criticità e prospettive de iure condendo del modello 231 per la prevenzione dei reati ambientali*, op. cit., p. 267.

> reduce the risk of crime commission. Therefore, there is a need for the model to be as individualized as possible, since only if it is tailored to the specific characteristics of the legal entity (size, type of activity, diachronic evolution) can it be deemed genuinely suitable for the preventive purpose assigned to it by law[434].

Therefore, once again, it becomes clear that case law has reiterated that, while acknowledging the significant guiding function of the guidelines, the construction of an adequate model cannot disregard a specific activity of analysis and adaptation of the model to the specific case.

Although judicial rulings have downplayed the role of the guidelines, it remains useful to refer to the main standardization practices in the environmental field.

The first to be considered are those prepared by Confindustria, initially developed in 2014 and later updated in 2021[435]. These provide for a division of the models into two parts: the general part, dedicated to the analysis and description of the characteristics of the legal entity, and the special part, which contains the procedures aimed at preventing the commission of crimes.

Specifically, the general part represents the 'identity card' of the legal entity, i.e., an indication of its organizational structure: structure; business area, reference sector, geographical location, whether it is a multinational company and whether it is listed on the stock exchange, the legal form, the structure, and the delegation system. It is usually composed of three sections: the code of ethics (the fundamental principles adopted and respected within the legal entity); the control system (the role of the Supervisory Body (ODV) and information channels); and the regulatory system (the internal regulatory framework of the legal entity).

By contrast, the special part contains the specific protocols adopted for risk prevention, namely the mapping of corporate areas exposed to the risk of crime commission and the corresponding procedures to be followed to prevent their actual occurrence[436].

Moving forward, particularly relevant for the environmental sector are the guidelines for the construction of 231 models developed by FISE-Assoambiente, first issued in 2016 and later updated in 2021 in light of regulatory and case law developments. These guidelines are particularly useful for companies primarily engaged in environmental hygiene, waste management, site remediation, or other activities with an environmental impact[437].

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[434] Italian Supreme Court, Section VI, op. cit.
[435] Confindustria, *Linee guida per la costruzione dei modelli di organizzazione, gestione e controllo ai sensi del decreto legislativo 8 giugno 2001, n. 231*, June 2021, available at: https://www.confindustria.it/home/policy/position-paper/dettaglio/linee-guida-modelli-organizzazione.
[436] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 184–186.
[437] Ibid., p. 186.

Specifically, the guidelines emphasize that, for environmental crimes, the interest and/or advantage for the legal entity often takes the form of economic savings resulting from the failure to implement appropriate safeguards to prevent harmful environmental consequences, thereby significantly reducing production costs. Based on this premise, the core of the construction of 231 models in this area must begin with the understanding that these models must aim to ensure compliance with regulations, which include particularly strict and precise legislative standards and technical-structural parameters.

Therefore, as a first step, it is necessary to assess whether the infrastructures, facilities, production plants, equipment, prevention and protection systems, and the administrative authorization to carry out the activity comply with regulatory requirements.

Secondly, it is necessary to carry out a specific analysis of the individual types of offenses[438]. To this end, Assoambiente suggests starting with the identification of the environmental policy of the collective entity, which involves specifying its objectives, the reference context, and, consequently, its organizational safeguards. Subsequently, the process can move on to risk assessment, conducted following the most qualified international standards.

The guidelines in question identify some of the areas most at risk, including: waste management and related obligations; management of atmospheric emissions; management of discharges; waste transportation; brokerage activities; site remediation activities; and the management of radioactive sources.

Subsequently, once the segments of activity that present the highest risks and the corresponding environmental crimes that could be committed have been identified, it is necessary to establish specific control protocols, differentiated according to the specific subject matter, and to introduce monitoring safeguards[439].Furthermore, additional support available to companies for the development of 231 models in the environmental field includes, at the international level, Environmental Management Systems (EMS) in compliance with international standards ISO 14001 and Regulation (EC) No. 1221/2009 (EMAS). However, these should not be confused with 231 models, as they can serve as a starting point for their construction but have a different purpose from crime prevention[440].

In this regard, it is worth noting that, for environmental crimes, there is no provision equivalent to Article 30 of Legislative Decree No. 81/2008 (protection of health and safety in the workplace), which

[438] S. Sarno, *La responsabilità da reato degli enti per i crimini ambientali tra contraddizioni legislative e normazione di categoria*, in *La responsabilità amministrativa delle società e degli enti*, (2021), n. 3, pp. 171–172.
[439] Ibid., pp. 172–174.
[440] A. Agnese, *Il modello organizzativo per i reati ambientali*, in *La responsabilità amministrativa delle società e degli enti*, (2012), n. 3, p. 235.

establishes a presumption of adequacy of the organizational models (MOG) if they are consistent with guidelines or international standards. This is even though, even in the environmental field, there are equally authoritative European and international standards comparable to those referenced in Article 30 of Legislative Decree No. 81/2008.

In any case, companies can resort to voluntary environmental certifications, such as UNI EN ISO 14001:2015 and EMAS, to demonstrate their commitment to complying with environmental regulations. Specifically:

> ISO 14001:2015 is an international ISO standard of a voluntary nature that allows a business organization to identify the concrete implications of its activities, products, and services that have an impact on the environment, to manage them while taking into account regulatory requirements and environmental policy objectives". Conversely, "the attainment of EMAS is conditional on the entity possessing all the prerequisites of ISO 14001, as well as the preparation of an Environmental Declaration specifying the results achieved about the predefined environmental objectives, in addition to the continuous enhancement of its environmental performance. This declaration must be validated by an independent and accredited third-party body[441].These internationally inspired environmental certifications aim to establish best practices for the implementation of safeguards intended to prevent or at least mitigate environmental impact. In other words, they pursue the objective of establishing a shared virtuous practice of environmental management within companies, in line with the logic of productive sustainability. Therefore, as previously mentioned, they have a specific purpose that differs from 231 models, which must aim to prevent the commission of environmental crimes, while still serving as a valuable starting point for their development.

In this regard, trade associations have long been urging the legislature to adopt a provision equivalent to Article 30 of the aforementioned Legislative Decree No. 81/2008.In conclusion, the analysis conducted so far on organizational, management, and control models highlights the peculiar complexity inherent in their regulation. Their adoption and effective implementation require specific professional expertise, enabling a comprehensive understanding of environmental regulations (both administrative and criminal) as well as technical-operational aspects. This is essential to identify the risks of crime commission and to introduce effective risk reduction procedures. This requirement typically also necessitates the involvement of professionals with expertise in areas related to the company's activities, such as environmental engineers, lawyers, and accountants.

[441] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 198.

Furthermore, the process of adopting the models must be carried out individually for each business entity, as there are no general rules that can be adapted to every situation. Instead, the risk analysis and preventive procedures must be tailored to the specific circumstances.

This must be done in a context where, despite the authoritative nature of the available guidelines, case law has established that they can only serve as guiding and methodological references. They must then be implemented and designed according to the specific case. In addition, the 231 model, once developed and implemented, cannot be considered permanently adequate. Instead, it must be periodically updated, taking into account any changes in the applicable regulatory framework and, most importantly, the inclusion of new predicate offenses, for which it may be necessary to adopt new prevention procedures.

It follows that the introduction of such compliance systems entails a significant investment, both in terms of professional activity and economic resources. This circumstance may act as a disincentive to the adoption of the models, especially for small and medium-sized enterprises (SMEs).

Nevertheless, the importance of adopting this tool is once again emphasized. Firstly, due to the positive effects it generates in terms of exemption from the administrative liability of the legal entity or the reduction/non-application of sanctions. Secondly, it is considered to represent a first step toward corporate reorganization aimed at prioritizing fundamental values, such as environmental protection, which is essential for achieving sustainable production and fostering a culture of legality within the company prevention procedures.

In this sense, it is believed that a legislative intervention on the matter, similar to what was done for the occupational health and safety (OHS) sector, would be highly desirable. Such an intervention would contribute to simplifying the implementation framework, thereby encouraging greater adherence by business entities, including small and medium-sized enterprises (SMEs).

4.5. Extra-codicem Measures Against Corporate Crime

At the outset of this chapter, attention was drawn to the circumstance that environmental crime, in most cases, overlaps with corporate crime. In light of this premise, it appeared necessary to undertake a more in-depth analysis aimed at identifying the legislative instruments available within the national legal framework to counter such a criminal phenomenon.

In this regard, reference has so far been made, given its relevance to the context of this research, to the practice of conducting productive economic activities at the expense of environmental protection. This practice entails the violation of regulatory provisions aimed at safeguarding the environment — both administrative and, consequently, criminal — to reduce costs and increase

profits. As previously highlighted, this criminal conduct represents the most widespread manifestation of entrepreneurial environmental crime, wherein lawful business entities strategically operate either within or outside the regulatory framework, guided by considerations of economic advantage in line with a profit-maximization logic.

At this point, however, it is necessary to broaden the analysis by considering that this form of corporate crime, when linked to the waste management sector, is often inextricably connected to the activities of mafia-type associations. This connection has been extensively highlighted in the course of the research. Therefore, without reiterating what has already been addressed, it is worth recalling that mafia interferences in the context of enterprises operating within the waste cycle can take different forms.

First, there are companies specifically established by criminal organizations, where the legal entity serves merely as a veil for an underlying reality that is entirely illegal in substance. Alternatively, mafia involvement may materialize through mechanisms of control, influence, or infiltration into pre-existing enterprises. Finally, the connection with mafia-type associations may also arise in cases where waste producers (companies that, at the end of their production processes, generate production residues) opt to entrust the management — recycling, reuse, or disposal — of such waste to companies that offer competitive prices on the market.

This latter scenario refers to lawful production contexts that interface with mafia groups to gain economic advantages.

It is also worth highlighting that mafia organizations have become entrepreneurs not only for economic reasons but also to establish a network of relationships based on the reciprocity of favors with members of the economic-business sector, the political sphere, and public administration[442].

In this regard, the preferred productive contexts for achieving such objectives are not the most innovative sectors but rather traditional ones with low technological content, including the waste management sector. This is because such economic areas are characterized as protected sectors, subject to public regulation, marked by limited competition, and closely linked to the operations of public administrations[443].

[442] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., pp. 65-85.
[443] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 493.

As a result, these sectors require only a limited degree of entrepreneurial know-how but are strategic for establishing connections with businesses and political-institutional powers. Therefore, they represent privileged sectors for mafia infiltration into the legal economy.

The legislature appeared fully aware of the connection between the waste management cycle and the activities of mafia-type associations when it decided to include the offense of organized activities for the illicit trafficking of waste (Article 452-quaterdecies of the Italian Criminal Code) among the offenses referred to in Article 51(3-bis) of the Italian Code of Criminal Procedure. This inclusion allows for the application of a range of additional measures in a broad sense of punitive measures.

As previously illustrated, this criminal offense was conceived to target the phenomenon of Ecomafie and, as such, it was deemed appropriate to place it within the so-called dual-track procedural system. Consequently, when a legal entity is deemed to be involved in the commission of such illicit activity, it is not only the regulatory framework under Legislative Decree No. 231/2001 that comes into play but also a broader set of legislative provisions, typically designed to counter mafia-related phenomena.

It is therefore particularly useful to refer to how this regulatory framework can operate in relation to collective entities.

First and foremost, consideration is given to the patrimonial prevention measures governed by Legislative Decree No. 159/2011 (the so-called Anti-Mafia Code). These measures are part of the set of tools specifically designed by the legislature to target the assets of criminal organizations, with the dual objective of weakening them and simultaneously preventing those assets from being used to commit further offenses or being reintroduced into the legal economy.

They are characterized and distinguished from criminal patrimonial measures as they are applied *ante* or *praeter delictum*, meaning regardless of the commission of a crime, as their primary aim is to prevent it.

For these measures to be imposed, specific subjective and objective requirements must be met. The subjective requirements involve the presence of either simple or qualified dangerousness. Simple dangerousness occurs when factual elements are found that demonstrate habitual adherence to criminal lifestyles. On the other hand, qualified dangerousness applies in cases where there are sufficient indications to believe that the person in question is a member of a mafia-type association or has committed another crime specified by law[444] (Article 4 of Legislative Decree No. 159/2011).

[444] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., pp. 239-245.

Concerning this latter category, Article 4 refers to individuals suspected of committing one of the offenses listed in Article 51(3-bis) of the Italian Code of Criminal Procedure, which therefore also includes Article 452-quaterdecies of the Italian Criminal Code.

About the objective requirements, it is necessary that the person concerned is found to have the ability to dispose, directly or indirectly, of the asset intended to be subjected to the patrimonial prevention measure and that its value is

> disproportionate to the declared income or the economic activity carried out, or when, based on sufficient evidence, there is reason to believe that they are the result of illicit activities or constitute their reinvestment[445] (Article 20 of Legislative Decree No. 159/2011).

These counteraction tools are primarily used to target entrepreneurial and commercial activities, as they are the entities most likely to be exploited for money laundering operations or for contaminating the legal economy[446].

About patrimonial prevention measures, primary consideration is given to seizure (Article 20 of Legislative Decree No. 159/2011) and confiscation (Article 24 of Legislative Decree No. 159/2011). These are dispossessory measures that deprive the subject of ownership of the assets. The requirements for the application of seizure are those outlined above, while confiscation may follow the seizure. Therefore, the former measure is provisional, while the latter is definitive.

Specifically, Article 24 provides that:

> The court orders the confiscation of the seized assets for which the person against whom the proceedings have been initiated cannot justify the legitimate origin and of which, even through an intermediary natural or legal person, they are found to be the owner or to have the availability, in any capacity, to an extent disproportionate to their declared income for tax purposes or to their economic activity, as well as assets that are found to be the proceeds of unlawful activities or to constitute their reinvestment. In any case, the person concerned cannot justify the legitimate origin of the assets by claiming that the money used to purchase them was the result of or the reinvestment of tax evasion proceeds[447].

Seizure and, where applicable, confiscation are the preferred tools in cases where the entrepreneurial entity is established from the outset as the result of illicit proceeds and only formally engages in lawful activity. Alternatively, they may be applied when the business serves as an instrumental asset for money laundering or the reinvestment of illicit capital. Furthermore, these

[445] Legislative Decree of 6 September 2011, No. 159, Code of Anti-Mafia Laws and Preventive Measures, as well as new provisions on anti-mafia documentation, pursuant to Articles 1 and 2 of Law No. 136 of 13 August 2010, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2011-09-06;159.
[446] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., p. 245.
[447] Legislative Decree of 6 September 2011, No. 159, Code of Anti-Mafia Laws and Preventive Measures, as well as new provisions on antimafia documentation, pursuant to Articles 1 and 2 of Law No. 136 of 13 August 2010, op. cit.

measures can be applied in cases where a company, initially operating legally, subsequently becomes so intertwined with mafia-related interests that its assets, in whole or in part, are found to be the proceeds or the reinvestment of illegal revenues[448].

The measures of court-appointed administration (amministrazione giudiziaria) (Article 34 of Legislative Decree No. 159/2011) and judicial oversight (controllo giudiziario) (Article 34-bis of Legislative Decree No. 159/2011) are distinct from those of seizure and confiscation, as they have a less afflictive/sanctioning nature and are aimed at rehabilitating entrepreneurial entities.

These instruments are intended to eliminate mafia contamination within companies that were originally legitimate. Although such companies may display signs of mafia infiltration and influence, they have not been entirely compromised in their integrity. Therefore, they serve the purpose of addressing problematic aspects that do not warrant the application of more severe measures such as seizure and confiscation. However, if left unaddressed, these issues could potentially escalate into more invasive forms of mafia control[449].

The measure of court-appointed administration (*amministrazione giudiziaria*) is applied when

> there is sufficient evidence to believe that the free exercise of certain economic activities, including entrepreneurial activities, is directly or indirectly subject to the conditions of intimidation (intimidazione) or subjugation (assoggettamento) as provided for in Article 416-bis of the Italian Criminal Code, or may in any case facilitate the activities of persons against whom one of the personal or patrimonial prevention measures referred to in Articles 6 and 24 of this decree has been proposed or applied, or of persons subject to criminal proceedings for any of the offenses referred to in Article 4(1)(a), (b), and (i-bis) (therefore also for any of the offenses provided for in Article 51(3-bis) of the Italian Code of Criminal Procedure) and the conditions for the application of the patrimonial prevention measures referred to in Chapter I of this title (seizure and confiscation) do not exist[450].

With the adoption of this preventive measure, corporate control is temporarily removed from the company (for a period not exceeding one year, which can be extended up to a maximum of two years) and entrusted first to the court and then to a court-appointed administrator (*amministratore giudiziario*), who may exercise all the powers normally attributed to the owners — a situation referred to as the managerial dispossession (*spossessamento gestorio*) of the company.

[448] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 528.
[449] S. Pellegrini, *L'impresa Grigia. Le infiltrazioni mafiose nell'economia legale*, op. cit., p. 272.
[450] Legislative Decree of 6 September 2011, No. 159, Code of Anti-Mafia Laws and Preventive Measures, as well as new provisions on antimafia documentation, pursuant to Articles 1 and 2 of Law No. 136 of 13 August 2010, op. cit.

The objective of the measure is to ensure the continuity of the company's operations while severing links with illicit entities and equipping the company with the compliance tools necessary to prevent future mafia interference.

At the end of the court-appointed administration (*amministrazione giudiziaria*), several outcomes may occur: the revocation of the measure, the application of judicial oversight (*controllo giudiziario*), which is a less afflictive instrument, or the confiscation of assets if it is determined that the latter are the result of illicit conduct or constitute its reinvestment[451].

About judicial oversight (*controllo giudiziario*), Article 34-bis establishes that it applies in cases where the facilitation described in Article 34(1) is occasional and where factual circumstances exist from which a concrete risk of mafia infiltration can be inferred, capable of influencing economic activities and business operations.

Therefore, the legislature intended to provide for intervention in contexts of criminal infiltration that occur at an earlier stage compared to those requiring the application of measures such as court-appointed administration (*amministrazione giudiziaria*), seizure, and confiscation.

As for the subjects who may be subject to judicial oversight (*controllo giudiziario*), Article 34-bis refers to Article 4(1). As a result, it can also be applied to individuals suspected of the offenses listed in Article 51(3-bis) of the Italian Code of Criminal Procedure, which includes, for the purposes relevant to this analysis, Article 452-quaterdecies of the Italian Criminal Code.

The objective pursued is to

> expand control over the grey area of mafia contiguity using less invasive tools compared to more aggressive dispossessory measures, which are unable to preserve corporate integrity[452].

This objective can be achieved through two different methods. First, the court may impose a series of disclosure obligations on individuals who own, use, or manage the assets and companies. These obligations consist of the duty to

> communicate to the Police Commissioner (questore) and the financial police unit (nucleo di polizia tributaria) of the place of habitual residence, or the location of the assets if the person resides abroad, or of the registered office if it concerns a company, all acts of disposition, acquisition, or payment made, all payments received, professional assignments, administration or fiduciary management assignments received, as well as other acts or contracts indicated by the court, of a value not less than €7,000 or of a higher

[451] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 499-504.
[452] Ibid., p. 506.

amount established by the court about the person's income, assets, and the company's turnover[453].

Alternatively, the court may appoint a delegated judge (*giudice delegato*) and a court-appointed administrator (*amministratore giudiziario*), who is required to periodically report on the results of the monitoring activity. The latter may be subject to various obligations, including refraining from changing the company's registered office, name, corporate purpose, or the composition of its administrative, management, and supervisory bodies; refraining from carrying out mergers or other transformations without the authorization of the delegated judge. Additionally, the court-appointed administrator is required to fulfill disclosure obligations, to provide prior notification regarding any form of financing of the company by shareholders or third parties, and to adopt and effectively implement the organizational measures referred to in Articles 6, 7, and 24-ter of Legislative Decree No. 231/2001.

In this regard, it is particularly significant that the compliance models provided for by Legislative Decree No. 231/2001 are referenced as tools for the rehabilitation of companies that show occasional connections with mafia-type associations.

It is worth highlighting that judicial oversight (*controllo giudiziario*) is also a temporary measure, which can range from a minimum period of one year to a maximum of three years.

Particularly noteworthy is the provision outlined in Article 34-bis(6), which establishes that the same natural or legal persons may request the application of judicial oversight (*controllo giudiziario*) according to Article 34-bis(2)(b) from the competent court. This option is available when they are recipients of anti-mafia interdictory information (*informazione antimafia interdittiva*) under Article 84(4) of Legislative Decree No. 159/2011 and have lodged an appeal against this measure with the Prefect (*Prefetto*). This provision strengthens the mechanisms for activating tools aimed at restoring legality within companies.

The application of court-appointed administration (*amministrazione giudiziaria*) and judicial oversight (*controllo giudiziario*) suspends the time limits and effects of the antimafia interdictory information (*informazione antimafia*) under Article 94, thereby freeing the company from the afflictive nature of the measure imposed by the Prefect (P*refetto*), an aspect that will be further analyzed in the following sections.

[453] Legislative Decree of 6 September 2011, No. 159, Code of Anti-Mafia Laws and Preventive Measures, as well as new provisions on antimafia documentation, pursuant to Articles 1 and 2 of Law No. 136 of 13 August 2010, op. cit.

Therefore, the preventive measure of judicial oversight (*controllo giudiziario*), as now examined, ensures that the framework of Legislative Decree No. 159/2011 (as amended by Law No. 161/2017) is no longer solely aimed at

> interventions designed to strip assets and power from criminal organizations through definitive measures of managerial dispossession (*spossessamento gestorio*), but rather at new state interventions aimed at 'taking care' of entrepreneurial entities that have been tainted by mafia contiguity, with the ultimate goal of restoring them to legality through a series of remediation activities carried out in collaboration with the recipients themselves[454].

It follows that such an objective can be linked to the same logic underlying the adoption of 231 compliance models, which are aimed at restoring or introducing a culture of legality within legitimate entrepreneurial entities. These are companies that, due to profit-driven motives and/or proximity to criminal contexts, have deviated from a virtuous management of economic activity.

Moving forward, among the rules applicable to individuals suspected of having committed the offense under Article 452-quaterdecies of the Italian Criminal Code are those concerning antimafia documentation (*documentazione antimafia*) set out in Book II of Legislative Decree No. 159/2011. These instruments are considered by economic operators to be among the most invasive and, therefore, among the most feared within the framework for combating mafia infiltration, as they also operate praeter delictum.

Specifically, Article 83 establishes that public administrations, public bodies, entities and companies supervised by the State or by another public body, companies or enterprises controlled in any way by the State or by another public body, and concessionaires of public works or services must request and obtain antimafia documentation according to Article 84 before entering into, approving, or authorizing contracts relating to public works, services, and supplies.

The antimafia communication (*comunicazione antimafia*) certifies whether or not one of the grounds for disqualification, suspension, or prohibition provided for in Article 67 of the same decree exists. By way of example, these grounds include the imposition of a definitive preventive measure or the existence of pending preventive proceedings.

The antimafia information (*informazione antimafia*), in turn, also certifies the existence or absence of one of the grounds for disqualification, suspension, or prohibition under Article 67. However, it further verifies the existence or absence of any attempted mafia infiltration aimed at influencing the

[454] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 512.

decisions and strategic direction of the affected companies or enterprises, as indicated in Article 84(4).

Article 84(4) specifies that attempts at mafia infiltration that may give rise to the application of an antimafia interdictory information (*informazione antimafia interdittiva*) are inferred, among other factors, from measures ordering precautionary measures or trial proceedings, or from judgments — even if not final — for any of the offenses listed in Article 51(3-bis) of the Italian Code of Criminal Procedure. As a result, this particular measure is of primary relevance to the present research.

Not only is this measure relevant because it explicitly refers to the offense of interest, but also because it is particularly pertinent to the criminal phenomenon under study. Indeed, it has been repeatedly observed that mafia-type associations exploit their criminal apparatus, including entrepreneurial control/infiltration, extortion, threat of reprisal, and corruption, to infiltrate the procedures for the awarding and management of municipal solid waste collection and disposal services.

In this context, the antimafia interdictory information represents a form of anticipatory protection aimed at

> safeguarding economic public order, free competition among enterprises, and the proper functioning of public administration, as it seeks to prevent free competition from being undermined by possible mafia infiltration and to ensure that public administration does not engage with entities whose market position has been distorted by the influence of organized crime[455].

With regard to the procedure, the possible issuance of the antimafia information follows the consultation of the National Database. If none of the aforementioned disqualifying factors apply to the subjects concerned, the information is issued. Conversely, if the consultation reveals that the company is not registered in the database or that disqualifying factors or attempts at infiltration are detected, the information is not issued.

At this point, the competent Prefect must carry out specific checks. If the outcome of these checks is negative, the antimafia clearance information (*informazione antimafia liberatoria*) will be issued. If the outcome is positive, the antimafia interdictory information (*informazione antimafia interdittiva*) will be issued instead.

[455] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 514.

Therefore, the decision regarding the presence of the requirements underlying the applicability of the interdictory measure in question lies with the Prefect (Article 91(5)). In this regard, the Council of State (*Consiglio di Stato*) has clarified that the antimafia interdictory information may be issued

> in the presence of two forms of contiguity, either compliant or submissive, of the company to mafia influences, these forms should be understood as cases in which the economic operator allows itself to be influenced by mafia threats and accepts the conditions imposed by it, or, on the other hand, knowingly decides to reach an agreement with the mafia organization to obtain any form of advantage for its business activity[456].

Moreover, in the same judgment, the Consiglio di Stato ruled on the legitimacy of the prefect's decision, stating that

> the administrative judge, called upon to review the proper exercise of the prefect's power to prevent mafia infiltration, must strike a balance between the indispensable conditions of substantive and procedural specificity, and the equally essential, vital interest of the State in countering the threat posed by mafia organizations. In this delicate operation, the criterion of 'more likely than not' is applicable[457].

With specific reference to the context of legal entities, the aforementioned controls apply both to those who are directly engaged in entrepreneurial activities and to those who are part of the internal supervisory bodies, such as the board of statutory auditors (*collegio sindacale*), the sole statutory auditor (*sindaco unico*), and the members of the Supervisory Body (ODV) according to Legislative Decree No. 231/2001[458].

Remaining within the framework of procurement or concession procedures by public institutions, the offense of organized activities for the illicit trafficking of waste is also relevant under the provisions of the Public Procurement Code (*Codice degli appalti pubblici*) outlined in Legislative Decree No. 50/2016.

Indeed, Article 80 provides a series of grounds for excluding economic operators from participation in a procurement or concession procedure. Among these is a conviction by final judgment, a conviction by irrevocable criminal decree, or a conviction according to Article 444 of the Italian Code of Criminal Procedure for the offense, whether committed or attempted, under Article 260 of Legislative Decree No. 152/2006 (now Article 452-quaterdecies of the Italian Criminal Code), as it is linked to participation in a criminal organization. Furthermore, Article 80 also provides for exclusion in cases where there are grounds for disqualification, suspension, or prohibition under

[456] Consiglio di Stato, sez. III, judgment no. 6105/2019, 5 September 2019.
[457] Ibid.
[458] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 489.

