ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DOTTORATO DI RICERCA IN

ARTI VISIVE, PERFORMATIVA, MEDIALI

Ciclo 37

Settore Concorsuale: 10/C1 - TEATRO, MUSICA, CINEMA, TELEVISIONE E MEDIA AUDIOVISIVI

Settore Scientifico Disciplinare: L-ART/06 - CINEMA, FOTOGRAFIA E TELEVISIONE

ENVIRONMENTAL SUSTAINABILITY IN THE ITALIAN AUDIOVISUAL INDUSTRIES

Presentata da: Ioannis Zikidis

Coordinatore Dottorato

Marco Beghelli

Supervisore

Paola Brembilla

Esame finale anno 2025

Doctoral Fellowship of the National Operational Program Research and Innovation 2014-2020 (CCI 2014IT16M2OP005), ESF REACT-EU resources, Action IV.4 "PhDs and research contracts on innovation topics" and Action IV.5 "PhDs on Green topics."

Borsa di dottorato del Programma Operativo Nazionale Ricerca e Innovazione 2014-2020 (CCI 2014IT16M2OP005), risorse FSE REACT-EU, Azione IV.4 "Dottorati e contratti di ricerca su tematiche dell'innovazione" e Azione IV.5 "Dottorati su tematiche Green".

CUP: J35F21003010006

Acknowledgements

The opportunity to study at a PhD level has been both a lifelong dream and a project of personal renewal. The greatest lesson of this experience has been one of endurance and perseverance. To this end, the meaningful help, inspiration, and support of Afrodite Liani, Stelios and Kyriakos Hatzaras, Rossella Apa, Grazia Lanzara, Claudio and Alfredo Iannone, Andrés Morales Pachón, Sara Calvo, Alicia Ioannidou, Paola Brambilla and Veronica Innocenti were invaluable. I am also deeply thankful for the friendship and hospitality of Tariq, Luca, Vito, Giulia, and Giuseppe.

TABLE OF CONTENTS

1. INTRODUCTION

1.1. ABSTRACT

This research is rooted in studying the real-life context of its subject, namely "Environmental Sustainability in Audiovisual Production" (Interreg Europe, 2018), also referred to as "Sustainable Production" (PGAF, 2023), "Sustainable Audiovisual Production" (EcoMuvi, 2022; Green Film, 2022), "Sustainable Filmmaking" (Di Bianco, 2020) "Green Filming", "Green Shooting" (Marmol and Morales, 2022) or "Low Impact Filmmaking" (Glasseyepix, 2007), all of which entail the promotion and implementation of "eco-friendly audiovisual and cinematographic production, in terms of sustainability, the use of resources and the preservation of natural spaces" (European Audiovisual Observatory, 2019).

Equally, the respective careers, duties and workflows of the field's practitioner-professionals are observed. Known generally as an "Eco-Manager"(Victory, 2014), "Eco-Supervisor" (O'Brien, 2014), "Green Runner" (Cineregio, 2015:23), "Eco-Assistant"(Jimenez-Morales and Lopera-Marmol, 2021:2), "Sustainability Consultant" (Torchin, 2022), "Green Film Manager" (Green Film, 2022) or "Green Film Consultant" (BVGCD e.V., n.d.) "Green Steward" (Greenshoot, n.d.) and "Green Producing Agent" (BMK and VKI, 2017:6); a role that, by any other name, implies "a seasoned production professional…[who]…functions as a department head alongside other crew department heads" (O'Brien, 2014:14), implementing and managing sustainability from prep through wrap (Ibid, 2014). More broadly, such considerations and associated job descriptions in audiovisual production, alongside the media policies and production practices that underpin them, have been grouped in the literature fittingly under the term "Environment Management of the Media" (Kääpä, 2018; Kääpä and Vaughan, 2022:312).

Furthermore, the study examines how such relatively new considerations in audiovisual production [first observed in 2004 with the introduction of EMA's *Green Seal Awards* in the US (Corbett and Turco, 2006:82; Environmental Media Association, n.d.)] and sets of skill sets (see

Hochschule der Medien, n.d.) extend to areas that supersede audiovisual "production" itself, such as film festival operations (Cessaro, 2022; Marijke de Valck, 2023) and to some extent, physical and digital distribution (Marks and Przedpełski, 2022) but also precede it; such as sustainability consultation and production planning (EcoMuvi, 2023a; Green Film, 2022) and planet placement content strategies (Albert and Futerra, 2023; Good Energy Stories, n.d.) during Development and Pre-production. By extension, the study also looks at how this line of work intersects with the work of committed public institutions related to environmental policy in the development of ecological minimum standards (Ministero de La Cultura, 2023) and cultural subsidies, such as regional Film Commissions and cultural funds related to the audiovisual sector (European Audiovisual Observatory, 2019) and observes the introduction of new stakeholders in audiovisual production, such as audit, certification (see Italcert, n.d.), ecolabelling (see BMK and VKI, 2017:20) and verification bodies (see Bureau Veritas, n.d.) alongside initiatives invested both in formal, quality-assured sustainable production training (see BVGCD e.V, n.d.) and the exchange of knowledge, information and best practices, occurring across sustainability initiatives and networks (Kääpä, 2018, p.208.). In addition, the study looks at the social aspects that often underline and inform this "Green" current, such as the growing awareness towards the gender gap in the European audiovisual sector (EWA, 2016), inclusivity, accessibility and mobility provision for the deaf, disabled and neurodivergent talent (Creative Diversity Network, 2024), labour conditions and mental health well-being (Film and TV Charity, 2020).

Finally, the study comparatively assesses the global trends and developments above, benchmarking them in a specific national context: Post-COVID, National Recovery and Resilience Plan-accelerated Italy experiencing core national reforms as part of its Green and Digital transition (Fabrini, 2022) in par with binding EU legislation and ambitious national energy and climate plans to be achieved by 2050 (European Union, n.d.a). Ripples of this effect can also be felt in the country's audiovisual sector, with the development of incentives for environmentally sustainable productions (Ministero per i beni e le attività culturali e per il turismo., 2020) and of environmental criteria for the exhibition sector (Ministero de La Cultura,

2023) alongside huge investments to enhance the energy efficiency of cultural spaces such as museums, theatres, cinemas and the eco-friendly restoration of the historic Cinecittà Studios (Italia Domani, 2021), occurring across a dynamic landscape marked by demand value for original audiovisual content, the growth of streaming platforms and the SVOD market and government backing via tax credits (Trabbatoni, 2022).

Keywords: Sustainable Audiovisual Production; Cultural Sustainability Policies; Sustainability Training for Media Production.

1.2. The Significance of the Study

1.2.1. The Problem Statement

While the study assumes a priori that sustainable practices can positively impact the environmental footprint of audiovisual productions and that, furthermore, by now, a general willingness exists among industry stakeholders to acknowledge that footprint (if not fully embrace the measures that mitigate it), it does consider this relatively new domain as fragmented and not sufficiently standardised, especially in the context of the Italian sector. As such, the inquiry is grounded on the observation that despite the increased attention towards sustainability (environmental or otherwise) in audiovisual production, there is still a limited amount of peer-reviewed research on the subject (Ridel, 2023:2). Further, existing studies cite further both the current lack of data on industry-related sustainability issues and the lack of consistent and comparable (Gassmann and Guttefarde, 2021:9), as well as reliable data on the number of audiovisual productions that adopt sustainable norms and measures for each European region (Interreg, 2018:2). Moreover, the existing landscape is marred by disjointed industry initiatives and policies, both in terms of geopolitical alignment and sectoral coordination (Kääpä, 2018:208-209) and coupled with industry practices and funding structures

that inherently complicate and contradict environmental sustainability principles (Sørensen and Noonan, 2022: 173). Adding to these, another layer that presents itself as a research gap is the role, approach and availability of sector-specific education on sustainability within academic and training settings (Gassman and Guttefarde, 2021); a deficiency of technical knowledge which impedes further progress (Kruger et al., 2023:15).

In and of themselves, the above observations and assumptions inform little about the debate that we should be having or, indeed, its significance. As Kääpä (2018) poignantly maintains, this comes with the territory; unlike major polluters such as oil companies, the audiovisual industries traditionally have found it very difficult to develop measurements for assessing their environmental impact. As a consequence, this has perpetuated the view of screen media production as a sector with a comparatively insignificant footprint, and as such, the emphasis on sustainable production norms "does not meet the level of existential urgency" that, for instance, oil companies display (Ibid, 2018:9). Indeed, this notion of urgency for the audiovisual sector is crucial, setting the stage for a preceding discussion on two levels: the 1) environmental footprint of screen media production—and, to some extent, distribution—and 2) the methodologies and strategies for its operational measurement, management, and mitigation.

In the first instance, the urgency becomes clear merely by considering the sizeable footprint of the screen media industry on account of its fossil fuel usage (Sustainable Production Alliance, 2021:2,5). As an example, the production of a single tentpole film with a more than $70m budget was calculated to generate the equivalent total of 2,840 metric tons of CO2 per shooting day, 51% of which is related to production transport, followed by mains electricity and gas (34%), with diesel generators accounting for the remaining 15% (KFTV, 2021:2), while on an average, a single hour in the production of TV content is estimated to emit about 25 metric tons of CO2 (Gassman and Guttefarde, 2021:6), alongside hundreds of tons of scrap metal and construction waste materials (UCLA, 2023). Considering that the global average for annual emissions per capita was 4.68 metric tons in 2022 (Statista, 2023) and that such data exclude considerations for distribution, whose digital delivery constitutes 82% of all internet traffic, with

that traffic itself accounting for well over 1% of global emissions (Evans et al., 2021:5) merits careful attention; underscoring the urgent need to address and manage the environmental footprint of such activities.

In the second instance, the challenge for the screen media sector is to navigate, align and ultimately comply with a complex set of frameworks, standards, and targets that constitute the larger landscape of sustainability agendas. Such agendas, which often comprise the dominant discourses around sustainability in audiovisual production (CineRegio, 2020:33; ECCA, 2023) and with the capacity to affect the sector's eco-cultural policy, include the UK's Climate Change Act (passed into law 2008), the United Nations' Sustainable Development organising principles (adopted 2015), the Paris Accords (adopted 2015), The European Green Deal (adopted 2019), (the much contested) World Economic Forum's Great Reset recovery project (launched 2020), NextGenerationEU and the Strategic Interventions of the National Recovery and Resilience Plan (in effect as of 2021), all of which often share strongly interlinked and mutually reinforcing processes (Koundouri et al., 2021:743) and with potential co-benefits arising from a synergistic implementation (Brandi et al.,2017:2). Tied to the above, what makes adapting swiftly to such contemporary developments urgent is the likelihood of newly introduced reporting initiatives, such as the EU Corporate Sustainability Reporting Directive (in effect as of 2024), also applying, directly and indirectly, to the European screen media industry as a whole. As per Albert et al. (2020: 58) and the European Broadcasting Union (EBU, 2023), the industry will be expected to gradually adopt new responsibilities and business practices in its day-to-day operations, such as the collection and disclosure of sustainability information in order to satisfy the demands of funders, partners and other stakeholders alike (Ibid, 2023), while concurrently, funding conditions for audiovisual projects are becoming increasingly subject to the fulfilment of selective environmental criteria set by certain regional EU film commissions (European Audiovisual Observatory, 2019:47).

1.2.2. Research Questions

Therefore, our inquiry begins by addressing the need for timely, effective and consolidated efforts situated within a specific research environment: audiovisual (film and television) production sets that implement environmentally proactive practices and activities, codified here as sustainable production protocol norms, which function as more effective and safe frameworks for the sector's transition (Gassman and Guttefarde, 2021:10). Towards this, the study advances three interconnected aims articulated as research questions: 1) "How have sustainability norms in audiovisual production developed historically across global and Italian contexts?"; and 2) "How are such norms institutionally integrated into existing domestic screen media production workflows?". Moreover, by anticipating further demand for such norms, 3) "What are the key pedagogical elements for the education and training of upcoming professionals in sustainable audiovisual production, and how might these inform a uniform educational approach at the EU level?".

1.3. Scope of the Study

1.3.1. Delineation

Sustainability in audiovisual production appears to be largely a terra incognita and, as this research will point out, entirely dependent on production contexts, which further elicits the following questions: What will constitute expertise in this scholarship? Which research approach will privilege its inquiry? And ultimately, what forms of nuanced understanding are required to generate a new production of knowledge in this field?

Naturally, a study in audiovisual production from the perspective of sustainability requires a theoretical framework that attributes back to sustainability the same significance. In fulfilling this, however, this study intends not to "reinvent the wheel" by retesting or debating

established Environmental Studies and Science theories related to climate change, technological innovations, footprint calculation methods or, indeed, offer a thoroughgoing critique of the aspects of Development Studies and Public Policy and Administration from whose perspectives it occasionally borrows. Besides providing a re-counting of such past and current relevant discourses when deemed necessary, any commitment to the established fields above will be maintained by mirroring the exact manner and extent to which the audiovisual sector, in real-life domestic and international production contexts, engages and preoccupies itself with such discourses. Practically, this entails that the study, firmly footed in Film and Media Production Studies, locates the testing ground and, indeed, the expertise of its scholarship in its ability to observe and engage academically with the existing norms and standards of sustainable audiovisual production and its practitioners, as well as the respective degree of articulation that underlines them, and in that context, advance past, present and emerging discussions (Whetten, 1989:494).

Equally, the study's investigation into the "behind the scenes" processes of screen media production will often point towards Production Studies, an established scholarship and research line that views the notion of "off-screen" production as a mode of "cultural production" in itself, examining within that, the people attached in such processes as "cultural actors" with a "lived experience of production" (Mayer et al., 2009:2-9). However, the agency of practitioners, "the social conditions within which such agency is embedded", and the "discrete production communities, their material cultures, and their historical contexts" (Mayer et al., 2016: ix-x) are examined here purely in terms of negotiating the advent and integration of newer, more sustainable standards and modes of production into existing practices. Such an examination is aimed at understanding how the implementation of such standards can, by stimulating further environmental awareness, lead the industry to a fundamental structural shift towards what Torchin (2022) describes as "care as practice."

Similarly, the institutional, financial, and regulatory mechanisms pertinent to sustainability in the industry are examined here solely on their merit in advancing the adoption and optimising the implementation of such practices within the industry and specifically in the Italian sector. As such, even though the inquiry occasionally verges on the Political Economy of Film, it significantly departs from that field as well in its reluctance to fully focus on film "as a commodity produced and distributed within a capitalist industrial structure" (Wasko,2004: 227). Without discounting their economic (or cultural, for that matter) significance, films and other audiovisual artefacts are viewed here as "products", "materially and economically inseparable from the biophysical environment" (Bozak, 2012:3). This viewpoint emphasises the environmental and social residue that lingers from the production of the screen image as a product: carbon emissions and energy consumption, the generation of waste, the preservation of locations used in physical film shootings, and within that, the impact on the local communities that are hosting them and further; the health and wellbeing, accessibility, diversity, equity and inclusion of the people, above and below-the-line, that make such "commodities" possible. It's important to note here that the intersections between the "environmental" and the "social" can be nuanced and subject to diverse interpretations; however, such intersections here are examined rather than established, particularly as potential areas of growth when addressing the social dimensions of existing sustainable production protocol norms and environmental management systems and the development of measurable indicators that further highlight these aspects.

Thus, the overall research approach identified as beneficial to the study is decisively inductive as it is generic: it doesn't test hypotheses, relying on "rigid frameworks or predetermined theories" (Daymon and Holloway, 2010:107) but rather aims to capture in a descriptive and exploratory manner, the depth and breadth of a novel and understudied subject, offering new understandings via cross-case comparative examinations that can inform or contribute to the theoretical frameworks and established scholarships from which the research occasionally borrows.

1.3.2. Research Objectives

Considering as an outcome a "new production of knowledge" not confined to one disciplinary framework (Gibbons et al.,1994:vii) that partly or in full addresses the information gaps, discrepancies, challenges and objectives identified above and engaging effectively with them, the current study's ambition is to embed an original, timely and meaningful contribution to the fields of Film Studies and Media Production and the Environmental Humanities, on five levels: by 1) identifying and mapping the understudied and fragmented territory of existing norms, initiatives and policies related to sustainability in audiovisual production; 2) by observing and theorising a multilateral context whereby international trends in sustainable production practices, advocacy and research inform and cross-fertilise domestic (Italian) ones and vice versa.

Moreover, by 3) contextualising the advent of sustainability and environmental stewardship in screen media production as part of a wider momentum of emerging production-related roles, putting policy and accountability into operation (Torching, 2022) such as accessibility and intimacy coordinators, executive coaches, mental health and well-being facilitators, crisis management and COVID compliance officers, on-set safety & health specialists (Screen Daily, 2021) and social impact producers (Mejia, 2021). This perspective will also consider how these new roles intersect within sustainability reporting and production protocol norms, arguing that this shift towards "a culture of accountability" for the screen media industries coincides with what Vaughn (2019: 7) observes as "a larger resurgence" and is often conditional to an underlying global impetus of institutional agendas related to sustainability. Among others, these include the United Nations' Sustainable Development organising principles (adopted 2015), the Paris Accords (adopted 2015), The European Green Deal (adopted 2019), NextGenerationEU and the Strategic Interventions of the National Recovery and Resilience Plan (in effect as of 2021) and the Commercial Organisations and Public Authorities Duty (Human Rights and Environment) UK Bill (passed 2023).

The proposed investigations above are facilitated in the study by adopting 4) an empirical, topical, and in-depth process-oriented inquiry in the form of embedded case studies on how sustainability is implemented in real-world (film and TV) production contexts with varying budget and production values (predominantly small-to-medium, budgeted independent films and tv-series) taking into account various genre conventions (live-action drama, documentary, animation) and production contexts (location and studio-based shoots), and respectively. The primary data that underpin this study are collected by consultation, industry testimony, and other contributions directly from the main sources, which include relevant professionals, academics and policymakers coupled with the researcher's own reflexive experience, observations, and field notes through mandatory industry placements on sustainable production sets of feature films and tv series, in Italy and abroad.

Further to the above, by 5) situating the study's relevance and research outcomes (in the form of theoretical oppositions and implications for cultural and environmental policy, industry practice and academic research) towards a specific national context (Italy), a specific sector (Italian audiovisual industry) and specialist education, whether rooted in academic curricula or professional training.

2. Research Methodology

2.1. Introduction

This research aims to explore the nature, adoption and implementation of sustainable media production protocols in Italian audiovisual production (AVP, henceforward), a domain of growing strategic relevance to the sector's operations. Specifically, it seeks to provide an overview by 1) mapping and retracing the origins and evolution of such norms, 2) exploring their integration in existing media production workflows, and 3) envisioning training frameworks that support the advancement of capacity building of future operators in sustainable production, whether these are pertinent to sustainability managers or role-specific training. Using an inductive approach within a qualitative, multiple case study design, the study's research methodology utilises in-depth, semi-structured expert interviews to provide a general overview of sustainability in Italian AVP while also addressing other European and international contexts. Through this approach, the aim is to generate context-rich observations and reach general conclusions that respond directly to the specific research questions.

Building on the above, the methodological framework presented in Fig.1 outlines a structured, three-year research trajectory, mapping the sequential progression of the study. It begins with the formulation of theoretical propositions during literature review (Year 1), followed by strategic case selection, the creation of a data collection protocol culminating in expert interviews (Year 2), and concludes with the transcription, logging, triangulation, coding and analysis of data (Year 3).

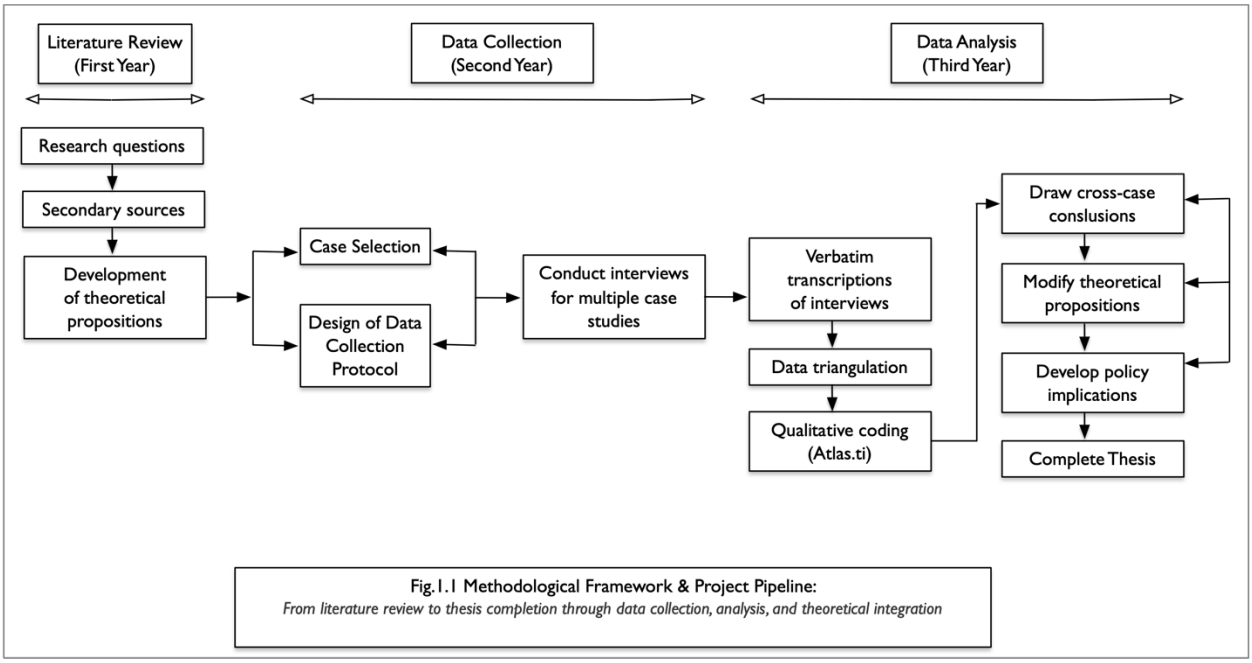

Fig.1.1 Methodological Framework & Project Pipeline:
From literature review to thesis completion through data collection, analysis, and theoretical integration

2.2. Qualitative Data: Interviews

To comprehensively address the research questions, primary data was collected from a broad range of industry stakeholders such as sustainability managers, AVP professionals and initiatives invested in sustainable production, funders, film commissioners and festival organisers, as well as academics, with primarily Italian but also international outputs. As such, the primary data collection method was conducted through a series of interviews directly with the main sources (see section 2.5. below).

2.3. Interview Protocol

The study employed an in-depth, semi-structured interview approach by utilising a fixed interview question protocol for all respondents while allowing flexibility in the number and

sequence of questions, as well as the inclusion of additional or context-specific questions tailored to the responders' areas of expertise (e.g. production, sustainability, policymaking, research focus). The input of responders interviewed was requested in more than one topic unit and, in the case of primary responders, on different occasions through follow-up interviews. Interviews were conducted individually and primarily in English or, where more appropriate and convenient, in Italian and in focus group settings.

Interviews were conducted online, recorded, and, where feasible, captured as video or audio recordings on location, e.g. film and TV production sets and film festivals in Italy and Greece. Participants were also invited to contribute supplemental audiovisual and/or textual material for research purposes, such as digital copies of theatrical releases (or access to them), behind-the-scenes footage or b-rolls, trailers and still photographs, lists of filmographies and credits, production documentation and other relevant bibliographic contributions, along with the clearance for the researcher to use such contributions in the written thesis.

2.4 Structure of the Interviews

The semi-structured, open-ended interview questions were crafted to facilitate a dialogic exchange between the researcher and participants, exploring the diverse ways sustainability has been historically approached, is currently implemented, and could be further advanced within audiovisual production settings.

Drawing on themes identified during the secondary data collection phase, such as recurrent discourses, emerging perspectives, developed theoretical propositions, and working hypotheses, the questions were organised around five key interrelated areas:
1) The history, development, and integration of sustainable practices in production settings;
2) Critical engagements with phases that precede and succeed production workflows — ranging from development, marketing, pre-/post-production, to cultural festivals, awards, and

events, and further, modes of distribution (physical, digital, and hybrid formats) — insofar as these phases intersect with, inform, or amplify sustainability-oriented advocacy and practices in audiovisual production.

3) The role of environmental, cultural, and occasionally political institutions;

4) The framing and operationalisation of "green" and sustainable content;

5) The role of training in advancing sustainable production practices.

While partially predetermined, the interview questions were intentionally formulated with flexibility, enabling participants to engage in a conversational manner that encouraged both lateral thinking and the delivery of detailed, nuanced answers.

2.5. Selection of Responders

2.5.1 Introduction

The knowledge brought to this thesis is derived from in-depth interviews with experts and specialists operating at the intersections of media and sustainability —two domains that, as this study contends, intersect to produce novel organisational roles and competencies pertinent to sustainable governance in audiovisual production practices. To this end, the following section introduces and critically situates four key notions underpinning this line of inquiry within the study: *expertise*, *specialisation, competency* and *authority*. These notions are examined to substantiate the rationale behind selecting the study's interview participants as relevant and legitimate knowledge holders.