Article 67 of Legislative Decree No. 159/2011, or in the presence of an attempted mafia infiltration under Article 84(4) of the same decree.

In this regard, it is evident that the regulatory framework governing public procurement is closely connected to the provisions of the so-called Anti-Mafia Code.

Moreover, economic operators who have been subject to the interdictive sanction under Article 9(2)(c) of Legislative Decree No. 231/2001 (prohibition from contracting with public administration, except to obtain the provision of a public service) are also excluded[459]. In this case, other environmental offenses are also relevant, specifically those for which such a measure may be applied among the predicate offenses provided for by the decree. By way of example, these include environmental pollution, environmental disaster, and the illegal disposal of hazardous waste.

Finally, before concluding the framework outlined so far, it is also useful to refer to the management, support, and monitoring measures for companies introduced by Article 32 of Decree-Law No. 90/2014, converted into Law No. 114/2014. This instrument is part of the administrative measures, which are an alternative to both criminal measures and preventive measures, and it is also aimed at countering the infiltration of criminal organizations into the legal economy.

Specifically, Article 32, entitled 'Extraordinary measures for the management, support, and monitoring of companies in the context of corruption prevention', provides that, where the judicial authority is proceeding concerning certain specific offenses under Title II of the Italian Criminal Code (Offenses against public administration), or where there are anomalous situations or symptoms of unlawful conduct or criminal events attributable to a company that has been awarded a public works, services, or supply contract, the President of ANAC (National Anti-Corruption Authority) informs the Public Prosecutor.

In the presence of serious and verified facts, the President may activate specific measures. In particular, they may propose to the competent Prefect to order the renewal of the company's corporate bodies and, if the company fails to comply within the established timeframes, to arrange for the extraordinary and temporary management of the company, limited to the execution of the procurement contract, contractual agreement, or concession. Alternatively, the President may order the Prefect to directly implement the extraordinary and temporary management of the company, even if limited solely to the execution of the procurement contract, the contractual agreement, or the concession.

[459] Legislative Decree of 18 April 2016, No. 50, Public Procurement Code, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-04-18;50.

As a result, the Prefect will proceed to verify the existence of the requirements set out in Article 32 and will subsequently order the company to renew its corporate bodies. If the company fails to comply within 30 days, the Prefect will appoint one or more administrators (not exceeding three). The duration of the measure is determined based on the functional needs related to the execution of the public work, service, or supply that is the subject of the contract.

The administrators are granted all the powers and functions of the company's administrative bodies, while the owners of the company are suspended from exercising powers of disposition and management.

The extraordinary measures for the management, support, and monitoring of companies are revoked if confiscation, seizure, or court-appointed administration is ordered in the context of criminal proceedings, or if preventive measures are applied. In such cases, where possible, the judicial authority confirms the administrators already appointed by the Prefect under Article 32 of Decree-Law No. 90/2014.

By contrast, the measures under Article 32 apply when the Prefect has issued antimafia interdictory information and there is an urgent need to ensure the completion or continuation of the contract's execution. This is necessary to guarantee the continuity of essential functions and services for the protection of fundamental rights, the safeguarding of employment levels, and the integrity of public finances. In this case, it is the Prefect who, on his own initiative, initiates the procedure and subsequently informs the President of ANAC[460].

In conclusion, based on the analysis conducted so far, it emerges that the Italian legal system has equipped itself with a comprehensive set of tools to counter criminal infiltration into the legal economy through entrepreneurial activity. As observed, the combined framework of the so-called Anti-Mafia Code, the Public Procurement Code, and Decree-Law No. 90/2014 establishes a sophisticated system of measures aimed at eliminating, rehabilitating, and preventing mafia infiltration in economic and productive sectors.

It follows that, although the post-delictum sanctioning system has always been considered weakly dissuasive in relation to the commission of environmental crimes linked to the waste cycle, the complete set of ante delictum and praeter delictum tools is particularly extensive and afflictive. As a result, this latter system is more feared by entrepreneurial entities due to the consequences it entails

[460] Decree-Law of June 2014, No. 90, Urgent measures for administrative simplification and transparency and for the efficiency of judicial offices, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2014-06-24;90!vig.

in terms of dispossession or the interdiction of managerial activity. Consequently, it can exert a more pervasive deterrent effect.

Drawing on the reasoning of organizational sociology concerning the determinants of behavior within a complex organization, in light of the elements of opportunity, motivation, and choice, and specifically referring to conduct related to the offense of organized activities for the illicit trafficking of waste, an interesting perspective emerges. Within a cost-benefit logic, if existing criminal sanctions lead to a preference for violating the law due to the potential profits that can be obtained, the measures examined so far could reverse this reasoning. This shift would favor compliance with the law, as it becomes a more advantageous option compared to the consequences of interdictive measures.

This dynamic can produce a twofold positive effect. Firstly, it would reduce the criminal contamination of the legal economy, and secondly, it would foster greater compliance with the content of the regulatory framework, including its objective of environmental protection.

4.6. Corporate Social Responsibility (CSR)

At this stage of the analysis, it is necessary to take a further step in examining the role that entrepreneurial entities play in environmental protection and how this role affects society as a whole.

In this regard, recalling the statements made at the outset of this research, it is clear that the impact of human activities on the planet has reached previously unimaginable consequences. These range from climate change to species extinction and the depletion of natural resources. The gradual awareness of these issues has led to the development of the concept of sustainable development, starting with the United Nations Conference on the Human Environment held in Stockholm in 1972, which has already been examined.

Sustainable development can be divided into several dimensions. The first is environmental sustainability, which refers to the need to ensure the integrity of ecosystems and the quality of the environment. This can only be achieved if human actions are guided by the understanding that the environment is a common value with limited resources. Otherwise, it would be irreparably compromised, undermining the very survival of the human community.

Secondly, sustainability has an economic dimension, which

> requires knowledge and awareness of the limits and impact of economic choices on society and the environment, and therefore pursues, through the control of natural, human, social, and cultural capital, the goal of ensuring that it does not decrease in order not to compromise the well-being of future generations[461].

[461] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 537.

Finally, there is the social dimension of sustainability, which consists of the ability to ensure conditions of human well-being are distributed homogeneously across classes and genders. This dimension is therefore based on the concept of social equity as an ethical principle.

Over the years, the need to achieve sustainable socio-economic growth, as defined, has been embraced — at least in intent — by the international political debate. This has already been observed concerning the proliferation of legislative texts aimed at environmental protection.

Within this context, another important consideration has emerged: economic collective entities, specifically businesses, are seen as key actors in sustainability. As such, they are regarded as being responsible for the environmental, economic, and social impacts connected to their conduct[462].

In other words, since the production cycle has repercussions on external factors, companies are expected to carry out their activities while assuming a responsibility that also takes into account environmental and social aspects.

This reasoning has led to the formulation of the concept of Corporate Social Responsibility (CSR), which refers to a corporate policy that guides economic decisions by also taking into account the ethical, social, and environmental consequences of its actions, not only for the business entity itself but also for the so-called stakeholders — including workers, contractual counterparts, and the reference community[463].

Therefore, in pursuing their specific goal of value creation, companies should simultaneously consider the external effects of their actions and endeavour to introduce best practices aimed at safeguarding both the environment and human rights.

In this sense:

> all companies must adopt a development approach in which the creation of economic value is accompanied by environmental protection, a qualitative improvement of the socio-economic system, and a fair distribution of income, consumption, and the well-being of the population. This development must therefore be sustainable from an economic, social, and environmental perspective and aimed at achieving conditions of equality and inter- and intra-generational equity, as well as justice and social cohesion[464].

[462] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 535-540.
[463] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, in *La responsabilità amministrativa delle società e degli enti*, (2023), n. 1, pp. 30-31.
[464] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 540.

The concept of Corporate Social Responsibility (CSR) was first developed in the 1920s when it began to be argued that the apical figures (*soggetti apicali*) of companies should act not only in the interests of shareholders but also in the interests of other social stakeholders. However, due to the Great Depression of the 1930s and subsequently World War II, this economic approach gained little traction.

A more in-depth consideration of the concept emerged only in the 1950s and is primarily attributed to Robert Edward Freeman, who played a significant role in defining the concept of the stakeholder with his work, Strategic Management: A Stakeholder Approach. According to this definition, a stakeholder includes any identifiable individual who can influence and/or be influenced by the activities carried out by the company.

Freeman's approach stands in contrast to the neoclassical economic perspective, which views profit as the sole objective of entrepreneurial activity. By contrast, Freeman argues that collective entities have a social function that goes beyond mere economic considerations.

Additionally,

> the relationships between a company and the socio-economic environment produce effects which, although not easily correlated with the profit or the company's financial and patrimonial position, can prove decisive for the company's competitive capacity[465].

In this regard, one can consider the gradual entrenchment of environmentalist culture within civil society, which is increasingly attentive to the issue of resource and species conservation and, correspondingly, concerned about the impact of human activities.

It follows that, in the evaluation of a commercial product, consideration is no longer limited to its qualitative characteristics but also extends to its intangible attributes, such as supply conditions, working conditions, the product's image, and its history.

> In this perspective, according to which producers and consumers are aware of the centrality of such aspects in competitive dynamics, the 'ethical' commitment of a company represents an element of the so-called value chain. This requires the use of new competitive levers consistent with 'sustainable development' for the community, thereby necessitating close attention to relationships with stakeholders, such as non-governmental organizations, trade unions, the media, and so on, whose positive judgment can become an element of added value for the company, promoting its success in the market[466].

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[465] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., p. 546.

[466] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, op. cit., p. 43.

The considerations outlined so far regarding the indispensability of sustainable economic development and the key role played by companies in this process have been reflected in the positions taken by institutions and business organizations.

First and foremost, attention is drawn to the ESG parameters — Environmental, Social, and Governance — which serve as the basis for assessing the sustainability of a company, a fund, or an investment. The acronym ESG was introduced in 2004 in the United Nations report entitled 'Who Cares Wins. Connecting Financial Markets to a Changing World'. This document aims to emphasize the importance of integrating environmental, social, and governance factors into investment decisions, with the dual objective of improving both financial returns and the social and environmental impact.

In this regard, the initial considerations of the United Nations emphasized that, within an increasingly complex and interconnected global context, the importance of risk management and the opportunities linked to emerging environmental and social trends, as well as the new public expectations regarding greater corporate responsibility, present unprecedented financial challenges for companies. This premise was followed by the recognition of the lack of a shared corporate approach on how to improve the integration of environmental, social, and governance (ESG) factors into financial and business activities. Accordingly, through this report, the United Nations developed a series of recommendations that, over the years, have become a key point of reference for the evaluation of corporate responsibility, both in terms of economic and financial performance and in relation to environmental and social sustainability[467].

Moving forward, sustainable corporate governance is a central issue in the debate within the European Community. First and foremost, attention is drawn to two European Parliament resolutions dated 6 February 2013: 'Corporate Social Responsibility: accountable, transparent and responsible business behaviour and sustainable growth' and 'Corporate Social Responsibility: promoting society's interests and a route to sustainable and inclusive recovery'. These resolutions emphasize the importance of companies disclosing sustainability information related to social and environmental factors so that risks can be identified and investor and consumer confidence can be strengthened[468].

[467] United Nations, *The Global Compact, Who Cares Wins. Connecting Financial Markets to a Changing World. Recommendations by the financial industry to better integrate environmental, social and governance issues in analysis, asset management and securities brokerage*, 2004, available at: <https://documents1.worldbank.org/curated/pt/280911488968799581/pdf/113237-WP-WhoCaresWins-2004.pdf>, pp. 1-2.

[468] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, op. cit., p. 32.

These resolutions were followed by a more decisive step in this area with the adoption of Directive 2014/95/EU. Indeed,

> the European Parliament recognized the importance of companies disclosing sustainability information [...]. The disclosure of non-financial information is essential for managing the transition to a sustainable global economy, combining long-term profitability with social justice and environmental protection. In this context, the disclosure of non-financial information contributes to measuring, monitoring, and managing companies' performance and their impact on society[469].

As a result, the European Parliament invited the European Commission to present a legislative proposal, which materialized in the above-mentioned directive. This directive was transposed into the Italian legal system through Legislative Decree No. 254/2016, along with its implementing regulation adopted by Consob Resolution No. 20267/2018.

European legislation essentially requires large enterprises that qualify as public-interest entities and have an average of 500 employees during the financial year to include a non-financial statement in their management report. This statement must contain, at a minimum, information related to environmental, social, employee-related, human rights, and anti-corruption (both active and passive) matters, to the extent necessary to understand the company's performance, results, position, and the impact of its activities.

Among these, the following are included:

> (a) a brief description of the undertaking's business model;
> (b) a description of the policies pursued by the undertaking concerning those matters, including due diligence processes implemented;
> (c) the outcome of those policies;
> (d) the principal risks related to those matters linked to the undertaking's operations including, where relevant and proportionate, its business relationships, products or services which are likely to cause adverse impacts in those areas, and how the undertaking manages those risks;
> (e) non-financial key performance indicators relevant to the particular business[470].

The same provision, in requiring compliance with these obligations, stipulates that Member States must ensure that companies can rely on national, Union, or international standards.

[469] Recital no. 3, Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, available at: https://eur-lex.europa.eu/legal-content/IT/ALL/?uri=CELEX:32014L0095.
[470] Article 19a, Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, op. cit.

Moreover, the European institutions have established, through Regulation 2014/95/EU, the criteria for determining whether an economic activity can be considered environmentally sustainable, thereby enabling the identification of the degree of eco-sustainability of an investment (Article 1)[471].

These legislative measures within the European Union framework are part of the 2030 Agenda, the new global sustainable development framework adopted on 25 September 2015 by the United Nations General Assembly. The 2030 Agenda pursues the Sustainable Development Goals (SDGs), taking into account its three dimensions: economic governance, social governance, and environmental governance.

Indeed, with the Communication of 25 September 2015, titled 'The Sustainable Future of Europe: Next Steps', the European Commission linked the SDGs to the EU policy framework, stipulating that all actions and policy initiatives within the European Community must conform to the achievement of these goals[472].

Also of significant importance is the recent EU Directive 2024/1769 on corporate sustainability due diligence, which is

> aimed at implementing global processes to mitigate negative impacts on human rights and negative environmental impacts along value chains, integrating sustainability into corporate governance and management systems, and framing corporate decisions in terms of human rights, climate, and environmental impact, as well as the long-term resilience of society[473].

Recital no. 73 clarifies that the legislative text represents a significant tool to ensure the transition of companies toward a sustainable economy, to reduce existential damage and the costs of climate change, achieving net-zero emissions globally by 2050, and preventing misleading statements and greenwashing practices. To achieve this objective, economic operators are required to adopt and implement a transition plan towards a sustainable economy and the mitigation of climate change[474].

In this sense, the directive lays down rules on:

> (a) obligations for companies regarding actual and potential human rights adverse impacts and environmental adverse impacts, with respect to their own operations, the operations

[471]Article 1, Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, available at: https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:32020R0852.
[472] Recital no. 2, Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, op. cit.
[473] F. Laus, *Corporate Sustainability Due Diligence e amministrazione del rischio*, in *Le Società*, (2024), n. 8-9, p. 913.
[474] Recital no. 73, Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate due diligence for sustainability, amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859, Recital no. 73, available at: https://www.lavorosi.it/fileadmin/user_upload/PRASSI_2024/direttiva-ue-2024-1760-deu-diligence-diligenza-e-sostenibilita_compressed.pdf.

> of their subsidiaries, and the operations carried out by their business partners in the chains of activities of those companies;
> (b) liability for violations of the obligations as referred to in point (a); and
> (c) the obligation for companies to adopt and put into effect a transition plan for climate change mitigation which aims to ensure, through best efforts, compatibility of the business model and of the strategy of the company with the transition to a sustainable economy and with the limiting of global warming to 1,5 o C in line with the Paris Agreement[475].

A preliminary analysis of the objectives of the text under examination reveals that the concept of Corporate Social Responsibility (CSR) has evolved to the point of becoming the subject of a primary legislative source, which establishes specific obligations and corresponding forms of liability in the event of non-compliance and/or violations of these obligations. Indeed,

> while economic development represents a public interest, respect for human safety, health, and the environment constitutes a legal obligation that serves as a source of liability for public authorities as well as for economic operators[476].

As a result, the directive mandates the introduction of the duty of due diligence into all corporate policies, thereby requiring the adoption of appropriate standards to comply with this duty through risk management obligations. In other words, companies must establish systems for the identification and subsequent mitigation of risks related to respect for human rights and environmental impacts that may arise during the conduct of their economic activities.

About the scope of application, and therefore to the legal entities that will be required to comply with the new regulatory obligations, Article 2 refers to medium-large enterprises, specifying the criteria for their identification.

More specifically, Article 5 states that Member States must ensure that each company exercises risk-based due diligence about human rights and the environment. This must be achieved through the integration of the duty of due diligence into corporate policies and risk management systems; the identification and assessment of actual or potential adverse impacts; the prevention, mitigation, and cessation of actual or potential adverse impacts; the provision of remediation for negative impacts; the engagement in meaningful dialogue with stakeholders; the establishment of a notification mechanism and a complaints procedure; the monitoring of the effectiveness of the policy and measures concerning the duty of due diligence; and the public reporting on due diligence.

Article 22 provides that Member States must ensure that each company covered by the directive adopts and implements a transition plan for the mitigation of climate change. This plan must be aimed at ensuring, with the utmost possible commitment, that the company's business model and strategy

[475] Ibid., art. 1.
[476] F. Laus, *Corporate Sustainability Due Diligence e amministrazione del rischio*, op. cit., p. 917.

are aligned with the transition to a sustainable economy and with the goal of limiting global warming to 1.5°C, in line with the Paris Agreement, as well as with the objective of achieving climate neutrality as established in Regulation (EU) 2021/1119.

The transition plan must include time-defined objectives related to climate change and, where appropriate, absolute targets for the reduction of greenhouse gas emissions; a description of the decarbonization levers identified and the procedures established to achieve the aforementioned objectives; where applicable, changes to the company's product and service portfolio and the adoption of new technologies; an explanation and quantification of investments and financing to support the implementation of the plan; a description of the role of the administrative, management, and supervisory bodies to the plan.

To ensure compliance with the provisions set forth in the directive, Article 24 stipulates that each Member State must designate one or more supervisory authorities tasked with monitoring compliance with the prescribed obligations. These supervisory authorities must be equipped with adequate powers and resources to carry out the assigned tasks, including the power to require companies to provide information and the power to conduct investigations (Article 25).

Particularly noteworthy is Article 27, which establishes that Member States are required to introduce effective, proportionate, and dissuasive sanctions applicable in the event of a breach of the national rules adopted to implement the directive. Furthermore, paragraph 3 specifies that Member States must at least provide for: monetary sanctions and, if a company fails to comply with a decision imposing a monetary sanction, a public statement identifying the company responsible for the violation and the nature of the violation[477].

As previously mentioned, an analysis of the directive's content reveals that the issue related to the impact of economic and productive activities on the environment and on the community as a whole, as well as the recognition of Corporate Social Responsibility (CSR), has progressively acquired greater substantive relevance.

Member States will be required to adopt and publish the legislative, regulatory, and administrative provisions necessary to comply with the directive by 26 July 2026. Therefore, it will be particularly interesting soon to assess how this new regulatory instrument may act as a catalyst for the improved achievement of sustainable development.

[477] Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate due diligence for sustainability, amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859, op. cit.

Moving forward, trade associations have also undertaken initiatives on this matter. At the international level, reference can be made to the Statement of the Purpose of a Corporation issued by the Business Roundtable in 2019, in which the CEOs of 181 of the largest U.S. companies committed to achieving long-term value for shareholders.

Concerning the national legal system, the new Corporate Governance Code, adopted by the Corporate Governance Committee in 2020, assigns the administrative body of listed companies the role of guiding them in the pursuit of sustainable success[478]. The concept of sustainable success is defined as the

> objective that guides the action of the administrative body and consists of creating long-term value for the benefit of shareholders while taking into account the interests of other stakeholders relevant to the company[479].

Furthermore, the quantification of the remuneration of both directors and top management also takes into account, for the variable components, the performance objectives, which are aimed at promoting sustainable success and, where relevant, include non-financial parameters[480].

In addition, companies have autonomously developed tools and processes for the management, measurement, and communication of their Corporate Social Responsibility (CSR) actions. Indeed, although information on financial performance remains a priority, it has become only one part of the relevant communications within the corporate sphere. Such communications now also include environmental, social, and governance (ESG) information.

Moreover, the recipients of these communications have expanded to include new and diverse stakeholders, as opposed to the traditional recipients. These stakeholders include all those who may have an interest or rights concerning the company, such as employees, citizens, communities, and public administration. In this context, the concept of stakeholder accountability comes into play. This concept grants the right to participate in decisions that may have a significant impact on stakeholders, regardless of the power they hold within the company.

Furthermore, within the market, several Corporate Social Responsibility (CSR) tools have been developed to measure companies' commitment to social and environmental issues. Examples of these tools include the AccountAbility 1000 (AA1000) Standards and the AccountAbility 8000 Standard.

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[478] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, op. cit., p. 33.

[479] Comitato Corporate Governance, *Codice di corporate governance*, gennaio 2020, available at: https://www.borsaitaliana.it/comitato-corporate-governance/codice/2020.pdf, p. 4.

[480] Comitato Corporate Governance, *Codice di corporate governance*, op. cit., p. 16.

At the European Community level, a prominent role is played by EUROSIF – The European Social Investment Forum[481], which includes pension funds, financial institutions, academic institutions, research associations, and NGOs. Its primary objective is to promote sustainability through the European financial market[482].

Therefore, the evolution of state policies has progressively moved towards recognizing a social and environmental responsibility for both private and public entities. These actors, due to their role and power, have the capacity to significantly impact key elements essential for the survival of the planet.

It follows that, in addition to the obligation to comply with the complex regulatory framework of environmental administrative law and related criminal law provisions, a new form of social responsibility has emerged. This responsibility requires companies to orient their activities not solely towards profit maximization, but also towards the pursuit of other fundamental values. This development both enriches and complicates the operational context for economic operators.

4.7. Practical Applications of Corporate Social Responsibility in the Italian Legal System

In the previous paragraph, it was noted that the concept of Corporate Social Responsibility (CSR) has progressively gained support from both institutions and certain trade associations. However, it is also necessary to recognize that a significant portion of economic operators and the scientific debate in commercial law maintain a critical stance toward this socio-economic approach.

On the one hand, internal sustainability within a company is defined as the need to ensure the continuation of its economic activity, with the decisions of apical representatives aimed at maintaining financial balance. On the other hand, sustainable development refers to the conduct of business activities in such a way that their externalities do not undermine environmental, health, social, and civil rights. As a result, it becomes clear that these two concepts, and consequently their respective objectives, often stand in contrast to one another.

In this sense, critics of CSR argue that

> in most cases, the pursuit of one objective hinders the fulfillment of the other demands mentioned. This is primarily because protecting the interests of stakeholders, related to environmental protection, workplace safety, etc., inevitably leads to an increase in the costs of conducting business activities. Consequently, it is possible to reduce negative externalities and make the company sustainable from an ESG perspective only if one

[481] Eurosif, *The European Sustainable Investment Forum*, available at: https://www.eurosif.org/.
[482] M. Maspero, A. D'Avirro, *Reati ambientali e responsabilità 231. Il Modello di gestione e le misure preventive ex D.Lgs. 231/2001. Le condotte riparatorie. L'accertamento della responsabilità dell'ente. Sviluppo sostenibile e climate change*, op. cit., pp. 548-549.

> simultaneously accepts a reduction in profitability, thereby negatively affecting the economic sustainability of the business operation[483].

It is also worth noting that, except for the recent Directive (EU) 2024/1760, CSR initiatives have largely remained voluntary and are therefore characterized by a lack of binding force in terms of legal sanctions. More stringent obligations apply only to medium-large enterprises, justified by the greater external impact of their activities and their greater economic capacity to bear related costs. However, this approach excludes a large portion of small and medium-sized enterprises (SMEs), which make up a significant part of the economic fabric, particularly in countries like Italy.

Concerning the Italian legal system, no provisions impose binding obligations on corporate directors to protect the interests of stakeholders. As a result, conduct that is contrary to this social policy may only be relevant from a reputational perspective[484].

Nevertheless, while acknowledging that criticism of CSR has a valid basis and that most CSR-oriented business policies are driven by voluntary initiatives, it is undeniable that there is a changing trend. This shift reflects a growing recognition of the importance of addressing the socio-environmental impact of business activities.

As previously explained, international institutions are clearly moving toward requiring companies to make greater commitments to the achievement of sustainable development. At the same time, stakeholders are increasingly basing their commercial choices on the ethical profile of companies.

It follows that, while companies must still ensure their internal sustainability, in the near future, it will be difficult for them to pursue this objective by disregarding other fundamental values, which are no longer considered sacrificable.

In this context, within the framework of the Italian legal system, it has been suggested that the objectives of CSR doctrine could be achieved not only through self-regulation codes or market-driven incentives and sanctions but also through the adoption of compliance models under Legislative Decree No. 231/2001.

This approach is deemed valid and shareable, as it allows for the re-evaluation of corporate values—profit, but also environmental and social protection—through the adoption of adequate corporate governance through 231 compliance models.

Although adopting Organizational, Management, and Control Models (MOGs) is not mandatory, their relevance within the regulatory framework has already been highlighted. This is evident

[483] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, op. cit., p. 35.
[484] Ibid., pp. 34-38.

concerning Legislative Decree No. 231/2001, where they play a role in excluding or mitigating sanctions, the Public Procurement Code, as a reputational factor for contracting authorities, and the Anti-Mafia Code, as a recovery tool in judicial control procedures.

Additional aspects, already widely recognized at a legislative level, are now being incorporated, linked to the concept of a company that acts responsibly from a socio-environmental perspective.

On this subject, Ciro Santoriello, Deputy Prosecutor of the Republic at the Court of Turin, asserts that

> only companies that have an organizational model aimed at preventing predicate offenses of the criminal liability of legal entities can be considered compliant with the principles of corporate social responsibility, and, conversely, mere compliance with the provisions of Legislative Decree No. 231 will be sufficient for a company to be deemed compliant with the premises of the CSR doctrine and ESG criteria[485].

This assertion is based on the premise that it is impossible for a company to genuinely consider stakeholder interests if it has not first adopted a governance model capable of preventing the commission of crimes.

The Italian legislature, through the adoption of a regulatory framework that recognizes the liability of legal entities for crimes committed in their interest or to their advantage, implicitly requires companies to ensure that their actions do not harm certain protected interests. The criminal offenses listed in this framework are aimed at protecting legal interests and fundamental values of the legal system, which are often shared by external stakeholders.

In this sense, convergence can be identified between the objectives pursued by CSR doctrine proponents and those of Legislative Decree No. 231/2001, particularly regarding the corporate governance of 231 compliance models. However, while the adoption of CSR principles is voluntary, compliance with Legislative Decree No. 231/2001 is a legal obligation.