2.5.2 The Conceptual Understanding of Knowledge, Expertise, Competency and Authority

At its core, "usable knowledge", according to Arnot and Lemos (2023:223), refers to a knowledge stock that can be used to inform a decision or action directly. Further, as Cash et al. (2003:8086) argue, scientific knowledge pertinent to the implementation of sustainability is most effective when such output is perceived as salient, credible and legitimate; attributes achieved through managing the boundaries between knowledge and action in ways that align with the needs of relevant stakeholders. In this context, interviews with experts and specialists were chosen in their capacity to reconstruct specific, detailed and exclusive knowledge stocks.

In reviewing relevant literature that employs the expert interview methodology (cf. Victory, 2014: 26; Christophe, 2021:9; Biancarelli et al., 2023:41; Hadas, 2024: 12, 24), it becomes evident that the terms *expert* and *specialist*, along with their associated competencies, are often used interchangeably. This conflation is arguably due to what Hadas (2024: 7) observes as an "unstandardised structure of sustainability departments or role descriptions". However, Pfadenhauer (2009: 82) highlights a critical semantic distinction between the two. Quite aptly, a specialist concerns themselves with "task-related, relatively well-defined partial knowledge in a specialist knowledge field", whereas an expert is characterised as "a type of knower who has a good overview of the overall known knowledge in one field"; a distinction that ultimately underscores that not all forms of specialist knowledge can be equated with expert knowledge.

In the context of sustainability, Venn et al. (2022) advance the discourse, moving from a more static categorisation between breadth (experts) and depth (specialists) towards a more dynamic model that foregrounds the actionable capacity behind such categorisations—namely, *competency*. This shift is articulated by identifying two complementary clusters: sustainability research and sustainability intervention competencies, each reflecting distinct yet interrelated dimensions of professional practice (Ibid, 2022:1). Sustainability research competencies comprise a cluster of knowledge, which enables "the profound analysis and understanding" of sustainability issues (Ibid, 2022:7). They encompass basic academic competency (critical and

analytical thinking; research and data management), futures-thinking competency (in assessing the possibility, probability, and desirability of a given development); systems-thinking competency (across social, ecological and economic domains) and value thinking competency, which emphasises a conscientious decision-making process aligned with ethical responsibility and critical reflection (Ibid, 2022:12-14). In contrast, sustainability intervention competencies denote a more action-oriented cluster, enabling professionals to collaboratively develop and implement solutions alongside relevant stakeholders. This is achieved through six interrelated interventive competencies: interpersonal collaboration (focusing on co-creation models that build stakeholder engagement, communication and trust); capacity building (by facilitating an inclusive, participatory and motivating environment that stimulates a shared sense of responsibility); intrapreneurial competency (collaboration in multi-stakeholder settings); strategic competency (in planning, adaptability, timing, goal-setting, and the political navigation of obstacles), political competency (in navigating diverging interests and complex power structures) and implementation competency (in initiating, facilitating and accomplishing sustainable transformation, while securing stakeholder support and overcoming resistance) (Ibid, 2022:7-12).

Lastly, expert knowledge may be understood not only in terms of its quality and applicability, but also through its legitimacy, social recognition, and professional credibility — attributes that confer its perceived *authority*. As Barnett and Finnemore (2012:5) argue, expert authority denotes "the ability of one actor to use institutional and discursive resources to induce deference from others". In this view, while the state is typically considered a primary authority, academics, professionals, experts, NGO leaders, and religious and business figures may likewise be granted authority (Ibid, 2012:5). Building on this notion, Busch et al. (2020:1,4) further observe that expert authority manifests into two forms: de jure authority, which is formally established through official mandates, and de facto authority which is practically recognised through the lived-experience and social acceptance of its knowledge-holders. In this paradigm, nation-states exemplify typical cases of de jure authority, established and maintained through formal, legal and nominal means. In contrast, international organisations

such as the OECD or the World Bank represent de facto types of authority, insofar as their tax policies, banking regulations and debt management guidelines —though not legally binding— are frequently adopted by states due to their perceived expertise, credibility and neutrality (Ibid, 2020:12).

The cohort of professionals interviewed for this study demonstrates that sustainability in the audiovisual sector is interdisciplinary, transversal, adaptive and cross-sectoral, blending and expanding theoretical and practical competencies for those actively engaging with it. By convention, academic researchers operate within the epistemic and methodological boundaries of a particular discipline or intellectual community (Reinecke et al, 2024: 1423). As such, within our immediate context, the film studies canon may typically approach audiovisual media as historical, socio-economic, aesthetic, and technological objects (Hagener and Zimmermann, 2023:13). However, film scholars interviewed in this study, have arguably, on account of their involvement with sustainability, broadened this initial focus to include systems thinking competencies as well as engagement with policy-related discources. Producers interviewed for this study, who typically manage project budgets, schedules and workflows, have expanded their operations by engaging with sustainable production protocols, navigating eco-certifications and coordinating an emerging network of stakeholders and suppliers, while embedding sustainability in their business models and production ecosystems. Similarly, in their attempts to inspire audiences and industry norms towards environmental change, contributing screenwriters and directors have enriched their cultural output by embedding ethical narratives and climate discourses in their storytelling. Film marketeers, while traditionally focused on production and commercialisation strategies (Mingant et al., 2015:2), now expand that strategic capacity to include ethical branding and environmentally conscious messaging. At the same time, film commissioners and policymakers consulted have enhanced their de jure regulatory power and funding capacity by assuming new strategic roles in aligning the procurement of public resources with long-term environmental goals and screen industry objectives tied to their regions.

Furthermore, craft-based specialists consulted, such as set designers and stylists, versed in sustainable lifecycle thinking, have transitioned from conventional textile and material use towards innovative circular design principles and the use of low-waste, ethically sourced materials. In parallel, a second cluster of professionals interviewed advances the social pillar of sustainability while actively reflecting on how it intersects with the sector's environmental goals. Industry roles such as DEI Officers, Health & Safety managers, mental health aides, executive coaches, and accessibility coordinators advocate for more sustainable labour practices, improved risk management and a more inclusive workforce —underscoring the view that sustainability meaningfully expands to encompass equity, workplace dignity and human wellbeing.

Finally, as this overview suggests, the current uptake of sustainability in audiovisual production signals not only a distributed knowledge across multiple areas of expertise and specialised roles—from writers, directors and producers, to film commissioners and designers, but also a reconfiguration of skills and competencies in production departments and workflows. Yet, without a dedicated professional tasked with planning, monitoring, managing and reporting on all these varied efforts, such contributions risk becoming fragmented, underutilised or worse, deprioritised. Towards this, the Sustainability Manager emerges as a key integrative figure—and the cornerstone of this study—mediating between socio-ecological imperatives, policy compliance and the complex realities of operationalising sustainability in audiovisual sets.

2.5.3 Participant Profile and Distribution

In total, 70 in-depth interviews with 64 participants from 24 countries were conducted and recorded via Zoom using granted UniBo institutional access. Of these, the first 35 interviews were completed during the second year of the PhD, with the remaining conducted during the first quarter of the third year. The table below (Table 1.1) provides a detailed breakdown of the participants involved in the study, categorised by their geographical distribution, professional roles, and affiliations. Such a categorisation also reflects the overlapping nature of certain roles, recognising that, particularly within a freelancer-based gig economy, a sustainability professional may simultaneously work in other capacities, such as a film commissioner, researcher, or filmmaker. Further, within this context, the use of the term 'filmmaker' is broadly defined to encompass professionals currently or previously working in various departments and roles, including the Production department (e.g., production managers and coordinators), the Director's department (e.g., directors and assistant directors), and in some cases the Camera department (camera operators).

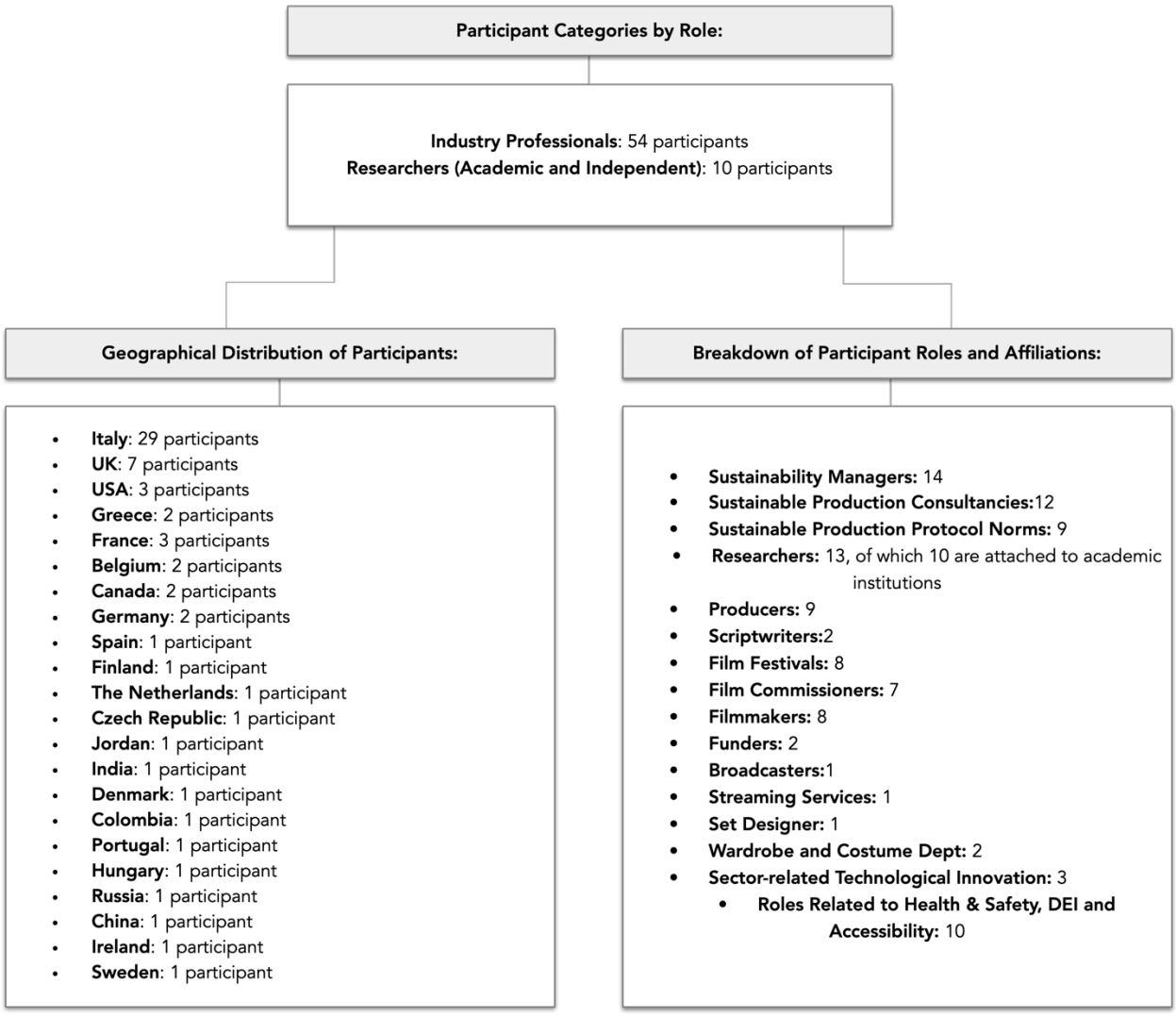

Table 1: Participant Composition Overview

With Italy as its main focus, the study finds that domestic activity in this aspect of production displays the highest number of developed norms, surpassing every other country examined, with seven established sustainable production protocol norms on offer and one relating to sustainable events and film exhibitions operating at the national level. Covered in depth throughout the study, as they developed these are Fondazione EOS' *Edison Green Movie*, Cremonesi Consulenze's *Green Ciak*, *EcoMuvi*, formerly of Tempesta, Sardegna Film

Commission's *Green Film Shooting Guide*, Trentino Film Commission's *Green Film rating system*, IDM Südtirol's *Green Shooting Certificate* and Zen2030's *Zen (Zero Emissioni Nette) Protocol* and, respectively AFIC's (*Associazione Festival Italiani di Cinema*) *Green Festival Guidelines*.

Domestically, the list also extends to include an ensemble of all the relevant film commissions at the forefront of promoting sustainability within their respective territories, with insights from representatives of the Trentino Film Commission, Sardegna Film Commission Foundation, Emilia-Romagna Film Commission, Torino-Piemonte Film Commission, IDM Südtirol, and the Association of Italian Film Commissions. On the film festival front, interview consultations have also included representatives of the Association of Italian Film Festivals (AFIC), Trento Film Festival, Cinema e Ambiente Avezzano and Garofano Rosso, Verona Green Movie Land and its associated ten film festivals, as well as the Green Drop Award at the International Venice Film Festival.

Some participants work or have worked for the following studios and broadcasters: Amazon Studios Italia, Sky Italia, Mediaset Infinity, Sony Pictures Entertainment, the BBC; and production companies such as Tempesta Srl, Groenlandia Slr, Kino Produzione, Scott Free Productions, and numerous others, contributing insider perspectives about operations relating to sustainability as well as elaborations on industry buy-in and audience engagement strategies. Further, participants have been associated with several prominent international working groups, think tanks, consortia and fora: the Sustainable Production Alliance, the European Film Commissions Network, the EcoProd Charter, the European Women's Audiovisual Network, BAFTA Albert Consortium, the TV Industry Human Rights Forum, the Film and TV Charity, CineRegio, Green Screen, the UN-backed Entertainment for Climate Change Action (ECCA), the TV Access Project, The German Association of Green Film & TV Consultants and the Clean Mobile Power Initiative backed by Netflix and The Disney Studios. Further, a long list of commercially and critically acclaimed feature films, TV movies, and series that the interviewees have participated as sustainability experts includes *The Last Winter* (dir.

Larry Fessenden, 2006), *Noah* (dir. Darren Aronofsky, 2014), *The Amazing Spider-Man 2* (dir. Marc Webb, 2014), *Black Panther* (dir. Ryan Coogler, 2018), *The Whale* (dir. Darren Aronofsky, 2022), *Napoleon* (dir. Ridley Scott, 2023), *No Time to Die* (dir. Cary Joji Fukunaga, 2023), *The Little Mermaid* (dir. Rob Marshall, 2023), *Killers of the Flower Moon* (dir. Martin Scorsese, 2023), *Il Capitale Umano* (dir.Paolo Virzì, 2014), *Le Meraviglie* (dir. Alice Rohrwacher, 2014), *Lazzaro Felice* (dir. Alice Rohrwacher, 2018), *Romulus Season 2* (created by Matteo Rovere, 2022), *Chimera* (dir. Alice Rohrwacher, 2024).

2.6. Ethical Considerations

To ensure that potential participants gave their fully informed consent for the interviews, during their recruitment as interview subjects, they were offered the chance to see the range of topics (however, not the actual questions) before deciding whether or not they wanted to take part in them. Responders were also given the right to end the interview at any point and were debriefed by the case study researcher following the conclusion of the study. In addition, responders were provided with relevant participant consent forms diligently prepared to align with GDPR-compliant Alma Matter regulations.

2.7 Benchmarking Existing Studies

Several factors necessitated this breadth of data collection: 1) the relevance of the participants selected as interview subjects, whose sizeable and diverse geographical spread ensured that 2) data saturation was reached by covering a broad range of perspectives, production contexts, and experiences. Additionally, the study also aimed to 3) benchmark the scope, depth and, to an extent, methodologies of key existing secondary sources, including influential long-form (books and theses) and short-form studies (articles, reports and trade literature), available both

in Italian and English, along with selected resources translated from German, French, Spanish, Swedish, Finnish, and Dutch.

In this regard, concerning the in-depth, semi-structured interview and multiple case study methodology employed in the research, it is notable that excluding a recent non-academic industry report with 150 interviewed participants (see Biancarelli et al., 2023), no other relevant comparison study examined had exceeded the consultation of 50 expert participants (indicatively, see Corbett and Turco, 2006; Kääpä, 2018; BAFTA Albert et al., 2020). As far as research in Italian production contexts is concerned, the bibliography is notably more limited, with singular case studies on the subject (see Di Bianco, 2020; Christophe, 2021) focusing on the work of auteur director Alice Rohrwacher, which naturally include forays into the prominent sustainability initiatives of Tempesta Slr and EcoMuvi. Additional studies, each examining up to five cases, address sustainability in the Italian audiovisual sector from a project-based industry management perspective (Chiarini and Khedarchi, 2018), a general inquiry into sustainable practices in live-action, animation, and documentary production (Formenti, 2022), and sustainability as a discourse in Italian film festival operations (Cessaro, 2022).

A final remark is that whereas the present study focuses on Italy, its findings are heavily informed by broader European and global trends in sustainability, especially in the context of co-productions. Consequently, the dynamic landscape of Italian sustainable AVP, as examined here, offers broader relevance as a case study for national industries with emerging sustainable production initiatives or navigating common legislative frameworks and pressures, such as those introduced by the EU Green Deal and the CSRD.

2.8 Transcription of Interviews

Interviews were transcribed following standard verbatim transcription conventions for qualitative research (see Appendix III). By "standard", it is implied that the methodology

excludes conventions steeped in conversation analysis, linguistics or ethnomethodological tradition (Gardner, 2005:3), in which the talk-in-interactions (that may include visual cues and expressions) of both speaker-listener participants are marked and analysed in depth. Instead, per Poland's (1995: 291) observation, the notion of a standard verbatim transcript is by definition limited to "a faithful reproduction of the aural record, the latter being taken as the embodiment of truth as an indisputable record of the interview" and within that understanding, per (Roberts-Powers, 2005:1) the process of transcribing spoken word has to reflect the research objectives further.

As such, for the first 28 interviews transcribed, transcriptions followed a simple process, adhering to the exact reproduction of the spoken words. Brackets were to indicate editorial notes or relevant contextual information, such as filmographies, bibliographies, credits, abbreviations or useful summaries. In addition, timestamps following a running timestamp format (e.g. 0:00:00, respectively, indicating hours, minutes and seconds) are used throughout the text. Further, omissions were made throughout all transcribed texts, omitting verbal repetitions, informal discourses and casual conversation, or in cases where the participant implicitly requested the exclusion of information and when other verbal cues such as "off-the-record" were provided.

Consequently, however, due to the time-intensive nature of the replay-driven manual transcription approach, a more efficient workflow emerged, with the researcher outsourcing the task of transcriptions to specialised, automated subscription-based services, such as Auris.ai and Cockatoo.ai. In most instances, the resulting transcriptions from such services were far from perfect, especially with regards to non-native English accents or overlapping speech, necessitating, again, manual revisions of the text—albeit in a less intensive and more streamlined manner. Equally, where translation services were needed for accurate translations of interviews conducted in Italian, these were powered through deepL, an online neural machine subscription-based translation service. Collectively, the 70 transcriptions amount to a total word count of over 365,000 words and a page count of just over a thousand pages.

2.9 Triangulation of Data

A notable challenge, often requiring careful and diplomatic navigation, was the triangulation of data provided by respondents. On the one hand, historical claims—and occasionally behind-the-scenes disputes—regarding the conception, innovation, or implementation of certain ideas and practices related to sustainability added a layer of complexity to the process. On the other, the credibility of claims made by responders, even when supported by reliable sources, often required scrutiny and contextual evaluation. For instance, as the study finds, in the context of sustainable production norms operating in Italy and beyond, some professionals or labels explicitly or implicitly have asserted during their interviews that their protocols and associated certification schemes possess international validity for ESG reporting purposes. However, despite being recognised at local, national, and EU industry levels for funding or regulatory purposes, most available protocols function as self-certifications, meaning that aside from any quality-assured third-party verification bodies attached to the process, the authority responsible for issuing these certifications is often the protocol providers themselves. Further, for some protocols, the appending certification covers only a partial process, such as, for instance, the carbon calculation and offsetting of emissions and not other aspects related to the socio-environmental impact of an audiovisual project.

Thus, as the study finds, while the overall efforts or value of such initiatives remain significant in advancing the sector's sustainability agenda, such norms often lack recognition as formal standards (e.g. ISO, BSI or UNI) norms outside the industry's context and may, in fact, become subject to revision in the face of more stringent EU legislation addressing eco-label claims for products, including "green certified" audiovisual content, as well as new sustainability reporting requirements, such as the Corporate Social Responsibility Directive (CSRD). Understandably, this observed pattern should not be interpreted as an indication of misinformation or dishonesty on the part of the responders but rather as a tactic to position their services in a more positive light. Therefore, all historical claims drawn from the interviews were cross-referenced using secondary sources, such as domestic and foreign trade press,

industry reports, and press kits. Conversely, claims regarding the validity of certifications on offer were carefully examined and contextualised in relation to current legislation but also in anticipation of forthcoming, stricter regulation, particularly at the EU level.

2.10 Qualitative Coding

For the coding process, the researcher took notes in real-time while conducting the interviews, organising them into a list of preliminary codes (e.g. production, distribution, content). Following the transcription and annotation of all the interviews, transcripts and initial coding were then migrated into Atlas.ti, a subscription-based qualitative data analysis (QDA) software. Within Atlas.ti, over 1180 quotes were identified and systematically categorised into a further 489 thematic codes.

2.11 Thematic Analysis

Building on theoretical frameworks, discourses, perspectives, overarching theoretical propositions and developed working hypotheses identified during the literature review, the process of thematic analysis sought to 1) uncover additional patterns and themes within the interview data, 2) conduct a further cross-case analysis of such elements while gradually 3) setting the foundations for a global benchmark to contextualise and contrast the case of Italy.

As expected, the process of thematic analysis has proven to be an iterative rather than a linear (or straightforward, for that matter) process, with constant revisions, refinements and further analyses of existing codes. Such changes resolved several discrepancies in the analysis, such as contradictory responses. For example, responders often provided dichotomous definitions of "sustainability" in the context of audiovisual production, with some framing it as a one-dimensional concept, a "green" approach focusing solely on environmental aspects, others as a three-dimensional approach, encompassing the triple bottom line framework of sustainable

development), and still others offered adimensional perspectives, verging on abstract, contemplative and philosophical interpretations. A similar challenge presented itself in how responders framed what they considered to be impactful, standard, substandard or merely performative ("greenwashing") implementations of sustainability in audiovisual settings. Such framed responses often reflected a binary perspective —for example, effective versus ineffective or strong versus weak implementations of sustainability—within what is otherwise a dynamic field of practice, continuously shaped by revised sustainable protocol norms, shifting policy frameworks and regulations, and technological innovations; factors that vary across geographical contexts, types of projects (e.g. short- or long-form, genre, live-action drama, documentary and animation productions) and scale of production (e.g. low-budget projects to tentpole films).

In tandem, given the emerging nature of the practice, numerous coded themes derived from primary data were continuously cross-referenced with secondary literature in a sector-agnostic, interdisciplinary manner, spanning fields such as environmental science and overtly STEM disciplines, to political science, policy studies, business, management and organisational behaviour., especially as they related to sustainability. This approach ensured that the arguments proposed by the study contributed meaningfully to broader academic debates on sustainability, particularly as they intersect with sectors beyond the cultural and creative industries.

2.12 Thesis Writing

As input for the thesis and aligning with its research questions and methodology, the resulting thematic analysis was then integrated into the main text in a three-fold manner. Firstly, it provided a structured historical review tracing the origins and evolution of sustainability norms in AVP settings, highlighting key milestones and developments while accounting for various

global and local regulatory contexts and technological and industrial changes (RQ1 "History"). Secondly, the data analysis examined how such considerations and practices are integrated into production settings characterised by long-established, traditional workflows. This involved evaluating both ideal and suboptimal scenarios for integration, using illustrative examples drawn from the various embedded case studies (RQ2 "Integration"). Thirdly, the analysis delved into the educational implications of fostering a relevant approach towards capacity-building training related to sustainable AVP (RQ3 "Education").

While the thematic analysis methodology directly addressed the research questions with corresponding, relevant codes and analyses, the writing approach in the thesis has been less compartmentalised. As such, all information is presented within an overarching narrative that gradually establishes the research's conclusion regarding Italian and EU industry policy, practice, and education in sustainability. Ultimately, this suggests that certain themes, observations, and information are recurrent throughout the thesis, with each subsequent mention introducing a new point or underscoring a point made at an earlier stage but doing so in a coherent, logical, and progressive manner.