It is also worth noting that one of the main criticisms of CSR is the lack of binding force. Conversely, Legislative Decree No. 231/2001 establishes a form of liability that may lead to pecuniary and interdictive penalties. To avoid these adverse consequences, the legislator's pathway is for companies to adopt a corporate compliance tool that introduces procedures aimed at preventing the risk of harm to legally protected interests.

Regarding the claim that the adoption of the 231 model is sufficient to comply with CSR principles and achieve ESG objectives, certain observations arise.

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[485] C. Santoriello, *L'adozione di un idoneo modello organizzativo 231 quale indispensabile (ed unico) presupposto per la responsabilità sociale dell'impresa*, op. cit., p. 38.

Firstly, the scope of the CSR doctrine is significantly broader than that of Legislative Decree No. 231/2001, which focuses solely on the liability of legal entities for specific predicate offenses.

Secondly, as previously discussed, the adoption of 231 compliance models presents several challenges. There is a lack of standardized legislative content for these models, and they must be tailored to the specific structure of the company. Furthermore, the capacity to adopt an effective model varies significantly depending on the size and economic resources of the legal entity, an aspect that consolidated case law does not take into consideration.

In any case, these elements suggest that it is impossible to make a general ex-ante assessment of the adequacy of a 231 compliance model in terms of alignment with the CSR doctrine and ESG criteria, as it will depend on the specific content adopted in the individual case. This assessment will only be carried out ex post, in the event of the verification of a predicate offense.

Nevertheless, it can be argued that, within the national regulatory framework, regardless of the model's effectiveness in exempting the legal entity from administrative liability, the 231 model currently represents the most effective tool available to achieve a satisfactory level of protection for collective interests.

Therefore, while awaiting the transposition of the recent European directive and/or other initiatives from international or national institutions, Organizational, Management, and Control Models (MOGs) represent an effective solution. They enable corporate policies, which are naturally driven by the pursuit of maximum profit, to balance and simultaneously pursue the protection of other fundamental values. This is achieved through the implementation of procedures aimed at preventing the commission of crimes in the course of business activities.

Before concluding this discussion, it is worth considering the Legality Rating, which serves as a synthetic indicator reflecting compliance with high standards of legality. It was first introduced by Article 5-ter of Legislative Decree No. 1/2012 to promote ethical business conduct and was later updated by AGCM (Italian Competition Authority) Resolution No. 28361 of July 28, 2020.

Although it is a voluntary tool and subject to the previously mentioned criticisms, it is of particular interest due to its positive effects and its interaction with 231 compliance models.

The adoption of the Legality Rating is also driven by the idea that the pursuit of entrepreneurial economic interests must be subject to a systematic revision in light of new social and ethical objectives. In this sense:

> business ethics thus becomes a valid vehicle for fostering a generalized culture of voluntary adherence, aimed not only at achieving the corporate purpose but also at the concurrent pursuit of a social interest, through mechanisms that generate incentives[486].

Therefore, this instrument aims to promote widespread adherence by companies to the fundamental values of the community through a system of incentives and rewards.

Specifically, the mechanism of the Legality Rating provides for the assignment of a "star" rating, which serves as a recognition of the level of compliance of a company that has requested its attribution.

In this regard, the Italian Competition Authority (AGCM) specifies:

> The attribution of the rating requires companies to comply with high standards of legality and measures, rewarding it, a transparent, ethical, and virtuous corporate management […] fostering compliance with the rules and the improvement of qualitative standards by companies operating in the market[487].

The Legality Rating is assigned by the Italian Competition Authority (AGCM) and has a duration of two years, which can be renewed upon request. The request for its attribution can be submitted by companies, both individual and corporate, that cumulatively meet specific requirements. These requirements are: having an operational establishment in Italy; having a minimum turnover of two million euros in the financial year closed in the year prior to the application; and being registered in the Business Register (Registro delle imprese) for at least two years[488]. With AGCM Resolution No. 28361/2020, its applicability was extended to entities registered exclusively in the Economic and Administrative Index (Repertorio Economico e Amministrativo - REA) of the Chamber of Commerce, Industry, Crafts and Agriculture (Camera di commercio, industria, artigianato e agricoltura - CCIAA), namely, companies with their main office in another country that establish a local unit in Italy, as well as associations or non-corporate entities that, even subsidiarily, carry out an economic activity[489].

Following the request, companies may obtain the base score of one "star" if they fully meet the requirements set out in Article 2, paragraphs 2 and 3, of the Implementing Regulation on the Legality Rating, as amended by Resolution No. 28361/2020[490]. Additionally, the base score can be increased

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[486] A. De Vivo, C. Zanichelli, *La (virtuosa) interazione tra rating di legalità e modello 231 tra premialità aggiuntive e percorsi etici d'impresa*, in *La responsabilità amministrativa delle società e degli enti*, (2021), n. 1, p. 26.
[487] AGCM (Autorità Garante della Concorrenza e del Mercato), *Rating di legalità*, available at: https://www.agcm.it/competenze/rating-di-legalita/.
[488] Ibid.
[489] A. De Vivo, C. Zanichelli, *La (virtuosa) interazione tra rating di legalità e modello 231 tra premialità aggiuntive e percorsi etici d'impresa*, op. cit., p. 28.
[490] Delibera AGCM n. 24075 del 12 novembre 2012 - Regolamento attuativo in materia di rating di legalità (ultima modifica Delibera n. 28361 del 28 luglio 2020), available at: https://www.agcm.it/chi-siamo/normativa/dettaglio?id=268c1269-d85d-4259-bce1-0ffa53414b23.

by a "+" for each additional requirement that the company proves to meet among those listed in Article 3 of the same Regulation. If the company achieves three "+", it is awarded an additional "star", up to a maximum of three.

The additional requirements outlined in Article 3, which are of particular relevance due to their connection with this research, are as follows:

> a) adherence to protocols or agreements on legality aimed at preventing and combating the infiltration of organized crime into the legal economy, signed by the Ministry of the Interior or by Prefectures-UTG with business and trade associations;
> b) use of payment traceability systems, even for amounts lower than those established by law;
> c) adoption of a function or organizational structure, also outsourced, that ensures the compliance of corporate activities with the regulatory provisions applicable to the company, or the adoption of an organizational model according to Legislative Decree No. 231 of 8 June 2001;
> d) adoption of organizational processes aimed at guaranteeing forms of Corporate Social Responsibility, also through participation in programs promoted by national or international organizations and the acquisition of sustainability indices;
> e) registration in one of the lists of suppliers, service providers, and contractors not subject to attempts at mafia infiltration, established according to current legal provisions (white list);
> f) adherence to self-regulation ethical codes adopted by trade associations, or the inclusion, in contracts with its customers, of mediation clauses — when not mandatory by law — for dispute resolution, or the adoption of protocols between consumer associations and business associations for the implementation of joint conciliation procedures;
> g) adoption of organizational models for the prevention and fight against corruption[491].

What is particularly relevant is that, following the recognition of such a compliance effort by the business entity, the Rating system provides access to a system of particularly advantageous benefits. These benefits include

> greater business opportunities, maximum market transparency, and improvements in corporate image, both in general terms and through the dedicated space on the AGCM's website[492].

Since November 2017, the Chambers of Commerce have been disclosing information regarding the possession of the Legality Rating by companies through the Chamber of Commerce reports (*visure camerali*), intending to ensure that stakeholders have access to such information to make informed decisions.

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[491] Delibera AGCM n. 24075 del 12 novembre 2012 - Regolamento attuativo in materia di rating di legalità (ultima modifica Delibera n. 28361 del 28 luglio 2020), op. cit.
[492] AGCM (Autorità Garante della Concorrenza e del Mercato), *Elenco Rating di Legalità*, available at: https://www.agcm.it/competenze/rating-di-legalita/elenco-rating in A. De Vivo, C. Zanichelli, *La (virtuosa) interazione tra rating di legalità e modello 231 tra premialità aggiuntive e percorsi etici d'impresa*, op. cit., p. 29.

Furthermore, the attribution of the Legality Rating entails a series of benefits in relation to public administration, such as preferential ranking among economic operators with equal scores or the assignment of an additional score; a 30% reduction in the amount of the guarantee to be provided when participating in public procurement procedures (Article 93, paragraph 7, of Legislative Decree No. 50/2016); and the consideration of the Legality Rating as a reward criterion in the evaluation of the offer in public procurement procedures (Article 95, paragraph 13, of Legislative Decree No. 50/2016).

Finally, according to Article 5-ter of Decree-Law No. 1/2012, the Legality Rating must be taken into account when accessing bank credit, which may result in shorter processing times and lower costs for loan concession or renegotiation requests[493].

The analysis of this framework reveals that, alongside the legislative provisions examined in the previous sections, which impose restrictions on entrepreneurial activity and contracting with public administration in cases where specific indicators of illegality are present, there exists a parallel reward system for entities that demonstrate a commitment to ethics and legality.

Moreover, the central role of the models according to Legislative Decree No. 231/2001 within the framework of corporate social compliance emerges once again, as their adoption constitutes a requirement for the attribution of a positive score in the assignment of the Legality Rating.

In this regard, the National Council of Chartered Accountants and the National Foundation of Chartered Accountants (Consiglio Nazionale dei Dottori Commercialisti e la Fondazione Nazionale dei Dottori Commercialisti) state:

> The regulations on administrative liability, by their inherent nature, are functional to the implementation by companies and entities of a cognitive investigation of business processes aimed at containing, if not eliminating, risk profiles. In this sense, it is characterized by the identification of those gaps that make processes less efficient, by the precise definition of responsibilities, by the mapping and monitoring of existing procedures, and by the role of adjusting the latter concerning the context: all this can be translated into a guarantee of greater transparency[494].

In this regard, some experts in the field have emphasized that, given that Legislative Decree No. 231/2001 and the regulations on the Legality Rating share common objectives, assigning only one "+" in the event of verification of the adequate and proper implementation of a Model 231 is too limiting. On the contrary, if greater emphasis were placed on corporate compliance in the context of

[493] Ibid., pp. 29-30.
[494] Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili, Fondazione Nazionale dei Commercialisti, *Rating di Legalità e Modello Organizzativo ex D.Lgs. 231/2001: novità e spunti per la valorizzazione degli strumenti di corretta gestione aziendale*, 14 gennaio 2021, available at: https://commercialisti.it/wp-content/uploads/2024/07/Rating-di-Legalita-e-Modello-Organizzativo-ex-D.Lgs_.pdf.

Rating score attribution, it could incentivize the adoption of such models. So far, however, the absence of legislative standardization and the high costs associated with Legislative Decree No. 231/2001 have represented an obstacle to the widespread adoption of Organizational Models (MOG), particularly among small and medium-sized enterprises (SMEs)[495].

[495] A. De Vivo, C. Zanichelli, *La (virtuosa) interazione tra rating di legalità e modello 231 tra premialità aggiuntive e percorsi etici d'impresa*, op. cit., pp. 32-33.

Chapter 5: Case Study: Compliance Strategies and Environmental Sustainability through the Implementation of the Organizational and Management Model (MOG).

5.1. Methodological Introduction

To understand the structure and objectives of the investigation presented in this final chapter, it is useful to retrace the main steps of the analysis conducted up to this point.

At the outset, the research objective was clarified, namely the phenomenon of Ecomafie, with specific reference to the illicit waste cycle as one of its manifestations.

In particular, the aim was to understand the role played by mafia-type criminal associations and other subjects with recognized legal status in the construction of the illicit business, as well as the motivations driving interest in this economic sector and the reasons behind its success in terms of illegal profit.

The research was conducted using a socio-legal approach to the analysis of the phenomenon, with a focus on the Italian context while also considering international implications, both from a phenomenological and regulatory perspective.

The information gathering process was carried out through the study and re-elaboration of scientific literature, judicial decisions, reference legislation, reports from organizations and associations, both institutional and non-institutional, as well as reports from Parliamentary Commissions and the Anti-Mafia Investigation Directorate (DIA).

The investigation thus conducted revealed that the illicit waste business is closely linked to social evolution. In other words, the rise of the capitalist economic model projected a portion of society into a state of significant well-being; however, it failed to address the external repercussions that would or could result from it. With growing awareness of the impact of human activities on the environment, particularly regarding the uncontrolled disposal of waste, there has been significant political and social mobilization. This phenomenon has led to the adoption of numerous regulatory instruments that place environmental protection at the core of the international community’s priorities.

Nevertheless, it has been observed that, despite the evolution of environmental awareness within society, issues related to waste management persist. Indeed, the relevant regulatory framework is the result of a multitude of political, economic, and social choices that must address the complex relationship between productive development and environmental protection, two elements that appear to be marked by an unavoidable conflict.

As a result, structural and, potentially, cyclical factors have emerged and continue to emerge, serving as entry points for criminal interests, which aim to achieve substantial profits by exploiting socio-economic inefficiencies.

The phenomenon, known as the illicit waste cycle, originates from a combination of elements that can be summarized as follows: large quantities of waste produced periodically; structural deficiencies and inefficiencies; technical complexity of sector-specific regulations; high costs and difficulties associated with fulfilling administrative and bureaucratic obligations; the economic value of certain materials; weak deterrence of sanctions in cases of violation of administrative and/or criminal law; significant profits and interests linked to the management of certain materials; and increasing attention to economic circularity and the energy transition.

In this complex and fragmented context, a common denominator has been identified: the business sector, which can be recognized for two main reasons.

Firstly, it has been observed that the most significant and frequent manifestations of environmental crime coincide with economic/corporate crime. This is because economic collective entities are the primary subjects involved in the production and management of processing waste and, therefore, are more likely to encounter the problematic elements listed above.

Secondly, it has been noted that mafia-type criminal associations display a particular interest in business entities, aiming to exploit them as a gateway into the legal economy. Moreover, the waste sector is among those of predominant criminal interest, as it is both a traditional sector and a strategic one for expanding territorial control and establishing connections with politics, institutions, and public administration.

For this reason, the research has focused both on the regime of legal and social liability imposed on companies and on the need to reconsider — and possibly reverse — the relationship between the pursuit of economic profit and the protection of environmental and social interests. To this end, in the conclusion of the previous chapter, the organizational, management, and control models provided for by Legislative Decree No. 231/2001 were identified as optimal tools to achieve these objectives within the current Italian regulatory framework.

This premise not only summarizes the trajectory followed in the previous chapters but also introduces the focus of the final chapter’s analysis. In particular, a case study will be analyzed, concerning a company whose main activity is the acquisition and resale of waste and End-of-Waste metallic materials.

The company in question was involved in a judicial proceeding, which will be analyzed in detail later, and chose to adopt Model 231 as part of its initiatives aimed at re-establishing a framework of legality.

Consequently, the investigation will focus on the adoption procedure and the specific contents of the Organizational and Management Model (MOG). Considering the issues related to the regulations under Legislative Decree No. 231/2001, which have already been analyzed, the objective is to further explore the topic and identify best practices that may be useful for other business entities facing similar situations.

Indeed, it is believed that these instruments currently represent the most effective means of establishing and maintaining an operational framework in compliance with the regulations, promoting a corporate culture oriented towards legality, and enabling a balance between the pursuit of profit and fundamental values, such as environmental protection.

To conduct a thorough analysis, the company's operational context was observed for six months. During this timeframe, relevant documentation was examined and used as a primary source for the subsequent analysis, ensuring compliance with privacy, confidentiality, and data protection regulations. On-site visits were also carried out to gain a more concrete understanding of the business environment and to integrate theoretical elements with technical-operational components.

Furthermore, three interviews were conducted with key subjects responsible for drafting and implementing the Model 231. Specifically, interviews were held with the following individuals: the independent sole administrator, a professional accountant; the environmental consultant, an engineer specializing in environmental matters; and the legal consultant, a lawyer specializing in criminal law and the drafting of Organizational and Management Models (MOG).

The choice of interviews among the tools of social research was based on their flexibility, spontaneity, and comprehensiveness — characteristics that allow for a representation that is both exhaustive and detailed. This methodology proved particularly suitable for addressing a complex and technical topic, where a certain degree of flexibility was required to explore the various issues in depth.

Among the various interview methodologies, the semi-structured interview was selected, specifically in the form of a focused interview, as it was deemed the most appropriate for the research objectives. This type of interview shares with less structured approaches the use of open-ended, non-predefined questions, offering a degree of flexibility to incorporate insights that arise during the

conversation. However, its distinctive feature lies in the presence of a pre-planned content structure, which limits the possibility of deviating from the primary focus of the investigation.

This methodology is designed to interview only individuals involved in a specific experience or situation. In this case, the interviewees are those who participated in the drafting and implementation of the Organizational and Management Model (MOG) for the company under study[496].

In conclusion, the investigation provides a reference framework for understanding the challenges and opportunities associated with the integration of corporate compliance, balancing social responsibility and profit, and lays the groundwork for future research aimed at identifying best practices in the business sector.

5.2. Overview of the Case Study

For the analysis of the case study under examination, the first step consists in the specific framing of the context. As previously mentioned, the company in question is primarily engaged in the acquisition and resale of metallic waste and materials classified as End-of-Waste, an activity that also involves the collection and treatment of metal residues.

Recently, the company was involved in a judicial proceeding following the discovery, during the preliminary investigation phase by the investigating authorities, of the presumed commission of certain specific criminal offenses.

It should be noted that, for this analysis, the ongoing judicial proceedings do not hold specific relevance, as the criminal trial is still pending at the first-instance stage, and no final judicial decision has been issued to establish the liability of the persons involved beyond a reasonable doubt. Therefore, the facts and conduct related to the proceedings are outlined here solely to provide the necessary context for this research, without making any considerations regarding the criminal liability of natural persons or the administrative liability of the company.

This preliminary framework is essential for understanding the risk assessment activity carried out by experts, aimed at drafting the Organizational and Management Model (MOG) and adopting the necessary procedures to eliminate or reduce the risk of criminal offenses being committed.

Following a logical sequence, the sole administrator of the company in question, at the end of the preliminary investigations, was deemed responsible for the offense under Article 648-ter.1 of the Italian Criminal Code, titled “Self-laundering”. This criminal offense punishes ‘anyone who, having committed or participated in the commission of a crime, employs, replaces, or transfers money, assets,

[496] K. D. Bailey, *Metodi della ricerca sociale*, Bologna: il Mulino, 1995.

or other utilities resulting from the commission of that crime in economic, financial, entrepreneurial, or speculative activities, in such a way as to concretely hinder the identification of their illicit origin'.

In the case under examination, the sole administrator is found to have committed, or participated in committing, the crime of organized activities for the illicit trafficking of waste, under Article 452-quaterdecies of the Italian Criminal Code. Specifically, it is presumed that, as the administrator of a company active in the collection and treatment of metal residues intended for resale to foundries, he obtained a significant portion of the materials involved in such activity from economic entities lacking the necessary authorizations, who supplied them without any control over their origin and type.

Subsequently, the illicit profits from this production process would have been transferred to shell companies, simulating the purchase of metal residues through the issuance of both subjectively and objectively false invoices[497], as well as the use of false Waste Identification Forms (*F.I.R. - Formulari di Identificazione dei Rifiuti*)[498]. The amounts paid to these companies for the fictitious purchases would have been returned to the administrator in cash to conceal the illicit origin of the revenues.

Due to this illicit practice, the individuals listed as administrators of the shell companies or as the nominees of fictitious individual enterprises were also involved in the criminal proceedings, being held jointly responsible for the offense of money laundering, under Article 648-bis of the Italian Criminal Code[499]. Specifically, these individuals are alleged to have established companies that, only formally, appeared to be active in the collection of metal residues but were, in reality, fictitious and inactive legal entities. These entities were controlled by individuals tasked with issuing invoices for nonexistent transactions related to the sale of metal residues. Such practices were carried out to conceal the actual purchases of metallic waste, which were conducted through unrecorded transactions.

Subsequently, the payments for the simulated sales were deposited into bank or postal accounts and immediately withdrawn in cash, before being returned to the fictitious buyers. In some cases, the illicit profits from the simulated sales were transferred to the accounts of other collective entities or inactive individual enterprises, whose apical representatives proceeded to withdraw the funds and return them to the fictitious buyers.

[497] Invoices are objectively nonexistent when the commercial transaction they refer to has never occurred; while they are subjectively nonexistent when the commercial transaction took place, but not between the parties stated in the documentation, but rather between different parties.
[498] For an explanation of the administrative regulations governing the Waste Identification Forms (F.I.R.) and the illicit practices of altering such documentation, see pp. 59 and 68 of Chapter 2 of this work.
[499] Article 648-bis of the Italian Criminal Code punishes: 'Apart from cases of participation in the offense, anyone who replaces or transfers money, assets, or other benefits derived from a (non-negligent) crime; or carries out other operations related to them in such a way as to hinder the identification of their criminal origin'.

As previously stated, the apparent legality of these transactions was ensured through the issuance of invoices for the purchase of ferrous scrap that never actually took place, and the preparation of Waste Identification Forms (*F.I.R. - Formulari di Identificazione dei Rifiuti*) for the transport of ferrous scrap that was never carried out.

In light of the above, these individuals were also held jointly responsible for the offense under Article 8 of Legislative Decree No. 74/2000 (law on tax offenses), titled 'Issuance of invoices or other documents for nonexistent transactions'[500].

For his part, the sole administrator of the company under investigation was deemed responsible for the offense under Article 2 of Legislative Decree No. 74/2000, titled 'Fraudulent tax return through the use of invoices or other documents for nonexistent transactions'[501].

The group of individuals who allegedly engaged in the aforementioned conduct was also held responsible for the offense of criminal organization according to Article 416 of the Italian Criminal Code. According to the prosecution, these individuals are alleged to have conspired to commit a series of crimes, including self-laundering, money laundering, and fraudulent tax returns through the use of invoices for nonexistent transactions, with the aim of evading income tax and VAT.

Therefore, the system allegedly devised by the individuals involved in the present proceedings provides that the offenses of issuing and using nonexistent invoices are merely complementary. Indeed, the objective of tax evasion plays an ancillary role, as the main purpose lies in the laundering of illicit profits already generated by the commission of the predicate offense (Article 452-quaterdecies of the Italian Criminal Code).

In this regard, the investigators identified the nature of the predicate offense as continuous activities of illicit waste trafficking. These activities are characterized by the systematic use of unrecorded supplies of metals and the entry of vehicles carrying untracked loads of metals.

The laundering of the profits from this illicit trafficking occurs through an indefinite series of offenses involving the issuance and use of invoices for subjectively nonexistent transactions. These invoices serve to create a false documentary justification for both the possession of metals (already acquired unlawfully) and the apparent payment for the related supplies. In reality, the corresponding

[500] Article 8 of Legislative Decree No. 74/2000 states: 'Anyone who, to enable third parties to evade income tax or value-added tax, issues or delivers invoices or other documents for nonexistent transactions, shall be punished with imprisonment from four to eight years'.

[501] Article 2 of Legislative Decree No. 74/2000 states: '1. Anyone who, for evading income tax or value-added tax, by using invoices or other documents for nonexistent transactions, includes fictitious liabilities in one of the tax returns relating to these taxes, shall be punished with imprisonment from four to eight years. 2. The act is considered to be committed using invoices or other documents for nonexistent transactions when such invoices or documents are recorded in the mandatory accounting records or are held as evidence for the tax authorities'.

sums are immediately withdrawn in cash through a network of accomplices and returned to the beneficiaries, after deducting the costs and fees of the money launderers. The final beneficiary company simulates the traceable payment for the nonexistent supplies of metallic waste through bank transfers, even though the companies issuing the invoices do not operate in the metal waste trade sector.

The operational scheme described so far reflects the modus operandi previously reconstructed in the analysis of criminal phenomenology and methodology[502]. At its core lies an unlawful activity based on waste trafficking — in this case, the acquisition of metal scrap from illegal suppliers through unrecorded transactions — through which practices are implemented to evade and reduce the costs and bureaucratic obligations established by Legislative Decree No. 152/2006 on environmental regulations.

As a result, the perpetrators find themselves in the position of having to engage in a series of ancillary offenses, aimed at concealing the unlawful origin of the materials and financial transactions, as well as justifying their possession[503].

Having outlined the judicial proceedings, it is now essential to focus on the position of the legal entity, as it represents a key topic of interest for this research.

At the end of the preliminary investigations, it was determined that the company in question was found liable for the offense under Article 648-ter.1 of the Italian Criminal Code, classified as a predicate offense under Article 25-octies of Legislative Decree No. 231/2001. In fact, the legal representative, namely the sole administrator mentioned above, is alleged to have committed the offense of self-laundering exclusively in the interest of the company, to secure a profit for it.

Specifically, the Preliminary Investigations Judge (*Giudice delle Indagini Preliminari, GIP*) who imposed the precautionary measures, as will be discussed below, found that the legal entity was responsible since the totality of the unlawful conduct was allegedly managed within the company's operations and in its direct interest. This conduct ranged from waste trafficking to money laundering and self-laundering, up to the ancillary offenses of issuing nonexistent invoices to justify payments.

The case was classified under the provisions of Article 5, paragraph 1, of Legislative Decree No. 231/2001, as the conduct was carried out by an apical subject in the interest and for the benefit of the company.

[502] See pp. 64-73, 'Criminal Methodology', in Chapter 2.
[503] See the Black Steel investigation as a reference, pp. 109-111, in Chapter 2.

Finally, it was found that there was no Organizational and Management Model (MOG) suitable to prevent the commission of offenses of the type that had occurred, thereby precluding the applicability of the exclusionary cause of liability provided for under Article 6 of Legislative Decree No. 152/2006.

Conversely, it was considered that the unlawful conduct was an essential part of the company's mission, given the extent of the value of the illicit revenues compared to the lawful ones, as observed by examining the company's total revenues.

In light of the evidentiary framework explained so far, the Preliminary Investigations Judge (*Giudice delle Indagini Preliminari, GIP*) found that specific grounds for precautionary measures existed. Specifically, the seriousness of the alleged facts revealed a risk—assessable in terms of a very high probability of the repetition of offenses similar to those under investigation.

In particular, the adoption of an illegal supply chain for metals and the associated laundering and reinvestment of illicit profits, which were considered the company's ordinary and systematic operational methods, justified the application of a preventive interdictive measure. This measure consisted of the suspension of authorizations, licenses, and concessions necessary for the operation of the company, with specific reference to authorizations related to waste management, for one year, according to Articles 45 and 9, paragraph 2, of Legislative Decree No. 231/2001.

Furthermore, as an additional precautionary measure, the preventive seizure[504] of the entire set of company assets and the related business relationships was ordered, along with the simultaneous appointment of a judicial custodian and administrator for their management, according to Articles 19 and 53 of Legislative Decree No. 231/2001.

The same individual was also appointed as the judicial custodian of the corporate shares held by the sole shareholder of the company in question, who coincides with the sole administrator under investigation/indictment in the proceedings, according to Article 321 of the Italian Code of Criminal Procedure.