2.13 Limitations, Challenges and Amendments

Given the considerable research gap identified during the literature review in the first year of the PhD, the study initially set more ambitious targets than those it currently presents its readership with. In particular, in its initial focus, the study envisioned integrating and analysing quantitative data related to the adoption rate of sustainable protocols and their subsequent certifications by Italian audiovisual productions through their festival submissions for the year 2023 at a prominent Italian film festival. However, during the late stages of the second year of the PhD, the researcher was told that pursuing this lead was no longer feasible. Similarly, access to another significant quantitative study —the development of baseline green indicators

based on the calculated pan-European carbon footprint of audiovisual productions by the European Audiovisual Observatory (see Fioroni et al., 2023)—and one whose data the researcher was counting on was deemed inconclusive due to insufficient data provided by most of its nine major participants, including sustainability labels and carbon calculators operating across the EU. This led the Observatory to comment in its report that the sector is not "mature enough yet to collect homogenous data on a national or pan-European level" (Ibid, 2023b:7). Furthermore, independent requests relating to sustainability production data from professionals and labels consulted in this study were met with resistance, often due to non-disclosure agreements (NDAs). This persisting challenge highlighted the pressing need for greater transparency within the industry, a theme addressed throughout the study.

Another limitation of the study is related to the exploration of sustainability protocols and practices in distribution contexts. Initially conceived as one of the focal points of this research, it became evident to the researcher that engaging in an in-depth manner with sustainability in physical distribution —particularly through research lines exploring the energy efficiency of theatres— would divert the research to an entirely different domain, overlapping with disciplines such as for instance, sustainable architecture and urban planning. Furthermore, available data on sustainable distribution practices has been sparse, often limited to basic guidelines issued by film festivals and sector-specific event organisers. In contrast, discourses surrounding sustainability in digital distribution have been more advanced, thus enabling a more extensive coverage of such perspectives within this thesis. As a result, the inquiry into sustainable distribution was delegated from a focused research point to sporadic yet in-depth discussions throughout the study, especially in areas where it intersected with notions of sustainable production. In addition, the study was initially conceived as a dual output comprising 1) the written component of the thesis and 2) a series of documentaries, utilising segments from the interviews and behind-the-scenes footage showcasing sustainable practices implemented on audiovisual sets. However, this proved to be a rather impractical pursuit due to the resulting low-quality audio and video from recorded interviews, notwithstanding the lack of permission to film behind-the-scenes footage during productions that the researcher

interned for as a Green Production Assistant. Despite what would have been a valuable companion to the textual thesis, the decision was made to abandon this direction, especially given that this component was non-assessed and optional.

Finally, another significant challenge came from the line of inquiry itself. On a policy level, discourses of sustainability in AVP gained considerable momentum post-COVID, driven in part by funding conditions, industry advocacy, technological advancements and policy changes, which, necessitating constant revisions on the thesis, have, at times, made it difficult for the study to establish a static picture of the sector. As such, the study acknowledges that newly introduced regulations within a constantly evolving policy landscape —whether at the domestic or EU level—could potentially outdate or disprove its insights, recommendations and findings.

3. Literature Review

3.1. Introduction

Upon initial examination, we can neatly organise the bibliography on sustainability in audiovisual production as occurring from three distinct research lines: 1) Academic, whereby owing much to eco-materialist discourse, one approach assumes a qualitative perspective, while 2) the other favours a more conventional, quantitative, hard-data-backed inquiry in the off-screen processes of production workflows, disseminated in the form of academic books, articles and reports. Then, another research approach can be observed when considering 3) the literature generated by the industry itself through the endeavours of individual practitioners or collectively through the joint efforts of industry networks, organisations, alliances and think tanks invested in knowledge sharing, advocacy, film policy and the promotion of co-productions, disseminated in the form of reports and white papers, trade literature and related news publications. These are presented here in advancing chronological order, taking into account the development of discourses in the field and the overall historical backdrop in terms of policy and legislation.

3.1. Academia: Qualitative and Quantitative Research Lines

Academic studies examining the complex relationship between the fields of media production and distribution, their industry operations and the environment are not new. Broadly, such inquiries have been addressed previously in a scholarship known as Ecocinema Studies. Also referred to as "green film criticism", "ecofilm criticism", or "ecocinema criticism", Ecocinema is an area of study characterised by its brief history yet fast expansion since the late 1990's (Chu, 2016:11). As those names in use imply, the scholarship's focus has been largely theoretical, with most studies focusing on representational (Kääpä, 2018: 2-5) and ideological (Chu, 2017:6)

concerns. As such, tracing that literary trajectory includes an academic body of work that, from a film studies and environmental humanities standpoint and through a cultural studies and literary criticism lens, primarily examines the environmental and ecological connotations of the filmic text, recognising the necessity of a "closer scrutiny" towards the reinvention of cultural concepts we hold about nature (Hochman, 1998: 13-14), examining, among others, the aesthetics of the rural and urban landscape, the representation of wild animals, the development and use of land and technology (Ingram, 2000) and locating the usefulness of such closer textual analyses of ecological representations in films toward the promotion of an interdisciplinary research framework holistically embracing discourses from Sciences and Humanities alike (Brereton, 2004: 237-238).

With the seminal publication of Cubitt's *Ecomedia* (Amsterdam: Rodopi, 2005), the field is presented with a proposed approach beyond mere film analysis: the notion of an ecological footprint as a discourse in film production and distribution (Cubit, 2005: 99). Thus shaping the view of the topic, this notion was further developed by Ivakhiv (2008:19-23), who, explicitly making the case for "Green" cinematic production mechanisms, proposed a "materialist" research line concerned with "the things, processes, and systems that support and enable the making and disseminating of cultural texts"; a term further refined as "ecomaterialist" by Hunter Vaughan, as a life-cycle exploration of screen media production:" From the extraction of minerals to the chemical waste of its process, the centrality of natural symbolism in its marketing and crossover merchandising, and the restructuring of urban communities based on production culture ebbs and flows" (Vaughn, 2019:13). This materialist approach to ecocinema has generated further inquiries on aspects of environmental sustainability in the media industries, from investigating the intersections between social justice issues and environmental problems affecting impoverished nations, indigenous populations, and racial, ethnic, and gender minorities in both affluent and less affluent countries (Willoquet-Maricondi, 2010:6) and the impact of information and communication technologies and consumer electronics production and their disposal, in Jennifer Gabry's *Digital Rubbish: A Natural History of Electronics* (2011, USA: The University of Michigan Press) and Maxwell's and Miller's 2012 *Greening the Media*

(New York: Oxford University Press), to a carbon-intensive understanding as to how film, as an image resource, relies on the exploitation of natural resources, which it further abuses by contributing to pollution, in Nadia Bozak's *The Cinematic Footprint* (London: Rutgers University Press, 2012). It was, however, with the 2016 publication of Starosielski's and Walker's 2016 *Sustainable Media: Critical Approaches to Media and Environment* (New York: Routledge) that academia appeared to engage with how media production technology processes impact the environment on a macro level, proposing concrete sets of best practices with potential industry policy recommendations.

In this more refined direction, Pietarii Kääpä's influential *Environmental Management of the Media* (New York: Routledge, 2018), while firmly footed in the physical-material impact of media production, shifted the conversation towards a more holistic, socio-environmental paradigm, locating its case studies in a European context. This paradigm emphasises the interplay between labour practices, their management and the environment through a descriptive case study approach of actors and networks involved in industry-related sustainability organisations, critically pointing towards necessary policy changes in the context of regulatory infrastructures and industry practice but also in the context of the content itself; as a means to inspire and educate audiences via the amplification of socially and environmentally beneficial perspectives, through strategically embedded narratives and communications (Ibid.:47). Another significant contribution adding to this process-oriented and impact-specific line of inquiry is Vaughn's *Hollywood's Dirtiest Secret* (Vaughn, 2019), where the industry's fascination with fire, explosions and the excessive use of water and other natural resources are examined on par with their environmental impact; addressing along the lines the ironic contradictions in the processes behind the digital production of notable pro-environmental blockbusters (such as 2009's *Avatar)*, interrogating the manner via which such productions advance the conversation in terms of environmental justice, and the real-world, off-screen effects on the environment embedded in their making. In addition to other relevant book publications (see Kääpä and Vaughn, 2022), the literature includes a small number of peer-reviewed academic articles on sustainability in audiovisual production (Gündüz Özdemirci, 2015; Uhlin, 2016; Di Bianco, 2020; Formenti, 2022;

Guzmàn, 2022; Lopera-Marmol and Jiménez-Morales, 2022) and the role of film commissions toward the adoption of such practices (Cucco and Richieri, 2021: 55-56).

A considerably more limited body of scholarly work of relevant literature pertains to sustainability in film festivals (see Cessaro, 2022 and de Valck and Damiens, 2023) and digital distribution (Marks and Przedpełski, 2022). In Cessaro's *Film Festivals in the Anthropocene* (2022), 'the spatiality" of film festivals [as] "cultural events", to be understood as "a cohesive relationship between territories, touristic flows and ethnographies" is located in the context of sustainability (Cessaro, 2022: 89-90), further registering such activity in Italy by observing the introduction of best practice guidelines in the Association of Italian Film Festivals' (AFIC) *Green Festival Guide* (AFIC, 2022). Subsequently, de Valck's and Damiens' *Rethinking Film Festivals in the Pandemic Era and After* shifts the conversation to a global level, anticipating changes not only in the design, operation and audience experience of film festivals but also in how such aspects will be academically studied in the future, in the context of sustainability and in the aftermath of the COVID-19 pandemic (de Valck and Damiens, 2023: 321-322). As such, the central argument developed by de Valck and Damiens is the need to reexamine "the logic of growth at film festivals and consider its limits", further pointing towards green solutions to common festival habits and the development of festival-specific sustainability goals (Ibid, 2023: 322-323). Similarly, an argument of de-growth and downsizing is also radically implied in the interdisciplinary scholarship and advocacy of academic Laura U. Marks that concerns itself with the environmental footprint of streaming media. Building on previous research (The Shift Project, 2019 and 2020), Marks makes qualitative sense behind comprehensive qualitative ICT data, inviting us to reconsider our consumption habits when accessing streaming content (Marks, 2021:50), assigning along the way best practices and policy recommendations for both the public and private sectors.

Meanwhile, in 2006, the academic discourse on sustainability for the screen sector arguably received its most influential quantitative study with the publication of *Sustainability In the Motion Picture Industry* (Corbet and Turco, 2006). Produced by UCLA's Institute of the

Environment and arguably the most visible and cited quantitative study on the subject, and one that "planted the seeds for a green revolution" (Di Bianco, 2020:154), Corbet's and Turco's study inquires through an even more scientifically sober, macro-levelled perspective on the carbon-intensive processes of audiovisual production around the Los Angeles area, rendering such activity as a significant contributor to conventional air pollution, greenhouse gas emissions, and energy consumption; shifting the conversation towards critical industry policy changes, providing high-level emission estimates and further recommended practices of mitigation. Such recommendations are the result of an input-output life-cycle analysis, which, even though is beyond the scope of this study, essentially underscores the fact that the production of motion pictures has a much bigger impact and footprint that supersedes its de facto operations on account of its reliance on first-order purchases of goods and services from suppliers and vendors, who in turn themselves make (second-order) purchases in order to provide their services, further extending the industry's environmental impact reach (Corbet and Turco, 2006: 6-7). In the same vein, subsequent research appears as the subject of several STEM postgraduate dissertations. Indicatively and as relevant, these include quantitative inquiries in the use and design of carbon calculators for the audiovisual industries (Jette,2020), addressing and mitigating the impact of television production (Mohebi, 2023), calculating the footprint of physical and digital distribution (Schoors, 2023) alongside the greenhouse gas emissions inherent, in film screenings (Schurmans, 2023), and in the use textiles in costumes and props (Serrien, 2022).

3.2. Industrial Organisation and Institution-related Literature

Tracing the literature stemming from the industry itself through the efforts of collective associations, industrial organisations, film commissions, individual professionals, and trade-related advocacy think tanks leads to a body of work that progressively underlines the manner in which the industry has preoccupied itself with the subject of environmental (and, eventually, social) sustainability in a production and distribution context. For the purposes of registering

such discourses as they emerge from the audiovisual industry itself, proposing a timeline of such developments would be beneficial. Therefore, such sporadic (and arguably, fragmented) contributions in the bibliography can be grouped chronologically as they reflect four periods in the development of relevant discourses: 1) Initial Awareness, 2) Building Momentum, 3) Expansion and Policy Development and 4) Recent Developments and Future Focus.

3.2.1. Initial Awareness (1992-2006)

Bibliographically, we can tentatively conclude (see Flanigan, 2002:92) that the earliest attempt at making a case for the environment in audiovisual production, why the industry should care, as well as codifying a set of best practices in print, appears to be with the publication of *Low Impact Filmmaking: A Practical Guide to Environmentally Sound Film & Video Production; a Book of Ideas and Resources* (US: Glass Eye Pix, 1993). Compiled of empirical observations from the author's 1990 production of *No Telling* (dir.Larry Fessenden, 1991), an independent horror feature film shot in New York, *Low Impact Filmmaking* was written in pre-internet times when all such activity was purely voluntary, disincentivised, unsupervised and uncertified. In the absence of standardised norms, greener production alternatives (e.g. clean energy film set generators or commercial hybrid and electric vehicles), or the current urgency and institutional drive for action, Fessenden's book appears to have, on all accounts, inaugurated the key, textbook concepts of the practice. Timely and relevant to this day, these consist of devising early a sustainability plan during development and pre-production, opting for paperless communications, and adhering to circular economy principles for achieving zero waste through reduction, reuse, recycling and donation, while today's role of a "sustainability manager" is delegated to an environmental consultant attached to the project. Furthermore, the book assesses each production stage, department, and workflow, as well as lays down specific tasks and responsibilities of each crew member. It outlines energy conservation, efficient transportation plans, the ethical treatment of animals and the provision of sustainable and ethical vendors during all facets of production, including the preference for organic and locally

sourced catering and craft services, instilling thus the habit of more ethical consumerism in film sets. The book also underlines the need to contextualise such practices with initiatives of the third sector pertinent to environmental advocacy and animal rights, such as Greenpeace, People for the Ethical Treatment of Animals (PETA) and Performing Animal Welfare Society (PAWS). In all of the above, Fessenden and Ellebogen are conscious that their proposed "environmentalism" would be essentially unpopular to the sector, met with resistance and "open to all sorts of sarcasm and condescension, even from [industry] groups that generally take the road to reform" (Glasseyepix, 2007). Though its arguments are articulated more in terms of global warming, which only accounts for the Earth's rising surface temperature and not for outcomes such as melting glaciers, heavier rainstorms and more frequent drought (Kennedy and Lindsey, 2015), *Low Impact Filmmaking* appeals to its independent filmmakers' readership, predicting that "low impact" practices will in time become a concern even for Hollywood "if for no other reason than that it's good for business" (Glasseyepix, 2007).

There is little evidence towards the impact of Fessenden's and Ellebogen's 1992 book, apart perhaps from providing a reference point and baseline study for two industry-focused studies conducted by the University of California Los Angeles (UCLA). In the first instance, following the negative publicity around the contentious and hostile to the environment filming of *The Beach* (dir. Danny Boyle, 2001) in Thailand, Flanigan's 2002 publication of *The Environmental Cost of Filmmaking* explores how relaxed regulation and permit granting has allowed filmmakers to disregard the environmental impact of their productions, often facing minimal to no accountability when such impact is adverse and subject to litigation (Flanigan, 2002: 70). Even though, Flanigan's investigation is approached as a Case Study Law inquiry, it introduces a number of significant concepts. To begin with, it brings our attention to the fact that often, localities that act as hosts to film productions receive substantial revenue by visiting production troupes, resulting in more lenient regulation (Ibid, 2002:71), alongside other attractive incentive packages (Ibid, 2002:77-78). Subsequently, it not only highlights the necessity for productions to complete an environmental impact assessment (Ibid, 2002: 89) but also the imperative of introducing a relevant production role of a designated professional within the company "to

coordinate [the] remedial efforts when environmental damage occurs (Ibid, 2002:73). Further, the study locates the industry's reluctance to comply manifesting on two levels: time constraints and budgetary concerns that mitigate against the development of and compliance to an environmental assessment but, perhaps more importantly, the argument that if a studio drafts such a statement, it opens them up to lawsuits if the drafted plan is not followed, resulting to environmental damage (Ibid, 2002:89). Subsequently, *The Environmental Cost of Filmmaking* explores film production's relation to both local and national governmental authorities and the often bureaucratic manner permits obtained from either come into conflict, often with damaging consequences (Ibid, 2002:82); as such it concludes that productions should practice due diligence in planning and complying with an environmental risk assessment plan in pre-production, if not for environmental reasons, in order to avoid eventual lawsuits, work stoppages and ensuing negative publicity (Ibid, 2002:95).

In the second instance, Fessenden's and Ellebogen's book is cited as a groundwork best practice study on the (much later) seminal 2006 publication of *Sustainability In the Motion Picture Industry*. Further, in Corbet and Turco's UCLA study, an informal content analysis of how mainstream trade literature, such as the Hollywood Reporter and Variety, engaged with the subject of environmental sustainability in film production for the years 1991-2004 further confirms that the vast majority of industry coverage of environmental discourses was centred around environmental content rather than the environmental aspects of the sector's operations (Corbet and Turco, 2006: 5). A subsequent attempt appears with the 2005 launch of the *Greening the Screen* toolkit website (now defunct), where a simplified walkthrough for sustainable solutions in audiovisual production is provided. Interestingly, the initiative, commissioned by New Zealand's Ministry of the Environment, highlights the importance of its resources when meeting the demands of leading overseas screen production companies visiting New Zealand as a filming destination. With such productions having voluntarily adopted environmental management and corporate social responsibility standards, the initiative insists that the local film sector and talent base "takes ownership of this process" (MFE.GOVT.NZ, 2005:5). As such, it appears that the conversation had, bibliographically, partially reconvened,

and indeed advanced with the emergence of sustainability reporting as part of Corporate Social Responsibility (henceforward CSR), which, with the establishment of the Global Reporting Initiative in 1997, and the publication of its guidelines in 2000, became accessible to a large number of corporations around the world (Chiarini and Khedarchi, 2018:7) and is to this day the most widely used sustainability reporting standard (KMPG, 2020:25).

3.2.2. Building Momentum (2006-2013)

Following a series of corporate scandals throughout the '90s, early 2000's and all the way to the aftermath of the 2008 financial crisis (Gulyás, 2015: 657; Kharabsheh et al., 2023:1) increased pressure on companies to act in socially and environmentally responsive ways affected the operations of business organisations (Gulyás, 2015: 657). Consequently, there was a gradual but noticeable trend among many corporations towards embracing Corporate Social Responsibility (CSR) frameworks and sustainability reporting practices. As Marisol (2016:16) posits, there are two competing theories regarding the attainment of the "common good" within the framework of capitalism: the first is centred on the concept of lassez-fair and in the free market's (assumed) inherent ability to regulate itself, while the second emphasises the need for governmental intervention and regulation. The concept of CSR, first introduced in 1960, cuts across both assumptions (Ibid, 2016:16), positing that corporations need to act responsibly towards society (and, by extension, the environment), being accountable towards a broader set of stakeholders beyond its shareholders. (Wang et al., 2016: 534). Considering that an increasing number of investors are actively seeking out companies with responsible practices for their investment portfolio, implementing CSR strategies entails a series of advantages for an organisation, such as shaping better relationships with all of its affiliated stakeholders and increasing employee morale (Ksiezak, 2016: 56) and further, building a better brand image, customer recognition and loyalty (Araújo et al., 2023:1-2). For society at large, benefits include the overall philanthropic activities stemming from the organisation, the protection of the environment and inspiring a

social activation in the organisation's value chain towards adopting similar responsibilities, leading to fairer competition (Ksiezak, 2016: 60).

As such, with credibility and managing a positive reputation being key drivers at the heart of both CSR and the media (Kääpä, 2018:45), it was the media sector itself that promptly initiated the conversation and action on this topic (Sandoval, 2009: 50). As an example, in 2001, as perhaps an early instance of what Kreft observes as "CSR Institutionalization", manifested by specialist training, implementation and sustainability reporting on ISO 14001 (Kreft, 2015: 328-329), Sony Pictures saw to it that all of its North American operating units, including Sony Pictures Studios spaces, achieved ISO14001 certification, which focused on the reduction of the environmental impact in key areas such as water conservation, energy and waste management and reduction as well as pollution prevention (Sony, 2002; Sony Pictures, 2022). Then, as early as 2002, in the United Nations' report *Good News & Bad: The Media, Corporate Social Responsibility and Sustainable Development*, as the name implies, the role of the media is broadly but explicitly contextualised along the lines of CSR and Sustainable Development, as are the sector's operational responsibilities in terms of governance, accountability and transparency (SustainAbility and UNEP, 2002:3-5). The sector's role and responsibilities were further fleshed out in the proceedings of the United Nations' International Expert Meeting in Marrakesh the next year, emphasising the need to work effectively with media and advertising sectors for the promotion of sustainable production and consumption (UN, 2003: 32). In exploring operationally the implications of such connections between the media sector (broadly) and non-financial reporting frameworks, the work of the Media CSR Forum added significantly to the conversation.

Established in 2001, the Forum was initiated by leading British media corporations such as the BBC, Sky, and the Guardian Media Group in order to foster CSR and sustainability practices within the media industry. In its 2005 *Key CSR Issues for the Media Industry* report, "environmental management", defined as a process of "maximising the positive and minimising the negative impacts of an organisation's operations and product output on society

and the environment by meeting stakeholders' expectations and complying with regulatory standards", was identified as a key issue for many stakeholders in UK-based media industries (Media CSR Forum & KPMG, 2005: 6), while in the Forum-affiliated discussion paper *Through the Looking Glass Corporate Responsibility in the Media and Entertainment Sector*, responsibility for the industry is for the first time articulated along the lines of content, as much as environmental impact (WWF-UK, 2004:5). Immersing themselves into CSR frameworks and practices, key broadcasters affiliated with the alliance took notice, gradually improving their overall performance; with Sky becoming the first media company to go carbon neutral for its own operations in 2006, cutting emissions and offsetting the rest (Comcast, 2020) and the BBC introducing the measurement of performance indicators in energy consumption, carbon emissions, water use, waste/recycling and travel in 2009 (BBC, n.d.). Further, in its 2008 report, the Media CSR Forum identified the recent prominence of climate change as part of the discourse among its stakeholder organisations, which, aligning with contemporary discourses, should be "concerned with climatic changes as a consequence of man-made pollution" as much as "operate in a way that minimises their environmental impact" (Media CSR Forum, 2008: 18-22).

Besides CSR discourses, evidence from the same time suggests the promotion of sustainable production initiatives from quasi-autonomous non-governmental organisations as well as local municipal entities in Britain. Commissioned by the UK Film Council, [whose responsibilities and functions following its 2010 dissolution were delegated to the British Film Institute (Child, 2011)], Gardner's 2007 *Developing an Environmental Strategy for UK Film* not only offers a factual presentation of complex environmental data, relating them to contemporary and future industry-specific challenges, and strategising the needed solutions in the context of the policy and legislative frameworks of its times. In this manner, it locates the impetus and urgency for the UK's film sector to adapt on par with meeting domestic targets in the reduction of greenhouse gas emissions, following the proceedings of the Kyoto Protocol (implemented in 2005) and further, the UK's Climate Change Levy (2001) and Carbon Reduction Commitment (2008-2009), alongside many other mandatory requirements, targets and goals stretching back

to the mid-'90s (Gardner, 2007: v-vi). It further frames current discourses in a holistic sustainability context where the industry is urged to reimagine its practices and rearrange its priorities towards the realisation that "a durable wealth creation process cannot take place in a world of ecological stress" (O'Riordan and Voisey, 1998; as quoted in Gardner, 2007:2). Simultaneously, Green Screen, a joint effort between FilmLondon and former prime minister, then Mayor of London, Boris Johnson, urges the performing arts sector in London towards a more sustainable management of its operations (Greater London Authority, 2008) and subsequently, the Film and TV industry (Greater London Authority, 2009). In the latter, beyond planning that involves the adoption of basic action plans, energy management policies and practical recommendations for production settings, the guide enlists two important ideas: the introduction of 'green' policies for suppliers attached to audiovisual projects in order to achieve waste reduction for London-based productions, and further, the sector's synergy in this process with municipal authorities, under the country's *Green Procurement Code* (Greater London Authority, 2009:28). Though the suggestions of both guides appeal to their readership on a purely voluntary basis, they do show that by the time of their writing, a majority of leading theatres and cultural trusts besides British broadcasters and studios were actively engaged with the process (Ibid, 2008:18-22; 2009: 27).

In the meantime, in the 2012 publication of the GRI's *Sustainability Reporting Guidelines Media Sector Supplement*, all such discourses were significantly consolidated into a sector-specific reporting framework that required transparent disclosures in economic and environmental areas of organisational activity, and additionally, on social aspects, such as decent labour and work practices with respect to human rights (GRI, 2012: 36-44). While sustainability in media production contexts is not specifically mentioned but rather broadly implied, the GRI update enlists three important and actionable ideas for reporting media organisations: 1) procedures internal to the organisation related to training and raising environmental awareness among its members and stakeholders and 2) initiatives to mitigate the environmental impact of products and services (Ibid, 2012: 38-40), as well as 3) the inclusion of external assurance of these reports

by competent practitioners in the validation of such reporting (Ibid, 2012: 73), points of which the audiovisual sector evidently took notice, as in the case of the CineRegio network.