The Preliminary Investigations Judge (*Giudice delle Indagini Preliminari, GIP*) authorized the judicial administrator to exercise the management rights associated with the company's corporate shares, including the appointment of an independent administrator to facilitate the resumption of the

[504] The preventive seizure is a real precautionary measure governed by Article 321 of the Italian Code of Criminal Procedure (c.p.p.), which states: '1. When there is a risk that the free availability of assets related to the offense may aggravate or prolong its consequences, or facilitate the commission of other offenses, at the request of the public prosecutor, the judge with jurisdiction over the merits orders its seizure through a reasoned decree. Before the initiation of criminal proceedings, the judge for preliminary investigations (*Giudice delle Indagini Preliminari, GIP*) shall issue the order. 2. The judge may also order the seizure of assets that are subject to confiscation (Article 240 of the Italian Criminal Code)'.

company's operations, in line to preserve the company's value to the greatest extent possible. The judicial administrator subsequently proceeded to appoint an independent sole administrator, identified as the chartered accountant previously mentioned as one of the interviewees in the course of this research.

The company is currently still subject to the preventive seizure measure, and its business continuity and operational continuity are ensured through the actions of the judicial administrator and the independent sole administrator. Specifically, the corporate shares' custodians and judicial administrators exercise powers of ordinary administration within the limits established by the Judicial Authority. The independent sole administrator performs the same functions under the supervision of the judicial administrator, who, in turn, reports to the Judicial Authority.

In light of the procedural events involving the company under investigation, it can be observed that this case represents an example of a business that, although initially lawful and subsequently formally compliant, chose to adopt practices contrary to environmental regulations, both administrative and criminal, for purely economic reasons.

While it remains true that the facts have not yet been ascertained, and therefore it is not possible to assert with certainty that such conduct occurred, the unlawful scheme hypothesized to have been implemented falls within the context of endogenous criminality. In this context, there is no evidence of infiltration by mafia organizations; rather, it is the autonomous decision of individuals with a formally lawful status to engage in unlawful conduct.

In this specific case, this unlawful conduct manifests itself through the procurement of metals from the illegal materials circuit, intending to circumvent sector-specific regulatory provisions and facilitate corporate operations.

Therefore, the case under examination serves as a particularly illustrative example of the plurality of interests involved in the management of waste and end-of-waste materials. This is a sector where the participation of mafia organizations is not a necessary condition, as entrepreneurs, acting independently, have come to understand how to achieve profits by violating the law.

Continuing with the contextualization of the case study, it is also useful to examine the commercial sector in which the company operates.

As previously mentioned, the company engages in the purchase, collection, treatment, and subsequent sale of metal waste and end-of-waste materials. These materials are considered among the most valuable in the waste sector. This is due to a variety of reasons.

Firstly, certain metals have a high market value, even in the form of scrap. This is the case, for example, with aluminum, copper, steel, and iron. From a circular economy perspective, these metals can be recycled multiple times without losing their chemical and physical properties. Furthermore, recycling them requires significantly less energy compared to their production from raw materials. Demand for these materials is extremely high in the industrial sector. In the specific case of the company under examination, the primary customers are foundries.

In this context, it should be added that the market prices of metals are influenced by the quotations established by the London Metal Exchange (LME)[505], the world's leading exchange for non-ferrous metals. The LME sets the reference prices, which also affect the costs of recovered materials and metal scrap, as recycling companies and traders use these quotations as a basis for determining the value of the materials.

In parallel, the high value and economic relevance of metal waste make it one of the primary targets of illegal waste trafficking. In this regard, it is worth noting that Legambiente, in its latest report, highlighted that:

> Investigations confirm the particular propensity of criminal organizations to infiltrate all stages of the waste management cycle, especially metal scrap, from collection to transport, up to recovery or disposal, in order to exploit the enormous profit opportunities, thereby distorting the proper functioning of the market[506].

Furthermore, the same organization recorded the types of waste seized from 2002 to 2024, revealing that as much as 40% of the total consists of industrial waste, corresponding to a wide range of European Waste Catalogue (EWC) codes, including metals[507].

In terms of the specific regulatory framework for the management of these materials, in addition to the application of the broader set of European and national environmental sources already examined throughout the analysis, particular relevance is given to Regulation (EU) No. 333/2011 and Regulation (EU) No. 715/2013.

The former defines the criteria under which waste, namely, iron, steel, and aluminum scrap, as well as aluminum alloy scrap, ceases to be classified as such (End of Waste). For the purposes of the regulation, scrap of iron and steel refers to waste primarily composed of iron and steel, while scrap of aluminum refers to waste primarily composed of aluminum and aluminum alloys.

[505] London Metal Exchange, available at: https://www.lme.com/.
[506] Legambiente, *Ecomafia 2024. Le storie e i numeri della criminalità ambientale in Italia*, op. cit., p. 20.
[507] Ibid., pp. 204-207.

Specifically, for iron and steel scrap to cease being classified as such, it must meet all the conditions set out in Article 3:

> (a) the waste used as input for the recovery operation complies with the criteria set out in Section 2 of Annex I; (b) the waste used as input for the recovery operation has been treated in accordance with the criteria set out in Section 3 of Annex I; (c) the iron and steel scrap resulting from the recovery operation complies with the criteria set out in Section 1 of Annex I; (d) the producer has satisfied the requirements set out in Articles 5 and 6.

Whereas, for aluminum scrap and aluminum alloy scrap, Article 4 establishes the following:

> (a) the waste used as input in the recovery operation complies with the criteria set out in Section 2 of Annex II; (b) the waste used as input in the recovery operation has been treated in accordance with the criteria set out in Section 3 of Annex II; (c) the aluminium scrap resulting from the recovery operation complies with the criteria set out in Section 1 of Annex II; (d) the producer has satisfied the requirements set out in Articles 5 and 6[508].

In addition to the aforementioned conditions, it is required that the producer issue a declaration of conformity for each batch of metal scrap to be forwarded to the subsequent holder and implement a quality management system demonstrating compliance with the criteria established by the Regulation[509].

Regulation (EU) No. 715/2013, in turn, establishes the criteria under which copper scrap ceases to be classified as waste. These materials are defined as copper scrap when they are primarily composed of copper and copper alloys.

Article 3 of the Regulation stipulates that:

> Copper scrap shall cease to be waste where, upon transfer from the producer to another holder, all of the following conditions are fulfilled: (1) the copper scrap resulting from the recovery operation complies with the criteria set out in Section 1 of Annex I; (2) the waste used as input for the recovery operation complies with the criteria set out in Section 2 of Annex I; (3) the waste used as input for the recovery operation has been treated in accordance with the criteria set out in Section 3 of Annex I; (4) the producer has satisfied the requirements set out in Articles 4 and 5[510].

Furthermore, in this case as well, in addition to the aforementioned requirements, the producer must issue a declaration of conformity for each batch of copper scrap and implement a management system aimed at demonstrating compliance with the criteria established by the Regulation[511].

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[508] Regulation (EU) No. 333/2011 of the Council of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0333.

[509] *Ambiente 2024, Manuale normo-tecnico*, E. Blasizza (ed.), Milano: Wolters Kluwer, 2024, pp. 571–572.

[510] Regulation (EU) No. 715/2013 of the Commission of 25 July 2013 establishing criteria determining when copper scrap ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0715.

[511] *Ambiente 2024, Manuale normo-tecnico*, E. Blasizza (ed.), op. cit., pp. 572–573.

The overview of the commercial sector outlined above highlights how the complexity of waste management regulations is further compounded by a series of specificities related to the materials in question. This condition further complicates the activities of those operating in the sector.

This also applies to the drafting and effective implementation of organizational and management models. As previously illustrated, these models require a preliminary analysis of the relevant economic activity, an in-depth study of the sector's regulatory framework, and the possession of specific technical expertise. Only through such a comprehensive knowledge-gathering process is it possible to identify the risks of committing offenses, thereby adopting procedures and protocols aimed at reducing or eliminating those risks.

5.3. The Introduction of the Organizational and Management Model in the Case Study

This paragraph is dedicated to analyzing the procedure followed for the introduction of the Organizational and Management Model within the context of the case study under examination. The objective is to delve into the key steps required for the implementation of this tool, highlighting how these steps were concretely carried out in the development of the Model within the analyzed company.

The aim is to outline an operational framework that could serve as a practical reference for companies facing similar conditions. Particular attention is paid to small and medium-sized enterprises (SMEs) operating in sectors similar to that of the company under study.

This in-depth analysis is considered particularly significant for such enterprises, as they are, as previously highlighted, the most disadvantaged in adopting an Organizational and Management Model (MOG). The challenges mainly stem from the lack of standardization in the sector, the technical complexity of environmental regulations, and the high costs associated with the preparation and implementation of the model.

To carry out this analysis, it is appropriate to introduce some preliminary considerations. As previously mentioned, the company in question did not have an Organizational and Management Model (MOG) in place before the intervention of the court-appointed administrator and the independent sole administrator (*A.U. – Amministratore Unico*), under whose administration the model was subsequently introduced.

This circumstance implies that the risk assessment was conducted by taking into account the company's situation in a subsequent context characterized by heightened legality. Specifically, the company operates under the direction of an independent sole administrator, who is subject to the supervision of the court-appointed administrator and the oversight of the court. Therefore, this is an

economic activity governed by criteria of utmost prudence and diligence, which are markedly different from the ordinary conditions of private economic initiative.

Consequently, the risk assessment activity is influenced by this scenario, resulting in a mitigated approach compared to a business context not subject to such constraints. Therefore, should the precautionary seizure measure be revoked and the company return under the direction of the previous administrator, or if the business complex were transferred to new entities, the adopted MOG would inevitably need to be reviewed and adjusted.

This necessity aligns with the provisions of Legislative Decree No. 231/2001, which requires the continuous reassessment and updating of the model in response to organizational and management changes[512].

Before delving into the specific content of this paragraph, it is also important to highlight that the Organizational and Management Model under analysis was developed following the Guidelines issued by Confindustria, which were already mentioned in the previous chapter.

In light of the above, the procedure for implementing the Model is structured into a series of sequential phases.

First Phase.

The first phase involves analyzing the company's governance and organizational structure to examine the division and allocation of powers within the enterprise. This activity plays a crucial role in risk assessment, as an excessive concentration of powers in the hands of one or a few individuals creates a context characterized by limited control mechanisms and low traceability of corporate decisions.

A fundamental principle for ensuring efficient business management is to avoid allowing a single individual to manage an entire process independently from start to finish. This approach promotes greater transparency, accountability, and control over decision-making activities.

The establishment of an organizational structure characterized by a broad distribution of powers is particularly challenging in single-member limited liability companies (S.*r.l. – Società a responsabilità limitata*)[513], especially when the sole member also serves as the sole administrator (*A.U. – Amministratore Unico*). A similar situation occurs when the Board of Directors, although

[512] For further analysis, see the discussion in the previous chapter, pp. 209–217.

[513] The limited liability company (S.r.l.), one of the most commonly used corporate forms among small and medium-sized enterprises (SMEs) in Italy, is characterized by the limited liability of its members and greater managerial flexibility compared to other corporate forms. It is governed by Articles 2462–2463-bis of the Italian Civil Code.

formally in place, is composed exclusively of family members of the sole member, a structure typically found in family-run businesses.

This scenario was present in the company under study and reflects the reality of many small and medium-sized enterprises (SMEs) operating nationwide. Although such a corporate structure is entirely lawful and provided for by the applicable regulations, as well as widely adopted by many legally compliant companies, it offers limited control mechanisms. This aspect must necessarily be considered a relevant factor during the risk assessment process.

Following the precautionary seizure order, the company's organizational structure was modified with the appointment, by the court-appointed administrator, of an independent sole administrator (*A.U. – Amministratore Unico*) distinct from the former's role. Consequently, the judicial measure initially resulted in a clear distinction between the two separate figures.

Moreover, in order to strengthen controls and reduce the risk of offenses being committed, it is possible to introduce additional control measures as part of the adoption of the Organizational and Management Model. Although not legally mandatory, such measures can be voluntarily adopted by economic operators with a view to enhancing overall corporate compliance.

In the case under examination, the decision was made to intervene along two main lines. The first involved the appointment of non-mandatory control bodies aimed at increasing the level of corporate guarantees. The choice was made between appointing a Statutory Auditor (*sindaco*) or an Independent Auditor (*revisore*), in accordance with Article 2477 of the Italian Civil Code.

The Statutory Auditor (*sindaco*) is an internal control body within the company. It is responsible for ensuring that management complies with the law and the company's articles of association. Its functions include legal, management, and accounting oversight and the preparation of an annual report on the financial statements.

The Independent Auditor (*revisore*), on the other hand, is typically a professional or a firm registered in the Register of Statutory Auditors (*Registro dei Revisori Legali*). Its specific task is conducting the company's statutory audit. Its activities include verifying accounting records, preparing a detailed report on the financial statements, and carrying out in-depth audits in the event of accounting anomalies.

In the specific case, the decision was made to appoint an Independent Auditor (*revisore*).

With the adoption of the Organizational and Management Model (MOG), a Supervisory Body (*OdV – Organismo di Vigilanza*) was also introduced, thereby strengthening the company's

management control system[514]. Indeed, the independent sole administrator (*A.U. – Amministratore Unico*) is subject to an obligation to report to the Supervisory Body (OdV). Any breach of this obligation results in direct liability and the application of the sanctions provided for in the Organizational and Management Model (MOG).

Nevertheless, the company's organizational structure remains characterized by a high degree of simplification. Specifically, it is composed of an independent sole administrator (*A.U. – Amministratore Unico*), a Supervisory Body (*OdV – Organismo di Vigilanza),* an Independent Auditor (*revisore*), an occupational physician, and a Head of the Prevention and Protection Service (*Responsabile del Servizio di Prevenzione e Protezione*).

The second line of action aimed at strengthening the system of corporate guarantees and controls focused on the distinction and detailed description of the activities falling within each operational area of the company. This approach takes into account that decision-making power over all areas is vested in the independent sole administrator (*A.U. – Amministratore Unico*), who is subject to the previously described controls.

The operational areas are five: the Administration and Human Resources Area, the "Core" Purchasing Area, the Sales Area, the Waste Management Area, and the Production Area. For each of these areas, the responsibilities of the area manager have been defined in detail to promote greater transparency and organizational clarity.

Proceeding in an orderly manner, the Head of the Administration and Human Resources Area is responsible for accounting obligations and cash flow management (both incoming and outgoing), maintaining relations with the tax consultant and the labor consultant. The role also includes oversight of the warehouse, the waste loading and unloading register, the electronic register for the fuel tank, and the consumption data register for operational machinery and work equipment.

Additionally, the Head ensures compliance with corporate deadlines and the documentation related to the aforementioned activities, as well as the documentation pertaining to the Quality Management System. While lacking decision-making power, the Head also oversees the procurement of non-core goods and services.

The Head of the Core Purchasing Area and Sales Area manages all commercial negotiations for the purchase and sale of goods with suppliers and customers, without decision-making power. This includes determining prices, quantities, and contractual terms.

[514] For further analysis, see the discussion in the previous chapter, pp. 195–202.

The Head of the Waste Management Area is responsible for all activities related to the receipt of incoming materials, including the acceptance of waste identification forms (*FIR – Formulari di Identificazione dei Rifiuti*) and delivery notes (DDT) for purchases, weighing, radiometric controls, visual quality checks, and material inspections using a Niton analyzer during unloading in the yard. The role also involves the management of material storage and handling within the yard, as well as the organization of logistics for transport related to purchases.

For outgoing materials, the Head is responsible for compiling waste identification forms (FIR) and delivery notes (DDT) for sales, issuing declarations of conformity and radiometric reports, and organizing logistics related to sales operations.

Finally, the Head of the Production Area organizes the tasks of production workers. Specifically, "production" refers to activities aimed at reducing the size of purchased materials for resale, along with the related logistical and support activities.

The roles of Head of the Core Purchasing Area, Head of the Sales Area, Head of the Waste Management Area, and Head of the Production Area are all held by the same individual. This person also maintains several points of contact with the Head of the Administration and Human Resources Area, highlighting a close interrelationship between the various operational areas of the company.

The external professional figures involved in the activities described above are the Head of the Prevention and Protection Service, the occupational physician (*medico competente*), and the Technical Manager for Waste Management (*Responsabile Tecnico Gestione Rifiuti*).

The company also relies on the support of various specialized consultants who assist its operations in specific areas. In particular, these include a tax consultant, a labor consultant, an environmental consultant, a quality system consultant, an IT consultant, and a privacy consultant.

Therefore, in this initial phase, the entire corporate organizational chart was thoroughly examined and strengthened through the implementation of more effective control tools, as well as a clear description, definition, and allocation of tasks and responsibilities.

Second Phase.

The second phase in the development of an Organizational and Management Model (MOG) is closely linked to the preliminary phase and constitutes the proper risk assessment process.

Firstly, it focuses on an in-depth analysis of the company's mission and the activities required to achieve the organization's strategic objectives. Within this context, a systematic mapping of business

processes is carried out, aimed at constructing a clear and structured representation of operational dynamics.

A central element of this phase is the recognition that business activities are not limited to isolated operations but rather form a complex system of interdependent processes. For this reason, it is essential to break down each activity into its fundamental components to accurately identify the specific risks associated with the possible commission of predicate offenses.

Moreover, the analysis must take into account the distinction between activities directly related to the company's purpose—namely, its core activities—and support activities, which are also relevant for the overall assessment.

In the case study under examination, the core activities include the purchase, collection, treatment, and sale of metal waste and end-of-waste materials. Alongside these, support activities are identified, such as human resources management, accounting operations, personal data protection, and the procurement of ancillary goods and services.

This analysis constitutes an essential step in defining an efficient Organizational and Management Model (MOG), as it requires a detailed understanding of the specific characteristics of the sector. Such understanding is essential for identifying the specific risks associated with the commission of predicate offenses, as well as the potential operational criticalities that may arise.

The process is structured in multiple phases. It begins with a detailed analysis of the company's activities and business processes, followed by the identification of relevant offenses and the specific ways in which such offenses could be committed.

Following this analysis, a risk assessment is carried out to evaluate the concrete risks of committing predicate offenses that have emerged in the specific context. This evaluation allows for the identification of any existing procedures that may already be in place to eliminate or mitigate such risks. If these procedures are found to be lacking, inadequate, or in need of updating, new measures, protocols, and operational procedures are introduced to effectively manage the identified risks.

These new provisions must be subject to constant monitoring and periodic reassessment, particularly when significant changes occur in the operational or regulatory context. This approach ensures a dynamic and adaptive process capable of keeping the Organizational and Management Model (MOG) aligned with the specific context and the objectives of risk prevention.

Having defined the starting point, the analysis can now move to the second phase of the implementation of the Organizational and Management Model (MOG) within the case study.

Concerning its mission, the company under examination engages in the following activities:

- Trading, collection, brokering, and transportation—also on behalf of third parties—of ferrous and non-ferrous scrap, as well as metal products in general;
- Trading, collection, brokering, and transportation—also on behalf of third parties—of non-hazardous municipal and special waste produced by third parties;
- Temporary storage of ferrous and non-ferrous materials, as well as other metal products intended for recovery.

It should be noted that, at the time of the initial introduction of the MOG, the company operated under a simplified Environmental Management Authorization. Subsequently, it obtained a standard Environmental Management Authorization[515].

In addition, the text of the MOG also specifies a range of additional activities that the company may or could carry out.

Specifically, the corporate purpose also provides that the company may engage in construction and real estate activities in the broadest possible forms, namely the construction, demolition, reconstruction, maintenance, repair, renovation, restoration, and conservative rehabilitation of buildings in general, both on its behalf and on behalf of third parties. It may also engage in the purchase, sale, exchange, and management of real estate for its account, including leasing and renting—also for terms exceeding nine years—either as a whole or in parts, of residential, industrial, and commercial buildings, as well as urban and rural properties and land, including land that can be used for development purposes. About this corporate purpose, the company may carry out any type of operation, both in Italy and abroad, of a commercial, industrial, financial, and credit nature, whether related to movable or immovable property, rental, or mortgage activities and may undertake, without any restriction, whatever is necessary or useful to achieve the corporate purpose.

For the sole instrumental purpose of achieving its corporate purpose, the company may operate either directly or by acquiring stakes, in any form, in other businesses, enterprises, and companies engaged in commercial or industrial activities similar to its own, provided that such participation is not predominant and is solely for stable investment and not for resale.

At present, the company does not hold any participations and carries out its business activities directly.

[515] For further analysis of the regulation on Environmental Management Authorization, see Chapter 2, pp. 52–73.

Finally, for the sole purpose of achieving its corporate purpose, the company may acquire and use patents and inventions, licenses, and similar rights, as well as carry out all industrial and financial transactions related to its corporate purpose. It may also provide guarantees, sureties, and any other form of security, including on behalf of third parties.

At present, aside from the aforementioned authorizations, the company does not own or use patents, inventions, or licenses, nor has it provided guarantees, sureties, or other forms of real security.

Having outlined the company's mission, the phase of identifying the corporate areas/activities within which the predicate offenses under Legislative Decree No. 231/2001 may be committed was carried out through a process of risk assessment and risk management.

This process is composed of a series of successive steps:

- Identification of the company's areas/activities;
- Assessment of the risks of committing each of the predicate offenses concerning the different areas/activities identified above;
- Mapping of areas/activities exposed to a significant risk of offense (also referred to as "sensitive" areas);
- Analysis of possible methods of offense commission and identification of existing Protocols (measures/procedures);
- Evaluation of the level of exposure to offense-related risk, taking into account existing Protocols, classified as "Present/Absent" and, in the latter case, the risk is further graded as "High/Medium/Low";
- Identification of additional Protocols in the event of a "Not Acceptable" risk.

In light of this procedure, the definition of an "acceptable risk" has been clarified. Specifically, it has been noted that, from a purely economic perspective, a risk is considered acceptable when the costs of additional controls exceed the value of the resource to be protected. However, this approach is inconsistent with the framework established by Legislative Decree No. 231/2001, in which economic logic cannot serve as the primary or exclusive reference parameter.

In this regard, the Confindustria Guidelines specify that, for intentional offenses, the conceptual threshold of acceptability, to exclude liability under Legislative Decree No. 231/2001, is represented by a prevention system that cannot be circumvented except through fraudulent conduct.

For negligent offenses, on the other hand, the threshold is defined by a prevention system that, through its proper application, ensures full compliance with regulatory obligations. Within this framework, the collective entity cannot be held liable if the negligent offense was committed through

conduct that violated the MOG, despite the proper fulfillment of the oversight obligations imposed on the Supervisory Body (*OdV – Organismo di Vigilanza*) under Legislative Decree No. 231/2001.

This approach was also adopted in the development of the MOG under examination.

The risk assessment and management process enabled the identification of a series of sensitive activities, meaning operational contexts characterized by a significant risk of committing one of the predicate offenses envisaged by Legislative Decree No. 231/2001.

By way of example, and to promote the applicability of the work carried out to similar contexts, the identified sensitive activities are presented below. It should be emphasized once again, however, that the implementation and application of Legislative Decree No. 231/2001 require a specific and context-based analysis for each company. This approach ensures that the adopted model is fully tailor-made and responsive to the unique characteristics of the specific case.

The identified sensitive activities are as follows: requests for authorizations, concessions, licenses, and certifications; requests for and use of grants, subsidies, loans, or other similar disbursements from the State, other public bodies, or the European Union; purchase of goods and services/assignment of work contracts; core purchases and sales; assignment of collaboration/consultancy positions; personnel recruitment; sponsorships for public or private entities; gifts to public officials/public service officers or to the persons referred to in Article 2635 of the Italian Civil Code; donations and acts of liberality; disposal of fixed assets; management of judicial disputes; management of incoming and outgoing cash flows and accounting obligations; management of tax obligations; corporate communications; management of relations with shareholders (as well as with statutory auditors and independent auditors, if appointed); compliance with health and safety at work obligations; and compliance with waste management obligations.

For each sensitive area, the potential predicate offenses that may be applicable have been identified.

By way of example, concerning the area under analysis, for the sensitive activity related to core purchases and sales (waste and end-of-waste materials), the following offenses have been hypothesized: criminal organization (art. 416 c.p.), mafia-type criminal organization, including foreign organizations (art. 416-bis c.p.), also of a transnational nature (arts. 416 and 416-bis c.p. about art. 3 of Law No. 146/2006), receiving stolen goods (art. 648 c.p.), money laundering (art. 648-bis c.p.), use of money, goods, or utilities of illicit origin (art. 648-ter c.p.), self-laundering (art. 648-ter.1 c.p.), fraudulent declaration through the use of invoices or other documents for non-existent

transactions (art. 2, paras. 1 and 2-bis of Legislative Decree No. 74/2000), and issuance of invoices for non-existent transactions (art. 8, paras. 1 and 2-bis of Legislative Decree No. 74/2000).

About the sensitive area of waste management compliance, the following offenses have been hypothesized: negligent crimes against the environment (art. 452-quinquies c.p.), organized activities for the illegal trafficking of waste (art. 452-quaterdecies c.p. and aggravating circumstance under art. 452-octies, para. 1 c.p.), illegal waste trafficking (art. 259, para. 1, of Legislative Decree No. 152/2006), discharge of industrial wastewater (art. 137 of Legislative Decree No. 152/2006), unauthorized waste management activities, waste management in violation of authorizations, or the mixing of waste (art. 256 of Legislative Decree No. 152/2006), violation of obligations related to communication, the keeping of mandatory records, and waste identification forms (art. 258 of Legislative Decree No. 152/2006), and use of false certifications (art. 260-bis, paras. 6 and 8, of Legislative Decree No. 152/2006).

At the end of the risk assessment and management process across the various areas and activities, whenever a risk level was classified as High, Medium, or Low, specific protocols were implemented to mitigate or eliminate the identified risk.

The procedures introduced are based on four fundamental general principles: the separation of tasks and functions, the objectification of decision-making processes, the traceability of operations, and the traceability of control activities.

It is important to emphasize once again that the procedures introduced do not constitute a legal obligation but represent voluntary measures adopted to ensure compliance with regulations within the company's operations. Although the apical figures responsible for their adoption and approval coincide with those responsible for their implementation, these procedures play a fundamental role in any potential judicial evaluation of the Model's adequacy. Furthermore, they clearly express the company's commitment to strengthening its compliance and promoting an operational framework based on respect for legality.

It has been established that the assessment of risk exposure must be periodically updated, particularly when specific circumstances arise that may impact the risk profile. These circumstances include:

- The introduction of new predicate offenses or legislative amendments affecting the predicate offenses already provided for by the Decree;
- The introduction of new regulations of specific relevance to the Model or significant judicial rulings;

- The introduction of new processes or activities within the company's organizational structure;
- Significant organizational changes relevant to this Model;
- The occurrence of serious violations of the Model or the initiation of criminal proceedings concerning predicate offenses or any other offenses affecting the Model;
- On an annual basis, as a general rule, or at the initiative of the Supervisory Body (*OdV – Organismo di Vigilanza).*

If such circumstances arise and areas or activities with significant exposures not previously mapped, or mapped differently, are identified, it will be necessary to reinitiate the process of analyzing and assessing the residual risk.