3.2.3. Expansion and Policy Development (2014-2019)

Founded in 2005 as a non-profit consortium of 15 regional film funds in Europe (54 as of now), CineRegio formed its GreenRegio subgroup in 2012, aiming to share and promote knowledge and develop a shared methodology for sustainability (CineRegio, n.d.c), further aligning such practices with the overall sector's CSR agenda (Evans and Dicks, 2014:4). Following this, in the network's inaugural 2014 *Sustainability in Vision* report, CineRegio promptly contextualised the sector's initiatives within the broader framework of Sustainable Development and the work of the Intergovernmental Panel on Climate Change (Evans and Dicks, 2014:7).This observation is important on three levels, one of which is that it arguably registers that the notion (and, undoubtedly, the reality) of climate change had, by 2014, already entered public discourse at large in Europe's audiovisual sector (including Italy) and that, by extension, concrete mitigation strategies have been, at the very least, part of that conversation for different industry stakeholders across Europe. Thirdly, it suggests the integration and further promotion of concepts and frameworks from established policy networks and scientific panels within media production settings, a contextualisation that is echoed in most subsequent industry reports (indicatively, Interreg, 2018: 2; Albert, 2020:9; BFI, 2020: 14; Gassmann and Guttefarde, 2021; Creative Europe, 2023: 7).

In addition, most subsequent reports and trade literature also display a marked preference for operationality, transitioning from the conceptualisation and justification of sustainable production processes to the practical execution. An example would be the German initiative Green Film Shooting, which operates as a forum for the sharing of best practices and a publisher, diffusing such information through its magazine under the same name. Being the only sector-specific magazine whose issues have been published annually since 2013, *Green*

Film Shooting has extensively covered the development of sustainable production, albeit with an operational and technological green-procurement focus. As such, the focus is decidedly on case studies with innovative solutions and optimisation opportunities such as energy-efficient technologies (from LED lighting kits and lower-emission generators to server-based solutions for productions shot on location), sustainable sourcing solutions (from set to costume design and food procurement for production and exhibition settings), innovative production methods (such as climate-neutral studios and the use of VR workflows as sustainable alternatives) and other eco-conscious business and community initiatives (such as relevant education, training and advocacy, equipment rental houses and innovative start-ups). Another contemporary addition also includes the 2014 publication of *Going Green and Staying Green: A Cost-Benefit Analysis of Sustainable Filmmaking* (O'Brien 2014). Written by Emelie O'Brien, one of the field's most esteemed and active practitioners, the document dispels myths and addresses common misconceptions among industry stakeholders, illustrating the budgetary savings resulting from proactive environmental action when it comes to managing production footprints related to water waste, dishware, transportation, batteries, waste composting, props, set dressing, wardrobe, debris, paper-less practices, and film e-waste, as well stressing the importance of an eco-supervisor in the process.

Another inquiry into the operational side of sustainable practices concerns itself with addressing gaps and barriers. Although brief, Interreg's 2018 *Greening the Audio Visual Industry* baseline report identifies key barriers, such as poor awareness of environmental sustainability, lack of government funding, unified methodologies and reliable data and the (persisting) perception of sustainability as an expensive pursuit (Interreg, 2018: 2-3). As such, it provides observations and recommendations stemming from the experience of its partners from 9 European countries to address these barriers, including the promotion of best practices, initiatives for increasing awareness, and the timely need for sector-specific training. Further barriers of an institutional nature are also addressed in the influential report *Where Are the Women Directors? Report on Gender Equality for Directors in the European Film Industry*. Following an extensive two-year research prior to its publication in 2019 by the European Women's Audiovisual Network

(henceforth, EWAN), the report finds that, on average, only one in five films across the seven countries examined is directed by a woman, and even though such talent exists, it is not fully exploited by the industry. This underrepresentation is further perpetuated by low funding opportunities and gender bias which further affect the market's willingness to invest in female talent, thereby creating thus a vicious circle (EWAN, 2019: 7-9). Although not an "environmental" inquiry per se, the agenda of EWAN's advocacy for sustainable gender equality is practical; focusing on empowering female talent through the facilitation of networking events, capacity-building masterclasses, scriptwriting clinics and training residences (Ewawomen, 2024). As we will further examine through this study, such initiatives designed to address and remedy disparities in the context of Diversity, Equity, and Inclusion (DEI, hereafter) through tangible measures in production settings often contribute to and overlap with broader sustainability initiatives in the sector.

Finally, a seminal contribution to the bibliography includes addressing the role of film funds and other aid schemes in the sector's sustainable transition. Published by the European Audiovisual Observatory in 2019, *Mapping of Film and Audiovisual Public Funding Criteria* in the EU registers the allocation of funding dedicated to offsetting sustainable and environmentally friendly production expenses and the provision of environmental certifications and shooting permits (European Audiovisual Observatory, 2019:76-80). Such support is offered by selected film funds based on the fulfilment of listed requirements, outlined as quantifiable (and subject to verification) criteria accompanied by an evaluative grid (or rating system) for the purpose of assessing compliance according to a pre-arranged sustainability plan (Ibid, 2019). For example, criteria subject to funding received from the Trentino Film Commission include energy savings, transport and accommodation, catering and material selection, waste management, and communication (Trentino Film Commission, n.d.:4,10,15). In addition, the report further documents the rapport between the financial aid mechanisms on offer with national mandates (i.e. Flemish Pact on Clime and Energy) and international frameworks (Sustainable

Development Goals), as exemplified in the case of the Flemish Audiovisual Fund (VAF) (Ibid, 2019).

3.2.4. Recent Developments and Future Focus (2020-present)

Much like in numerous other sectors, the advent of COVID-19 precipitated the strongest adverse impact on the global film industry's history (European Audiovisual Observatory, 2019:1). As highlighted by both international policy networks, forums and sector-specific organisations, preventive measures such as isolation and social distancing had a special impact on cultural, artistic activities and the entertainment sector, affecting all of its production and distribution settings in which the congregation of people and the relationship with the environment form a constitutive dimension (Bulloni Yaquinta et al., 2021:1; Orankiewicz and Bartosiewicz, 2023). As such, a marked difference in the manner in which the audiovisual sector engages with discourses of sustainability can be observed thereafter in terms of assuming a more alarming rhetoric, concrete planning and strategic implementation, as is evident with the publication of *Screen New Deal: A Route Map to Sustainable Film Production* (BAFTA Albert et al., 2020). The British Film Institute's and BAFTA's Albert joint effort acknowledges the necessity of an empowered film industry Post-Covid and, owing much to its collaboration with Arup, a building and engineering development firm, advocates for changes in physical and digital infrastructure as well as existing working practices that would make sustainability a reality (Ibid, 2020:13). Such changes begin with proposing a futuristic (and arguably radical restructuring) of studios buildings, facilities and locations "designed, procured and operated with flexibility and adaptability in mind to accommodate changing tenant requirements" offering user-centred solutions that "encourage a work-life balance, supporting people's productivity and optimise the multimodal mobility of people and goods" (Ibid, 2020: 15).

Besides provisions for a Post-Covid, sterilised industry with tighter controls about "materials and people who enter and leave spaces" (Ibid, 2020: 10), such interventions entail that, through

adequate planning, energy demand reduction in future studio premises can be feasible through green infrastructures powered by renewable energy generation with microgrid battery storage. Equally, a reduction in water demand can be achieved through rainwater harvesting and greywater recycling using separate plumbing to standard sewage systems. Furthermore, in this setting, digital tools are used from the outset in managing and reducing carbon emissions and waste: from digitising standard workflows with collaboration platforms and cloud computing (Ibid, 2020: 46) to virtual planning and pre-visualisation and the digital fabrication of sets designed for deconstruction through 3D printing with microplastics (Ibid, 2020: 22). Moreover, additional work-life facilities on studio sites in support of crew and staff that include all-inclusive changing rooms lockers for personal deliveries, childcare services and laundry services (Ibid, 2020: 43) and the introduction of mobile sanitation solutions such as composting toilets (Ibid, 2020: 29). In all of the above, informed, coordinated, responsible and local sustainable procurement choices in the sourcing of materials are key (Ibid, 2020: 17), as is the proposal of a designated industry sustainability fund that would help reduce the associated enterprise risks for studios embracing these upgrades, covering initial set-up expenses while partially offsetting operational costs (Ibid, 2020: 57). Such bold proposals affecting every production department and respective value chain are underscored in *Screen New Deal* not only by anticipating government-mandated, legally binding carbon reduction commitments, which will impact all industries and society at large but also the very expectations of investors measuring "an investment's overall impact on environmental, social and governance factors to determine its worth" (Ibid, 2020: 58). Similarly, a forecast for "muscular regulations over future industrial practices" is also echoed in BFI's standalone report *Green Matters* (BFI, 2020:59) of the same year. Taking stock of sustainability in production settings before COVID-19, *Green Matters* argues that in spite of Climate Change-related legislation, the industry is still in a period of transition, largely characterised by voluntary actions that can be grouped into two operational approaches. One observes UK-studio-backed productions adhering to the PGA *Green Production Guide* standards in the context of global corporation CSR. At the same time, the other revolves around independent productions taking advantage of sustainable protocols (for the UK, these include Albert, Greenshoot and Green Screen) (Ibid, 2020:59). While both

approaches are parallel and often overlap, they cannot claim to be fully complementary. As such, the BFI addresses the "dangers of disengagement from potential joint action" if sustainability initiatives are misaligned with both corporate thinking and commercial realities, as well as the day-to-day practicalities of production settings (Ibid, 2020:59-60).

Another instance of how sustainability in audiovisual production can be approached arguably manifests itself in the promotion of sustainable tourism and territorial development through the work of regional film commissions. As noted by Cucco (2013: 264), the advent of film-friendly policies by locally-based, authority-established initiatives, such as film commissions, has implications that supersede film production itself, such as institutional, economic and, as of recent, environmental (Cucco and Richeri, 2021: 55-56) ramifications, all of which intersect operationally in what Cucco aptly calls "on-location film tourism". In contrast with film-induced tourism, a promotion which essentially capitalises on high-profile tourism destinations by utilising film-related aspects in inbound marketing campaigns (Connell, 2012: 1008) such as filming locations that such destinations are renowned for, on-location film tourism refers to those destinations acting as hosts to audiovisual productions and their crews (Cucco and Richeri, 2021: 52), as in the case of Barcelona. As the second most populous municipality in Spain and a city heavily invested in decisive climate action (Borrell et al., 2025: 2, 14), Barcelona sets out, through its film commission's *Guide to Good Practice* (Barcelona Film Commission, 2020) a series of responsibilities for visiting international audiovisual productions. Heavily informed by the UN's Sustainable Development Goals, such commitments consider both the environmental and social aspects of organising a film shoot. Beyond standard practice considerations such as reduction in atmospheric emissions, consumption of materials, energy and water, the Guide underlines the importance of reducing noise in the city (Ibid, 2020:12), cultivating a relationship with the local community and supporting its economy in line with circular, collaborative and sustainable criteria (Ibid, 2020:13). Towards advancing this, the Barcelona Film Commission asks among others that visiting production troupes hold meetings with representatives from the local community, offering compensatory measures to the community affected, as well as hiring people at risk of social or socio-economic exclusion (Ibid,

2020:13-17). Similar responsibilities are also espoused by the Catalonian Film Commission on a regional level in its *Guide to Implementing Sustainability Criteria in Filming and Film Shoots* (ICEC, 2020) of the same year.

In that same year, research focusing on novel DEI approaches to production management and organisational change further complemented and substantially extended sustainability discourses within the audiovisual sector. Formed in 2017 as an offshoot of BAFTA's Albert and with the patronage of Sky, BBC Studios, ITV, NBC Universal and IMG Studios in the UK, the TV Industry Human Rights (TVIHR) Forum examines the making of TV programmes through a human rights lens; an approach heavily informed by the UN Guiding Principles on Business and Human Rights (ratified unanimously by the Human Rights Council in 2011). Probing such an investigation in its seminal 2020 report, *Research into the Labour Rights of Ancillary Workers in UK TV Production* (TVIHRF, 2020), the Forum identifies the risks, adverse impacts and absence of due diligence with respect to the labour rights of workers that provide essential services to TV productions but who are not seen part of the crew. Such workers include people involved in set construction and rigging, stagehands, facilities, catering, cleaning, security and transport (Ibid, 2020:7), which, as the study finds, can be subject to an inherently unsustainable working culture characterised by excessive working hours and poor working conditions (Ibid, 2020:5) such as low-paid and subcontracted, temporary and insecure employment as well as unsanitary, dangerous and physically demanding work (Ibid, 2020:41). As such, the report looks beyond the long-held, "business as usual" assumption that such working conditions are unavoidably part-and-parcel in the production of typical TV content (which includes drama, comedy, factual entertainment, sports and news), providing further recommendations in mitigating such workforce risks. Of immediate relevance to the labour rights of audiovisual professionals is also the work of the Film and TV Charity. Focusing on the mental health impacts of film production workflows, the Charity reports in its inaugural cross-sectional 2020 report, *The Looking Glass*, that approximately two-thirds of Film and TV workers have experienced depression (with the same number of professionals contemplating leaving the industry), an alarming figure

considering the two-in-five national per capita average of mental distress (Film and TV Charity, 2020: 5-6). At the root of this crisis, the Charity reports, lies an intensive work culture with extremely long working hours, occasional isolation, and high incidences of bullying, which largely remain unaddressed due to an acute sense of competition and fear of speaking out (Ibid, 2020: 56-58). As such, and calling for a joint, industry-wide activity that has been effective in other sectors but is lacking in screen media production, the ongoing work of the Charity, as we will further explore, has sparked conversation, inspiring a number of professionals towards mental health advocacy, wellbeing facilitation and executive coaching and the development of dedicated production protocols (Wilkes et al., 2020:17).

In 2020 also, as a direct response to the COVID-19 pandemic, EU institutions adopted a substantial stimulus package to boost the recovery of the continent named Next Generation EU (CultureActionEurope, 2021:4). This initiative, primarily driven by its financial component, the Recovery and Resilience Facility, has sought to allocate funds from 2021 to 2026 to EU member states in order for them to better cope with the pandemic's aftermath as well as make their societies more sustainable, resilient and better equipped to meet their respective green and digital transitions (Ibid, 2021:40). Pertinent to Italy's Cultural and Creative Industries, such financial injections were set to subsidise the upgrade of the historic Cinecittà Studios (an investment of € 300 million), with great attention dedicated to the identification of "eco-sustainable techniques and technologies for controlling the environmental impact in all phases of the production cycle, with specific reference to plant and technological solutions for the lighting, mobility, construction of film sets and audiovisual products" (Italia Domani, n.d.). Furthermore, the initiative includes the enhancement of energy efficiency through state-of-the-art installed new-generation power plants and photovoltaic panels in order to allow for a 70% reduction of current needs, alongside an additional € 160 million subsidies for the capacity building of culture operators in making the digital and green transition (Camera dei Deputati, 2021:103). As such, and although sustainable production and distribution are not explicitly mentioned, they are indeed implicitly suggested within that context.

Elsewhere in Europe, and in particular, the German-speaking world, the audiovisual industry adopted a more decisive and informed stance on the subject of managing and curbing its production emission, as it becomes evident from the literature generated over subsequent years. In 2021, Gassmann's and Gouttefarde's very influential report, *Greening the Audiovisual Industry: The Best Strategies and Their Costs*, boldly calls for a "Green European Audiovisual Industry Deal" which, by offering savings in terms of consumption and therefore costs, and through investments in green technologies that will create new business ventures and job opportunities, a "Green Domino Effect" of beneficial developments will be initiated (Gassmann and Guttefarde, 2021:8). As such, the report takes adequate stock of current figures reported by studios and broadcasters all across Europe relating to average emissions from film production and TV programming, calculating the costs, occasional disruptions and eventual return-of-investment associated with pursuing the sector's green transition. Further, it anticipates the imperative of action by taking into account the gradual increase in distribution platforms for Over-the-Top (OTT) services, which include service modes such as Subscription-Video-on-Demand (SVOD) and Transactional-Video-on-Demand as well as free on-demand, besides cable and satellite services (Ibid, 2021:19). Such an increase is proportionally correlated with both increase in production as well as consumption (Ibid, 2021), leading to a "rebound effect" that reduces or even counteracts existing efforts (Ibid, 2021:21). In order to remediate the environmental impacts of such an increase, and besides utlilizing established sustainable production methods and green innovations, the authors saliently point towards the development of appropriate legal frameworks and reporting systems extending to public broadcasters (Ibid, 2021:40), and standardised methods of (quantitative) data collections with regards to emissions and life-cycle cost analysis (Ibid, 2021:56), that have to be implemented strategically at an EU level; avoiding thus an expected "distortion in competition" for member states imposing more demanding environmental standards than others (Ibid, 2021:8). Furthermore such changes, the report suggests, will be difficult task, as jobs and entire businesses depend on existing production workflows; therefore such a transition has to be smoothly introduced (Ibid, 2021:80).

Evidently, *Greening the Audiovisual Industry* makes its appeals to the wider European audiovisual sector, which, despite significant activity, is lagging behind Germany, particularly in areas such as the provision of audiovisual funding tied to sustainability. As a preamble to Germany's first ecological minimum standards (implemented as of 2022) (Heidsiek, 2022:3), *The Ecological Minimum standards for German cinema, TV, and online/ VoD productions* report (Arbeitskreis »Green Shooting«, 2021) outlines 15 production aspects with 22 specifications for sustainability in German audiovisual sets, of which at least 17 criteria have to be met, in order for applying productions to be awarded the Green Motion label (Ibid, 2021:3). Such criteria include first and foremost the presence of Green Consultant on set, pre-production carbon accounting, and a final report submitted upon completion of the project. Furthermore, the utilisation of certified green electricity, LED lighting kits (up to 2 Kw) and recyclable batteries alongside less carbon-intensive alternatives to diesel generators. Other criteria outlined include travel and transportation considerations (such as opting out of domestic or international flights if available train journeys can cover the distance for location-based shoots in less than five hours), the use of environmentally certified accommodation, organic or locally sourced catering with disposable tableware, in addition to paperless workflows, reusable material for sets and costumes, avoiding single-use plastics and appropriate waste separation (Ibid, 2021:4-12). Such requirements are further stipulated by Green Shooting's state-of-the-art study of the next year's *100 Green Productions* (100 Grüne Produktionen). Putting theory into practice, the 100 German productions (feature, TV and documentary films) participating in the study were monitored over a two-year period (2020-2022) according to the application of the above criteria, and with a precise scientific evaluation following afterwards (Rüdenauer et al., 2020:6). The report registers some important notions about the state of the practice: in particular the range of CO2 emissions from productions is not format-specific (e.g. film or TV) but rather context-specific and subject to production aspects that set "the framework within which [emission] savings can be realised", taking further into account among others the needs of the script, filming locations, size of the team as well as the location of sets and props, and as the frequency these artefacts are changed (Ibid, 2020: 74). Further, it adds to the controversial debate of "offsetting" carbon

emissions from audiovisual productions, a method of compensating for greenhouse gas emissions produced by one source (for example, a film produced in Europe) by reducing an equivalent amount of CO2 elsewhere (e.g. by planting trees in Central America) (Kooten and de Vries, 2013). More importantly, the study recognises that despite progress made with the introduction of ecological minimum standards, German broadcasters will still need to revise their objectives, while high-level policymaking will need to ensure the provision of adequate funding for carbon-neutral technology, currently more expensive than conventional options on offer (Rüdenauer et al, 2020: 76).

A further inquiry into sustainability for studios examines the advent of newer production workflow methods, such as Virtualisation and Virtual Production. Building on observations made in *Screen New Deal* (BFI, 2020) *Green Screens, Green Pixels and Green Shooting: A Report on Virtual Production and its Opportunities for Sustainable Film Productions*, a collaborative study between the German-based Filmakademie Baden-Württembeg and Animations Institut, uncovers evidentially new opportunities for more sustainable techniques. On average, the report finds, Virtual Production consumes about a third of the energy needed for comparable offline-rendered production techniques, such as green screens, suggesting that travel costs can indeed be reduced through the digitisation of real sets into virtual environments such LED wall virtual backgrounds (Helzle et al., 2022: 3-4). Beyond endorsing such newly developed technologies for their enduring benefits to energy consumption, the authors suggest that such developments allow for "a unique opportunity for democratisation in filmmaking", appealing further to the industry to reconsider its use of resources to their maximum capacities just because such resources "are available" (Ibid, 2022:4).

Although the necessity of engaging audiences with environmental content has been addressed previously (see Kääpä, 2018), in 2022, an increased interest in establishing a concrete baseline point for the representation of climate storytelling can also be observed (USC Annenberg and Good Energy, 2022). As findings from *A Glaring Absence: The Climate Crisis in Virtually Nonexistent in Scripted Entertainment* (Giaccardi et al., 2022), a collaborative report between

the University of South California's Norman Lear Center and think-tank Good Energy Stories categorically indicate, "climate change is largely absent in scripted entertainment", even though there is evident audience demand for climate portrayals" (Ibid, 2022:1-2). In the report, such disquieting conclusions derive from the analysis of a sizeable sample of about 38,000 scripted TV episodes and films from 2016-2020, in which mentions of "climate change" related keywords were notably missing (Ibid, 2022). Based on such findings, *A Glaring Absence* recommends normalising climate conversations in all genres of scripted entertainment and in a manner that makes "explicit connections linked with local concerns". As such, portrayals of climate change made by scriptwriters should be authentic, providing due credence to the role of oil and gas industries in the acceleration of the climate crisis, simultaneously attributing the causality of weather-related, eco-disaster themes back to climate change (Ibid, 2022:18). In addition, the report suggests, it is equally paramount to uncover the intersections of the climate crisis with issues the audiences care about, such as racism, sexism, mental health, class, war, disability, and more; as is cultivating a sense of agency in respective audiences, in considering their own carbon footprint (Ibid, 2022:19). Further, *A Glaring Absence* enlists two important notions: the divisive politicisation of climate change and the generational propensity in tackling it. In the first instance, we are reminded that while the climate crisis is a global issue, in the US, such discourses engage mainly with a democratic-progressive base (Kennedy and Johnson, 2020) and in the second, such engagement is largely generational, with people born between 1981 and 1996 (colloquially referred to as "Millennials") being more open to far-reaching environmental policy recommendations (Funk, 2020).

In 2023, more so than in previous years and on many fronts, the concept of sustainability for the audiovisual sector seems to be transitioning from a mere discourse into tangible planning and, occasionally, concretely implemented practice as part of the agenda of institutional organisations, policy networks and the industry itself, whose common objectives as we will see often harmoniously converge. At the EU level and in the framework of executing the European Green Deal, the European Commission's broader strategy of "safeguarding, developing and promoting European cultural and linguistic diversity" extends its agenda to include

environmental objectives, as is explicitly stated in Creative Europe's *Greening of the Creative Europe Programme* (Creative Europe, 2023:8). Aiming to transform Europe into the first climate-neutral continent, the European Commission's cultural arm, Creative Europe, considers the allocation of responsibilities to its funding beneficiaries such as the "greening" and reporting of practices and procurements, a rather progressive step considering that neither beneficiaries (or the Commission itself) had to report such efforts in the past (Ibid, 2023:31). Consequently, the Programme takes stock of the progress made in this area, pinpointing strengths, weaknesses, potential prospects and challenges. For a start, it acknowledges the strong willingness and readiness among policymakers and practitioners and the broader societal call for greater sustainability, engaging in grassroots, bottom-up initiatives, projects, guides and resources in the promotion of sustainable practices (Ibid, 2023:14). However, this process is marked by significant challenges, such as the costs associated with sustainable procurement and acquisitions of materials and the lack of capacity training, for both beneficiaries and the relevant authorities that assess their funding applications (Ibid, 2023:14-15). Furthermore, a lack of overarching coordination among existing initiatives and systematic exchange of best practices potentially bears the risk of duplicating and, therefore, complicating existing efforts to make Europe's cultural and audiovisual sectors greener. Within this oversight, the shortage of data pertinent to sustainability efforts of Europe's wider Cultural and Creative Industries further undermines the capacity of the Programme's ability to track progress in the medium to long term (Ibid, 2023:14). Furthermore, and in the aftermath of Covid-19, the report highlights the danger of an upcoming economic recession, an anticipated downturn likely to be exacerbated by soaring energy prices but also heightened geopolitical tensions deviating the attention from the environment, towards security policy and defensive capacity, as well as financial and humanitarian assistance in support of Ukraine (Ibid, 2023:16). As such, the Creative Europe Programme anticipates an organic, gradual progression of different paces (Ibid, 2023:18), where continuous monitoring and research will play a key role, in addition to a combination of incentivised bottom-up and top-bottom approaches (Ibid, 2023:19).