Before proceeding with the ongoing analysis, it is essential to highlight a crucial aspect. In the process of developing control protocols, it is fundamental to ensure that the number and content of controls are proportionate to the actual feasibility of their implementation within the company's operational context. An excessive number of controls and procedures would be counterproductive, as they would be difficult to apply in practice, thereby increasing the risk of generating a phenomenon known as cosmetic compliance. In such a case, the model would be deemed inadequate: while it might appear adequate in theory, it would prove ineffective in practice due to its inapplicability.

The real challenge, therefore, lies in achieving a balance between the effectiveness of the controls and their operational sustainability.

The discussion outlined above will be further explored in the following paragraph to concretely examine the procedures adopted to reduce or eliminate risk in the sensitive areas relevant to this research. Based on the case study under analysis, the goal is to highlight certain best practices and provide useful, applicable recommendations for companies operating in similar contexts.

Third Phase.

Continuing the analysis of the process for adopting the Model, the third phase concerns the design and implementation of supervisory tools aimed at ensuring compliance with and the proper application of the Model itself. In fact, the framework established by Legislative Decree No. 231/2001, together with its judicial interpretation, requires that, for a Model to be considered adequate, it is essential to establish effective mechanisms to monitor its operation and ensure its observance.

In this context, the Supervisory Body (*OdV – Organismo di Vigilanza*) plays a central role, along with the system of information flows established in its favor. As provided for by Legislative Decree No. 231/2001, the OdV is responsible for monitoring the functioning and actual compliance with the

Code of Ethics, the Model, and the operational procedures, as well as ensuring their continuous updating[516].

The Supervisory Body (OdV) was appointed by the company's administrative body and meets the fundamental requirements of autonomy, independence, professionalism, and continuity of action, which are essential elements for the effectiveness of the control system and the credibility of the Model.

Specifically, compliance with and respect for these fundamental principles have been ensured in the following ways. The autonomy and independence of the Supervisory Body (OdV) are guaranteed by placing it at the highest hierarchical position within the organization, with a duty to report directly to the administrative body, the company's highest operational authority. Moreover, it is established that the OdV may not be assigned operational tasks to prevent its involvement in decision-making processes and their implementation, thereby preserving its objectivity in judgment and the proper performance of its functions.

The professionalism of the Supervisory Body (OdV) is ensured by the requirement that its members possess the technical and professional expertise appropriate for the functions and duties assigned to them.

With regard to continuity of action, the OdV is tasked with constantly monitoring the adequacy and effective application of the Model. It is vested with the investigative powers necessary to carry out its functions.

Finally, to ensure compliance with all the required criteria, the OdV is supported in its activities by representatives from the various operational areas and corporate consultants, each within their specific area of expertise. Moreover, the OdV is entitled to engage external professionals, using the financial resources made available through the budget approved by the independent sole administrator (*A.U. – Amministratore Unico*) upon the OdV's proposal.

Concerning the composition of the Supervisory Body (OdV), it should be noted that, in light of the Confindustria Guidelines, the company under analysis qualifies as a small enterprise, given the essential nature of its hierarchical and functional structure. According to Article 6, paragraph 4, of Legislative Decree No. 231/2001, this condition would have allowed the supervisory and updating duties of the Model to be directly entrusted to the independent sole administrator (*A.U.* –

[516] For further analysis, see the previous chapter, pp. 195–202.

Amministratore Unico). However, in this specific case, it was deemed that this solution would not adequately ensure the autonomy and independence required for the role.

Consequently, it was decided to establish a single-member body specifically appointed to serve as the OdV. The selected professional possesses specific and proven legal expertise, with particular reference to criminal law, as well as extensive knowledge of corporate organization, risk management and assessment, and audit and accounting management. This figure is external to the company, holds a two-year renewable mandate, and operates with full independence in carrying out the supervisory functions.

It has also been established that certain individuals cannot be appointed as members of the Supervisory Body (OdV), and, if appointed, they will automatically be removed from office. These individuals include those who:

- Maintain significant business relationships with the company, as well as with its administrators;
- Are part of the family unit of the company's administrators, where "family unit" is understood to include the spouse or civil union partner who is not legally separated, or the cohabiting partner, as well as relatives and in-laws up to the fourth degree;
- Have been convicted, even with a non-final judgment, or have been subject to a sentence of application of the penalty upon request of the parties (art. 444 of the Italian Code of Criminal Procedure), or are under investigation or charged with offenses covered by Legislative Decree No. 231/2001.

The Supervisory Body (OdV) is assigned the following specific duties:

- Monitor the effectiveness of the Model, which consists of ensuring consistency between the provisions of the Model and the actual conduct adopted by its Recipients;
- Verify the adequacy of the Model, meaning its actual capacity to prevent the commission of the offenses provided for by the Decree and, more generally, to prevent prohibited conduct even if it does not constitute a criminal offense;
- Ensure the maintenance over time of the Model's solidity and functionality;
- Oversee the updating of the Model by formulating proposals for its adjustment and verifying its implementation and adequacy.

To enable the Supervisory Body (OdV) to carry out these tasks, it is provided that:

- It may conduct, including on a surprise basis, all checks and inspections deemed necessary for the proper performance of its duties;

- It may freely access all company documents and facilities, without any prior consent or authorization, to obtain any information, data, or document deemed necessary;
- It may, where necessary, arrange for the hearing of personnel who may provide relevant information or insights regarding the company's operations or any dysfunctions or violations of the Model;
- It may rely on the support of all company personnel and corporate consultants, as well as additional external consultants directly engaged for this purpose, in compliance with company procedures, using the budget approved by the independent sole administrator (*A.U. – Amministratore Unico*) at the OdV's request;
- It is required to issue a reasoned opinion on proposed disciplinary measures following violations of the Code of Ethics, the Model, and the related operational procedures;
- It must inform the administrative body of the necessary assessments, if, during its verification activities or as a result of a report, it detects conduct that does not comply with the Code of Ethics, the Model, or the related operational procedures.

A crucial aspect for ensuring the effectiveness of the Model's supervisory system is the management of information flows. In this context, the Supervisory Body (OdV) is tasked with reporting activities and maintaining relationships with the Independent Auditor (*revisore*) and other internal control bodies.

Accordingly, it is established that the OdV reports as follows:

- Directly to the independent sole administrator (*A.U. – Amministratore Unico*), in the event of serious violations identified during supervisory activities or following reports received, where urgent intervention is required;
- To the independent sole administrator (*A.U. – Amministratore Unico*) and the court-appointed administrator, on an annual basis, through the preparation of a specific report.

About the information flows directed to the Supervisory Body (OdV), it is established that the following must be communicated to it in all cases:

- Measures and/or information from judicial police bodies or any other authority, indicating the conduct of investigative activities or the existence of criminal proceedings that could result in liability for the company under Legislative Decree No. 231/2001;
- Notifications regarding inspections carried out by supervisory bodies (such as the *Guardia di Finanza*, Local Health Authority (*ASL – Azienda Sanitaria Locale*), etc.);
- The initiation of disciplinary proceedings for acts, events, or omissions related to violations of the Code of Ethics, the Model, and the related operational procedures;

- Data, documents, and information requested by the OdV on a case-by-case basis.

The Supervisory Body (OdV) is also tasked with progressively identifying the information necessary to fulfill its supervisory function, as well as defining the related timeframes.

Of particular importance is the adaptation of the Model to the whistleblowing framework, which has already been analyzed previously, to facilitate the reporting of any unlawful conduct while ensuring the confidentiality of whistleblowers. To achieve this objective, specific internal reporting channels have been established and activated, allowing reports to be submitted through the following methods:

- In written form, via registered mail with acknowledgment of receipt, addressed to the single-member component of the OdV at the company's headquarters. The report must be enclosed in a sealed envelope marked with the phrase "personal and confidential–whistleblowing report" on the outside. Inside this envelope, two separate envelopes must be included: one containing the report and its attachments, and the other containing the whistleblower's identifying information along with a copy of a valid identification document.
- In oral form, either by telephone contact with the single-member component of the OdV or through a direct meeting with the same. The meeting will be scheduled in a confidential location within a reasonable period, and in any case, no later than fifteen days from the receipt of the request, which must be sent via a dedicated email address.

An additional crucial element in the third phase of the Model's implementation is the establishment of a disciplinary system aimed at ensuring compliance with the provisions outlined in the compliance system. The importance of this system is expressly enshrined in Articles 6 and 7 of Legislative Decree No. 231/2001, which require its introduction as an essential prerequisite for the Model to be considered adequate and effective.

To this end, the company under analysis has adopted a system of measures aimed at sanctioning, as disciplinary offenses, violations of the principles, rules, and provisions set out in the Code of Ethics, the Model, and the related operational procedures. These measures apply to various subjects, including the administrative body, employees, independent auditors, the Supervisory Body (OdV), statutory auditors, and other control bodies, where applicable, as well as holders of specific appointments, consultants, suppliers, clients, and, more generally, all third parties with whom the company maintains contractual relationships.

About the disciplinary sanctions applicable to employees, it is established, following the Confindustria Guidelines, that the initiation of disciplinary proceedings and the imposition of the

related sanctions are independent of the possible initiation and/or outcome of criminal proceedings concerning conduct relevant to the Disciplinary System.

Consequently, the disciplinary sanctions applicable to employees will be those provided for by the National Collective Bargaining Agreement (*CCNL – Contratto Collettivo Nazionale di Lavoro*) for employees of companies in the commerce, distribution, and services sectors dated 30 July 2019, in compliance with the provisions of Article 7 of Law No. 300 of 30 May 1970 (Workers' Statute), as well as any other applicable special regulations.

The type and extent of the sanction are determined based on criteria of graduality and proportionality concerning the established violation, taking into account the following circumstances:

- The intentionality of the action/omission or the degree of negligence, imprudence, or lack of expertise;
- The overall behavior of the person responsible for the violation, with particular regard to the existence or absence of prior disciplinary records, within the limits permitted;
- The functional position and duties of the person responsible for the violation;
- Other specific circumstances associated with the violation.

Violations have been classified in order of increasing severity, in compliance with the principles of legality and proportionality, according to the following structure:

1. Failure to comply with the Code of Ethics, the Model, and the related operational procedures, unless one of the conditions outlined in points 2, 3, and 4 below occurs;

2. Failure to comply with the Code of Ethics, the Model, and the related operational procedures in the performance of "sensitive" activities or activities in any way connected to areas at risk of offense, unless one of the conditions outlined in points 3 and 4 below occurs; and violation of confidentiality protection measures for whistleblowers;

3. Failure to comply with the Code of Ethics, the Model, and the related operational procedures through conduct suitable to constitute the methods of commission (objective element) of one of the offenses provided for by Legislative Decree No. 231/2001 or to give the appearance of such conduct, unless the condition outlined in point 4 below occurs; and the submission of a report that proves to be unfounded, with gross negligence;

4. Failure to comply with the Code of Ethics, the Model, and the related operational procedures, when it involves conduct aimed at committing one of the offenses provided for by the Decree; the submission of a report that proves to be unfounded, with intent (*dolo*); and the adoption of retaliatory, discriminatory, or penalizing measures against the whistleblower as a result of the report made.

The ascertainment of violations, the initiation of disciplinary proceedings, and the imposition of sanctions fall under the competence of the administrative body. Moreover, the aforementioned provisions are displayed at the company's headquarters in an easily accessible location, in order to ensure their full accessibility and awareness for all employees.

Specific provisions regulate the sanctions applicable to the independent sole administrator (*A.U. – Amministratore Unico*), statutory auditors, where appointed, and independent auditors. If these apical figures violate the Code of Ethics, the Model, or the related operational procedures, the Supervisory Body (OdV) is required to report the violation and provide an opinion on the seriousness of the infraction as follows:

- To the independent sole administrator (A.U.), who will inform the custodian of the seized shares, in the event of a violation committed by statutory auditors, where appointed, or external auditors;
- Directly to the custodian of the seized shares, in the event of a violation committed by the independent sole administrator (A.U.).

If such violations are ascertained, the custodian of the seized shares will adopt the measures deemed most appropriate concerning the seriousness of the infractions identified. For the most serious violations, these may be considered just cause for the removal of the independent sole administrator (A.U.), statutory auditors, or external auditors. The ascertained commission of one of the predicate offenses is always regarded as a serious violation.

This section of the Model highlights the specificity of the corporate context, which is currently subject to the seizure measure. Consequently, this aspect will necessarily require reassessment if the precautionary measure is revoked, as previously anticipated.

The disciplinary system also considers the conduct of the Supervisory Body (OdV). In particular, if the OdV fails to fulfill the duties established by the Model, the independent sole administrator (A.U.) may, depending on the severity of the non-fulfillment, adopt the following measures:

- A formal warning to ensure prompt compliance;
- Revocation of the mandate for just cause, if the seriousness of the non-fulfillment justifies such a measure.

Finally, sanctions are also provided for consultants, suppliers, clients, and other third parties. To validly enter into contracts with the company, these parties must formally commit to complying with the Code of Ethics, the Model, and the related operational procedures. As a result, contracts with external parties must include a specific clause establishing this obligation, and any violation thereof

is classified as a serious breach, which may result in the termination of the contract, without prejudice to the company's right to claim compensation for damages incurred.

Fourth Phase.

The fourth and final phase of the implementation of an Organizational and Management Model (MOG) focuses on its drafting, dissemination, and staff training. This concluding phase plays a crucial role in ensuring the effective implementation and application of the Model in the operational context.

About the drafting and structuring of the Model, it has been carried out in compliance with the provisions of Articles 6 and 7 of Legislative Decree No. 231/2001 and following the guidelines provided by the Confindustria.

The document is divided into a general part, special parts, and two annexes, as follows:

- Annex 1: "Predicate Offenses under Legislative Decree 231 – Risk Exposure Assessment and Mapping of Areas/Activities with Significant Exposure";
- Annex 2: "Code of Ethics".

The general part is structured as follows:

- It outlines the regulatory framework of reference;
- It describes the purpose, scope of application, and recipients of the Model;
- It describes the company's mission, governance, and organizational structure;
- It illustrates the content and structure of the Model, the criteria and methods used for the assessment and management of predicate offense risk, and for ensuring its continuous updating, as well as the control system adopted to reduce the identified risks to an acceptable level;
- It establishes and regulates the operation of the Supervisory Body (OdV), specifying its requirements, composition, term of office, causes of ineligibility and disqualification, functions and powers, reporting obligations, as well as its relationships with the external auditor (*revisore*) and other internal control bodies, the information flows, and the procedures for handling reports (whistleblowing);
- It governs training and information activities aimed at promoting knowledge of and compliance with the Model by all recipients;
- It establishes and defines the disciplinary system aimed at preventing and sanctioning non-compliance with the Model.

Therefore, it incorporates the content developed during the three previous phases.

Concerning the special parts, these are structured in correspondence with the categories of predicate offenses that, following the risk exposure assessment and the mapping of relevant areas and activities, were deemed potentially applicable within the company's operations.

Specifically, these categories are divided into seven groups: offenses against the public administration, crimes related to organized crime, corporate crimes, negligent homicide, and serious or very serious negligent bodily harm committed in violation of workplace health and safety regulations, receiving stolen goods, money laundering, and the use of money, assets, or other benefits of illicit origin, as well as self-laundering, environmental crimes, and tax offenses.

Each of these special parts contains:

- Brief explanatory notes on the specific predicate offenses deemed potentially committed (also for training and informational purposes);
- The areas/activities potentially at risk;
- The subjects potentially involved and the possible methods of commission;
- The adopted Protocols, the Residual Risk, and the corrective measures;
- The information flows directed to the Supervisory Body (OdV).

The following is Annex 1, which:

- Describes the results of the assessment of the level of exposure to predicate offense risk for the various company areas/activities concerning all predicate offenses. The assessment is expressed in terms of Present/Absent and, where Present, in terms of "Acceptable/Not Acceptable", with further classification of the risk level, in the latter case, as "High/Medium/Low";
- Identifies the areas/activities with significant exposure.

Finally, the Code of Ethics represents the company's fundamental document and serves as the primary protocol to which all Recipients must adhere. Specifically, it:

- Sets out the principles and values that guide the company's operations;
- Defines the rules of conduct through which these principles and values are concretely implemented.

It can be stated that the Code of Ethics represents one of the most significant components of the Model governed by Legislative Decree No. 231/2001, as it defines the system of fundamental values that serve as the ethical and behavioral framework for all individuals involved in the company's activities. This document goes beyond providing general guidelines; it serves as the foundation for building an organizational culture oriented towards legality, transparency, and social responsibility. Through the sharing, formalization, and concrete implementation of the principles established in the

Code of Ethics, the company has the opportunity to redefine its mission, moving beyond a purely profit-oriented vision. This shift creates space for the pursuit of other fundamental objectives, such as environmental sustainability, worker well-being, the protection of local communities, and respect for human rights.

From this perspective, the Code of Ethics becomes not only a compliance tool but also a vehicle for cultural change, capable of promoting a fairer and responsible business model.

In the drafting of the Organizational and Management Model (MOG), a fundamental consideration emerges that may serve as a valuable suggestion for legal entities seeking to comply with Legislative Decree No. 231/2001. It is essential to recognize that the Model is intended for a heterogeneous audience, which requires a careful balance between diverse communication needs.

On one hand, the normative and legal section of the Model, particularly the general section, must be written in a way that is comprehensible to a judge, who may be called upon to assess its adequacy in terms of preventing the commission of predicate offenses. This part, therefore, requires the use of precise and rigorous legal-technical language.

On the other hand, the special parts and the sections containing operational provisions intended for employees must be written in an accessible and clear manner for them. This is particularly important given that, in the tertiary sector, employees may come from diverse cultural and regulatory backgrounds and may have educational levels that are not comparable to those of experts in regulatory and compliance matters. While they may be highly skilled in the practical execution of their tasks, they could face difficulties in understanding rules and protocols if these are not expressed in an appropriate and comprehensible language.

Consequently, in drafting the sections of the Model intended for employees, it is essential to use simple and understandable language, tailored to the skills and needs of the operational staff. Only through the effective communication of normative and operational content can the effective implementation of the Model and compliance with its provisions by all Recipients be ensured.

The same objectives are pursued through dissemination and training activities, which are considered fundamental steps for the effective implementation of the Model. Specifically, dissemination is ensured by promoting knowledge, both within and outside the company, of the provisions of Legislative Decree No. 231/2001, the obligations deriving from it, as well as the principles and rules contained in the Code of Ethics, the Model, and the related operational provisions.

Concerning employee training, it is managed by the administrative body in close coordination with the Supervisory Body (OdV). Specifically, training and informational activities are planned and carried out:

- Upon the adoption and updating of the Code of Ethics, the Model, and the related operational provisions;
- Periodically and on an ongoing basis;
- Upon the commencement of employment or at the start of an employment relationship;
- When there are changes in roles or functions;
- In the event of regulatory changes or modifications to the internal organization;
- In the event of significant violations of the Code of Ethics, the Model, or the related operational provisions.

Furthermore, after the adoption of the Code of Ethics and the Model, as well as in the event of any updates, the independent sole administrator (A.U.) ensures the distribution of a copy to all employees and displays a version in a company location that is easily accessible. The periodic training activity, on the other hand, is organized through dedicated courses, which are also delivered via videoconferencing.

Finally, the information activity is also directed at external parties to the company. Specifically, the company, in collaboration with the Supervisory Body (OdV), is committed to promoting awareness of the Code of Ethics and the Model adopted, as well as the specific operational procedures of interest, among all third parties with whom it has relationships, such as control bodies, holders of specific assignments, consultants, suppliers, clients, and other relevant stakeholders.

This paragraph concludes by providing a schematic overview of the analyzed procedure, outlining its key steps, associated recommendations, and the measures to be implemented.

1) Analysis of Corporate Governance and Organizational Structure

Objective:

- Examine the division and allocation of powers within the company.

Recommendation:

- Avoid situations where a single individual can independently manage an entire process without oversight.

Measures to Implement:

- Appoint supervisory bodies, even if not legally required.
- Differentiate operational areas within the company, designate a manager for each area, and describe all responsibilities assigned to them.

2) Risk Assessment

Objective:

- Identify risks associated with the commission of predicate offenses and implement procedures to mitigate or eliminate these risks.

Recommendations:

- Conduct a detailed analysis of the company's mission, activities, and procedures.
- Differentiate core business activities from support activities.
- Break down each activity into its constituent actions and processes.
- Engage consultants and professionals, including external experts, with specialized knowledge of applicable regulations and the technical-operational characteristics of the sector.
- Introduce proportional controls, in both number and scope, to the practical feasibility of implementation within the corporate context.
- Align the introduced procedures with principles of task and function separation, objectivity in decision-making processes, traceability of operations, and traceability of control activities.
- Periodically update the procedures.

Process:

- Assess the risk of each predicate offense being committed in relation to different areas/activities.
- Map areas/activities exposed to significant offense-related risks.

- Analyze potential methods of commission and identify existing protocols (measures/procedures).
- Evaluate the level of exposure to offense-related risks, considering existing protocols, in terms of "Present/Absent". Where present, assess whether the risk is "Acceptable/Unacceptable", and for the latter, classify the risk level as "High/Medium/Low".
- Identify additional protocols in cases where the risk is deemed "Unacceptable".

Measures to Implement:

- Protocols for risk mitigation or elimination, tailored to the case's specific circumstances.

3) Ensuring Compliance and Implementation of the Model

Objective:

- Implement monitoring tools to ensure compliance with and proper application of the Model, including a Supervisory Body (Organismo di Vigilanza, OdV) and a disciplinary system.

Recommendations:

- Assign the responsibilities of monitoring and updating the Model to an individual or entity other than the sole administrator, even if legally permitted.
- Ensure that the members of the OdV meet fundamental requirements of autonomy, independence, professionalism, continuity of action, and integrity.
- Establish cases of incompatibility or removal of OdV members in the event of a conflict of interest.
- Clearly define the duties of the OdV.
- Ensure that the content of the disciplinary system is accessible to all intended recipients.

Measures to Implement:

- Establish the OdV in a single-member or collegial form.
- Develop an adequate, clear, and transparent system of information flows between the OdV and corporate entities.
- Introduce a confidential communication channel (whistleblowing).
- Design a dissuasive and punitive disciplinary system, differentiated according to the category of recipients.
- Introduce disciplinary sanctions applicable to third parties entering into contracts with the company.

4) Drafting, Dissemination, and Communication

Objective:

- Ensure the effective implementation and application of the Model within the operational context.

Recommendations:

- Carefully balance communication strategies based on the varying needs of the Model's stakeholders.
- Extend dissemination and training activities to include external parties interacting with the company.

Measures to Implement:

- Draft the Model in a clear and comprehensive manner, with the assistance of a legal expert and in alignment with recognized and accredited Guidelines.
- Distribute a copy of the Model and its annexes to all employees and make a version available in an easily accessible location within the company.
- Plan and deliver periodic training courses, including remote sessions.

5.4. Best Practices and Protocols to Prevent Environmental Crimes

In the previous paragraph, the procedure for adopting the Organizational and Management Model (MOG) implemented by the company under study was analyzed. As mentioned, the methodologies for the implementation of MOGs have been consolidated over time through the development of authoritative guidelines; in this specific case, the company referred to those issued by Confindustria. However, in addition, the analysis identified and highlighted certain particularly interesting aspects in the practical application of the procedure, which may provide useful insights for other small and medium-sized enterprises facing similar contexts.

At this point, it is appropriate to focus on the protocols introduced during the second phase of the Model's implementation, which represent the core of the framework established by Legislative Decree No. 231/2001, as they are aimed at preventing or mitigating the risk of committing predicate offenses. As previously illustrated, through a systematic process of risk assessment and management, the company's areas and activities characterized by significant exposure to relevant crime risks (the so-called "sensitive areas") were identified and mapped. In the presence of unacceptable risks, these were classified as high, medium, or low. Consequently, existing corporate procedures were subjected to an in-depth review and, where found to be insufficient or absent, they were either adjusted or introduced anew.

It is particularly relevant to focus on this phase, as it concretely addresses the definition of the measures necessary to ensure that the company's operations comply with the regulatory framework while also respecting fundamental principles and interests that may go beyond the strictly entrepreneurial sphere.

In conducting this analysis, it should be noted that, while authoritative guidance is available regarding the methodology for introducing the Model — offering valuable support to economic operators — the practical application still requires tailored decisions based on the specific case (for instance, the selection of oversight bodies or the composition of the Supervisory Body). Conversely, the introduction of protocols and the definition of their content are strictly linked to the specific context under analysis.

Therefore, this phase of the procedure is the one that, more than any other, requires a specific and customized approach, in line with the so-called tailor-made Model principle. This need emerges from the analysis outlined so far: the risk of committing offenses inevitably depends on the company's organizational structure, the economic and production sector, the nature of the activities carried out, how they are performed, as well as other related factors. Consequently, the measures aimed at mitigating or eliminating such risks must necessarily be tailored to the specific needs of the corporate context. Precisely because of this necessity, case law has established the principle that 231 models must be custom-designed for the specific case to be deemed adequate and effective.

However, while the difficulty of adopting standardizations in this area is understandable and justifiable, it also poses significant challenges for economic operators. The adoption of suitable protocols, in the absence of legislative guidance, requires in-depth knowledge of both sector-specific regulations and the related technical-operational aspects. This often necessitates the involvement of external consultants, leading to additional costs. Moreover, the introduction of procedures entails not only financial burdens but also operational complexities.

These factors, while not exempting companies that intend to comply with the framework established by Legislative Decree No. 231/2001, risk discouraging many small and medium-sized enterprises from pursuing this path.

In light of these considerations, the objective of this research is to identify and highlight, through the experience of a company that has chosen to implement its corporate compliance, best practices that can be applied in similar contexts. It is clear that, given the need to tailor such procedures to specific cases, the suggestions developed will be particularly useful for companies operating in the same market sector, especially those involved in the purchase, collection, treatment, and sale of waste

and End-of-Waste materials. Specific attention is given to metallic materials, which have distinctive characteristics and require a dedicated approach.

In outlining this part of the research, not all categories of predicate offenses that, following the risk assessment, were deemed abstractly feasible in the course of business activities will be taken into consideration. Instead, the focus will be exclusively on environmental crimes (art. 25-undecies of Legislative Decree No. 231/2001). This choice is motivated by the fact that the field of environmental crime represents the core and primary driver of interest in this investigation. It is closely linked both to the procedural implications that have directly involved the company and to the need to conduct an in-depth analysis of the dynamics of crime prevention and management in a field that is as sensitive as it is strategic.

By proceeding systematically through the mapping of risk areas and the identification of sensitive processes, a series of potentially applicable hypotheses of environmental predicate offenses has emerged (already listed in the previous paragraph), as they are associated with specific business activities considered exposed to the risk of commission.