On a more localised level, in 2023, the Italian Ministry of Culture announced the first instance of subsidies related to "activities and initiatives for cinematographic and audiovisual promotion" subject to sustainability compliance (Ministero della Cultura, 2023). Under Article 27 of Law No.220 of 2016-Year 2023, and with the purpose of strengthening film and audiovisual culture as well as Italian cultural identity and cohesion at both a national and international level, film and other audiovisual festivals can, upon successful evaluation, receive subsidies with the proviso that besides their quality, festival projects have to carry out environmental sustainability commitments (Ibid, 2023:4-8). Among an extensive list of guidelines, such commitments include the promotion and use of public transport as a means of travelling to domestic festival destinations and the calculation of residual CO2 emissions from the festival activities, followed by a concrete plan to offset them. Furthermore, a marked reduction in the number of printed materials such as programmes, catalogues, flyers, brochures and postcards, with a view to combating paper waste generation and the procurement of FSC, PEFC, European Ecolabel or other equivalent alternatives, alongside a marked preference for digital communication, information, promotion and ticket admissions; all situated in renewable structural facilities that can be reused in future festival editions. Further, beneficiaries should also comply in areas such as waste separation, food sustainability (defined as a preference for local, small to medium-sized suppliers certified with Environmental management systems), as well as awareness-raising and capacity training for festival organisers and staff (Ibid, 2023:26). Such minimum environmental criteria were developed and promoted in 2021 as the *Green Festival Project* by AFIC (Associazione Festival Italiani di Cinema) The Association of Italian Film Festival and eventually petitioned in 2022 as *Green Festival Guidelines* to relevant authorities, such as the Italian Ministry of Culture and Ministry of Ecological Transition, culminating towards the legislative shift of 2023 (AFIC, 2022:2).

Concurrently in the same year, BAFTA's Albert is revisiting its seminal 2020 publication of *The Screen New Deal*, translating its vision for sustainable efficiency, flexibility, user-centricity and shared infrastructures into six key areas of operations - Climate, Circularity, Nature, People, Management and Data. In its novel Studio Sustainability Standard (Albert and ARUP, 2023:2). In

the interim of both publications, Albert conducted a pilot study with participating UK-based studios such as BBC Studio Works, Sony Pictures, Warner Brother Levensden, 3 Mills Studios and IMG, among others, testing the feasibility of its 2020 proposal with overall satisfactory results (Ibid, 2023:4-6). Apart from typical considerations common to all sustainability standards, such as emission, energy, material use and waste reduction, Albert's *Studio Standard* broadens its environmental focus, intrinsically linking it with social objectives, such as the cognitive and emotional well-being of people using the studio sites, through policy, programme and design strategies such as mental health first aid services and child care provision (Ibid, 2023:23-24). This comprehensive approach is heavily informed by the UN Sustainable Development Goals, which, in turn, inform and organise the areas of action suggested in the *Standard* (Ibid, 2023:10). Furthermore, within the same year, Albert published its *Biodiversity and the Screen Industries: A Guide for Productions*, whereby the impact of production workflows is examined through a biodiversity lens. This view promotes an inherently eco-centric understanding of land use change, over-exploitation of material resources and pollution during audiovisual productions, taking into account both how indirect (Scope 3) emissions contribute to habitat change, vegetation damage and deforestation (Albert, 2023:10-13) while also considering the representation of biodiversity itself, as is portrayed on screen. As such, the guide appeals to producers not to film at sites that may be impacted negatively by increased visitors and to avoid disclosing filming locations while simultaneously using the opportunity to promote the protection, recovery, and restoration of biodiversity of the locale utilised. In carefully planning these aspects, the guide suggests enlisting the consultation of experts, local communities and, when relevant, knowledge holders from indigenous and First Nations (Ibid, 2023:15).

Simultaneously, in 2023, novel DEI perspectives about bridging the audiovisual sector's diversity divide with tangible solutions specifically targeting the full inclusion of Deaf, Disabled and Neurodivergent talent have been gaining ground. Formed as a direct response to the campaign by Underlying Health Condition in the UK and with the backing of 10 high-profile industry partners such as the BBC, Channel 4, Disney, ITV, Paramount and Sky, the TV Access Project proposes in its *Roadmap to Full Inclusion* (2023) a framework of addressing the

exclusion of disabled talent, with mitigation strategies that contribute towards the creation of a workplace culture where disability is accepted and celebrated in the UK sector by 2030 (TAP, 2023a:1-3). Operationally, this framework builds from a number of influential discourses, such as Oliver's (2013:1) Social Model of Disability, which essentially argues that people are not disabled by their impairments but rather by the disabling barriers they face in society and, further, by the very influential UN's Convention on the Rights of Persons with Disabilities, which views disability as an evolving (and therefore, not static) concept that is to be mainstreamed as an integral part of Sustainable Development (UN CRPD, 2006:2). Thus, among an extensive list of structural changes, the TV Access Project calls for adequate and consistent access to grants for the development of sustainable mobility in production spaces (Ibid, 2023a) and the introduction of new production roles ensuring a just and inclusive transition, such as Commissioning Access Leads as part of Creative Diversity teams, Access Coordinators, Support Workers and Facilitators and Disability Script Consultants (Ibid, 2023b).

In the form of a conclusion to all previous discourses analysed, a more recent addition to the literature includes the contribution of the UN-backed initiative Entertainment and Culture for Climate Action (ECCA). Founded in 2023 with the underlying principle that the Entertainment and Cultural sector "possesses valuable expertise in cultural and narrative strategy" in audience engagement towards ambitious climate and sustainability initiatives, ECCA explicitly frames the need for both relevant, sustainable content and audiovisual production methods in the context of the United Nations Global Climate Action agenda (ECCA, 2023:1-2). As such, the initiative extends its invitation to various industry stakeholders, which include production companies, studios and broadcasters, film commissions, festivals and policymakers, educational institutions, trade associations, labour unions and guilds, as well as activist and grassroots organisations and non-profit foundations (ENZA, 2023:3-4). Current signatories of ECCA's *Accord* (which exceeds 430 at the time of this writing) are expected to implement at least five of its Climate Action Pathways (Ibid, 2023). Subject to reporting transparency procedures and practices submitted in the UN's Framework Convention on Climate Change (UNFCCC) Data Portal, such Pathways include 1) net-zero commitments in the production of audiovisual material and its constituent

value chains, 2) the use of storytelling in interdisciplinary arts in catalysing climate action and awareness among audiences, 3) the preservation and regeneration of biological diversity through more responsible industry planning, 4) the acceleration of knowledge-sharing with the creative industries and 5) the promotion of widespread climate action through mitigation and adaptation strategies at local, national and global levels (Ibid, 2023).

3.2.5 Summary and Discussion

Clearly, as a starting point, the research gap in the development of academic literature focusing on the Italian sector has to be addressed, with just a mere few publications that register the investigation of such activity in Italian production (see Chiarini and Khedarchi, 2018; Christophe, 2021; Di Bianco,2022; Formenti, 2022) and distribution (Cessaro, 2022) contexts, with a further study (Cucco and Richieri, 2021:55-56) pointing towards the role of film commissions in the domestic sector's sustainable transition. Similarly, in the literature generated by the industry itself, existing references around sustainability in the Italian sector, while few and far between, are largely descriptive, bulletin-style and non-in-depth (see CineRegio, 2015; Green Film Shooting, 2016; CineRegio, 2017; Green Film Shooting, 2017 and 2018; European Audiovisual Observatory, 2019; CineRegio, 2020) and with a relatively narrow focus on the more visible initiatives (indicatively, Green Film, EcoMuvi and Sardegna Film Commission) leaving out other contemporary developments on domestic grounds, which are examined here extensively.

Then, from the existing literature, we can initially identify a group of distinct context-specific approaches: academic contributions ranging from theoretical film ecocriticism perspectives of audiovisual productions to ecomaterialist readings of how such productions are made procedurally, emphasising the impact on the environment contexts they are produced. The literature generated from the industry itself evidently leaves room for more observations, particularly when considering the development of discourses in a chronological fashion: from initial awareness to contemporary practices that gradually become more strategic, especially in

the context of milestone practices such as sustainable protocols and reporting mechanisms. In addition, literature produced by policy networks and institutions related to the audiovisual sector and the Creative and Cultural Industries underscores the transition (or necessity) from voluntary actions to more concretely, policy-driven initiatives relating to emissions and waste reduction, energy efficiency and often the promotion of social inclusion and more ideal labour conditions.

Considering the more advanced, thorough and strategic vision of *A Screen New Deal* (Albert and Arup, 2020) and its subsequent realisation through the S*tudio Sustainability Standard* (Ibid, 2023) as prime reference points against which all other activities and strategies can be benchmarked, further discrepancies can be observed, with the first being disproportionality. As is evident from the literature, the development of the practice is uneven in terms of scale, pace and action in strategic implementation but also in terms of focus, with sustainability in production being more pronounced than its distribution counterpart. A second observation is that, by the time of this writing, the buy-in for sustainable production appears to be greater for established, private, big-budget production companies and studios, major broadcasters and multinational media corporations as part of their CSR agendas than for independent, small to medium enterprises (SMEs) operating in the audiovisual industrial district. Aside from the necessity for "rapid and far-reaching transitions across all sectors" in reaching climate targets (IPCC, 2023:28), this is an important observation since SMEs and the independent production sector in general, working on a film-by-film basis, are more often subject to regional and state subsidies for the development of their activities (Teichmann and Murschetz, 2018:60).

Thirdly, a pronounced need for sector-specific practical training can be observed (see Interreg, 2018; Gassman and Guttefarde, 2021; Creative Europe, 2023) that is not currently accommodated in film and media production curricula offered at a higher education level, that is, excluding selected German institutions such as Filmakademie Baden-Württemberg (Filmakademie Baden-Württembeg and Animations Institut, 2022: 3-4). The argument here is that whether the object of (higher) education is perceived to stand for the preparation of

students for the workforce, the incubation of entrepreneurial projects, the production of scientific discoveries useful to governments and industries or the promotion of social justice and other projects beneficial to society (Goetze, 2019: 4,13), a new social contract for education in line with the times, addressing climate, environmental and social issues is now required, whereby accommodating ecological, intercultural and interdisciplinary learning, will be of help to students in accessing and producing knowledge simultaneously with building their capacities and critical skills, according to UNESCO (2021:64).

Beyond discrepancies, distinct approaches, which in subsequent stages can be assembled and synthesised as propositions for industry best practices, need to be addressed. For a start, a common consensus on what constitutes "sustainability" in the audiovisual sector can be observed in the plurality of available resources. As part of standardised protocol norms, this shared understanding begins with the management and reduction of emissions, resources, and waste in production and distribution settings, progressing to raising awareness through content and (often) achieving social impact. Navigating the path towards those objectives, the literature presents us with a distinct number of focal points. These range from the global and broad (i.e. the promotion of a shared vision, organised principles and blueprint for action, as in the case of ECCA) to the local and specific (i.e. community-customised approaches from regional film commissions, such as the cases of Trentino, Barcelona and Catalunya Film Commissions; also bringing notions of territorial development and sustainable tourism into the picture). Subsequently, we also observe a distinct emphasis on technology and green innovation in production workflows (Green Film Shooting, Filmakademie Baden-Württemberg) and digital distribution (see Marks and Przedpełski), the establishment of infrastructure and the management of procurement (BAFTA's Albert and Green Screen) and organisation change (Albert, European Women Audiovisual Network, Film and TV Charity, TV Industry Human Rights and The TV Access Project). In turn, such approaches have been so far implemented in a voluntary, self-regulated fashion (which is largely the case; see Gassmann and Guttefarde, 2021:6), occasionally incentivised through selective funding criteria set by regional film commissions (European Audiovisual Observatory, 2019:81), and, as of recent, strict requirements

whose compliance is enforced on a state level in Germany (see Arbeitskreis Green Shooting, 2021:3).

In view of the identified gaps and approaches presented, several critical points and implications for the direction of this study emerge. To begin with, there is a need to establish, consolidate and thoroughly register all previous knowledge pertinent to sustainability norms for the Italian audiovisual sector, alongside embedding a brief overview of similar activity on a global scale. Treating the "national" and the "international" domains as interlinked, communicating vessels and in anticipation of future developments from such an interaction, a bilateral comparative analysis in the present study will aim to uncover how the (evidently) more advanced global trends are mirrored or diverged within the Italian sector and, in turn, how successful examples from Italian sector-related initiatives feedback and cross-fertilise global ones. Within this analysis, the perception, vision and experience of implementing sustainability among screen media professionals, academics and policymakers will be examined, as will the integration of standardised practices in audiovisual production workflows through the triple-bottom-line lens of Sustainable Development, promoting thus an understanding of how environmental objectives intersect meaningfully with societal drives and occasionally, economic considerations.

Further, the scope and application of sustainable protocol norms themselves and the role of those who implement and report on them (e.g. sustainability managers), as well as those who legitimatise and assess (certifying authorities, film commissions and audiovisual funds) such activity, will be investigated in-depth to discover the shared challenges, barriers and opportunities between domestic and international industry settings. Moreover, understanding the pivotal role that relevant institutions have in the audiovisual sector's green transition, the function of (selective or mandatory) environmental criteria, and green public procurement schemes as part of Italian cultural funding mechanisms will be examined, as will the sector's efforts overall alignment with the environmental agendas of supranational (such as the European Union) and international (United Nations) organisations. Finally, in attempting to

answer just how invested the Italian audiovisual sector is in its own green transition, this research will provide an aggregate picture of the adoption rates of sustainable production protocols by Italian and Italian-based productions that applied for sustainable certification for the year 2023, contrasting this number against overall domestic production.

Combined findings from all of the above will serve a dual purpose: 1) to provide a set of actionable insights, propositions and industry-endorsed solutions in development, pre-production, production, post-production and, to an extent, distribution workflows, as well as sector-specific events (e.g. film festivals and awards) through the use of existing protocols, available technology and (when appropriate) funding opportunities in the Italian audiovisual sector. Further, 2) to provide an outline for a proposed framework of sustainable production study and training package targeting the capacity building of further media professionals that can be accommodated in Italian Universities as part of existing film and media production curricula. In fulfilling both purposes, the study will address the disconnect between all stakeholders in this conversation: industry, academia and public institutions offering recommendations towards an enhanced trilateral cross-collaboration.

4. The Historical Backdrop of Sustainable Development: A Timeline Overview of its Policies, Processes, and Initiatives

4.1. Introduction

For a thorough analysis of audiovisual production through the lens of sustainability, we posit that it is critical to establish a theoretical framework that examines how "sustainability" is both understood and referenced by the audiovisual sector, particularly with the advent of sustainable production protocols and consultancy globally as well as in Italy. And even though we can argue that material considerations of production resources in audiovisual production settings comprise, managerially, secondary objectives (see Kääpä, 2018: 27 and 89), with the first objective clearly being the production of the content itself, we further posit here that often such practices expand the scope of audiovisual content production by linking, attributing and aligning the sector's established industrial practices to the work of wider institutions and policy networks, such as the European Union and the United Nations, whose vision, objectives and value-driven approaches frame the conversation on what new development agendas and plans of action are in the context of sustainability (Ala-Uddin, 2019:2). Towards this, as proposed by Schmieg et al. (2018:785), "the idea of sustainability is intrinsically normative", with normative orientations of what constitutes sustainability guiding and informing objectives and processes on the macro-level (transnational institutions, humanity and the planet), the meso-level (nations and societies) and (in our case), the micro-level (subnational [commercial] organisations and individuals) (Ibid, 2018:789).

In order to facilitate this discussion, we will first provide a broad yet brief historical overview of how the concept of environmental sustainability evolved over time globally through an accounting of the conferences, reports, influential policies, management systems and reporting mechanisms that shaped it; occasionally taking a pause and expanding the discussion on pivotal milestones, such as the work of the Brundtland Report (1987), the work of the IPCC

(1988-), the United Nations' Sustainable Development organising principles (adopted 2015), the Paris Accords international treaty (adopted 2015), The European Green Deal set of policy initiatives (adopted 2019), and within that, the NextGenerationEU and the Strategic Interventions of the National Recovery and Resilience Plan (in effect as of 2021) along with the introduction of Corporate Sustainability Reporting Directive (in effect as of 2024). Subsequently, in a later segment of the study (see section "Literature Review"), an in-depth discourse analysis of how the Audiovisual sector has normatively engaged with the concepts of sustainability discussed below, further anchoring its operations and rationalising its efforts will be provided.

4.2. Early Environmental Awareness, Movements and Policies

During the late 1960s, in what has been a pivotal moment for international environmental politics (RCCESP, nd) , an ecological Sustainable Development as a concept was first made implicit in the UNESCO Intergovernmental Conference for Rational Use and Conservation of the Biosphere held in Paris, 1968, with all prior efforts to the Conference focusing primarily on physical sciences and biological issues but in a manner decoupled from ecology (Caldwel and Weiland, 1996:34). Simultaneously, the public's perception of responding to environmental vulnerabilities en masse, as well as its demand for industrial and social reformations to combat such issues, can be traced back to the environmental movements of the New Left, where, owing much to the postwar economic boom, millions of children grew up in settings designed to be in harmony with nature (Rome, 2003:543). In 1969, the US National Environmental Protection Act (NEPA) was the first legislation to address the need for "the identification and development of methods and procedures and their consideration as amenities in environmental decision making" (NEPA,1969:2), acting as a precursor to what is now known as Environmental Impact Assessment across the world (Yang, 2019:528).

The further impetus towards this direction was provided by the 1970s Energy Crisis, which brought an alarming realisation of just how dependent industrial societies were on fossil fuel

energy; as a result to which environmental pressure groups amplified their voices, encouraging changes in behaviour alongside the state sponsorship of alternatives (Rapid Transition Alliance, n.d.). Adding to this backdrop, the 1972 United Nations Conference on the Human Environment held in Stockholm promoted two opposing yet interlinked perspectives: 1) the acknowledgement of the human impact on the biophysical environment, emphasising the importance of controlling pollution and the conservation of resources, towards which 2) discrepancies in social and economic development were identified as the real issue; therefore advancing the notion that environmental protection constitutes an essential element of socioeconomic development (Caldwell and Weiland, 1996:64), to which lifelong education in environmental matters is essential in fostering "enlightened opinion and responsible conduct by individuals, enterprises and communities" (UN, 1972:5).The implicit connection between education and environmental stewardship was further clarified in the proceedings of the Tbilisi Declaration, held in Tbilisi, former USSR, whereby the concept of Environmental Education, integrated both in formal and non-formal educational settings, was introduced as both timely and essential (UNESCO,1977:12).

4.3. *The Brundtland Report,* the Intergovernmental Panel on Climate Change and ISO

While numerous other United Nations conferences contributed to the debate over the following years, it was in the 1980 World Conservation Strategy report that the term "sustainable development" was first introduced (Moldan et al., 2020:1). Prepared by the International Union for Conservation of Nature and Natural Resources (ICN) with the cooperation of United Nations Environmental Programme (UNEP) and the World Wildlife Fund (WWF), the report elaborates that for development to be sustainable "it must take account of social and ecological factors, as well as eco-economic ones; of the living and non-living resource base; and of the long-term as well as the short-term advantages and disadvantages of alternative actions" (IUCN et al, 1980:18). This broad conceptual groundwork culminated in the World Commission on Environment and Development's seminal Brundtland Report *Our Common Future*, where

Sustainable Development, defined as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987:15), is established as the dominant discourse on sustainability, to which all subsequent discussions are grounded and trace their origins to (Barkemeyer et al., 2011: 2). Concurrently, and in recognising the importance of connection and coincidence, *Our Common Future* situates its relevance on account of the three major environmental disasters that at the time also marked the world, such as the Bhopal Industrial Gas Disaster (India, 1984), the Sandoz Chemical Spill (Switzerland, 1986) as well as the Chernobyl Power plant Disaster (USSR, 1986) (Ibid, 1987:8), whose international attention further added to public awareness, putting industrial processes critically further under the spotlight (WCED, 1987:156).

As such, driven both by legislation aimed to prevent and control environmental impacts and, within that, the companies' own need to leverage compliance to such rules as a marketing tool (Martinic, 1997), and coupled with the necessity of cost reductions and meeting the overall requests of customers (Weiß and Bentlage, 2006: 86), along with increased environmental activism impacting consumer awareness (Martinic, 1997), 1987 also witnessed the expansion of conformance assessment initiatives related to socio-environmental impacts, by voluntary standard-setting bodies, exemplified by The International Organization for Standardization (ISO). While ISO commenced its work in 1947, it wasn't until the late 80s that the organisation shifted its focus towards the certification of management practices related to social and environmental governance and regulation rather than merely emphasising technical specifications for products and materials (Cadman, 2011: 75) with the publication of ISO 9000 family of quality management system and standards and leading to the subsequent development of ISO 14000 series of environmental management system standards (EMSs) in 1996. For ISO, sustainability constitutes the "ability to maintain or develop long term performance" in areas such as business (economic and financial) sustainability, environmental sustainability and social responsibility, whose successful implementation can be further aided by sets of certifiable and guidance standards developed by ISO (Ceko, 2023: 151). Simultaneously, ISO-adopting organisations were seen as "leaders in building the "technical infrastructure" for

"sustainable development" in the manner codified by the UN (Murphy and Yates, 2009 p.47), while ISO itself was at times seen as alternative or complementary to the (perceived) ineffective governance associated with the UN (Ibid, 2009: 68).

All such developments further advanced the need for operational assessment and mitigation of the anthropogenic impact on the environment, towards which the creation of the Intergovernmental Panel on Climate Change (IPCC) was key. Founded in 1988 as a joint effort between the United Nations Environmental Program (UNEP) and the World Meteorological Organization (WMO) (IPCC, n.d.:1), the IPCC has ever since served the comprehensive, objective, open and transparent assessment of scientific, technical and socio-economic information relating to human-induced climate change by analysing its potential impacts while designating relevant options towards its adaptation and mitigation strategies (IPCC, 2013: 1). Considered as the most complex and extensive scientific undertaking of the United Nations (Breidenich et al., 1998: 316), the overall work of the IPCC has been to this day influential both on how discourses of climate change are perceived globally, as well as further embedding climate change in international agendas; accelerating the development of strong climate research communities and global climate politics guiding the proceedings of the 2015 Paris Agreement (Hermansen et al., 2023: 1). Consisting of three working groups (WG, henceforward), whereby WG1 examines the physical science behind climate systems and their change, WG2 assesses climate impacts on nature and the economy, while WG3 focuses on mitigation of climate change and the prevention of greenhouse gas emissions (IPCC, nd), the panel has published six influential Assessment Reports: First Assessment Report [FAR (1990)], Second Assessment Report [SAR (1995)], Third Assessment Report [TAR (2001)], Fourth Assessment Report [AR4 (2007)], Fifth Assessment Report [AR5 (2014)] and the more recent Sixth Assessment Report [AR6 (2021)] (IPCC, 2018:1-2). All such Assessments alongside other IPCC supporting publications, as Vasileiadou et al. (2011) suggest, have established themselves as authoritative sources of climate change knowledge, not only in disciplines closely studying the phenomenon of climate change (e.g. Meteorology) but also in further disciplines, as well as wider debates on social and policy issues (Ibid, 2011: 1052-1059). The next year also saw the emergence of the

voluntary carbon market as a concept, with the first carbon offsetting project taking place in 1989, whereby an agriforest was financed in Guatemala as compensation to a coal-fired power plant built in Connecticut, USA (Smoot, 2022). In the same year, the fall of the Berlin Wall, the subsequent disintegration of the Soviet Union and the end of the Cold War brought about considerable optimism about the world's future. To quote Clémençon (2012:313), "many hoped that a peace dividend would allow the world to turn its attention to long-term development and environmental problems". Hence, incoming initiatives had substantially more consolidated agendas.

Looking towards operationalising the global solutions for environmental and developmental problems addressed in 1987's Brundtland Report, the subsequent United Nations Conference on Environment and Development in 1992, also known as Agenda 21, was held in Rio de Janeiro, Brazil. In Agenda 21, the successful implementation of global objectives is delegated to national governments, whose localised plans, policies, and processes will, in turn, cooperatively supplement the global effort in tackling problems of social, environmental and economic nature (UN, 1992:3). As such, a key component in the Agenda enlists the idea of building international consensus through a "Local Agenda 21", in which local authorities in each country consult with citizens from local, civic, community, business and industrial organisations, formulating optimal strategies for resolving global challenges (Ibid, 1992:285). The following year, the Clinton Presidency in the US, with renowned environmental activist Al Gore as acting Vice President, solidified various other efforts related to the environment through several national and international initiatives. To quote Nie (1997:39), "By making the economy the litmus test of his presidency," Clinton sought to tackle environmental problems in a new and much more efficient economic manner, advocating for an environmental and economic symbiosis (Ibid, 1997).

4.4. The Kyoto Protocol, the Global Reporting Initiative and the Millennium Development Goals

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) international treaty held in Rio de Janeiro acknowledged the observed significant increases in atmospheric greenhouse concentrations due to anthropogenic factors, addressing the adverse effects of climate change on both natural ecosystems and human societies (UN, 1992: 2, 33). In doing so, the UNFCCC further conceded that its 197 ratifying countries share common but differentiated responsibilities, meaning that each country was expected to reach different context-specific emission-reduction targets and relevant reporting through its general actions (Oberthür and Ott, 1999:318). More importantly, the UNFCCC set the groundwork for the subsequent Kyoto Protocol, the world's first legally binding mandate to reduce carbon dioxide and greenhouse gas emissions (Breidenich et al., 1998: 315). Held in 1997 in Kyoto, Japan, at the heart of the Kyoto Protocol lies the joint commitment of industrialised countries to curb their emissions by at least 5% below 1990 levels for the years 2008-2012 (Oberthür and Ott., 1999:113). Concurrently, in the same year, another significant development was the formation of the Global Reporting Initiative (GRI, henceforward), which provided the first global standards for non-financial, sustainability, corporate social responsibility and environmental, social and governance reporting on issues such as climate change, human rights and corruption. Founded in response to the public concern following the Exxon Valdez oil spill eight years previously (GRI, 2022:1), the GRI built upon the existing US financial reporting structure FASBI, expanding its "reach (global), scope (social, economic and environmental performance indicators), flexibility (descriptive and quantitative indicators), and stakeholder base (industry, the financial sector, the accounting profession, civil society, environmental and human rights NGOs, organised labour, and others)" (Brown et al., 2009: 571). Central to the Initiative's reporting framework is the concept of *materiality*, a principle that considers the mere identification of "financially material (or material to enterprise value)" matters as incomplete unless the organisation has first identified their material impacts in the context of Sustainable Development (GRI, 2021: 4). Then, in a manner akin to financial reporting, materiality entails that an organisation must carry out

auditing practices, filtering and validating information 1) attesting to its impact on society and the environment, further identifying 2) the manner via which such conduct affects present and future stakeholder needs (Calabrese et al., 2018: 1018), assessments and decisions (Garst et al., 2022: 65).

In 2000, the United Nations Millennium Summit took place in New York. During the Summit, eight international development goals for 2015 were addressed, ensuring the commitment of all 191 member states to their accomplishment. Primarily focused on developing countries, to which the developed world provided solidarity through finances and technology (Sachs, 2012: 2207), the Millennium Development Goals (MDGs, henceforward), as they came to be known, aimed to address extreme poverty and hunger, ensuring universal primary education, the promotion of gender equality, reduction of mortality rates and tackling major diseases alongside ensuring environmental sustainability (UN, 2015: 4-8). Essential to this objective-setting agenda was the idea that all targets embedded in the MDGs were causally related to one another and that no one goal could be looked at in isolation from the others; thus, a robust and insightful analysis must acknowledge this interdependency (McGillivray, 2008: 2). This understanding has been key towards the development of the Sustainable Development framework and its associated Goals (SDGs), which resumed the work of MDGs past their expiry in 2015 (Biermann et al.: 2017:1).

4.5. The Sustainable Development Goals

In a normative sense, the salient point that the Sustainable Development paradigm registers is the acknowledgement that sustainability is, by necessity, balanced and holistic: rather than a mere "green" or environmental concern; as Morrissey and Heidcamp (2022:1) point out, "the social and economic dimensions are key for societal stability and continuity". As such, in its preamble, the 2030 agenda of Sustainable Development pledges its strong commitment to eradicate poverty while healing and securing our planet by way of 17 Sustainable Development

Goals (henceforth SDGs), globally interlinked, and a further 169 subset targets (UNGA, 2015:1), developed to integrate social well-being alongside the environment's biophysical growth boundaries (Biernmann et al., 2017:216). Developed after decades of work and adopted by all 193 members of the United Nations, the SDGs are central in the contemporary literature on sustainability (Purvis et al., 2018:2), with overarching aims that, according to Griggs (2014: 49), can be summarised as "poverty elimination, sustainable lifestyles for all, and a stable, resilient planetary life-support system". Underpinning such aims, the UN's organising principles specifically consist of 4 Goals about the Environment, such as Clean Water and Sanitation (SDG-6), Climate Action (SDG-13), Life Below Water (SDG-14) and Life on Land (SDG-15), followed by 8 Goals about Society which include No Poverty (SDG-1), Zero Hunger (SDG 2), Good Health and Well-being (SDG-3), Quality Education (SDG-4), Gender Equality (SDG-5), Affordable and Clean Energy (SDG-7), Sustainable Cities and Communities (SDG-11) and Peace, Justice and Strong Institutions (SDG-16). These are succeeded by 4 Goals about the Economy such as Decent Work and Economic Growth (SDG-8), Industry, Innovation and Infrastructure (SDG-9), Reduced inequalities (SDG-10) and Responsible Consumption and Production (SDG-12), and one further, standalone Goal, Partnership for the Goals (SDG-17), underlying the fact that such commitments can only be realised through strong international partnerships and collaboration (UNGA, 2015:1).

However, while broad and ambitious as statements, the 17 established SDGs remain purposely unspecific and vague to include all populations and ensure their flexible applications in all international settings, allowing for a broad interpretation yet possibly "weak implementation" (Biermann et al., 2017: 26-27). Besides such an equivocal outline, several other challenges present themselves, such as the lack of consensus on what Sustainable Development is on an operational level (Young, 2017: 138), the inherent contradiction of reconciling economic growth with socio-environmental objectives (Robinson, 2004: 369) and delivering climate change mitigation simultaneously with adequate levels of development and poverty alleviation (Morrissey and Heidkamp, 2022:262). Further, and perhaps more importantly, is the notion that sustainable development and sustainability (used here interchangeably) are subject to diverse

interpretations by different stakeholders, people and organisations (Robinson, 2004: 373). As such, over time, and through the lens of various disciplines, many model typologies used for the representation and study of sustainable development have been proposed (Todorov and Marinova, 2009: 1217), the most widespread of which is the Triple Bottom Line model (TBL). Within the TBL approach, sustainability is positioned at the intersection of three dimensions (economic, social, and environmental), represented visually either as pillars, embedded circles or as a Venn diagram with three overlapping circles (Ibid, 2009). Among these, the three-pillar pictorial representation has been explicitly embedded in the formulation of the 17 SDGs (Purvis et al., 2018:2). However, despite their commonplace mentions in the literature, the three pillars are not universally regarded (Ibid, 2018: 4). As Todorov and Marinova (2009: 1219) point out, due to their inherent "methodological eclecticism", such approaches are based on shorter trends rather than long-range intergenerational needs, and their dimensional fragmentations prevent from a holistic perspective. As such, many other attempts at conceptualising sustainability via the inclusion of a fourth or more pillars (Purvis, 2018:6) are distinguished, proposing a broader, transdisciplinary convergence between multiple dimensions (Kopfmüller, 2011:2).

Adding further to the complexity of the debate is the fact that Sustainable Development, its objectives and targets as expressed through the SDGs comprise political goals and not legal rules (Kim, 2016:16). Although the Goals are grounded in international law, they are not legally bound; with the United Nations General Assembly who established them carrying no legal capacity to enforce the Goals and equally, the nations that adopted them have no legal obligation in following suit towards their implementation (Biermann et al., 2017: 26). As such, the Goals remain a voluntary device to be implemented at the discretion of their adopting countries, who have the sovereign right to integrate the SDGs according to their national priorities (UNGA, 2012: 43).

4.6. The Paris Agreement

The second normative paradigm observed regarding how sector initiatives (individual professionals, studios and alliances) frame and justify their operations is decisively more climate-centric, drawing its discourses from the 2015 Paris Agreement and the work of the United Nation's Intergovernmental Panel on Climate Change (IPCC). Finalised the same year with UN SDGs, the Paris Agreement (also called The Paris Accords) is a legally binding international treaty shifted from the top-down Kyoto Protocol mandate, adopting a bottom-up, country-driven implementation process (Brandi et al., 2019:4), constituting an opportune moment in climate diplomacy, where 195 of the world's governments, for the first time in history, negotiated a mutual policy on climate action (Obergassel, 2016:3). When viewed comparatively, it becomes evident that both The Paris Agreement and the 2030 Agenda promote policies that Kuyper et al. (2017) conceptualise as "hybrid multilateralism", merging the work of both state and non-state (civil society and social movements) actors, but also economic (business and trade unions) and subnational or substate actors (regional local governments, cities and municipalities). While the Agreement is a legally bound treaty in the context of international law, spelling out compliance to legal obligations for its signatory parties, operationally, it entails a mix of both mandatory and non-mandatory provisions relating to its parties' mitigation strategies (Bodansky, 2016:1-2). As such, the main mandatory long-term goals for all signatories include 1) the substantial reduction of global greenhouse gas emissions to maintain global temperature increases to well below 2°C, gradually limiting 1.5°C above pre-industrial levels, in the understanding that such an achievement will significantly reduce the risks associated with climate change (UN, 2015:3). Central to achieving this objective is to 2) periodically assess the collective progress via each party member's state National Determined Contributions (NDCs), which also correlate operationally with SDG targets regarding land use, food, energy and water (Brandi et al., 2019:10) and are meant to be transparently communicated every five years from the start of the Agreement in 2015 (UN, 2015:5-6). Underpinning both goals, a further third goal acknowledges the provision of scaled-up 3) financial resources in support of the signatory

developing countries' mitigation strategies, strengthening their resilience and building their adaptation capacity to climate impacts (Ibid, 2015: 5, 13).

As discussed previously, both the Paris Agreement and the scientific output of the IPCC that underpins it are primarily environmental discourses. In the first instance, while in the Agreement, the "social pillar" of sustainability is explicitly mentioned in its preamble in the form of human rights alongside additional references to sustainable development in its operative provisions, such mentions have received criticism of failing to incorporate adequately human rights in what constitutes a legally bound treaty (Galvao Ferreira, 2016: 3). One such criticism levelled at the IPCC was made by the Inter-American Commission on Human Rights (2016) posits that climate change has a social aspect to it inherently; with consequences such as deaths, injuries and displacement of individuals following natural disasters and extreme weather events such as frequent tropical cyclones, tornadoes, heatwaves and droughts being traced back to climate change (IAHR, 2015). In contrast, such an understanding is more pronounced in the second instance, with IPCC's acknowledgement that achieving sustainable development, the eradication of poverty and reduced inequalities while simultaneously limiting warming to 1.5°C would require" meeting a set of institutional, social, cultural, economic and technological conditions" (IPCC, 2015:p.448). Further to this, the IPCC observes that differences in vulnerability and exposure to the effects of climate change often arise from non-climactic factors and are the product of intersecting social processes such as discrimination based on gender, class, ethnicity, age and disability (IPCC, 2014:6).

4.7. The European Green Deal, NextGeneration EU and Corporate Sustainability Reporting Directive

Whereas the previous two frameworks cover a broad spectrum and global perspective, the third normative paradigm is strictly bound to the European continent. Launched as a proposal by the European Commission in 2019, the European Green Deal (EGD, henceforth) comprises a wide-ranging legislative package aiming to address climate change concurrently with ensuring a just and inclusive transition in the European Union (Pianta and Lucchese, 2020:1). Essentially a subsequent iteration of the Europe 2020 (2010-2020) strategy, that aimed for "a smart, sustainable and inclusive growth" (European Commission, 2010:3) and further, the creation of an Energy Union as a European political project addressing "the energy trilemma" of sustainability, affordability and security (especially in response Ukraine's 2014 Crimean crisis) (Climate Strategies, 2015), per the Commission, the EGD's refined vision aims to transform the EU into a "fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use"; thus protecting, conserving and enhancing the continent's natural capital, and within that, prioritising the health and wellbeing of its citizens from environment-related risks and impacts (European Commission, 2019:2). Central to these objectives is a re-examination of the continent's production and consumptions systems with a subsequent revision of its entire value chain of products and services, in order to minimise climate change, biodiversity loss and pollution (Paleari and Günther, 2023:1). In terms of meeting those targets, the EGD is organised around the eight following macro-areas of action: 1) Increasing the EU's climate ambition for 2030 and 2050, 2) supplying clean, affordable and secure energy, 3) mobilising industry for a clean and circular economy, 4) building and renovating in an energy and resource-efficient way, 5) accelerating the shift to sustainable and smart mobility, 6) designing a fair, healthy and environmentally- friendly food system, 7) preserving and restoring ecosystems and biodiversity and 8) achieving a zero pollution ambition for a toxic-free environment (Sabato and Fronteddu, 2020: 12). Procedurally, such interventions are meant to be achieved by introducing and fully embracing practices such as eco-design and

clean, circular production processes that extent the life of products and materials, driven through eco-label certification and green public procurement schemes while further recovering energy from non-recyclable waste, simultaneously with avoiding waste disposal to the greatest extent possible (Paleari and Günther, 2023: 13).

Despite decades of biodiversity decline and severe climate change effects, the disruption caused by COVID-19 the following year made the connection between planetary health and public health sharper (Financial Times, 2021). Representing a "late lesson" from an early warning, the pandemic, as noted by the European Environmental Agency (2022), emerged and intensified through the complex interplay between ecosystem disturbance, urbanisation, international travel and climate change. Firstly, as estimated by the US Centers for Disease Control and Prevention, three-quarters of all out-breaks for infectious diseases originating from animals (such as the novel coronavirus) were on the increase, a rise attributed to human infringement on animal habitats and fragile ecosystems, with illegal wildlife trade and live animal markets bringing humans into greater contact with infectious wildlife species (Pachaury et al., 2021: 3). Secondly, in the aftermath of lockdown and social distancing, and following the closure of motorways and factories across the world, many environmental parameters showed an improvement with decreased pollution levels, energy usage and greenhouse gas emissions, perhaps offering a glimpse into what the world would like without relying on fossil fuels (Watts, 2020). Confronted with such difficulties and opportunities, a noticeable shift towards EU priorities aimed at financing the repair of the pandemic's social and economic damage emerged (Theodoropoulou et al., 2022:5), with EU institutions adopting a substantial stimulus package known as Next Generation EU (NGEU, henceforward) for the period 2021-2027 (CultureActionEurope, 2021:4). NGEU's principal component is the financial instrument Recovery and Resilience Facility, financing the recovery of EU Member States with up to 312.5 billion euros in grants and up to 360 billion euros in loans (Theodoropoulou et al., 2022:8), which are accessible through the formulation of National Recovery and Resilience Plans (NRRPs) and subject to meeting conditions that include minimum allocation targets and country-specific recommendations (Ceron, 2023: 324). Specifically, the allocated funds, designated to reflect in

scope both the European Green Deal growth strategy, the EU's commitment to the Paris Agreement and the UN SDGs (Ibid, 2021:2), are to be spent in six key areas: 1) green transition, 2) digital transformation, 3) smart, sustainable, inclusive growth, 4) social and territorial cohesion, 5) health, economic, social and institutional resilience and capacity building and 6) educational policies for the next generation (Ibid, 2021:31).

Essential to the implementation of all policy initiatives promoted by the EGD is the necessity of evaluating the sustainability performance of all large and publicly-listed companies (European Commission, 2023), a process subject to a reporting mechanism known as Corporate Sustainability Reporting Directive (CSRD) and its reporting instrument known as European Sustainability Reporting Standards (ESRD). In 2021, and amending the 2014 Non-Financial Reporting Directive (NFRD) that preceded it, the European Commission introduced through CSRD stricter audit requirements for reporting companies, such as the introduction of third-party limited assurance (e.g. verification and certification auditors), broader disclosure mandates (e.g. expanding the previous company size criterion from 500 employees to 250) and digital reporting and tagging of reported data (Searoutes, 2023). Central to the reporting framework of the CSRD is the concept of *double materiality*, which essentially now encourages reporting companies to judge materiality from two perspectives: 1) the existing socio-environmental impact that is (financially) material to a company and its stakeholders (see previous discussion on GRI), and 2) additional information needed to understand and assess a company's overall sustainability performance in areas of focus that supersede the activity of accompany or the direct interest of its stakeholders, such as accounting for a company's overall impact to society and the environment (GRI 2021: 5), in a full range covering, social, environmental and governance issues, including climate change, biodiversity and human rights (European Commission, 2023). Consequently, while not all companies are subject to CSRD and ESRS and may use the reporting framework and standards voluntarily, requests from external stakeholders are on the increase, particularly as the CSRD becomes applicable to them; therefore, the collection and disclosure of data pertinent to sustainability performance will likely become a common practice in many sectors, including the media sector as a whole (EBU, 2023).

5. Drivers & Avenues for Sustainability in the Audiovisual Sector: Corporate Communications and Public Policy Development

5.1. Corporate Communications

Previous research has partially located the introduction of sustainable production norms for the audiovisual sector among various types of media organisations. These include multinational mass media and entertainment conglomerates, Video-On-Demand (VOD) and Over-The-Top (OTT) streaming services, and both public and private broadcasters, who have developed and incorporated such norms in the form of protocols or guidelines as part of their Corporate Social Responsibility (CSR) practices and disclosures. For instance, Maxwell and Miller (2012:24) suggest that a "green customer demand" can encourage media companies to adopt more ecologically sound practices, thus reflecting the sector's broader shift towards CSR and public relationships (PR, henceforward) management, while for Kääpä (2018: 45), credibility and the management of reputational capital are key incentives for media organisations; promoting thus environmental sustainability practices and supply chain integrity in all areas of their operations. Further, for Chiarini and Khedarchi (2018), the sustainability reporting strategies of the motion picture industry are contextualised as part of the CSR disclosures typical of project-based industries (Ibid, 2018: 6-17). In explaining CSR, Marisol (2016:16) presents us with two competing theories regarding the attainment of the "common good" within the framework of capitalism: the first is centred on the concept of lassez-fair and in the free market's (assumed) inherent ability to regulate itself, while the second emphasises the need for governmental intervention and regulation. The concept of CSR, first introduced in 1960, cuts across both assumptions (Ibid, 2016:16), positing that corporations need to act responsibly towards society (and, by extension, the environment), by being accountable towards a broader set of stakeholders beyond its shareholders (Wang et al., 2016: 534). Considering that an increasing number of investors are actively seeking out companies with responsible practices for their investment portfolios, implementing CSR strategies entails a series of advantages for an

organisation, such as shaping better relationships with all of its affiliated stakeholders and increasing employee morale (Ksiezak, 2016: 56) and further, building a better brand image, customer recognition and loyalty (Araújo et al., 2023:1-2). Moreover, improved access to capital and markets, higher sales, and reduced costs (Dubravská et al., 2020: 1-2), while for society at large, benefits include the overall philanthropic activities stemming from the organisation, the protection of the environment and inspiring a social activation in the organisation's value chain towards adopting similar responsibilities, leading to fairer competition (Ksiezak, 2016: 60). It's also important to note here that CSR is by its nature often underlined by a political and developmental dimension: for Adelopo et al. (2015), once governance gaps are identified, it's in the interest of corporations to bridge those gaps through their CSR initiatives. While historically, the initial policy response of governments towards environmental problems has included a "command-and-control" type of regulation (Prakash and Potoski, 2006: x), which, to quote Hou and Reber (2011:6) has been successful in "harvesting the low-hanging-fruit" of environmental problems such as the "large, visible pollution problems that are easy to identify and ameliorate", in the absence of equivalent international organisations overseeing economic and corporate responsibility issues and with the World Trade Organization and its constituent trade ministers "diligently striving to remove restrictions on business opportunities" (Hawken, 2008: 138) the pursuit of long-term sustainability is left subject to voluntary industry reforms (Prakash and Potoski, 2006: x). Thus, and in place of other alternatives, reforms of a voluntary nature tend to be naturally more effective than the traditional policy-making in place (which narrowly focuses on treating the consequences of environmental degradation) by addressing "the principal roots of systemic environmental problems" (Gorobets, 2013:655).

5.2. The Management and Reporting of Environmental Performance

Central to corporations meeting the above objectives is compliance with non-legal forms of regulations set forth by global governance institutions in the form of implemented managerial

CSR strategies (Vigneau et al., 2015:469), an integral part of which is the incorporation of an Environmental Management System (henceforth EMS) as a part of an integrated management system (IMS) (Ikram et al., 2019:1). Established as standard company practices since the late 1990s, EMSs are voluntary management tools aimed at improving an organisation's environmental performance by applying an integrated and systematic approach to environmental issues (Zilahy, 2017:2). Operationally, today's interested parties can design their own EMSs or implement the guidelines laid out by third parties, such as the EMAS regulation of the European Union or the more popular ISO14001 standard, both of which require stringent certification procedures by trusted third parties (Ibid, 2017:15). Due to this reason, the implementation of EMSs varies significantly across the globe: while by 2015, more than 300 000 companies operated environmental management systems certified according to the ISO14001 standard, and more than 4400 firms followed the principles of EMAS (Ibid, 2017:1); an earlier study (Delmas, 2002:92) points out that most adoptions of EMSs have mainly occurred in Western Europe (52%) and Asia (36%), regions whose governments have encouraged and even provided technical support to potential adopters. In sharp contrast, a mere 4.5% adoption rate in firms was reported for the United States, a discrepancy Delmas (Ibid, 2002:91) attributes both to an institutional environment that is not supportive of environmental management standards and due to an apprehensive corporate culture towards a certification process that potentially discloses their performance to public scrutiny (Ibid, 2002:1).

Other relevant CSR strategies, in addition to EMSs, include the mechanisms of sustainability reporting and green certifications. International standard-setting bodies generally develop reporting (e.g. GRI) and certification (e.g. ISO) frameworks, which can be national or international in nature and scope, sector-specific or impact area-specific (Brown et al., 2009: 574). Typically, reporting the sustainability performance of an organisation involves the public disclosure of their economic, social and environmental impacts against indicators and priorities in dedicated publications (Tang and Higgins, 2022:46) that serve as promotional material or

result in the organisation's annual reports (Alghamdi and Agag, 2023:1). However, as Manetti and Becatti (2008: 289) note, the practice of reporting in itself is characterised by a "credibility gap" due to its inability to map the involvement of stakeholders or embed their opinions through reliable, comparable and relevant CSR data. As such, to further demonstrate an organisation's competence in assuring the quality of its sustainability performance, external assurance services are offered by third parties independent of the organisation in the form of green certifications (Deloitte Norway, 2019: 2). Nygaard (2023:4) classifies the main certification systems that promote sustainability into three categories: 1) product certifications, and 2) process certifications, verifying that the product or management system conforms to certain social and environmental standards or criteria with 3) organization-based certification, certifying compliance throughout an entire organisation's processes. Key examples include the Cradle to Cradle certification for sustainable products, assessing the entire life cycle of a product while encouraging the use of environmentally safe materials (*product certification*), the Forest Stewardship Council (FSC) certification for ethical and sustainable forestry (*process certification*), with ISO 14001 or B Corp certifications assessing a company's overall social and environmental performance, accountability, and transparency (*organisational certificatio*n) (Ibid, 2023:3).

5.3. Transparency, Greenwashing and Eco-opportunism

For an overarching and successful corporate governance that enhances stakeholder connections and as a baseline consideration underpinning the public dimension of sustainability reports further guiding what elements are disclosed in them is transparency (Tang and Higgins, 2022: 46). In theory, to quote the Global Alliance for Public Relations and Communication Management (Global Alliance, 2010:3), CSR mechanisms should be subject to a transparent, "trustworthy behaviour, authentic and verifiable representation" that in effect sustains "the organisation's "licence to operate"; an approach however whose effectiveness is often questioned. In their critique, Tang and Higgins (2022: 45) highlight that sustainability

reports are often 1) less about transparency and more about reputation-building, 2) many have errors and omissions, and 3) the standards that underpin them are rarely enforced, while 4) the manner via which stakeholders can leverage insights from an organisation's report is unclear; as such, the general consensus often is that 5) sustainability reports lack the enforcement, attention, and scrutiny that the organisation's annual financial reports command (Ibid, 2022: 45). Such gaps and discrepancies in transparency, alongside costly monitoring and lack of legal enforcement systems (Nygaard and Silkoset, 2023: 3804) can often make stakeholders and customers alike susceptible to an organisation's hidden, self-interest-driven actions, such as engaging in Eco-opportunism. To quote Nygaard and Silkoset (2023: 6), eco-opportunism is "the pursuit of concealed self-interest with the framework of sustainable development", whereby one party in the certification system avoids "the associated costs of submitting to standardisation" while enjoying a free ride on a collective capital that includes efforts and milestones in green entrepreneurship, sustainable innovations, and investments in environment, social or green governance (Ibid, 2023: 5) and the corporate legitimacy that underlines such conduct. Further, in an attempt to attain such legitimacy and cash in on the green movement, many firms with poor performance in terms of substantive actions on environmental issues (*green talk*) engage in symbolic actions (*green talk*), selling themselves as being green to consumers and stakeholders (Walker and Wan, 2012:1), a practice known as greenwashing. Broadly, greenwashing implies a "selective disclosure of positive information about a company's environmental or social performance, without full disclosure of negative information on these dimensions" (Lyon and Maxwell, 2011:6), and usually, per de Freitas Netto et al. (2020: 7) manifests itself on two levels: 1) Claim Greenwashing and 2) Execution Greenwashing. The first includes the use of deceitful textual arguments that "explicitly or implicitly refer to the ecological benefits of a product or service in order to a create a misleading environmental claim"; in contrast, the second, without making any specific claims, relies on the construction of a false eco-friendly brand image by placing "nature-invoking" elements and motifs in its advertisement campaigns, such as colours (e.g. green or blue), sounds (sea, birds), natural landscapes (mountains, forests, oceans), pictures of endangered species or renewable sources of energy (Ibid, 2020: 7, 10). Considering the above, as

Caradonna articulates (2014:248), greenwashing is problematic primarily for two reasons: first, it undermines sustainability by making a mockery of its concept, and second, it is "merely another way for marketers to mislead consumers by exploiting their benign intentions". Further, in tackling the matter, and in the interest of consumer rights and the creation of a more circular economy, the EU in 2024 announced its plans to ban any 1) unsubstantiated and generic claims about a product or 2) claims that a product has a neutral, reduced or positive impact because its producer is offsetting emissions, as well as 3) sustainability labels not backed by approved certification schemes or established by public authorities (European Parliament, 2024:1-2).