For each offense hypothesis, the structure of the special section dedicated to environmental crimes is organized as follows: a brief description and analysis of the offense; the identification of corporate areas potentially exposed to the risk; the identification of bodies, areas, and individuals who could be involved; the description of the possible modalities of commission; and, finally, the indication of the protocols adopted to prevent or mitigate such risks.

About this section of the Model, it is deemed appropriate to propose a suggestion aimed at enhancing its clarity and communicative effectiveness. The criminal offenses that protect the legal interest of the environment often criminalize the violation of provisions contained in administrative regulations, typically those outlined in Legislative Decree No. 152/2006 (Consolidated Environmental Act), which precisely regulate specific obligations and behaviors. To make the Model more comprehensible and accessible, particularly for employees who may not be familiar with regulatory technicalities, it may be beneficial to supplement the description of the offense with an explanatory clarification of the relevant administrative regulations.

For instance, in the case of the offense related to the violation of obligations concerning reporting obligations, record-keeping, and the use of mandatory forms, it would be useful to include a summary of the rules set out in the Consolidated Environmental Act. This summary could illustrate the obligations related to communication, record-keeping, and the use of forms. Furthermore, it would be advisable to clarify the underlying rationale of these obligations, explaining their practical importance and their role in environmental protection. This approach would highlight not only their

formal value but also their concrete utility. Such a strategy would not only improve recipients' understanding of the protocols but also promote greater commitment to compliance with the procedures, which would be perceived as sensible and functional tools rather than mere bureaucratic formalities.

Before presenting the protocols introduced, it is essential to draw attention to the inherent risks that these tools aim to mitigate, making them acceptable, or to eliminate. The relevant risks are closely linked to the company's core activities, namely the procurement, management, and sale of waste and materials classified as End-of-Waste. These activities form the basis for the potential conditions that could lead to the commission of the identified environmental predicate offenses. Understanding their nature is crucial to fully grasp the effectiveness and purpose of the protocols implemented.

Specifically, the main criticalities are concentrated in the procurement phase, which represents the moment of greatest exposure to the risk of committing offenses.

As highlighted at the beginning of the chapter, metallic materials are particularly attractive in the market, as they are valuable materials characterized by high demand and significant economic value. This appeal gives rise to numerous interests, including those of a criminal nature. It has been observed that metals are among the main types of waste traded on the so-called black market. This phenomenon can be traced back to the economic mechanism whereby, in the face of high demand, the race for procurement intensifies, fostering illegal practices aimed at maximizing profits from their sale.

Alongside the so-called "black" zone, marked by a clear intent to act illegally for profit, there exists a more widespread and insidious "gray" zone, which is far more difficult to identify and monitor.

This gray zone is made up of practices that, while not necessarily fraudulent or intentionally criminal, are nonetheless irregular concerning the applicable regulatory framework. By way of example, these practices may include the incorrect separation and classification of waste, the improper assignment of the EER code, the inadequate management of materials, or the practice of mixing materials with different codes. Such circumstances occur with some frequency, especially in small-scale economic contexts, where waste producers may face difficulties in correctly interpreting and applying highly technical and complex administrative regulations, leading to errors that are not necessarily intentional.

Although the general principle of Italian law establishes that ignorance of the law does not exempt one from liability, it is necessary to consider how the complexity and breadth of environmental

legislation may serve as a factor that increases the risk of violations. Anyone operating in this sector must be aware that such difficulties can act as a multiplier of risk exposure.

Other noteworthy irregular practices occur when unauthorized individuals, attracted by the opportunity to obtain metals, use suitable means of transport to offer private individuals a collection service for large-sized or significant quantities of metal objects. In this way, private individuals are relieved of the burden of properly managing the disposal of waste, often unaware of the regulatory implications or, in some cases, aware but still incentivized to accept the offer due to convenience or simplicity.

Although these practices may appear harmless, they constitute a violation of environmental regulations, contributing to the proliferation of untracked and potentially illegal management of metallic waste.

Having clarified these circumstances, it becomes evident that a company like the one under analysis, whose core activity consists of sourcing metallic waste and End-of-Waste materials to resell them to its buyers, particularly foundries, finds itself in a position of vulnerability. Indeed, this position is hampered by the need to operate within a context characterized by complex regulations and a market exposed to significant risks of irregular practices, both intentional and negligent, which can undermine corporate compliance and environmental protection.

In reporting this information, specific reference is made to the company's current condition, where the lawful conduct of business activities has been restored. That being said, even a fully compliant company faces challenges in sourcing metals, as there is a widespread circulation of materials that do not meet the requirements established by the regulatory framework.

A different scenario applies to companies that are formally legal but voluntarily choose to purchase materials of illicit or irregular origin for reasons of economic convenience. In such cases, the business strategy openly allows illegal practices in the conduct of corporate activities. This is presumed to have occurred in the case of the company under analysis before the issuance of the preventive seizure order. In fact, in the ongoing criminal proceedings, the alleged criminal practices involve sourcing materials from unqualified individuals — that is, persons lacking the necessary authorizations — who supplied materials without any control over their origin or type.

In any case, it follows that the main risk factor associated with the business activity in question relates to relationships with metal suppliers.

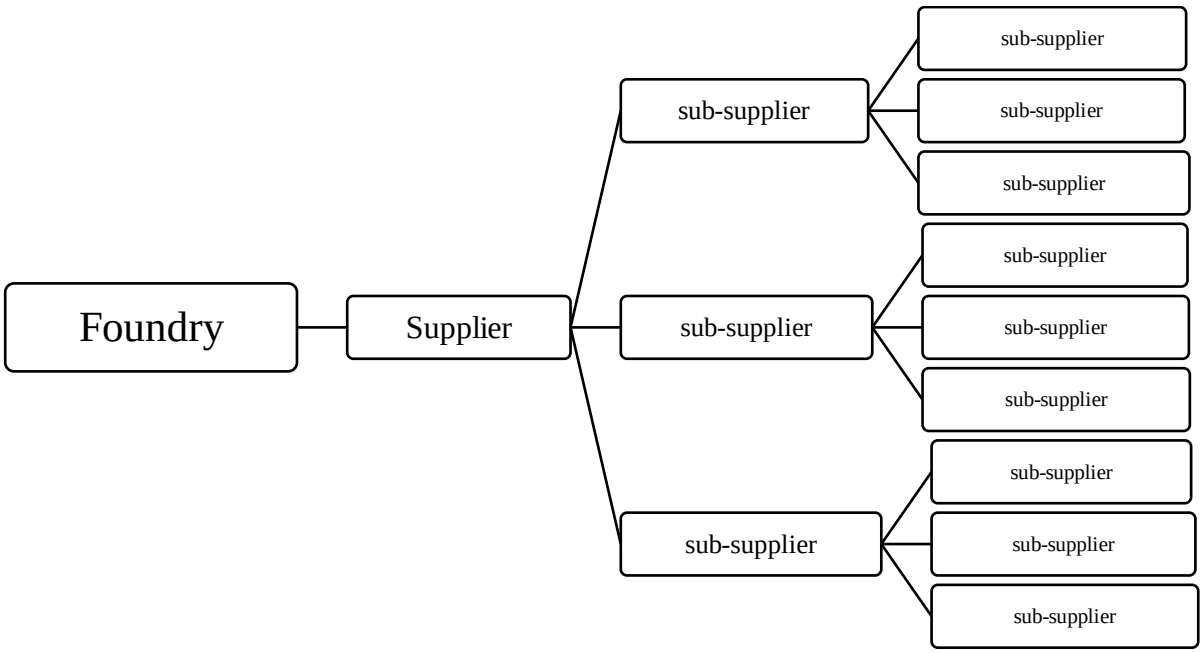
This difficulty in identifying and verifying suppliers is further exacerbated by the particularly complex and intricate structure of the metal supply chain, which is significantly longer than that of

other materials. This complexity is attributable to the high market appeal and economic value of metals, as well as the fact that their price is regulated by the London Metal Exchange. This dynamic results in a strong influence of market fluctuations, making timing a crucial factor. Consequently, certain economic operators may manage to source materials quickly and at favorable prices compared to others, thereby generating a new cycle of supply and demand. While this market fluidity represents an inherent feature of the sector, it also increases the challenges of traceability and regulatory compliance throughout the entire supply chain.

It is also essential to consider that the structure of the metal materials market is heavily influenced by end buyers, particularly foundries. These operators, due to their need for constant and large-scale supplies of material, tend to avoid contracting directly with an excessive number of suppliers. Instead, they select a limited number of key suppliers capable of ensuring continuity and reliability. These main suppliers are then responsible for managing relationships with additional sub-suppliers and coordinating procurement along the supply chain.

In the specific case under analysis, the company played the role of a stable key supplier for foundries prior to the initiation of the criminal proceedings, focusing primarily on the supply of aluminum.

To better understand the dynamic described, the following explanatory diagram is proposed:



In the outlined diagram, the company under analysis, as previously mentioned, served as the key supplier of aluminum for the foundry. For the sake of simplicity, the diagram illustrates a single main supplier, although in reality, there are multiple main suppliers, and the same applies to sub-suppliers.

This position establishes the company under analysis as the final recipient, determined by market dynamics, of a network of medium- to small-sized entities (sub-suppliers), which, in turn, act as endpoints for additional sub-suppliers.

As a result, tracing the original producer of the material requires tracking the supply chain across 3 or 4 upstream levels, making it extremely complex to identify any irregularities concerning the economic operators or the materials involved. Inspections for irregularities can, at best, be carried out on the company's immediate sub-suppliers, but not beyond, as these sub-suppliers have no interest in disclosing information about their sub-suppliers. This reluctance is motivated by the fact that exclusive access to such contacts constitutes a strategic element of their competitive advantage in the market.

At this point, after outlining the distinctive characteristics of the economic sector and identifying the main risk factors, it is possible to proceed with the analysis of the Protocols introduced in the Model under examination.

In general, to counter the identified risks of committing environmental crimes, the company has adopted the following measures/procedures:

- Code of Ethics;
- Job Description System;
- Accounting Procedures;
- Independent Auditor's Checks;
- Quality Management System;
- Information Flows to the Supervisory Body;
- Employee Training;
- Reporting of Unlawful Conduct (so-called whistleblowing);
- Disciplinary System.

Moreover, considering that the main risks are associated with the qualification of waste/End-of-Waste suppliers and the management of regulatory obligations related to the procurement and sale of such materials, an integrated set of specific procedures has been developed:

- Procedure PO 01 "Customer and Supplier Controls";
- Procedure PO 02 "Transport Requirements and Administrative Documents";
- Procedure PO 03 "Management of Forms and Waste Register";
- Procedure PO 04 "Warehouse Management";
- Procedure PO 05 "Weighing, Radiometric Control, Pile Management, Scrap Shear";

- Waste Trader Homologation (in Italian and English for foreign traders);
- End-of-Waste Trader Homologation (in Italian and English for foreign traders);
- Waste Intermediary Homologation (in Italian and English for foreign intermediaries);
- End-of-Waste Intermediary Homologation (in Italian and English for foreign intermediaries);
- Homologation for Waste from Italian Producers;
- Incoming Waste Checklist;
- Outgoing Waste Checklist;
- Incoming End-of-Waste Checklist;
- Outgoing End-of-Waste Checklist.

To analyze the protocols and understand their effectiveness, with reference to the most significant and relevant ones, it is appropriate to examine the process followed for the procurement of materials after the implementation of the Model.

It should be noted that, in general, the economic operators with whom the company interacts for the purchase of waste primarily belong to two categories. The first category consists of producers of scrap metal, namely companies that generate such materials as residual materials from their production processes. The second category includes scrap metal traders and materials classified as End-of-Waste, who, similarly to the company under analysis, base their business model on the purchase and resale of these materials to generate profit.

When the company initiates contact with a supplier or is contacted by one, it first conducts a series of checks aimed at minimizing the risk of interacting with unqualified economic operators. The control process is structured into two main levels: economic-structural and reputational.

The economic-structural verification focuses on the supplier's financial soundness and organizational structure. First, the company's equity position and financial position are assessed through the acquisition of the Company Registration Report (*Visura Camerale*) and the Single Insurance Contribution Compliance Certificate (*Documento Unico di Regolarità Contributiva, DURC*), which provide information on the supplier's economic stability.

Additionally, the company requires the supplier to specify the physical location where the materials are stored and from which they will be shipped, which may differ from the supplier's registered office. Subsequently, verification is conducted using Google Maps to ensure that the provided address is real and compatible with an activity intended for such a purpose. This type of control has proven particularly effective, as it has, in some cases, made it possible to identify instances of non-compliance and to decide not to accept the shipment of materials.

In certain circumstances, particularly when establishing contact with a supplier for the first time, this verification is carried out by sending a company representative to the location where the materials intended for purchase are stored.

The reputational verification, on the other hand, focuses on the supplier's reliability in terms of image and professional integrity. To this end, the company relies on the services of a specialized firm that, by using public databases, monitors any legal proceedings or other circumstances that could negatively impact the supplier's reputation.

In addition to the economic-structural and reputational verifications, an additional preventive measure is implemented: homologation, which is carried out at an initial stage, that is, before deciding whether to proceed with the purchase. This measure is divided into three main types: homologation for waste or End-of-Waste traders, homologation for waste or End-of-Waste intermediaries, and homologation for waste from Italian producers.

The homologation protocol goes well beyond the requirements established by administrative regulations, as it involves the prior collection of information that, in most cases, is already included in the accompanying form for the load, which is delivered when the materials arrive at the company's facility. Although this approach entails a duplication of time, it proves particularly useful. The objective is to avoid engaging with unqualified operators and to prevent the receipt of materials that do not meet the required legal characteristics or that may have been unlawfully introduced into the supply chain.

The homologation is carried out each time the company interacts with a new supplier and is repeated if the same supplier, in turn, obtains materials from different entities over time.

Using the example of waste trader homologation, the process requires the collection of the following information:

- The date and method by which the initial contact was established, specifying the communication channel used (e.g., phone call, message, or e-mail);
- Identification data and information on the authorizations held by the holder;
- Identification data and information on the authorizations held by the waste trader;
- Identification data and information on the authorizations held by transporter 1;
- Identification data and information on the authorizations held by transporter 2;
- Identification data of any transshipment site (the location where materials are transferred from one means of transport to another);
- Quantity of the materials;

- Frequency and estimated quantity of delivery (including the presence of foreign fractions, the presence of oils or emulsions, and certification of radiometric testing);
- Waste code;
- Expected delivery date.

In the case where the material being purchased falls within the End-of-Waste category, it is also necessary to request the following information:

- Indicated quantity;
- Material specifications;
- Frequency and estimated quantity of delivery;
- Presence of foreign fractions;
- Presence of oils or emulsions;
- Presence of closed containers;
- Materials with maximum dimensions of 100 cm, 40 cm, 60 cm;
- Only for special demolition: materials with maximum dimensions of 150 cm, 40 cm, 60 cm;
- Certification of treated materials (according to Art. 6 and Annexes I and II of EU Regulation 333/2011 for iron, steel, and aluminum, and Art. 5 and Annex I of EU Regulation 715/2013 for copper).

Of particular relevance and worthy of positive assessment is the attention given to the control of both transporters and the possible transfer site for materials between them (storage site). In fact, during the analysis of criminal methodologies related to the illicit waste cycle, these elements emerged as some of the most critical. Therefore, they play a fundamental role in ensuring the regularity of each stage of the supply chain[517].

Subsequently, if the preliminary verifications have a positive outcome and the contract for the purchase of materials is finalized, a series of checks is carried out upon the arrival of the load at the company's facility.

The process begins with a verification of the correspondence between the information reported in the Waste Identification Form (*Formulario di Identificazione dei Rifiuti, FIR*) or the Transport Document (*Documento di Trasporto, DDT*) and that contained in the homologation, ensuring that no discrepancies are present.

[517] For further details, see Chapter 2, pp. 64–73.

Next, the Waste Management Area Representative conducts a visual inspection to verify the conformity of the material with the EER code indicated in the FIR, in the case of waste, or in the DDT, in the case of End-of-Waste.

The next step is the weighing of the material, which is necessary to compare the actual quantity with that indicated at the purchase stage. In addition, a radiometric control is performed to detect the possible presence of radioactive elements. When necessary, the Niton gun is used, a device that allows for the precise identification of different aluminum alloys.

Finally, the material is deposited in a specific pile, identified according to the type of material and the treatment it must undergo. At the same time, an additional document required by the Organizational Model is completed: the Incoming Waste Checklist or the Incoming End-of-Waste Checklist, depending on the type of material being processed. This document serves as a fundamental tool for tracking and verifying all operations carried out during the acceptance and management of the load.

It is considered particularly useful to present the content of this document, focusing on the form related to waste, as it is substantially similar to the one provided for End-of-Waste.

It should be noted that, for each piece of information required, a response must be provided by selecting the appropriate option through the placement of an “X” in the corresponding field, indicating “Yes” or “No” based on the verification carried out.

Incoming Waste Check-List

- Was the transport preceded by the homologation?
- Has the homologation been approved?
- Is the holder (producer) the same as indicated in the homologation?
- Is the holder (producer) among those registered?
- Is the transporter the same as indicated in the homologation?
- Is the transporter among those registered?
- Is the truck compliant with the CER code (verified through the waste management register)?
- Is the Waste Identification Form (FIR) correctly completed?
- Is the EER code among those authorized at the facility?
- Has the net weight of the load been measured?
- Has the radiometric measurement of the load been performed?
- Has a visual inspection been conducted to verify the material's conformity with the EER code indicated in the Waste Identification Form and homologation?
- Was the driver directed to the correct storage pile?
- Did the staff detect any foreign fractions or other issues during the sorting?
- Absence of foreign fractions.
- Absence of oils or emulsions.
- Absence of fractions destined for other storage piles (if present, specify to which piles and how many kg were transferred).
- Is the waste compliant?
- Was the load rejected?
- Has the Waste Identification Form been stamped and signed in the section reserved for the recipient, indicating the verified weight?
- Were the transporter’s copies of the Waste Identification Form returned?
- Has the documentation (Waste Identification Form, radiometric test, weight measurement) been delivered to the Waste Management Area Manager?

In addition, the sole administrator (A.U.) has appointed a Technical Manager for Waste Management, selected as an external figure with high qualifications and proven expertise and experience in the sector. This manager is responsible for conducting periodic checks to ensure

compliance with the procedures, homologations, and checklists required by the Organizational Model, thereby guaranteeing that the company's activities conform to the applicable regulations.

In the analysis of the procedures introduced, attention has been focused on the procurement phase, as it represents, for the reasons previously explained, the most vulnerable stage of the company's operations. However, the application of these procedures also ensures regulatory compliance in the subsequent sales phase of the materials, thereby strengthening the entire operational cycle.

Indeed, compliance with the listed protocols allows the company to:

- Qualify suppliers of waste and End-of-Waste (traders, intermediaries, and producers), both Italian and foreign;
- Verify compliance with applicable regulations upon the entry and exit of waste and End-of-Waste from the company's facility;
- Ensure compliance with applicable regulations regarding transport and the related documentation;
- Ensure the proper management of forms and the waste register;
- Ensure the proper management of the warehouse;
- Ensure the proper management of the weighing of incoming materials, their radiometric control, the material piles, and the use of the scrap shear.

For the sake of completeness, it should be noted that the only treatment carried out on the materials by the company is the volume reduction of metals using the scrap shear. Through this process, waste is transformed into End-of-Waste. For a metallic material to be classified as End-of-Waste, it must meet certain length requirements, which are typically set by the final buyer (foundry).

Compliance with the measures introduced through the Model is sufficient to deem the risk of committing the identified predicate offenses as "acceptable", as determined during the risk assessment process. The offenses in question include organized activity for the illegal trafficking of waste (art. 452-quaterdecies c.p. and the aggravating circumstance under art. 452-octies, paragraph 1, c.p.), illegal trafficking of waste (art. 259, paragraph 1, of Legislative Decree No. 152/2006), unauthorized waste management, non-compliance with permit conditions, and waste mixing (art. 256 of Legislative Decree No. 152/2006), violation of communication obligations, mandatory record-keeping, and the use of forms (art. 258 of Legislative Decree No. 152/2006), and use of false certificates (art. 260-bis, paragraphs 6-8, of Legislative Decree No. 152/2006).

For the other two identified predicate offenses, namely, negligent offenses against the environment (art. 452-quinquies c.p.) and discharges of industrial wastewater (art. 137 of Legislative Decree No.

152/2006), an environmental emergency procedure has been introduced. This procedure aims to prevent the occurrence of accidental events that could potentially cause environmental pollution, even if the assessed impact is considered to be very limited.

Proceeding further, to provide a comprehensive analysis, it is considered appropriate to briefly refer to the special section dedicated to organized crime offenses, as this is a key element of the present research that is closely linked to the waste management sector.

In this regard, the Model states that the reference market sector, which is significantly affected by associative phenomena, including those of a "mafia-type", and the external context — at both the regional and provincial levels (Emilia-Romagna; Reggio Emilia) — where the company operates, are subject to significant infiltration by organized crime, including "mafia-type" organizations. Taking into account the charges that led to the seizure of the company's shares — charges that, although still under investigation, must necessarily be regarded as a significant element of assessment — it is considered that the following offenses are potentially applicable: criminal organization (art. 416 c.p.); mafia-type criminal organization, including foreign organizations (art. 416-bis c.p.); and criminal organization and mafia-type criminal organization with a transnational character (art. 416 and 416-bis c.p., about art. 3 of Law No. 148/2006).

In this case, as well, the areas of activity considered potentially at risk are those related to core procurement and sales, specifically concerning the waste/End-of-Waste that forms the subject of the company's operations, as well as the management of tax obligations.

Specifically, the risks identified concerning core procurement and sales are as follows:

- Procurement from unauthorized entities, entities lacking the necessary qualifications, or procurement of materials of illicit origin, justified by (objectively and/or subjectively) non-existent procurement invoices, as part of associative agreements aimed at illegal waste trafficking, handling of stolen goods, money laundering, the use of money or goods of illicit origin, and tax evasion;
- Sales to entities other than those ostensibly indicated, or for qualities/quantities other than those ostensibly declared, or for prices different from those ostensibly declared, resulting in the issuance of (objectively and/or subjectively) non-existent sales invoices, as part of associative agreements aimed at illegal waste trafficking, handling of stolen goods, money laundering, the use of money or goods of illicit origin, and tax evasion.

The risks associated with the management of tax obligations are as follows:

- Use of invoices for (objectively and/or subjectively) non-existent transactions to justify the procurement of waste/End-of-Waste from unauthorized entities, entities lacking the necessary qualifications, or materials of illicit origin;
- Issuance of invoices for (objectively and/or subjectively) non-existent transactions, resulting from non-transparent commercial relationships (sales to entities other than those ostensibly indicated, for qualities/quantities other than those ostensibly declared, or for prices different from those ostensibly declared).

The protocols adopted to mitigate these risks coincide with those established for environmental crimes, which have already been examined. In summary, they include: controls on customers and suppliers, compliance with transport and administrative documentation requirements, management of forms and the waste register, warehouse organization, weighing activities, radiometric control, management of material piles and the scrap shear, homologation procedures, and the use of checklists.

In conclusion, the protocols described, relating to the procurement, management, and sale of metallic waste and End-of-Waste, with particular attention to the identification and verification of suppliers, deserve a highly positive assessment. The measures adopted effectively address the critical issues inherent in the metal scrap supply chain to reduce the risk of interactions with unqualified operators or the procurement of materials of uncertain origin.

Particularly noteworthy are the actions aimed at verifying the reputation of suppliers, the regularity and legal existence of these entities, the actual existence of the storage site, the transshipment site, and the authorizations of transporters, all of which have proven to be effective in countering issues related to the illicit waste cycle. Moreover, the homologation documents and checklists are configured as tools of significant operational and managerial value.

In summary, these measures represent a significant contribution to the improvement of corporate compliance and can be considered best practices to be adopted in similar contexts, providing a reference model for the sector. If all economic operators in the metal supply chain were to adopt such measures, a rigorous system of widespread control over contractual counterparts would be established. This mechanism would automatically encourage all actors to comply with the applicable regulations. The result would be an effective system to counter Ecomafie, reducing both the scale of profits generated by the so-called black market cycle and promoting a more transparent and lawful market. These practices would also improve the traceability of materials and ensure greater transparency throughout the entire supply chain, thereby significantly countering illicit activities.

It is considered appropriate and useful, even in this context, to outline the most significant measures contained in the protocols described. Attention is focused on the adoption of control

procedures in the execution of procurement activities for metal scrap and materials classified as End-of-Waste, with a specific focus on supplier verification. The objective is to avoid the risk of acquiring materials originating from the illicit waste management cycle.

The main best practices are outlined below. It should be noted that two elements will be marked with an (*) as they represent additional suggestions analyzed in the following paragraph, but are referenced here for consistency with the topic under discussion.

Best Practices for Countering Ecomafie and Combating the Illicit Waste Cycle

1. **Editorial Recommendation**:

   a. Description of the environmental crime, including the relevant administrative regulations.

2. **Supplier Verification**:

   a. Economic/Structural Check;

   - Use Google Maps to verify the existence of the source site for materials and ensure it is appropriate for the storage of waste;
   - If possible, carry out on-site physical inspections by a designated representative.

   b. Reputational Check:

   - Introduce a preference criterion for suppliers listed on white lists*;

   - Introduce a preference criterion for suppliers with a digitalized, documented, and traceable reputational rating*.

   c. Homologation Procedure:

   - Pay particular attention to verifying the transporters' permits;

   - Pay particular attention to verifying the transshipment/storage site.

3. **Checks and Verifications at the Time of Load Acceptance:**

a. Compare the information contained in the homologation document with that in the FIR (Waste Identification Form) or DDT (Transport Document).

b. Verify the correspondence between the declared load weight in the homologation stage and the actual weight measured upon arrival.

c. Conduct a radiometric check.

d. Implement a checklist procedure to ensure the regularity of all previous steps.

5.5. Strategies to Strengthen Corporate Reputation and Promote an Ethical and Virtuous Market

In conclusion to this chapter, two additional points for reflection are proposed, aimed at strengthening corporate compliance, with particular emphasis on the strategic value of reputation, both for the company under analysis and for the counterparties with whom it interacts to achieve its business objectives.

Reputation goes beyond reflecting compliance with legality standards; it also constitutes a primary intangible asset capable of positively influencing the company's perception among stakeholders. Moreover, by promoting widespread adherence to ethical and legal standards, the company not only consolidates its image in the market but also helps to foster virtuous behavior throughout the entire economic supply chain. This, in turn, generates a virtuous cycle of legality and transparency that extends beyond its organizational boundaries, benefiting the entire economic system.

First, it is useful to focus on the regulation of white lists, which are registers established at each Prefecture and include companies deemed reliable and not exposed to mafia infiltration. This tool was designed to prevent and counter corruption and the infiltration of organized crime, with particular attention to the most sensitive sectors and those at risk of illegality.