5.4. Film Policy and Regional Funding Allocation

While the previous section situates the introduction of sustainable norms for the audiovisual sector in a corporate-organisational context, where the adoption of concrete (but also symbolic) actions aims at signalling an organisation's relevance to its stakeholders, this section locates the agency and drive in smaller industrial contexts (Kääpä and Vaughan, 2023:180) such as regional and community-driven industry initiatives. Such initiatives include the work of competent public institutions, such as 1) film commissions and national film institutes, in the development of environmentally sustainable intervention models (D'urso, 2022:164); 2) the role of cultural subsidies for the audiovisual sector, such as film funds leveraging significant industry change through policy development and enforcement dynamics (Kääpä and Vaughan, 2023: 180) in the form of (selective or automatic) funding schemes and other tax incentive mechanisms taking stock of environmental risks and production impacts (Evans and Dicks, 2014:4), as well as 3) a plurality of eco-sustainable solutions advocated by committed individual practitioners and film production companies. Moreover, 4) the integration of all the above in the form of collaborative industry networks, organisations, alliances, and think tanks invested in a unified approach through knowledge sharing, advocacy, film policy and the promotion of co-development and co-production of audiovisual products (Cineregio, n.d.).

Drawing on Cucco's (2013: 268) thorough inquiry, film commissions are organisations that regional governments create as non-profit entities in order to attract audiovisual productions to their respective territories by offering a variety of services at no cost, from providing assistance with logistics, location scouting and the granting of permits, to arranging concessions with accommodation and catering companies, and providing access to experienced local workforce and infrastructures (Beeton and Cavicchi, 2015:149). According to Costa (2008, as quoted in Nicosia: 2015: 166), in delivering such services, Film Commissions utilise two key variables: endogenous relations among locally based public and private stakeholders and exogenous relations with foreign stakeholders such as operators, productions and markets. Within this organisational framework, the primary goal is to generate economic benefits for their localities without exceeding their own operational costs (Cucco, 2013: 268); in doing so, successfully involving both public and private stakeholders is considered ideal (Nicosia: 2015: 168). As part of facilitating the above, film commissions also develop certain promotional tools, such as production guides typically providing local regulations and important contacts of operators, workers and service agencies based in the region, as well as location guides promoting a range of local filming destinations, from natural scenery and urban spaces to abandoned buildings and historical landmarks (Ghedini, 2007:33). As of recent (Cucco, 2021:56, D'urso, 2022:164; AFCI, n.d.:2), and particularly throughout Europe, the functions of film commissions have also expanded to include the promotion and development of protocols and guidelines for sustainable practices in production settings, often rewarding the audiovisual productions who comply (Cineregio, 2017: 10; Cucco, 2021:56).

Appending to the latter are public film and audiovisual funds. Per the European Audiovisual Observatory (2019:14), audiovisual funds constitute one of the four pillars of public support for European film production, alongside fiscal incentives such as tax shelters, cash rebates and tax credits, whereby they bridge the gap between producers and credit institutions by financing obligations on industry stakeholders, such as broadcasters and OTT/VOD providers. Typically, per Poort and van Til (2020:601), film funding support schemes across Europe are administered

at the supranational (Pan-European and occasionally international), national (or federal) and subnational (regional) levels for audiovisual projects such as feature films (fiction, animation and documentary), and TV content (series, single works and short films); a list that in some occasions extends to include video games, web projects and other multimedia productions, subsidising a range of project-related activities from development and scriptwriting to production, promotion and exhibition (Ibid, 2020:601). In fulfilling all of the above, a standard practice necessitates the pooling of financial resources from a combination of different public regional grants (Appelgren, 2018:256) into joint film projects, known as co-productions (Port and van Til, 2020:603). By now, to quote Appelgren (2018: 270), given the challenges of accessing private funding or pre-sales, most European feature films and TV drama series have to rely on multinational and/or multiregional public financing in order to proceed with their productions.

In eligible for support films and other audiovisual productions, regional funds emphasise the economic and cultural return of their investments (ROIs) back to their region, a principle known as the "regional effect" (EAO, 2019: 62). Such an effect is primarily tied to conditions such as territorial spending, whereby spending obligations for hosted productions in the region must be equal to or higher (typically, between 100% to 160%) than the allocated financial support (Appelgren, 2018:267-268) and shooting obligations, such as a minimum number of shooting days spent in the region (EAO, 2019:64) . Other funding criteria include providing proof of the project's cultural connection to the funding region either in terms of key production delegates attached to the project such as writers, directors and producers being residents of that locality, or via significant use of regional skills and talent in terms of technical services and cultural employment (Ibid, 2019:65). Moreover, the overall artistic value of the project (considering the story, script, and film director), and the production's audience or festival submission potential (Appelgren, 2018:267-268), as well as taking into account the applicants' performance success with previous projects as a reference, also called "reference film funding" (Teichmann and Murschetz, 2018:262). Allocated funding can be awarded in an automatic manner, whereby criteria are based on clear conditions without involving the discretionary evaluation of experts

or selectively, that is, in accordance with selective criteria assessed by experts through eligibility tests in areas such as quality, originality and cultural value (Poort and van Til, 2020:603).

Recently, some public funds have also broadened their criteria to address the need for "off-screen" initiatives that aim to improve production practices by adopting sustainable policies (EAO, 2019: 75). Per the European Audiovisual Observatory (Ibid, 2019: 138), the idea of allocating funding for sustainable production is that the adoption of relevant policies may, in some cases, lead to higher production costs; as such, provided that particular conditions are met, successfully awarded support can offset such costs (Ibid, 2019: 138). On some occasions, public funding is also allocated to cover other eligible costs such as project development, ecologically sustainable theatrical release and green certification (ÖFI, 2023; FISA, 2024:13). In most instances, delegate producers applying for selected public funds are obliged to demonstrate how their co-productions are diligently minimising their expected environmental impacts. As such, support is awarded based on the fulfilment of listed requirements in the form of criteria and evaluation grids or a rating system (EAO, 2019:138). Other formal obligations include the submission of a pre-production action plan detailing sustainable choices for the specific project, compiling a regional carbon calculator providing emission estimates in pre-production and coaching sessions with experts tied to the fund, whose evaluation and approval will eventually allocate the support (VAF, n.d.; Eurimages, 2023).

5.5. Industry Alliances, Multiple-stakeholder Groups and Non-State Actor Participation

In this section, we locate the drive for progress made in the sector's sustainability efforts by enlisting the concept of "co-opetition" among (otherwise) corporate rivals and competing professionals, working together to solve industry-wide environmental problems through transatlantic industry networks and organisations, strategic alliances, and think tanks invested in knowledge sharing, advocacy, film policy, and the promotion of co-productions.

Per Fuller-Love (2009:271-273), cooperation in professional networks plays an important part in the survival of both small and medium enterprises (SMEs, henceforth), with observed benefits outweighing the competitive approach itself, including access to resources, competencies, savings from transactional costs and reduction in costs, as well as greater negotiating power with suppliers (Daidj and Jung, 2011:39), maintaining further the viability of an industry that experiences "a collapse of [its] parts, units, functions, roles, business and revenue models" and a radical departure from established ways of doing things (Deuze and Prenger, 2019: 18). Specifically, co-opetition as a proposed term here refers to instances of "competitive collaboration" among firms that drive sustainability while assisting in the creation of environmentally friendly products and services (Kumar et al., 2020:2). Recognising this shifting dynamic, Pardo (2007:59) proposed that the new "net value" of a media organization can be seen as the crossing point of two axes: a vertical axis describing the dynamic interactions between the consumers and suppliers of a product or service and a horizontal one determined by the tenseness of interactions with the organisation's external market environment. Such a net value is translated into a spectrum ranging from competitive rivalry for the market share to more synergistic and complementary relationships aimed at fostering industry-wide (and, in our case, environmental) solutions and entails four types of coopetitive relationships: 1) interactions with global rivals, 2) engagements with foreign governments, 3) external cooperation with alliance partners and 4) internal cooperation within a multinational enterprise (Ibid, 2007:60). For Kumar et al.(Ibid, 2020:9-11), co-opetitive relationships in firms occur across all three dimensions of sustainability: economic, social, and environmental; strategically they can be further classified into 1) commonality-driven, 2) competition-driven, and 3) collaboration-driven approaches. Commonality-driven approaches include the collective strife for achieving common economic goals and socio-environmental objectives, towards which strategic partnerships are crucial, while competition-driven factors include the importance of choosing partners with complementary capabilities to enhance corporate performance (Ibid, 2020:9-11). Further, collaboration-driven approaches aim for technological support and sustainable competitive advantages. Broadly, notions of co-opetition in the media industries have been

present throughout the 1980s, with Hollywood studios gravitating towards synergy and diversification (Pardo, 2007:21) in the form of strategic alliances. Strategic alliances in the entertainment industry involve two or more legally independent firms under a contract-based relationship, without the establishment of a new entity and no indefinite pooling of resources and have taken the form of co-financing agreements negotiated during the assembly stage of a project, whereby studio executives are presented with a package that includes the screenplay, the projected budget and the creative team consisting of primary cast members, the line producer and the director(s) (Palia et al., 2008:484, 486). Other factors necessitating coopetitive synergies surfaced in the late 1990s, whereby owning much to the digital sector's technological boom, a growing interest in audiovisual media from outsiders to the industry, such as telecommunications groups, internet service providers and IT companies was encouraged (Daidj and Jung, 2011: 37, 46).

In this context and during more recent years, a formation pattern of network organisations can be observed, whereby competing studios, besides pooling together funding and resources for pilot projects, also implement, monitor, and report on their sustainability on production sets, eventually devising and sharing standardised sets of best practices, guidelines, and toolkits in a manner exhibiting both "positive competition and positive collaboration" (Motion Picture Association, 2020). Prominent examples include all-time rivals such as Time Warner, Disney, Viacom and News Corp, once competing with each other in "an oligopolistic and very competitive market" (Daidj and Jung, 2011:46), gradually uniting into a joint pooling of resources, in instances of "rare cooperation in an industry of sharks" (Vaughn, 2019:174) in the formation of Sustainable Production Alliance and the publication of its *Green Production Guide* (SPA,2010). Additionally, similar alliances have been formed (Netflix - The Walt Disney Group) to pursue objectives such as the use of eco-friendly alternatives to diesel generators within the entertainment sector, consolidating their demand and paving the way for the supply of mobile batteries, hydrogen power units and systems (CMPI, n.d.).

Further, as a response to the rapid globalisation of supply chains (Cineregio, 2012:5) and decentralisation of industrial processes (Pardo, 2007:61), strategic alliances with international partners (such as US-European co-productions) were seen as necessary, particularly in the context of runaway productions. To quote Goldsmith and O'Reagan (2005:9-10), utilising the "hypermobility of contemporary film production" in its outmost, Hollywood studios have sought to produce their films overseas for economic reasons (such as tax incentives and reduced labour costs), creative considerations (use of exotic locations) and marketing campaigns (where shootings facilitated as a "local events'). However, as Vaughn (2019:178) points out, while such runaway productions enjoy "reduced costs, low wages and rental rates, tax credits and subsidies", and the locations exploited also enjoy increased visibility as a tourist attraction, the configuration of infrastructure and the training of semipermanent local media professionals, the aftermath is often detrimental to the environment surrounding the hosting region. As such, a second network type of cluster organisations can be observed, whereby regional film funds and film commissions consolidate their efforts into a range of eco-conscious supporting schemes and services promoting film culture, social cohesion and the buildup of regional infrastructure in the interest of international co-productions (Cineregio, n.d.).

Naturally, achieving sustainability on a sector-wide scale also necessitates amplifying relevant advocacy efforts at the highest levels of agenda-setting, e.g., the United Nations Framework Convention on Climate Change. Taking things one step further, advocacy for a more sustainable audiovisual industry has pursued more ambitious venues through the work of non-state actors working in a representative capacity for the sector. In understanding the role and definition of a "non-state actor", Wijninga et al. (2014:142) suggest considering the "changing nature and extent of state authority" in an international political scene, navigating a complexity accentuated by globalisation, the rise of communication technology and the emergence of a multipolar world order. In the context of global climate governance and appending to the Paris

Agreement and 2030 Agenda frameworks, such a complexity is navigated through policies that, revisiting Kuyper et al.'s (2017:7) earlier observation, promote a "hybrid multilateralism" merging the work of both state and non-state (civil society and social movements) actors, but also economic actors (business, including media-related outlets and multinationals, and trade unions) and subnational or substate actors (regional local governments, cities and municipalities) into "a dense regime complex" (Ibid, 2017: 3). Such a broad engagement of different stakeholders also implies new modes of interaction between actors through transnational coalitions bringing together non-traditional players (e.g. businesses and advocacy groups) (Wijninga et al., 2014: 145). As such, following successful examples from the fashion and textile industries [United Nations Fashion Industry Charter for Climate Action in 2018] and the sports sector (Sports for Climate Change (UNFCCC, n.d.a and n.d.b), multi-stakeholder non-state actor initiatives are lobbying for a more sustainable audiovisual sector, through stakeholder engagement to net-zero commitments, biodiversity preservation, and the use of storytelling as a catalyst to climate action (ECCA, 2023:2-3).

5.6. Green Promotional Events and Awards

Highlighting and propelling the progress in all of the above are other segments in the audiovisual supply chain, such as promotional events undergoing a similar "green" activation (D'Urso, 2022:176). These include a range of industry-related events and recognition awards, from leveraging environmental celebrity activism into inspiring, educating and mobilising the general public (Environmental Media Association, n.d.a) to honouring remarkable production and location work that sets the highest standards in sustainability (Global Production Awards,2023a). As theorised by Simonton (2004:163), filmmaking is a process of "collaborative creativity", and a feature film is a product of the separate contributions of directors, screenwriters, actors and other technical specialists. Such separate contributions are not completely "submerged or blended in the final product" (e.g. film and TV content) and can be themselves evaluated as "indicators of creativity or achievement", subsequently awarded

"independently of each other as well as independently of the film's overall success"(Ibid, 2004:163, 169). Notably, in the ever-evolving landscape of audiovisual production, such recognition of achievement has been expanded to now include "where, how and who creates such work on the ground" with respect to sustainability, inclusion and the empowerment of local economies (Screen Daily, 2023b). In addition, such attention has also shifted inwardly, with film festival ecosystems pursuing behind-the-scenes "solutions or tweaks to common festival habits and practices" (de Valck and Damiens:2023:322). Broadly per Holmes et al.(2015:6-7), such sustainable solutions include 1) economically viable events that contribute to the development of regional enterprises, thus triggering economic activity, 2) event planning and operations focused on the conservation of natural and built environments where the event takes place, taking stock of 3) socially ethical and equitable principles that promote local employment, social and cultural pride, while strengthening community networks; and more specifically the promotion of such considerations on a national level, often underpinned by relevant certification (see Green Film, 2021b and Trento Film Festival, 2024) in a "globally recognised manner" (ISO, 2012:7).

6. The Development of Sustainable Production Norms in the US and Europe

6.1. United States

6.1.1. The Environmental Media Association

Attempts to understand, promote, and enact sustainability in the production of media have been gaining traction at large, at least since the late 1980s (Ricketts, 2010:22; Heimann, 2012:11) and early 1990s (Corbet and Turco, 2006: 5). According to Zilahy (2018:1), by the late 1980s, businesses started to recognise the complex nature of environmental issues and their implications for corporate management, stakeholders, consumers, and the general public, prompting thus a shift towards pollution prevention and the integration of technological solutions alongside more traditional end-of-pipe mitigation strategies. In taking stock of the ecological downturn linked to, among others, the growth of the creative economy, the US Environmental Protection Agency [EPA, the enforcement arm of the NEPA Legislation Act of 1969 (U.S. EPA, n.d.)] started publishing data on the industrial toxic emissions of big corporations, bringing unwanted attention to Eastman Kodak Company, a once-dominant corporate giant in the field of commercial photographic film stock and equipment (Oakley and Banks, 2020:26-28). That data was alarming, considering that Kodak's Eastman Business Park operations were found to outrank every other major polluter in the state of New York (Orr, 2014), with such violations resulting in millions of lawsuit fines. Simultaneously, as Vaughn observes (Starosieski and Walker, 2016: 27), Hollywood was forced to realise that environmental sustainability enjoyed widespread popularity, evolving to a "cause célèbre for the new millennium". Thus, in 1989, the Environmental Media Association (EMA, henceforward) was founded as a 501(c)-type non-profit organisation with a mission to promote environmental content in the media, inspiring, educating and mobilising the general public (Environmental Media Association, n.d.a.) through its annual prestigious galas, bringing together celebrities, studios, industry stakeholders and politicians. In 1991, EMA hosted its first

EMA Awards, honouring exemplary film and TV projects that effectively promoted environmental themes in tandem with dedicated, focused briefings raising awareness on various facets of environmental advocacy. Throughout its annual editions, these have included panels and fora as diverse as rainforest preservation (1990), population and consumption (1994), clean air (1996), recycling (1999) and wildlife protection from oil exploration and drilling (2002). However, it wasn't until 2004 that EMA, partnering with Green Seal, a non-profit environmental certification developer, launched its Green Seal Awards programme in recognition of progress made in the field of sustainable audiovisual production (Corbet and Turco, 2006: 5; Environmental Media Association, n.d.b.).

6.1.2. The CSR Institutionalisation of US Studios

Although the EMA Green Seal did not inaugurate sustainable production in audiovisual productions per se (see discussion on Fessenden's 1993 *Low Impact Filmmaking* in the section *Literature Review*), we assume here that the guidelines underpinning its green checklist appear to have served as the prototype for all subsequent sustainable protocols, particularly those that utilise rating systems (cf. for example, BAFTA Albert and Trentino Film Commission's Green Film). As the earliest example of this methodological setup, the EMA Green Seal, in its 2004 update, required delegate production applicants to rate their own efforts in sustainable production on a 5-point scale in areas such as the usage of 1) certified renewable and sustainable building materials for set constructions, 2) less toxic and low-emission paints, sealants and lacquers, 3) hybrid and electric vehicles for production transport and 4) the purchase of clean (low sulfur) diesel for all production vehicles and generators (Corbet and Turco, 2006: 82-83). Further, 5) the procurement of environmentally friendly products with recycled content for production offices, 6) adequate recycling of office stationary materials (from paper and plastics to VHS, Digital Betacams and DVDs), and 7) assuring that craft and catering services utilise reusable or recyclable serving products in leu of mass-produced styrofoam (Ibid, 2006: 82-83). Then, following the submission of the completed application, a

site visit to the production (studio or location-based) site by Green Seal-affiliated auditors would, alongside interviews with production representatives and adequate documentation, verify the claims of the application, thus ensuring the inclusion of the production in the annual Awards (Ibid, 2006: 82-83).

Beyond the EMA framework, as Vaughn notes (Starosieski and Walker, 2016:27), while most major productions and studios initiated their path to carbon neutrality by offsetting otherwise pollutant methods through donations to independent environmental organisations, among other corporate environmental efforts that often resemble greenwashing (Vaughn, 2019:174), several distinct practices that significantly contribute to sector's sustainable transition should be highlighted. As an example, in 2001, as perhaps an early instance of what Kreft observes as "CSR Institutionalization", manifested by specialist training, implementation and sustainability reporting on ISO 14001 (Kreft, 2015: 328-329), Sony Pictures saw to it that all of its North American operating units, including Sony Pictures Studios spaces, achieved ISO14001 certification, which focused on the reduction of its environmental impact in key areas such as water conservation, energy and waste management and reduction as well as pollution prevention (Sony, 2002; Sony Pictures, 2022), making Sony Pictures the first and so far only 14001-certified studio (Meyer, 2016: 34). Even though the specific ISO standard was not directly applicable to audiovisual production, or in fact, required to follow an environmentally optimal strategy towards immediate improvements, to quote Corbet and Turco (2006: 56), it did have valuable educational effects. As of the same year, Sony Pictures also sought to repurpose all paint and varnish leftovers from its motion picture filming sets by donating up to 900 gallons of paint to local organisations (Sony, 2001: 41), further supporting, hosting and promoting the launch of Berlin-based ECOmove International Festival Network, the "1st International Festival of Environmental Film Festivals" (Sony, 2002:46) decidedly focused on Education of Sustainable Development through the promotion of environmental media (Ecomove, 2019). Through the next few years, along with other forward-thinking policies and initiatives, Sony also pioneered the development of digital video and cinema technology in line with environmental objectives, claiming a total of 40% reduction in CO2 emissions reductions

through its prototype digital camcorders and energy- and resource-saving cinema projection systems (Sony, 2010:20; Sony, 2012:183).

Another early pioneer has been Warner Bros. Entertainment. As early as 1994, Warner was setting the example through various initiatives for its productions, including an environmental purchasing program, sustainable design and construction policies, and the use of refined oil for a production fleet of more than 400 vehicles, increasing its waste diversion rate in 2006 from 7% to 53% through recycling and donations, generating as much as $25,000 while saving an extra $150,000 in disposal costs (Corbet and Turco, 2006:52-54). In 2007, NBC Universal created its *Green is Universal* initiative in an effort to raise awareness and effect positive industry change towards the environment, further pledging the substantial greening of all of its operations, including television, film and studio divisions (Audubon New York, n.d.). Besides the publication of step-by-step guides of best practices, Universal at the time also announced the designated role of "Manager of Sustainable Production", liaising with both film and television productions to help implement and track green best practices and assist shows when transitioning to more sustainable operations (CSR Wire, 2009). Then, as early as 2005, in an effort to reduce waste and save resources, time, and money, Disney's T*ouchstone Television Set Reuse* program saw the recycling of more than 40,000 set pieces, including from the sets of *Desperate Housewives* (Created by Marc Cherry, 2004-2012) and *Gray's Anatomy* (Creator Shonda Rhonda Rimes, 2005-), producing annual savings exceeding $500,000 (Disney, 2005:10). Building from a longstanding and meaningful commitment to climate action throughout its history (Ingram, 2004:21; Rehman, 2021:122) and notwithstanding numerous accusations of greenwashing on account of Disney theme parks being carbon-intensive attractions and promoting unsustainable patterns of tourism as a destination (Pearce, 2009), in 2010 the Disney Group facilitates the inclusion of an at least one full-time Environmental Steward on its motion pictures, coordinating "location, production, catering, and cost services teams to incorporate environmental considerations in filming" (Disney, 2010:41). Not dissimilarly, the News Corporation-owned Twentieth Century Fox (as of 2018, Fox Corporation) also entered the conversation. In 2007, the Chairman and CEO of Fox, Rupert Murdoch,

provided the press with a dual pledge: greening News Corps' internal operations and becoming carbon neutral by 2010 while developing and producing more entertainment programming about energy conservation and climate change (Di Meo, 2007), stating that "our audience's carbon footprint is 10,000 times bigger than ours. That's the carbon footprint we want to conquer" (Ibid,2007). A fitting and perhaps surprising strategy of aligning with the times, considering the public image of News Corps-owned Fox News, a Network catering to a more politically conservative camp often utilising aggressively anti-environmentalist content (Ibid, 2007).