In this regard, Article 1, paragraph 53, of Law No. 190 of November 6, 2012 identifies the following as sensitive sectors, i.e., those most exposed to the risk of mafia infiltration:

> c) extraction, supply, and transport of soil and inert materials;
> d) packaging, supply, and transport of concrete and bitumen;
> e) dry lease of machinery;
> f) supply of processed iron;
> g) wet lease of machinery;
> h) road haulage for third parties;
> i) site security services;
> i-bis) funeral and cemetery services;
> i-ter) catering, canteen management, and food service;
> i-quater) environmental services, including collection, domestic and cross-border transport (also on behalf of third parties), treatment, and disposal of waste, as well as reclamation and remediation activities and other services related to waste management[518].

For these business activities, the entities listed in Article 83, paragraphs 1 and 2, of Legislative Decree No. 159/2011 are required to obtain the antimafia clearance communication and information, regardless of the thresholds established by the same decree[519]. This acquisition is carried out through the consultation, including via telematic means, of a specific white list, which contains suppliers,

[518] Law No. 190 of November 6, 2012, Provisions for the Prevention and Suppression of Corruption and Illegality in Public Administration, available at https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2012-11-06;190.
[519] For further details on the subject, see Chapter 4, pp. 218–228.

service providers, and contractors operating in the identified sectors who are recognized as free from attempts at mafia infiltration (Article 52 of Law No. 190/2012).

Therefore, companies wishing to participate in public contracts or subcontracts in the specified sectors are required to be mandatorily registered in the white lists. It should also be noted that such registration serves as an antimafia clearance communication and information for the stipulation, approval, or authorization of contracts and subcontracts related to activities other than those originally envisaged for registration.

To obtain registration, companies must submit a specific application to the territorially competent Prefecture, which will proceed to verify the absence of grounds for revocation, suspension, or prohibition according to Article 67 of Legislative Decree No. 159/2011, as well as the absence of attempts at mafia infiltration aimed at influencing the company's decisions and strategic direction, as provided for by Article 84, paragraph 3, of the same Legislative Decree.

This instrument has been highlighted because, although the registration requirement is mandated by law only for companies operating in sensitive sectors that intend to enter into contracts with public administration, it can also serve as an important guarantee in relationships between private parties.

While the binding nature of registration is more evident in dealings with public administration, it can also hold significant relevance beyond this scope. Its primary function is to certify the reliability and transparency of registered companies, qualities that translate into added value for these companies, with positive effects on corporate reputation and commercial relationships.

Being registered on a white list represents a certification of integrity, attesting to the absence of criminal infiltration and compliance with antimafia regulations. This status can offer a significant competitive advantage, especially in private sectors with a high exposure to the risk of illegality, such as waste management or the transport of materials. Moreover, many large companies, particularly those operating in sensitive sectors like energy, construction, or environmental services, tend to select suppliers and partners that can demonstrate a high level of reliability and regulatory compliance. In this context, registration in a white list becomes a distinctive element, even in the absence of legal obligations, strengthening the company's position in negotiations and partnerships.

An additional benefit relates to access to credit. Some financial institutions or investment funds may consider registration in a white list as an indicator of reliability[520].

[520] M. Bonsegna, L. Tarricone, *Lo screening dei fornitori: dalle prescrizioni antimafia ai requisiti di sostenibilità*, in *La responsabilità amministrativa delle società e degli enti*, (2024), n. 2, pp. 85–92.

Therefore, regarding the case study under analysis, it can be suggested that registration in the white lists represents a significant advantage for the company in carrying out its economic activity. The company operates in one of the sectors identified as sensitive and within a territorial context marked by significant mafia infiltration. Access to this register could strengthen and demonstrate to its commercial counterparties the company's commitment to legality, a commitment that was undertaken following the judicial proceedings. This measure would also contribute to the restoration of its corporate reputation.

Moreover, in the supplier selection process, about reputational control, it is suggested that registration in the white lists be considered as a preference criterion. While it is acknowledged that exclusively requiring suppliers to be registered may currently be unsustainable, as it would excessively limit the pool of available contractors, it is believed that giving preference to counterparties with this requirement represents a balanced strategy.

In this way, the company's registration and the preference granted to suppliers who are also registered could contribute to strengthening the virtuous cycle of legality and the promotion of an ethical economic market, as outlined in the concluding remarks of the previous paragraph.

Proceeding further, it is considered appropriate to examine another useful tool for the objectives under analysis: the Digitalized, Documented, and Traceable Reputational Rating, published by CROP News (*Cronache Reputazionali Oggettive Personalizzate*)[521], an online periodical managed by CROP News Onlus and founded by Mevaluate Holding Ltd[522].

The Reputational Rating in question represents an innovative system for measuring the reputation of individuals, companies, and entities. Its purpose is to provide an objective, transparent, and certified evaluation, promoting mutual trust in commercial and professional relationships. The primary goal of this tool is to encourage transparency in economic interactions and contribute to the prevention of illegal or unethical behavior. Additionally, it aims to mitigate specific risks that may compromise the security and integrity of economic and social relations, such as the use of false identities, counterparty unreliability, corruption, criminal activities, and identity laundering.

The Reputational Rating is calculated using a proprietary algorithm developed by the Irish company Mevaluate Holding Ltd. The system assigns each subject a code composed of five alphanumeric indicators, where the highest score is A-A-A-100-100 and the lowest is Z-Z-Z-0-0.

[521] Crop News, *Cronache Reputazionali Oggettive Personalizzate*, available at https://cropnews.online/.
[522] Mevaluate Holding Ltd, available at https://www.mevhld.com/index.html.

Each component of the code corresponds to a specific evaluation area: criminal, fiscal, civil, education and training (applicable only to natural persons), and work and civil commitment.

The ratings are published in the database managed by CROP News, making them accessible to those seeking information on potential business counterparts. This enables better-informed decisions based on a certified assessment of the counterpart's reputation.

It is significant to highlight that the Reputational Rating score is not determined by information arbitrarily selected by the algorithm, but exclusively based on the documentation submitted by the requesting subject. This documentation can be provided either directly by the subject or through a mandate to KONSUMER ITALIA (Association for the Protection of Consumers and the Environment – ETS).

The algorithm incorporates a "memory effect" or "forgiveness mechanism", whereby the passage of time can reduce the score attributed to specific categories of events. For instance, the score assigned to a conviction changes based on its temporal distance, differing if the sentence was issued one year ago as opposed to ten years ago.

Additionally, the algorithm takes into account non-final events, which are marked with an asterisk to indicate their provisional nature pending future confirmation or reversal. An example of this is appealable judgments, which are flagged but do not impact the Rating score. In such cases, the holder of the Rating has the option to submit additional documentation to support or justify their position.

The Rating is recalculated and updated periodically, typically during the annual renewal of documentation or upon profile updates, while ensuring the preservation of the historical record of values assigned to the five categories[523].

It is important to emphasize that Mevaluate Ltd has developed the digitalized Reputational Rating to allow for its evolution over time, based not only on the emergence of new facts but also on analysis from a historical perspective. This is achieved through the study of historical models related to the classified population, conducted by artificial intelligence. The AI subsequently suggests possible adjustments to the scores assigned by the algorithm, thereby ensuring a dynamic and adaptive evaluation system.

The Reputational Rating under analysis, developed through a humanized algorithm, aims to ensure certainty by relying on voluntarily provided documentation that is thoroughly verified for authenticity and traceability. Data management is carried out in compliance with EU Regulation 2016/679

[523] Crop News, *Cronache Reputazionali Oggettive Personalizzate*, op. cit.

(GDPR), with particular reference to Article 6 (lawfulness of processing), Article 10 (processing of personal data related to criminal convictions and offenses), and Article 85 (processing of data concerning freedom of expression and information).

The Reputational Rating also aims to be incorruptible, as it is based on an algorithmic calculation; verifiable, thanks to the possibility of widespread public control; dynamic, as it is constantly updated in real-time; and authoritative, as it is subject to validation by a Global Ethics Committee and its architecture is verified by a dedicated Research and Development Group[524].

Specifically, the Global Ethics Committee is tasked with ensuring that the values assigned by the algorithm to individuals' actions do not merely consider their legality but also take into account the socio-cultural and political context in which such actions are performed. The socio-cultural and political values of different countries are analyzed in light of the Universal Declaration of Human Rights[525], to normalize the weights assigned to the actions of individuals from different national contexts, thereby ensuring a fair and context-sensitive assessment.

The Global Ethics Committee is composed of six members, supported by an Advisor for International Law and a Secretary-General, who is responsible for coordinating and supervising the Committee's activities. Members are selected based on their expertise in ethics and human rights, as well as their in-depth knowledge of the socio-cultural and political contexts of various regions of the world. Each member represents a specific region and is entitled to appoint up to three collaborators. These appointments must be approved by the Secretary-General before being ratified by the Committee. The six represented regions are: Africa, the Americas, Asia, Australasia, Europe, and the Middle East[526].

Moreover, Mevaluate Ltd has adopted a Universal Reputation Code, designed to define and clarify the fundamental principles guiding the reputation assessment process, applicable to both natural persons and legal entities[527].

Concerning diffused public oversight, it is established that every natural person or legal entity, in addition to being able to request the assignment of the Rating, has the opportunity to access

[524] S. Pellegrini, S. Benedetti, *L'utilizzo di strumenti di intelligenza artificiale nel contrasto alla criminalità organizzata di tipo mafioso*, in M. Palmirani, S. Sapienza, (eds.), *La trasformazione digitale della giustizia nel dialogo fra discipline, Diritto e intelligenza artificiale*, op. cit., pp. 274–276.

[525] Universal Declaration of Human Rights, adopted and proclaimed by the United Nations General Assembly on December 10, 1948, Paris, available at https://www.senato.it/application/xmanager/projects/leg18/file/DICHIARAZIONE_diritti_umani_4lingue.pdf.

[526] Worldwide Ethics Committee Mevaluate (WEC), Mevaluate the bank of reputation, available at https://www.apart-italia.com/documents/20194/0/WEC/4339aa6f-29b0-4cc3-9d78-279934b046d1.

[527] Codice della Reputazione Universale, Mevaluate the bank of reputation, available at https://www.mevaluate.com/common/Codice%20della%20Reputazione%20Universale.pdf.

information and documentation published by other subjects through the Crop News users community. This system also allows users to report any inaccurate or false information through a dedicated section called "Report the Misinformer". Naturally, the reported party retains the right to reply, thereby ensuring a transparent and fair process in managing disputes[528].

In Italy, in 2023, an Agreement was signed to promote the national strategy for digital reputational qualification and the related platform ITALIA VIRTUTE (Valuable Identity and Reputation Technologically Unique Trusted Engine). The objective of this initiative is to encourage the adoption of this reputational assessment tool, offering specific benefits to professionals and their clients derived from its use.

The Agreement was signed by: the National Council of Chartered Accountants and Accounting Experts (*Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili*); the National Training Foundation of Accountants E.T.S. (*Fondazione Nazionale di Formazione dei Commercialisti E.T.S.*); the non-profit association Crop News; APART – Professional Association of Traceable Reputation Auditors (*Associazione Professionale Auditor Reputazione Tracciabile*); Mevaluate Holding Ltd. The Agreement also aims to invite other associations and institutions to join, such as the National Bar Council (*Consiglio Nazionale Forense, CNF*).

The benefits offered include discounts on university training programs related to the mitigation of cyber risks provided by accredited universities, reductions in insurance premiums for policies related to cyber risk, and reward points for determining the "Sub-Reputational Rating for Work and Civic Engagement," which also takes into account the certifications obtained through training programs provided by accredited universities[529].

Of particular interest is the case study concerning Immobiliare Strasburgo, promoted by the National Agency for the Administration and Destination of Assets Seized and Confiscated from Organized Crime (ANBSC). This project aims to create the first digital infrastructure for documented and traceable reputational qualification, aimed at recognizing the reliability of companies confiscated from mafia organizations. This initiative seeks to represent a significant reform in the field of antimafia and anti-corruption prevention, promoting greater security and reliability in economic transactions, a substantial reduction in legal disputes related to unlawful acts and contractual

[528] S. Pellegrini, S. Benedetti, *L'utilizzo di strumenti di intelligenza artificiale nel contrasto alla criminalità organizzata di tipo mafioso*, in M. Palmirani, S. Sapienza (eds.), *La trasformazione digitale della giustizia nel dialogo fra discipline, Diritto e intelligenza artificiale*, op. cit., pp. 275–276.

[529] Convenzione tra CNDCEC, FNC, CROP NEWS, APART, MEVALUATE HOLDING Ltd, 24 May 2023, available at <https://www.apart-italia.com/documents/147481/0/Convenzione+tra+CNDCEC%2C+FNC%2C+CROP+NEWS%2C+APART%2C+MEVALUATE+HOLDING+Ltd+24.05.2023/94e2f8fe-b171-4e1d-b364-801ff62e9a7c>.

breaches, and enhanced protection in the personal and professional relationships of economic operators, consumers, and users[530].

The project involves approximately four hundred subjects, including suppliers, lessees of properties (both commercial and residential), and employees represented by the CGIL, which signed a collective bargaining agreement. The initiative is developed within the framework of a Public-Private Partnership and involves the participation of numerous institutional and associative actors, including the National Agency for the Administration and Destination of Assets Seized and Confiscated from Organized Crime (ANBSC), under the supervision of the Ministry of the Interior; the Professional Association of Traceable Reputation Auditors (APART), overseen by the Ministry of Economic Development pursuant to Law No. 4/2013; Crop News (Personalized Objective Reputational Chronicles), an online periodical managed by Crop News Onlus and founded by Mevaluate Holding Ltd; the Federation of Consumers and Users (Codacons, Codici, Konsumer Italia); and the National Institute of Judicial Administrators (INAG).

Through this case study, the Reputational Rating, developed by Mevaluate Ltd, is applied within the legal and economic context with the aim of countering mafia infiltration into the legal economy. The primary objective is to identify tools that enable the prevention and deterrence of such phenomena. In this context, the Organizational and Management Models established by Legislative Decree No. 231/2001 are utilized, supplemented by the application of the Reputational Rating as a supporting tool. The Rating is employed to manage risks, qualify counterparties, enhance transparency in contractual relationships, and facilitate the development of the Organizational Models themselves.

The use of the digitized Reputational Rating within the Models for counterparty assessment, which also imposes obligations on the latter, supports the execution of essential controls for the proper conduct of contractual relationships. This system ensures more reliable and efficient results, along with time and resource savings. Moreover, it helps reduce the risk of inadequate assessments and simplifies potential audits by external entities. In this way, the company can distinguish itself for its reliability and transparency.

The achievement of such results is possible only through the involvement of all parties engaged in corporate management, such as suppliers, employees, and partners. The latter are required to provide their data and documents to Crop News Onlus, which manages information related to the stakeholders

[530] *Antimafia Digitale, l'esempio di Palermo. Nuovo lavoro nell'Infosfera per 42mila professionisti*, available at https://www.formazionecommercialisti.org/download/00013728-allegato-3-comunicato-stampa-antimafia-in-digitale-lapproccio-innovativo-del-rating-reputazionale-palermo-teatro-massimo-20-01-2020.

of Immobiliare Strasburgo. Crop News Onlus is also responsible for verifying the authenticity of the information received and processing the corresponding Reputational Ratings[531].

Finally, it is worth highlighting that the algorithm developed by Mevaluate Ltd, used for the processing of the Reputational Rating in question, has recently been reviewed by the Italian Supreme Court. With Order No. 28358/2023 of the First Civil Section, the Court ruled that the algorithm complies with the provisions of Legislative Decree No. 196 of June 30, 2003 (Personal Data Protection Code). Specifically, it was found to meet the requirements regarding consent (art. 13), understood as a free and specific expression of will related to an identified data processing activity, accompanied by adequate preliminary information on the purposes and methods of processing.

More specifically:

> in the case under review, to fulfill the conditions of 'free and specific' consent so that it is lawful and valid, it is required that the prospective member be able to understand the algorithm, intended as a reliable procedure to achieve a certain result or solve a certain problem, which must be described to the user in an unambiguous and detailed manner, demonstrating its ability to lead to the result within a finite time. Moreover, the fact that the procedure, as explained in common language, is also capable of being translated into mathematical language is as necessary and certain as it is irrelevant: indeed, it is neither required that such mathematical language be disclosed to users, nor, even less, that they understand it. What matters, instead, is that it is possible to translate the input data into mathematical/computer language, so that everything becomes properly understandable to the machine, thanks to expert programmers, following the sequences and instructions derived from 'clear data', as described in the aforementioned regulation. Now, based on the findings made by the judge of merit, all these reference parameters were present in the regulation[532].

In conclusion, it was deemed appropriate to refer to the digitized, documented, and traceable Reputational Rating as a tool for measuring and collecting the reputation of natural persons and legal entities, as it is fully consistent with the approach adopted so far.

The primary objective of this tool is to promote transparency and fairness in economic and commercial relationships, elevating them to fundamental values. The underlying premise is that, in order to efficiently conduct a professional or business activity and to make informed choices about commercial counterparties, it is essential to be able to identify and verify them, taking into account relevant information to assess their reliability and regulatory compliance. The large-scale adoption of this principle could encourage virtuous behavior among all economic operators, with the aim of

[531] S. Pellegrini, S. Benedetti, *L'utilizzo di strumenti di intelligenza artificiale nel contrasto alla criminalità organizzata di tipo mafioso*, in M. Palmirani, S. Sapienza (eds.), *La trasformazione digitale della giustizia nel dialogo fra discipline, Diritto e intelligenza artificiale*, op. cit., pp. 276–278.

[532] Italian Supreme Court, Section I, judgment no. 28358/2023, available at https://www.apart-italia.com/documents/147481/0/Rating+Reputazionale+incontrovertibile+MEVALUATE+-+Ordinanza+Cassazione/a1349c0b-73d8-496a-8d37-5bcad77836b3.

achieving the highest reputational score and, consequently, greater competitiveness in the market. This would outline an economic context in which ethics, fairness, and sustainability become essential factors for competition.

The creation of this tool and the widespread support it has received at the national level, as highlighted in the analyzed Agreement and the case study promoted by the ANBSC, demonstrate a progressive shift in the conduct of business activities, which are increasingly oriented toward regulatory compliance and the satisfaction of stakeholder needs. These elements confirm that the doctrine of Corporate Social Responsibility (CSR) is gradually consolidating on multiple levels.

At the same time, it should be noted that despite concerns regarding the use of Artificial Intelligence — which emerged during the discussion due to its implications for the protection of certain fundamental rights[533] — the Reputational Rating represents a positive example of the use of such technologies. It has passed the scrutiny of the Italian Supreme Court, as it is designed to generate a reputational score based exclusively on documentation voluntarily and knowingly provided, subjected to diffused public oversight and verification by a committee of experts.

The Reputational Rating also proves to be relevant in the case study under analysis, where it emerged that the main risk associated with the purchase and sale of metals lies in the identification and control of suppliers. In line with the observations made in the case of Immobiliare Strasburgo, it is believed that this tool could serve as a useful reinforcement for the company's Organizational and Management Model. Applied to the Protocols already in place, it could facilitate and streamline the reputational control of suppliers, as well as enhance the homologation procedure. However, achieving these objectives requires active collaboration from the company's counterparties.

Despite the potential implementation challenges in the medium to long term, given the complexity of involving all suppliers, the Reputational Rating is considered a useful tool to be taken into account and highlighted.

In the meantime, the company under examination could consider accessing the services provided by Crop News Onlus and Mevaluate Ltd to obtain its own Reputational Rating, as well as evaluating potential commercial counterparties that already use this system. This approach would further strengthen the company's reputation in the market, increase its competitiveness, and promote virtuous conduct in line with the principles of legality.

[533] For an in-depth analysis, see Chapter 3, pp. 179–191.

Conclusions

By way of conclusion, it is appropriate to summarize the main findings of the investigation. The objective of this study was to reconstruct and examine in detail the phenomenon of the illegal waste cycle as a manifestation of the Ecomafie.

The research aimed to analyze the motivations and factors driving the success of this criminal business, while concurrently identifying the interests and actors involved. This approach was adopted with the understanding that a comprehensive grasp of these elements constitutes an essential prerequisite for evaluating the effectiveness of existing countermeasures and proposing innovative solutions.

To this end, the investigation began with an analysis of the so-called structural and conjunctural factors related to the waste cycle, considering both critical issues and intrinsic characteristics of the sector susceptible to exploitation by criminal actors or individuals driven by illicit interests.

Among the main critical factors identified is the annual production of waste, which significantly exceeds the available management capacity. This issue is further exacerbated by inefficiencies and structural deficiencies within the national system, as well as disparities in facility distribution across the territory. These conditions hinder the effective management of the volume of waste requiring annual disposal and treatment.

Another significant challenge lies in the delay in implementing a circular economy model and advancing the ecological transition, both of which struggle to produce tangible results at the national level. Additionally, the public management of municipal solid waste collection and treatment has proven particularly vulnerable to criminal infiltration.

Moreover, economic-productive and regulatory disparities among countries have been highlighted, as they facilitate environmental dumping, alongside transitional crises in waste management, which are frequently addressed through ineffective emergency measures lacking structural solutions.

Adding to these challenges is the breadth and complexity of environmental administrative regulations, which require adherence to highly technical and detailed rules that are comprehensible only to sector experts. This regulatory framework translates into an onerous system of responsibilities for obligated parties, who must incur significant compliance costs.

In criminal law, the response has historically been delayed and, for a long time, characterized by a sanctioning framework lacking genuine deterrent effectiveness. It was only with the introduction of

specific offenses and the strengthening of the repressive system that attempts were made to address this regulatory gap, although significant challenges in application persist.

The economic value of waste and its management is a crucial element and the primary driver of the illegal waste cycle. Initially, illicit waste management emerged as a highly profitable sector, providing a cost-effective solution to a widespread issue—waste disposal—while posing a low risk of sanction. This dynamic involved both business operators generating industrial waste and public entities responsible for the collection of municipal solid waste, who were unable to adequately address the problem in compliance with regulatory requirements.

An additional central economic incentive is the opportunity to reduce management costs**.** Legal waste management is particularly burdensome, as it requires compliance with complex regulatory obligations and payment of high fees for disposal and treatment. Resorting to illicit practices allows for significant cost reductions, making regulatory violations a more economically advantageous option than compliance.

Subsequently, the rediscovery of the intrinsic value of "waste material" has given renewed momentum to the phenomenon. In a context where natural resources are increasingly scarce and the environment is progressively degraded by human activities, the recovery and reuse of waste have become cornerstones of a new economic-production model oriented toward sustainability.

This transformation has not only strengthened the sector but also attracted new economic interests and investments, broadening the range of actors involved and multiplying profit opportunities, often outside the boundaries of legality.

In this scenario, the illegal waste cycle reveals a dual dimension: the "black zone" and the "grey zone". The "black zone" represents consciously illegal practices driven exclusively by profit maximization, often at the expense of the environment and society. The "grey zone", on the other hand, encompasses irregular practices stemming from ignorance, negligence, or convenience, facilitated by the complexity and fragmentation of sector-specific regulations.

This dual dimension, combining overt illegality with opaque irregularities, contributes to the persistence and complexity of the phenomenon, making its mitigation significantly more challenging.

Within this context, two categories of actors emerge as the primary protagonists in the illegal waste cycle: mafia organizations and corporate entities.

Since the 1980s, mafia organizations have identified waste management as a highly profitable sector. The lack of efficient and sustainable disposal solutions positioned them as providers of alternative services, offering faster and more cost-effective solutions compared to official channels.

The waste management market, particularly that of municipal solid waste, exhibits structural characteristics that facilitate mafia infiltration. This sector belongs to the so-called protected tertiary market, characterized by limited technological advancement, which allows the entry of actors lacking specialized expertise, high capital investment requirements, and significant involvement of public institutions through concessions, authorizations, and contracts. Additionally, the workforce is often composed of individuals from non-EU countries, employed under precarious conditions with limited contractual protections.

These factors make the waste market an ideal environment for mafia organizations, which exploit low competition, the corruption of public officials, and the precariousness of the labor force to consolidate their control. In doing so, the sector emerges as an area of high profitability with relatively low risks, reaffirming its status as a prime domain for mafia entry and persistence.

The analysis conducted highlights that, over the years, mafia organizations' interest in the waste business has remained consistently high, driven by the substantial profits it generates and the growing demand for material management.

Unlike other illicit commodities, such as narcotics, waste is not inherently illegal but represents the inevitable outcome of society's production and consumption processes, with disposal being a structural necessity for the economic and social system.

The sector's strategic importance has been further bolstered by regulatory pushes toward a circular economy and ecological transition, which have increased the economic value of waste materials, granting them newfound centrality in production value chains.

Mafia infiltration also enables the consolidation of ties with public administrations, the business sector, and the political system, thereby expanding influence and territorial control while generating additional illicit profits.

In summary, the waste management sector represents a strategic arena for mafia organizations, driven by the stability of demand and the opportunity to integrate into economic and political power networks, thereby consolidating their influence and ensuring substantial financial returns through illicit activities.

A central aspect emerging from the research concerns the role of entrepreneurs in the illegal waste cycle. The findings indicate that mafia organizations did not "invent" the practices of trafficking and illegal disposal; rather, they capitalized on a pre-existing demand for irregular services originating from the industrial sector. The lack of efficient and economically sustainable legal-political solutions

prompted businesses to resort to alternative waste management methods, to which mafia organizations responded by providing untraceable illicit services.

One of the key outcomes of the research highlights the structural fragility of the waste management system, which imposes high costs and complex bureaucratic burdens on businesses. This regulatory framework has incentivized evasive behaviors aimed at reducing expenses and increasing competitiveness.

However, the involvement of businesses is not limited to their role as beneficiaries of services provided by mafia organizations. Mafia groups also aim to achieve internal control over businesses to launder illicit proceeds and secure legal legitimacy for operating in lawful markets while consolidating territorial control. This is accomplished through the establishment of front companies or the covert takeover of pre-existing enterprises, gradually redirecting their operations toward illicit purposes.

Furthermore, a significant finding from the analysis is that illegal waste management is now predominantly carried out by legitimate businesses operating independently, without direct involvement from mafia organizations. These businesses, often holding official permits and sometimes certified under international standards such as ISO 14001, violate environmental regulations to maximize profits, frequently committing offenses related to illegal waste management. This phenomenon highlights a growing operational autonomy, where businesses exploit weaknesses in the regulatory framework to achieve economic advantages without relying on mafia-provided services.

The increase in such practices has prompted questions about the concept of Ecomafie. While the term initially referred to mafia activities in the environmental sector, there is now a growing debate about the need to redefine it, as the phenomenon no longer necessarily involves mafia presence. This evolution has generated legal and doctrinal debates, particularly concerning the application of Article 51, paragraph 3-bis of the Italian Code of Criminal Procedure, which references the offense outlined in Article 452-quaterdecies of the Italian Criminal Code (organized activities for the illegal trafficking of waste). Originally designed to combat organized crime, this provision is now being applied to circumstances lacking mafia-related elements, prompting criticism regarding its suitability in such contexts.

The research highlighted an established and adaptable modus operandi in environmental crimes related to illegal waste management, employed not only by mafia organizations but also by legitimate businesses involved in the phenomenon. This approach is characterized by efficiency, flexibility, and opacity, allowing the system to adapt to regulatory, economic, and territorial changes, thereby

ensuring the phenomenon remains in constant evolution and resistant to institutional countermeasures.

The system extends beyond the involvement of businesses, relying on a network of individuals and professionals, such as chemical analysts, transporters, and legal and commercial consultants, who provide essential expertise to consolidate illicit activities. The research identified the presence of eco-criminal structures, described as flexible horizontal networks lacking internal hierarchy but highly coordinated, capable of quickly adapting to evade controls.

In parallel, the phenomenon encompasses ancillary offenses such as tax fraud, money laundering, and false invoicing, essential for concealing illicit profits and reintegrating them into the legal economic system. These crimes support the criminal system and enhance its economic sustainability.

Consequently, the absence of mafia organizations does not diminish the severity of the phenomenon, which has demonstrated an autonomous capacity to adapt to social, economic, and regulatory changes. Initially, profits were primarily derived from illegal waste disposal; however, they are now increasingly linked to the reuse and recycling of materials, aligned with the circular economy model. This evolution has amplified the economic value of waste, creating further incentives for illegal management practices.

Finally, the international scope of the phenomenon positions it as a global threat. According to international institutions, environmental crime—of which the illegal waste cycle is a central component—is now ranked as the fourth most significant criminal threat worldwide, with substantial economic, social, health, and environmental repercussions.

In light of the findings, the research aimed to address the question of which legal and operational tools can effectively prevent and counteract the illegal waste cycle, with a particular focus on the active role of corporate entities. To address this issue, an extensive review of key international, European, and national legal frameworks was undertaken to outline the penal protection system for the environment.

At the international level, there has been a growing awareness of the need for a coordinated response to environmental crime, positioning this issue at the center of the global debate. Numerous international legal instruments have promoted cooperation among states, yet their effectiveness is often constrained by their soft law nature and the lack of universal adherence to certain key treaties. Another critical challenge is judicial localism, which hampers the establishment of a uniform global response. To address this issue, proposals have been made to extend the jurisdiction of the

International Criminal Court to include environmental crimes, ensuring centralized oversight of enforcement and uniform regulation.

Among the most significant international instruments is the Palermo Convention, supplemented by Resolution 10/6, under which the signatory countries committed to including environmental offenses among the serious crimes regulated by the Convention. This initiative aims to strengthen international cooperation and ensure more effective action against the phenomenon.

In the European context, the European Union stands out for its particularly proactive approach to the criminal protection of the environment. Although Directive 2008/99/EC marked a significant initial step, its practical limitations led to the adoption of Directive (EU) 2024/1203, which introduced substantial innovations. These include a clear definition of environmental crime, an expansion of the categories of relevant offenses, the establishment of a stricter sanctioning system, and provisions for transnational cooperation mechanisms. Moreover, the Directive prescribes the collection and sharing of comprehensive statistical data on environmental crimes, thereby promoting a deeper understanding of the phenomenon and enabling the monitoring of enforcement measures. However, the effectiveness of these measures can only be assessed once the Directive has been fully transposed into national legal systems.

About the national legal framework, the research highlighted a historical delay in the introduction of effective criminal tools to combat the illegal waste cycle. For a long time, the system relied primarily on minor offenses (*contravvenzioni*) of abstract endangerment, punishable by modest monetary penalties, which proved insufficient to deter offenders. The relatively lenient penalties effectively incentivized such behaviors, as the illicit profits far exceeded the costs associated with potential sanctions.

The turning point came with Law No. 68/2015, which introduced Title VI-bis, “Crimes Against the Environment” into the Criminal Code, establishing the so-called environmental crimes (*ecoreati*) alongside the minor offenses (*contravvenzioni*) already provided for by Legislative Decree No. 152/2006. While representing a significant advancement, the reform has drawn criticism regarding its practical applicability. Despite imposing severe penalties, the new criminal provisions are often challenging to enforce due to their vague and indeterminate language, which complicates evidentiary assessment and delegates the concretization of norms to case law. This approach risks conflicting with constitutional principles such as specificity, clarity, harm principle, and proportionality in criminal law.

The challenges are particularly evident in establishing harm and causation, as in cases of environmental disaster or environmental pollution offenses. These issues result in the limited

enforcement of the newly introduced offenses, as confirmed by data from the Ministry of Justice for the 2021–2023 period: despite identifying offenses during the preliminary phase, only a small fraction of cases culminate in trials or final convictions. However, this seemingly low incidence does not indicate a real decline in environmental crimes. Data from national and international associations and institutions demonstrate a rise in such offenses in 2023. This trend suggests the existence of a significant "gray area" of offenses that elude the repressive system, leading to an underestimation of the true scope of the problem.

Among the most significant and frequently applied criminal offenses is that of "organized activities for the illegal trafficking of waste", originally introduced by Legislative Decree No. 152/2006 and now codified under Article 452-quaterdecies of the Italian Criminal Code. This provision, central to combating Ecomafie, penalizes organized and repeated illegal waste management activities. Its importance is further reinforced by its inclusion within the "dual-track" procedural regime outlined in Article 51, paragraph 3-bis, of the Italian Code of Criminal Procedure, which introduces more stringent procedural and punitive measures.

However, the extension of this regime to corporate contexts lacking any ties to mafia organisations has provoked doctrinal criticism. Although originally designed to combat mafia organisations, the provision has been applied to non-mafia entities, raising questions about its consistency with its original purpose. Despite this, the offense under Article 452-quaterdecies of the Criminal Code remains a pivotal tool in combating eco-criminals, proving more effective than the new environmental crimes introduced by Law No. 68/2015.

In light of these considerations, any potential reforms to the punitive system must be carefully evaluated to preserve the effectiveness of existing enforcement tools and ensure stronger environmental protection.

Another focus of the analysis was the operational tools used to counter environmental crimes, with particular emphasis on the adoption of new technologies and artificial intelligence (AI) by law enforcement agencies. Among the most impactful technologies are the use of drones, satellite imagery, and data analytics systems, which have proven to be highly effective tools for preventing and combating environmental offenses. The deployment of these technologies enables continuous and comprehensive territorial monitoring, as well as the rapid analysis of vast amounts of data.

However, the use of these technologies raises significant concerns regarding the protection of fundamental rights, particularly concerning the right to privacy, the defendant's right to a defense, and the right to a fair trial. The legal implications of these tools have also been addressed in the European Union's AI Act, the first comprehensive regulatory framework aimed at governing the use

of artificial intelligence (AI). This regulation, while allowing the use of AI by law enforcement agencies, prescribes strict adherence to fundamental rights and requires the implementation of measures to prevent abuses. Specifically, the regulation mandates transparency, accountability, and respect for human dignity in all AI applications within the context of law enforcement. Its operational impact and practical implementation at the national level remain to be assessed following the full transposition of the European regulatory framework.

The research then focused on analyzing the regulatory and operational tools to combat the illegal waste cycle, with specific reference to the active role of corporate and entrepreneurial entities in the commission of illicit activities.

This investigative choice is grounded in two principal reasons. First, the entrepreneurial sector has emerged as a structural and constant element of the phenomenon, as the economic motivations underpinning illicit behaviors characterize the illegal waste cycle as a form of corporate crime. Businesses are often driven by the imperative to reduce management costs and maximize profits, frequently at the expense of compliance with environmental regulations. Second, given that businesses are the primary actors in this phenomenon, it is essential to direct regulatory and operational countermeasures toward these collective entities, rather than merely focusing on individual liabilities. This approach is particularly relevant in light of statistical data, which indicate that offenses related to the waste cycle are frequently committed by businesses operating independently, without the involvement of mafia organizations.

In this context, the research examined Legislative Decree No. 231/2001, which establishes a form of administrative liability for corporate entities concerning crimes committed, in their interest or for their benefit, by individuals within the organization, whether in apical positions or subordinate roles. The catalog of predicate offenses under the decree also includes certain environmental crimes, which were expanded by Law No. 68/2015 through the introduction of the so-called *ecoreati*.

However, the research highlighted that the catalog of predicate offenses remains incomplete, as it excludes certain significant environmental offenses that are often perpetrated by corporate entities rather than individuals. This legislative gap has sparked doctrinal and judicial debate, emphasizing the need for legislative reform to ensure greater alignment between the sanctioning framework and criminological realities.

Despite these challenges, the legislation on the liability of corporate entities is generally regarded positively, as the prescribed sanctioning system—comprising financial penalties and interdictive sanctions—tends to be more effective compared to the penalties applicable to individuals. However, the application of environmental offenses encounters similar difficulties as those previously

identified: the vagueness and indeterminacy of the terms used in the normative definitions result in significant challenges in prosecuting illegal activities, hindering the full operability of the regulations.

Within the framework of regulatory tools to combat environmental crime applicable to corporate entities, the research also examined so-called extra-codices measures, which entail broadly sanctionative consequences. These measures apply to corporate entities involved in the offense under Article 452-quaterdecies of the Italian Criminal Code, included among those referenced in Article 51, paragraph 3-bis, of the Code of Criminal Procedure.

A key instrument is represented by the asset prevention measures regulated under Legislative Decree No. 159/2011 (Anti-Mafia Code). Designed to target the assets of criminal organizations, these measures aim to weaken their operations by preventing illicit assets from being used for further crimes or reintegrated into the legal economy. Such tools are particularly effective in combating the illicit waste cycle, as they directly address the economic profits that drive the phenomenon. Specifically, judicial administration and judicial control are crucial in eliminating mafia infiltrations in originally legitimate businesses, preserving their integrity when they have not been entirely compromised.

Antimafia documentation, regulated under Book II of Legislative Decree No. 159/2011, constitutes another significant tool. It requires public institutions to obtain specific antimafia certificates before entering into, approving, or authorizing contracts for public works, services, and supplies. This mechanism, aimed at safeguarding public order, fair competition, and the proper functioning of public administration, proves particularly effective in the public sector of municipal solid waste collection and management, which is frequently vulnerable to criminal infiltration.

Similarly, the Public Procurement Code (Legislative Decree No. 50/2016) establishes grounds for the exclusion of economic operators from procurement or concession procedures. These include final convictions for the offense under Article 452-quaterdecies of the Criminal Code, the application of interdictive sanctions according to Article 9(2)(c) of Legislative Decree No. 231/2001, the existence of forfeiture, suspension, or prohibition measures under Article 67 of Legislative Decree No. 159/2011, or evidence of attempted mafia infiltration according to Article 84(4) of the same decree.

Finally, the research considered the measures introduced by Article 32 of Decree-Law No. 90/2014, converted into Law No. 114/2014, which provide tools for managing, supporting, and monitoring businesses aimed at countering criminal infiltration into the legitimate economy.

Overall, it has been observed that these measures, collectively, are more punitive and effective than the penal sanctions applicable to environmental offenses. Although they are exclusively

applicable to the offense under Article 452-quaterdecies of the Italian Penal Code, this provision has proven to be the most suitable for combating Ecomafie-related activities, understood as organized networks for the illegal management of waste. Consequently, it plays a significant deterrent role and contributes to strengthening prevention and enforcement strategies.

From the perspective of identifying measures to counteract the illegal waste cycle, with particular attention to the role of the corporate sector, the research extended its analysis beyond the legal liability framework established by statutory provisions. Emphasis was placed on the role of businesses as key actors in environmental sustainability, highlighting the necessity for them to act with social responsibility, taking into account the externalities generated by their actions on the surrounding environmental and social contexts.

To this end, the doctrine of Corporate Social Responsibility (CSR) was analyzed, grounded on the principle that businesses, in addition to pursuing economic objectives, must assume responsibilities towards society and the environment. CSR acknowledges that companies interact with a wide range of stakeholders—including employees, local communities, and institutions—whose well-being can be directly affected by corporate decisions. In this context, CSR promotes a proactive approach aimed at reconciling economic development with environmental and social sustainability.

A central role is played by the internationally recognized ESG (Environmental, Social, and Governance) criteria, which provide a framework for assessing corporate performance in terms of sustainability. These criteria encourage businesses to implement virtuous practices, such as reducing emissions, respecting human rights, and adopting transparent and ethical governance systems, thereby contributing to the achievement of long-term sustainability goals.

The European Union has taken a leadership position in this area, promoting regulatory tools that encourage transparency and sustainability in business activities. Among these, Directive 2014/95/EU introduced a requirement for large companies to publish non-financial statements addressing issues such as environmental protection, human rights, anti-corruption measures, and governance. This directive aims to integrate sustainability values into corporate operational strategies, thereby strengthening the role of CSR.

A further step forward is represented by Directive (EU) 2024/1769 on corporate sustainability due diligence, which imposes specific obligations on companies to ensure the responsible management of their supply chains. This regulation requires businesses to identify, prevent, and mitigate risks of human rights violations and environmental harm across the entire production chain, shifting the focus from transparency to the necessity of concrete action. The directive marks a paradigm shift, placing tangible commitments to social and environmental values at the core of corporate activities.

These regulatory and value-driven developments signify an evolution in the capitalist economic model, traditionally focused solely on profit. The growing emphasis on environmental and social sustainability encourages businesses to reassess their priorities, integrating values such as collective well-being and environmental protection. This approach not only enhances corporate ethics and social responsibility but also serves as an effective tool for preventing unlawful conduct, fostering a corporate culture oriented toward legality and sustainability.

To understand how environmental and social sustainability values can be effectively implemented within the Italian economic and legal framework, the research examined the motivations underlying offenses related to the waste cycle. These offenses are often driven by profit motives: complying with environmental administrative regulations entails costs that exceed the penalties imposed for violations, incentivizing many businesses to adopt illegal practices. Furthermore, the complexity and interpretative challenges of sector-specific regulations contribute to a "gray area", marked by irregular practices not necessarily stemming from illicit intent.

To address these challenges, action is required on two fronts. On one hand, the strengthening of the sanctioning system, has already proven more effective for corporate entities than for individuals. On the other hand, it is essential to promote a shift in the value system, moving beyond the logic of profit maximization towards an approach that integrates respect for the environment and society as core business priorities.

In light of the research, the organizational, management, and control models established by Legislative Decree No. 231/2001 have proven to be the most effective tool for achieving this objective. These models aim to prevent the commission of predicate offenses within corporate activities through risk assessment and the implementation of operational protocols designed to mitigate such risks to an acceptable level. When deemed adequate, the models allow for the exclusion of corporate liability, the reduction of monetary sanctions, and the avoidance of interdictive penalties.

These tools represent a pivotal element in fostering corporate compliance aligned with the principles of environmental and social sustainability, values directly protected by the environmental offenses that the models are designed to prevent. However, their implementation presents several challenges. Legislative standardization is not provided, and the guidelines proposed by trade associations can only serve as methodological support. Case law requires that the models be tailor-made, meaning they must be adapted to the specific characteristics of the individual enterprise.

This requirement is particularly challenging in the case of environmental offenses, as it demands an in-depth understanding of sector-specific regulations, characterized by extensive regulatory frameworks and technical complexity. Drafting suitable models therefore necessitates the input of

highly qualified experts, such as engineers, accountants, and lawyers, resulting in significant costs. These burdens serve as a deterrent for many businesses, particularly small and medium-sized enterprises (SMEs), which have limited resources and struggle to bear such tools' implementation and management costs.

Although the models represent a fundamental tool for promoting sustainable and compliant corporate management, their use remains limited to enterprises with greater economic capacity.

In light of the identified challenges, the research delved into this issue through the analysis of a case study, focusing on a company involved in criminal proceedings for the predicate offense under Article 452-quaterdecies of the Italian Criminal Code, as well as related offenses aimed at concealing the illicit origin of the waste, justifying its possession, and masking the financial transactions associated with it.

The analysis allowed for the examination of the procedure adopted by the company to implement an organizational and management model and the specific protocols aimed at reducing the risk of environmental offenses. The primary objective was to identify operational guidance and best practices, useful not only for the analyzed company but also for other business entities in the sector. This approach provided a tangible contribution to overcoming the application challenges that could emerge during the adoption phase of these models and to promote the use of corporate tools that promote the principles of legality and environmental sustainability.

The research developed a structured four-phase methodology for implementing the organizational, management, and control models required by Legislative Decree No. 231/2001, supplemented by practical recommendations aimed at ensuring their effectiveness and adequacy.

The first phase, focused on analyzing corporate governance and organizational structure, emphasizes the importance of avoiding power concentrations that would allow a single individual to manage an entire process autonomously without appropriate oversight. To mitigate such risks, it is recommended to appoint supervisory bodies, even when not legally mandated, to ensure transparency and a balanced distribution of responsibilities within the organization.

The second phase, related to risk assessment, requires an in-depth analysis of the company's mission, operational activities, and procedures. It is necessary to distinguish core activities from support activities, breaking them down into specific actions and processes to identify the risk of offenses being committed. This analysis must be conducted with the support of consultants and professionals, including external experts with specialized knowledge of the applicable regulations and the sector's technical-operational peculiarities. The procedures introduced to mitigate the risk of

offenses must be proportionate and realistic, as well as aligned with the principles of segregation of duties, objectivity in decision-making processes, traceability of operations, and control activities. It is also essential to provide for a periodic update of the procedures to ensure they remain current and consistent with any regulatory or operational developments.

The third phase, aimed at ensuring the compliance and implementation of the model, focuses particularly on the appointment of a Supervisory Body (Organismo di Vigilanza, OdV). The responsibility for monitoring and updating the model must be assigned to an entity distinct from the sole administrator, even in cases where this is permitted by the regulations. The members of the OdV must meet requirements of autonomy, independence, professionalism, operational continuity, and integrity, with measures in place to prevent conflicts of interest. The OdV's functions must be clearly defined and supported by an adequate, transparent, and bidirectional flow of information between the OdV and the corporate bodies. A confidential communication channel (whistleblowing) must be implemented. Additionally, it is imperative to establish a deterrent disciplinary system, differentiated by category of recipients, which also includes sanctions applicable to third parties contractually linked to the company.

The fourth and final phase concerns the drafting, dissemination, and communication of the organizational, management, and control model. It is essential to carefully balance communication strategies to address the varied needs of the model's stakeholders, ensuring that communication specifically caters to the requirements of each group involved. The model must be drafted clearly and comprehensibly, with the assistance of a legal expert, and in alignment with recognized guidelines. A copy of the model and its annexes must be distributed to all employees and easily accessible within the company premises. Additionally, it is crucial to schedule periodic training courses, which can also be delivered remotely, extending training and awareness activities to external parties interacting with the company.

This methodology, structured into interconnected phases and supported by practical recommendations, provides a framework to facilitate the implementation of organizational models and promote corporate management aligned with legality, transparency, and sustainability principles.

Subsequently, recommendations and best practices were also developed regarding the protocols adopted in the case study to mitigate the risk of committing environmental offenses. This phase focused on the specific activities of the analyzed company, which operates in the trade of metallic waste and materials classified as end of waste. The decision to narrow the investigation to this sector stems from the need to adhere to the jurisprudential principle that organizational models must be tailored to the specific characteristics of each company, thereby excluding universal standardization.

Focusing on the risks associated with the procurement and resale of metallic waste, it emerged that the greatest vulnerabilities lie within procurement operations. This is due to the intrinsic and economic value of metals, highly valuable materials that, precisely because of their economic significance, attract considerable commercial interest. These characteristics fuel a parallel market, often irregular, where untracked materials or those sourced from entities lacking the necessary administrative authorizations circulate.

Among the primary risks are the procurement of materials that fail to comply with administrative and environmental regulations, as well as collaboration with irregular suppliers lacking the required authorizations for managing and trading metallic waste. These situations not only expose the company to criminal and administrative liability but also pose a significant reputational risk.

To mitigate these risks, the case study highlighted the importance of adopting stringent procedures for supplier qualification and verifying the regulatory compliance of purchased materials. The analyzed company implemented specific protocols aimed at ensuring the full legality of its operations, establishing advanced control standards that served as the foundation for formulating recommendations and best practices. These protocols constitute a reference model for other business entities operating in the same sector, promoting management practices aligned with the principles of legality and sustainability.

A key element involves providing a detailed description of the implemented protocols of the environmental offenses targeted for prevention, including the associated administrative regulations. This approach enables those responsible for applying the procedures to fully understand the rationale behind the rules and to avoid behaviors that, even due to error or negligence, could constitute environmental violations. A thorough understanding of the relevant regulations proves essential for ensuring the correct implementation of operational procedures.

An equally critical aspect is the thorough vetting of suppliers, encompassing both economic-structural assessments and reputational checks. From an economic-structural perspective, it is essential to verify the supplier's financial stability and organizational framework, for example, by acquiring the Chamber of Commerce registration extract (*visura camerale*) and the Certificate of Social Security Compliance (*Documento Unico di Regolarità Contributiva*, DURC). Additionally, accessible tools such as Google Maps can be employed to confirm that the origin site of the materials aligns with an area suitable for waste storage. Reputational checks, on the other hand, focus on the supplier's reliability in terms of public image and professional integrity, including the introduction of preference criteria for suppliers listed in white lists or equipped with documented systems for reputational assessment.

In addition to these checks, homologation serves as a preventive measure carried out before procurement. This protocol, which goes beyond the minimum requirements of administrative regulations, involves the advanced collection of information regarding materials and suppliers. It has proven highly effective in avoiding dealings with unqualified entities or the acquisition of materials that do not comply with regulations. Particular attention must be paid to verifying the permits of transporters and the authorization status of transshipment or storage sites.

Acceptance checks during the delivery phase constitute another crucial pillar. It is essential to compare the information provided in the homologation document with that contained in the FIR (Waste Identification Form) or the DDT (Transport Document). Additionally, the weight declared during the homologation process must match the actual weight recorded upon arrival. Among supplementary measures, radiometric testing of materials proves invaluable for detecting potential contamination or anomalies. Finally, the implementation of a structured checklist to verify the compliance of all preceding operations significantly reduces the risk of errors or omissions.

The implementation of these recommendations not only enhances traceability and compliance in the management of metallic waste but also fosters greater regulatory adherence and virtuous conduct across the entire supply chain. By adopting stringent controls, businesses can ensure their own legal compliance while indirectly encouraging their suppliers to adhere to regulations, thereby creating a virtuous system of widespread checks. On a broader scale, this dynamic could transform regulatory compliance into an essential requirement for competitiveness, effectively excluding non-compliant operators from the market and strengthening the principle of legality throughout the sector.

The critical aspect of this research lies in its focus on recommendations and best practices primarily applicable to protocols in the metal purchase and resale sector. While this area is of significant economic and regulatory importance—due to the strategic value of metals, which are in high demand for their central role in the circular economy and ecological transition, as well as their ability to retain their properties through multiple reuse cycles—the research does not encompass the entire spectrum of waste types or all categories of environmental offenses. This limitation reduces the general applicability of the insights provided.

This is due to the existing legislation and its judicial interpretation, which allow for the standardization and development of guidelines solely for the methodology of introducing organizational models while requiring customization in the definition of specific protocols. These protocols must be tailored to the economic sector, target market, and unique characteristics of each company. While this approach ensures greater effectiveness in mitigating specific risks, it also limits

the potential for universally applicable solutions, confining recommendations to specific sectoral contexts.

However, the research suggests that a potential future development could involve drafting guidelines to assist businesses in implementing effective procedures for reducing the risk of environmental offenses, addressing the phenomenon in more general terms. This appears particularly relevant given the complexity of environmental and waste management regulations, which demand a high level of expertise in both administrative and criminal law.

If, as highlighted, the organizational models outlined in Legislative Decree No. 231/2001 represent a crucial tool for preventing environmental offenses and fostering corporate social responsibility, it is essential to provide companies with operational tools to encourage their adoption. Currently, the process of implementing such models is complex and costly, posing a significant deterrent for many businesses, particularly small and medium-sized enterprises. Developing sector-specific and operational guidelines could not only simplify the adoption of these models but also contribute to orienting companies toward practices based on legality, sustainability, and social responsibility.

In this perspective, well-developed and promoted support tools could enhance the effectiveness of Legislative Decree No. 231/2001, improving its impact on preventing unlawful conduct in the environmental sector. These tools hold the potential not only to assist companies in complying with regulations but also to foster a cultural shift, encouraging a transition from a focus on immediate profit to a more sustainable and responsible entrepreneurial vision.

To conclude, the research highlighted how human behavior remains largely oriented toward the pursuit of self-serving interests, with little regard for the consequences on the environment, society, and future generations. It is, therefore, necessary to continue the already initiated process of recognizing the intrinsic value of the environment as a good deserving protection, regardless of its utility to humankind. A positive signal in this direction is represented by the 2022 Italian constitutional reform, which amended Articles 9 and 41 of the Constitution by introducing the principle of protecting the environment, biodiversity, and ecosystems, also in the interest of future generations, and incorporating the obligation for private economic initiatives not to harm the environment.

In terms of tools to counter unlawful conduct, the research highlights the urgency of a systematic reassessment of the Italian criminal framework**.** While the provisions introduced by Law No. 68/2015 represent significant progress, they prove challenging to apply in practice, leading to limited operational effectiveness of criminal offenses and consequent underutilization, despite the increasing prevalence of environmental crimes. Simultaneously, there is a pressing need to expand the catalog

of predicate offenses under Legislative Decree No. 231/2001, which currently fails to comprehensively cover the types of unlawful conduct frequently associated with waste management and other environmental violations.

In administrative law, the primary challenges lie in the complexity and technical nature of environmental regulations, which hinder clear understanding and proper application by practitioners. A potential solution could involve reorganizing and simplifying the regulatory framework, making it more accessible and functional without compromising the technical precision required in such a complex field.

About the organizational models provided for by Legislative Decree No. 231/2001, the priority should be the development of operational and sector-specific guidelines. In this context, a virtuous example can be found in the guidelines adopted in the field of workplace safety. Article 30 of Legislative Decree No. 81/2008 establishes that models compliant with the UNI-INAIL Guidelines or international standards such as OHSAS 18001:2007 (now ISO 45001) are presumed to meet the requirements for exempting the entity from administrative liability. This system demonstrates how integrating recognized standards can facilitate companies' adoption of effective and validated models. Similarly, specific guidelines for models under Legislative Decree No. 231/2001 could assist businesses in identifying and implementing appropriate protocols to prevent environmental crimes, encouraging broader adoption of such tools, especially among small and medium-sized enterprises, which are often constrained by limited economic and organizational resources.

Ultimately, the research underscores the importance of an integrated approach that combines cultural and value-driven evolution with a comprehensive and systematic revision of the regulatory framework and its practical applications. Only through strategic interventions aimed at strengthening both prevention and enforcement capacities will it be possible to foster effective and sustainable environmental protection, capable of addressing contemporary challenges and building a more responsible economic and social model for future generations.

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