6.1.3. The PGA Green Committee

In 2008, pioneering producer Mari Jo Winkler monitored her production of *Away We Go* (Dir. Sam Mendes, 2009), reputably the first US production to have a verified carbon footprint, implementation of alternative fuels for generators, and the elimination of plastic water bottles through water refilling stations, waste separation alongside the choice of low-VOC (volatile organic compounds) paints, responsible craft sourcing and donations, overall achieving a 49% diversion of waste from landfills (Bergmann et al., 2008:6-8; Truenorth, 2023). The compiled report was sent to the heads of all the major studios —Sony Pictures Entertainment, The Walt Disney Company, Warner Bros. Entertainment, NBC Universal, and Fox—which in 2009 all came together, partnering with the Producers' Guild of America (PGA) in the creation of PGA Green Committee (henceforth, PGA Green) (Kilday, 2011). Subsequently, the previous Hollywood majors regrouped to form the Sustainable Production Alliance (SPA, henceforward), a consortium dedicated to "accelerating the transformation of the entertainment business into a more sustainable industry"(Motion Picture Association, 2020), a list that by now extends to include Amazon Studios, Amblin Partners, Netflix, Hasbro Inc., Participant Media and ViacomCBS. Together, PGA Green and SPA in 2010 developed the Green Production Guide, arguably the first resource toolkit for sustainable productions, making it available internationally through an interactive database with access to sustainable vendors, products and services

(Killjoy, 2011). The toolkit consists of 1) PEACH (Production Environmental Actions Checklist) and PEACH+, which include practices with individual benchmarks and targets on an environmental balance sheet (Meyer, 2016: 30) that every department can follow; 2) the PEAR (Production Environmental Accounting Report) carbon calculator measuring the environmental impact of productions based on the usage of energy in offices and stages, fuel in vehicles and generators and emissions from air travel and accommodation, and 3) the PLUM (Production Lumber Material) worksheet that tracks sustainable plywood usage (Green Production Guide, 2024).

6.2. United Kingdom

6.2.1. The Media CSR Forum

The sector adapted swiftly in Europe and especially the UK. As a precursor to sustainable production in Britain, we can regard the formation of the Media CSR Forum in 2001, an initiative established as a collaboration between leading British media corporations such as the BBC, Sky, and the Guardian Media Group to foster CSR and sustainability practices within the media industry (Media CSR Forum, 2005: 6), following the recognition that the integration of such practices in media organisations has "many unique features that set it apart from traditional industry and other business sectors, some of which could benefit from a collaborative approach" (UNAOC, n.d.). For its stakeholders, who by 2005 had welcomed among themselves the addition of Channel 4, Five, Turner Broadcasting (now owned by Warner) and Reuters (Media CSR Forum, 2006:1), the Forum undeniably proved to be a *prova generale* in meeting future responsibilities and reporting requirements (Channel 4, 2010:99), such as the mandate to report on a public company's social and environmental action, introduced as part of the 2006 Companies Acts (Gulyás, 2011:61). The UK CA 2006 enlists the concept of an 'enlightened shareholder value', which, per Kabour (2021: 13-14), intersects two competing corporate objectives: shareholder value and stakeholder theory. Shareholder value

posits that "the sole corporate objective is to prioritise shareholder interest by generating shareholder wealth" (Ibid, 2021:13-14), while stakeholder theory presupposes that directors must run their companies for the benefit of all their stakeholders (incl. shareholders); therefore, an organisation has to adopt more diverse (e.g. socio-environmental) sets of concerns that stretch beyond mere its financial performance (Ibid, 2021:13-14). In the context of CA 2006, as Copp (2009:17) posits, shareholder value was equated to short-term profit and was, therefore, incompatible with an organisation's long-term benefits resulting from cooperative relationships (Copp, 2006:17.) Suffice to say that before the passing of CA 2006, shareholder value was not statutorily mandated; as such, companies were "expected to act in good faith vis-à- vis the way in which the directors, and not the court, consider to be in the best interests of the company" (Kabour, 2021:13-14). Thus impacting reporting activity on various levels, many Media CSR Forum's affiliates sought to pursue their green transition actively while beginning to report on their efforts on an annual basis. For the Comcast-owned, then UK-based Sky Group (that also includes Sky Italia and Sky Deutschland, formed respectively in 2003 and 2009), this implied achieving CarbonNeutral certification for its UK corporate operations in 2006, further aligning its internal vision with external campaigns such as Rainforest Rescue and Ocean Rescue (CarbonNeutral, 2024), while gradually demanding a carbon footprint from productions commissioned by external contractors (Heidsiek, 2015: 5). For the BBC, initial strides have included practices of ethical conservation when filming animals, stating that the welfare of the subject is more important than the sequence", the inclusion of disabled actors (BBC,2006:53), the promotion of medium-term environmental policies related to the overall reduction of waste and energy use (BBC,2006:49) and the procurement of FSC certified paper for all BBC in-house print publications (BBC,2006:58), and the eventual introduction of annual environmental targets in 2009 to measure the BBC's performance in energy consumption, carbon emissions, water use, waste, recycling and travel (BBC, n.d.). For ITV, similar efforts included renewed procurement policies with a marked preference for more sustainable supply chains and the greening, collection and reporting of data relating to carbon dioxide emissions, waste generation and water use in the company's three main studio sites (ITV, 2006: 9, 27) while for Channel 4, the introduction of an in-house direct carbon reporting framework, with the

additional development of all indirect emissions, including production-related transport activities (Channel 4, 2010:98).

6.2.2. Green Screen London

Subsequently, the number of initiatives increased substantially, bringing about key positive changes. In 2008, the regional screen agency Film London backed Green Screen London, a then-new environmentally friendly initiative for film and TV production. The initiative aimed to cut climate emissions in London by 60% by 2025, in line with the then-Mayor's Ken Livingstone Climate Change Action Plan and had the en-masse support of the UK Film Council, BAFTA, Ealing Studios, 3 Mills Studios, Pinewood Studios, the Production Managers Association, Advertising Producers Association, Producers Alliance for Cinema and Television, and Production Management Association (Mitchel, 2008). As of 2017, Green Screen consolidated its guidelines into a certifiable protocol in partnership with Greenshoot (Greenshoot, n.d.). Successful adherence to the Greenshoot protocol is subject to evidence collected by a "production coordinator", cataloguing the social, economic and environmental impacts of a shoot, upon which productions then receive a Greenshoot Environmental Card (Oxford Economics, 2012:35-36), gradually certifying over 1500 productions in 26 countries to this day (Greenshoot, n.d.). As for Film London, operating strictly within the bounds of the City of London, the agency proved to be a premium support mechanism not only in areas such as helping firms to film in the capital, exhibition events, training, skills and marketing, as well as production funding schemes (Chapain and Stryjakiewicz, 2017:81) but also in the supply of green energy to audiovisual projects, through the installation of an electrical feeder pillar at a key unit in Victoria Park in 2023, an initiative known as *The Grid Project*, made possible with funding from the Mayor's Good Growth Fund supported through the London Economic Action Partnership, NBCUniversal, Interreg Europe's Green Screen, and the British Film Commission (Film London, 2023).

6.2.3. The BSI 8909 Specification

Another major advancement driving the British screen sector's green transition and the second instance to observe the introduction of new stakeholders in audiovisual production (following the EMA Green Seal), such as environmental standard development organisations, pertains to the involvement of the British Standards Institution (henceforward, BSI). The BSI, a national standards body (NSB, henceforward) authorised by the British government, was established in 1901 and was the first standards body globally, with a mission to meet the demands of relevant stakeholders, including society, all levels of government, enterprises and the public. In 1946, the BSI became a founding member of ISO and has since then initiated over 35000 general management system standards, many of which were the prototypes behind the more popular ISO standards, such as ISO 9000 (based on BSI's BS 56550) or ISO 1400 (based on BS 7750) (Song and Wang, 2018: 1037-1038). In 2011, during the 2011 Cannes Film Festival, the BFI, together with the BSI, introduced a new standard specification for both audiovisual (particularly film) production and events management, the BSI 8909 (Heimann, 2012:16-17). The BSI 8909 " Specification for a Sustainability Management System for Film" standard considered a workflow covering all production stages from pre-production through to the sales of DVDs for home entrainment purposes, where the minimisation of carbon emissions coincides with the maximisation of socio-economic positive impacts (Ibid., 2012:16-17) holistically all three dimensions of sustainability: 1) environmental, through improved route planning, the selection of vehicles with lower CO2 ratings, and carpooling 2) social, through establishing clear guidelines that minimise production effects on local communities from promoting limited working hours and engaging with the hosting communities to converting the entire supply chain into more sustainable. Further, 3) economic sustainability, through helping local communities benefit from the film activities in the locale via hiring local people and compensating them properly, in addition to sourcing local props, extras and catering (BFI, 2011: 2).

6.2.4. BAFTA Albert Toolkit

Arguably, however, the most influential development in codifying a sustainable production norm came through BAFTA's Albert programme. In 2010, the BBC developed the first "fit for broadcast" online carbon calculator, which was piloted on the BBC One show *EastEnders* (Created by Tony Holland, Julia Smith, and Tony Jordan, 1985-). The BBC aptly named it "albert" after the continuing drama's setting in Albert Square, London (BBC, 2024), eventually sharing its resources with the industry through a partnership hosted by the British Academy of Film and Television Arts (BAFTA)(Gündüz Özdemirci, 2016: 4). Further, in 2011, aiming to improve the carbon footprint of the television production industry simultaneously with raising the environmental awareness of television programme makers, Albert, teaming up with UK sustainability organization Julie's Bicycle, became the Albert Consortium project, in which instance BAFTA became both its member, owner and treasurer (Julie's Bicycle, 2022:26). The Albert Consortium took upon itself to deliver a variety of timely solutions in the field of sustainable production, moving from a mere carbon calculator to a certification toolkit scheme in 2013 and carbon literacy training facilitator as of 2021 eventually becoming a global consolidated sustainable production paradigm (Kääpä and Vaughn, 2022:313) and an established industry-standard (Hjort and Nannicelli, 2022:308) used predominately by the BBC, ITV, Channel 4, UKTV, Sky, TG4 and Netflix (BAFTA Albert, 2024), in a (mostly) compulsory manner (Albert, 2021.:2). Despite its constant improvements and iterations over the years, at its core, the Albert calculator promotes a simple online workflow for tracking and logging emissions in a production setting: a user (normally a production co-ordinator) or multiple users add data to the calculator while a reviewer (normally a person fulfilling a senior production role, such as a Head of Department) is responsible for implementing sustainability in the production (Albert, 2021.:3-5). Collection and reporting of data occurs on three successive occasions: 1) a draft footprint started in pre-production, giving an indication of expected emissions according to activities and budget, 2) a carbon action plan (henceforward, CAP) that covers the sustainable measures taken in production followed by 3) certification, whereby the draft footprint and the CAP have been fully assessed and successfully approved (BAFTA Albert,

2022b:1-2) by an external auditor (Albert, n.d.:3-5). Other important Albert initiatives include *The Creative Energy Project*, operated in partnership with British energy company Good Energy, which offers companies and service providers the chance to use 100% renewable power without the cost usually associated with that purchase (Strauss, 2019) and the 2019 *Green Rider*, a novel contract between the production and its actors, writers and directors, whereby all signatory parties commit to implementing certain pre-arranged sustainable measures in areas such as dressing rooms and trailers, costume and make-up, as well as catering, travel and accommodation (BAFTA Albert, 2024d). Moreover, as of 2020, Albert launched its *Creative Offsets* programme, helping productions to offset emissions they can't reduce through the purchase of carbon credits (BAFTA Albert, 2024b) and further piloted its *Studio Sustainability Standard* in 2023 (BAFTA Albert, 2024c) in addition to a significant body of research and advocacy (see section *Literature Review*).

6.3. Continental Europe

6.3.1. Introduction

The development of sustainable production discourses and norms that took root in North America and, subsequently, Britain was also gradually reflected in a range of regional initiatives stretching all across continental Europe, albeit in a very different manner. Since covering all such initiatives is an unnecessary (if not impossible) task, a focused discussion that covers such developments thoroughly and meaningfully can be organised by addressing the most forward policies and developments displayed regionally amongst the EU-27 in key and often overlapping areas, such as 1) sustainable production advocacy, lobbying and the sharing of best practices, 2) the mandatory provision of carbon action plans as part of both shooting permits and allocated funding, 3) fiscal incentives to produce content sustainably and funding to offset the costs associated with the adoption of such measures, 4) region-specific approaches to sustainable production management, certification and carbon calculation, and 5)

green film awards honouring sustainable approaches to production; developments against which the case of Italy will be gradually benchmarked.

6.3.2 Ecoprod (France)

In continental Europe, the earliest activity can be traced back to 2005, when Catherine Puiseux, CSR Director of the French TF1 Group and the Ile-de-France Film Commission (now Film Paris Region), conducted a survey in 2005 on behalf of Corinne Rufet, then-Vice Président de la Région from the Green Party, to determine the levels of carbon emissions in audiovisual production in the region of Ile-de-France (Heidsiek, 2015:11), a practice also repeated in 2006, when Puiseux was asked to perform a carbon evaluation for TF1 to set criteria for its own commissioned productions, which comprised about 80% of its programming (Ibid, 2015:11). Subsequently, in 2009, various industry stakeholders such as the Ile-de-France Film Commission, France Télévisions Group and the TF1 Group, alongside the French Environmental and Energy Management Agency (ADEME), and Audiens, a social protection NGO ensuring DEI advocacy for the creative sector, among others, created Ecoprod, a working group initially aiming to curb the footprint of audiovisual production (Biancarelli et al., 2023:24). Over the years, Ecoprod evolved from a collective partnership to a non-profit association, open to all industry actors (Croll, 2022) with more than 350 to date (Biancarelli et al., 2023:33) and a "symbol of possibility within sustainability and media practises" for the French audiovisual sector (Green Filmmaking, n.d.) through various key restructures. In 2012, Ecoprod launched its carbon calculator, the Carbon Clap, the first computer-based carbon calculator specifically catered to the audiovisual sector (Ibid, n.d.), while in 2014, Ecoprod launched its Charter, a pledge where signatory organisations (production companies and suppliers) commit to promoting more eco-friendly approaches in what will be an "initial step towards more demanding standards and certifications" (Green Film Shooting, 2015b:6-7). Further, in 2022, Ecoprod released its Ecoprod label, an open-access reference framework with 80 actions to be implemented, whereby successful compliance with each action earns points to

measure the Ecoprod Label score. The actions pertain to ten key areas of intervention: 1) production, communication and commitment; 2) content (e.g. planet placement) strategies; 3) offices, with respect to energy consumption and waste and raw materials; 4) filming locations with respect to energy and resource consumption and biodiversity risk assessment, and 5) circular use of sets, constructions and accessories in addition to 6) make-up, hairdressing and costume considerations, such as the use of eco-labelled, toxic and cruelty-free materials and cosmetics, 7) sustainable travel and commuting arrangements, 8) stage management (for studio shootings), 9) technical production resources in electricity and lighting and special effects and 10) post-production. (Ecoprod, n.d.). While the majority of the targeted actions are meant to be planned alongside consultation with all production departments during pre-production, certain actions are non-negotiable, comprising mandatory baseline considerations ranging from thorough communication with all teams of cast, crew, and stakeholders, the inclusion of a "designated person" overseeing sustainability on production sets, the calculation of final carbon emissions, the drastic reduction of single-use plastics on set, alongside sorting instructions for office and studio-based waste to the banning of private jets and helicopters for all productions (Ibid, 2024). In turn, successful observance of actions granting a score of over 65% qualifies for the Ecoprod Label, in which case, the production's application is assessed and audited by AFNOR Certification (Ecoprod, n.d.). Simultaneously, considering that France is the largest public funder in Europe (EA0, 2016:38), it was a matter of time before sustainability was seen in the context of regional funding. For the first time in film funding history, producers in the French region of Provence-Alpes-Côte-d'Azur were awarded €50,000 to implement environmentally friendly measures on production sets, a support scheme allocated to 36 productions between 2010 and 2013 (Meyer, 2016: 47). Then, owning much to its influential collaboration with Ecoprod, France's Centre National du Cinéma (CNC) in 2014 launched its programme of green grants, supporting 40% to 60% if the cost of investing in sustainable production, and recognising the importance of research, further funding up to 70% of expenses occurred during commissioned environmental studies for the sector (Heidsiek, 2015b:8). Subsequently, in 2017, the Ile-de-France Film Commission also launched its eco-bonus funding programme with € 50,000 awarded in a selective fashion to applicants who

submit a production note with a budget estimate for costs associated with the implementation of sustainability (Ibid, 2015b:8; Cineregio, 2020: 7).

6.3.3. The Flanders Audiovisual Fund (Belgium)

Approaching parity with the French sector's regional film funding strategies, yet clearly on a much smaller scale, brings us to the case of Belgium. In Belgium, the Vlaams Audiovisueel Fonds (Flanders Audiovisual Fund, henceforward VAF) is the first film commission "to tie the approval of funds to the environmental engagement of a production" (Green Film Making, 2014) and has been focusing on sustainable production since 2010, with the publication of its Best Practice Guide while researching, developing and releasing its carbon calculator three years later (Jetter, 2020: 16). The calculator, called e-Mission, and the methodology behind it which was developed in partnership with eco-consultants Zero Emission Solutions (ZES) (Green Film Shooting, 2014:4), became, as of 2013, a central part in accessing funding from the VAF (EAO, 2019: 78), whereby beneficiaries to the fund were expected to deliver a carbon footprint of their productions sequentially during different production phases, (Green Film Shooting, 2014:4) in order to receive the allotted production support (ranging from € 47,500 to € 65,000) in instalments. Coinciding with these instalments, the E-mission programme regulates progress made in green production, awarding, for example, the last 10% of the funding to productions that submit a final sustainability report (Jetter, 2020:42). Such funding has been used by the VAF as leverage towards sustainability and awareness-raising amongst its recipients, helping them to support further regional policies such as the Flemish Local Climate and Energy Pact (launched in 2021) (EAO, 2019: 78), whereby Flemish cities and municipalities commit to the European Green New Deal, by translating its strategies into tangible regional targets to be achieved by 2030 (ABB Flanders, 2024:4). Simultaneously, the VAF also looks towards the Sustainable Development framework as a "moral compass" by locating the relevance of its SDGs into usable examples across the broad value chain of the audiovisual sector (Interreg Europe, n.d.) As such, the VAF embeds the SDGs at all of its subsidy domains, ranging from

funding level, whereby SDGs inform policies behind sustainability funding for productions, public events and procurement, and further at script level, to script development, where sustainable topics and themes are encouraged and production, as well as cinemas and festivals are encouraged to opt for sustainable more logistics, further promoting SDG literacy during events and film-related panels (Ibid, n.d.)

6.3.4. The Green Shooting Card (Germany)

Arguably, one of the most advanced among the EU-27, combining efficiently the strategies and approaches displayed in previous examples, is the case of Germany. In 2011, the city of Hamburg was honoured with the European Commission's European Green Capital Award (Meyer, 2016:18). This special awarding scheme was based on the 2006 Tallinn Memorandum, whereby cities that 1) achieve consistently high environmental standards, 2) commit to further ambitious goals for environmental improvement and sustainable development, while 3) serving as exemplary role models for other European cities are recognised for their innovations in green thinking and action (European Commission, 2011:09-10). Towards this, and through its Municipal Climate Protection 2007 plan, the city of Hamburg introduced— and met— some very ambitious targets: tripling its use of renewable resources, developing its own 100% city-owned energy supplier, providing electricity from climate-friendly sources in addition to organic gas (Ibid, 2011:31), as well as further addressing the footprint of its media sector, consisting of about 15400 companies providing work for over 65000 people (Ibid, 2011:14). As such, in the same year the Film Commission Hamburg- Schleswig-Holstein initiated its Green Shooting Card, under the motto "Avoid, Reuse, Recycle" (Meyer, 2016: 48). The Card acts as a seal of approval, promoting the use of an eco-balance sheet guideline, in order to reduce waste and consumption (Green Filmmaking, n.d.) through six key areas of intervention: 1) equipment, with respect to reduction and recycling of electrical waste and the use of eco-friendly material for props, 2) catering, via the use of regional and seasonal products, avoidance of single-use plastics and sustainable waste management, 3) production office

considerations, such as avoiding printed material, use of environmentally friendly paper and double-sided printing, and use of green electricity within the premises, in addition to 4) a carpooling-based use of e-cars and hybrid vehicles, while avoiding air travel, 5) use of energy-efficient lighting technology and 6) the use of fixed (i.e. public power grids) or rechargeable power sources on set, avoiding altogether the use of diesel generators (Meyer, 2016:37-38). To qualify for a Green Shooting Card, productions have to meet four out of the six areas of intervention (Ibid, 2016:47); in return, obtaining the Card would ensure more streamlined cooperation with local permit issuers while bearing a mark of distinction, documenting and communicating the project's contribution towards the protection of the local environment (Green Filmmaking, n.d.; EAO, 2019: 137). A salient point that needs to be made here is that from the get-go, in order to create a pool of practitioners in the realm of sustainable production, the Film Commission Hamburg nurtured a number of external collaborations by engaging the local Hamburg Media School and further organising crash courses for students of Environmental Science and Film Production (Heidsiek, 2016:3).

6.3.5. The Progressive Policies of the German Federal Film Board

Drawing inspiration from Hamburg's example, in 2013, other German film funds in influential positions, such as the MFG Baden-Württemberg Film fund and the Medienboard Berlin-Brandenburg followed suit, requesting certain (voluntary) practices from their funding beneficiaries (Green Filmmaking, N.D.). Particularly in the case of Berlin, as part of the city's 2016 coalition agreement between the Social Democratic Party of Germany (SPD), the Berlin Regional Association and ALLIANCE 90/The Greens Berlin, the Mayor of Berlin categorically stated that, in addition to maintaining and expanding the German capital as a filming location, increased funding will be provided to strengthen sustainable film production, further announcing that in the future, Berlin's film fund will only award funding to projects with "socially acceptable and ecological standards" (SPD et al., 2016:128), while in 2017, the German Federal Film Board (*Filmförderungsanstalt*; henceforth FFA) introduced sustainability

criteria in its cultural eligibility test structure (Greenberg Traurig, 2017: 6). Particularly in the EU, the cultural test framework comprises one of the key funding criteria set forth by film funds, and is based on a point system with a minimum threshold to qualify as eligible for funding; as such, points are accrued based on the nationality of the talent, crew and cast, the shooting language, copyright adaptations and the relevance of the audiovisual project towards the history and locations of the country providing the subsidies (EAO, 2019:25-29). While the environmental commitments introduced by the FFA were voluntary, beneficiary productions opting out of such commitments were faced with deducted points in the cultural test (Greenberg Traurig, 2017: 6). As such, the stage was gradually set in Germany for the adoption of more decisive measures when leading German broadcasters such as Constantin Film, Bavaria Film and Studio Hamburg, as well as ZDF, Netflix Germany, RTL Germany and Sky Germany/Austria, jointly committed to a set of 22 minimum ecological standards in 2021 (Roxborough, 2021). Developed by Green Shooting (an initiative run by the aforementioned production companies), leading sustainable production expert Phillip Gassmann and the initiative Changemakers, the 22 standards (see section *Literature Review*) as of 2023 became a requirement for both obtaining public funding as well as the Green Motion certification (Berg, 2024), a label that can be displayed on a film's end credits, press kits and other promotional material (Dams, 2021).

In 2017, neighbouring Austria's domestic Environmental Agency launched its own green label for film and TV productions as a counterpart to Germany's Green Shooting Card (Heidsiek, 2017:5). Operating as part of Vienna's eco-business plan (ÖkobusinessPlan), the new Austrian Ecolabel UZ76 "Green Producing" (henceforward,AE UZ76), was first piloted in 2016 by calculating the CO2 balance of the late-night show "Willkommen Österreich" (BMK and VKI, 2017:4). In the context of audiovisual production an "Ecolabel" has been used synonymously and interchangeably with "certification" in the sense that both (voluntary) schemes are certifiable, the difference being that the awarding party for an Ecolabel is a national (e.g. Austrian state) or supranational (e.g. European Union) entity. In that capacity, the AE UZ76 has served as a state-awarded quality seal driving the country's green economy for over three

decades, involving state entities such as the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Austrian Consumer Association (VKI) in the development of criteria and indicators, while the certification itself is issued in collaboration with independent third-party accredited bodies (Epple Druckfarben, N.D.). Thus, subject to verification by competent authorities, criteria that have to be met are divided into two categories: 1) criteria to be complied with by the production company as an enterprise entity and 2) criteria applying to the respective film production. The first category includes provisions such as the enterprise's sustainability mission statement, the inclusion of a "Green Producing Agent", communication with production departments and their staff, arrangements for environmentally friendly mobility, sourcing and use of office disposables (e.g. paper) in accordance with other Austrian Ecolabel guidelines (e.g. AE UZ24 "Printed Products") and waste separation. The second category observes the promotion of environmentally friendly in areas such as mobility by calculating the emissions of production vehicle fleets, location scouting and environmental protection for sensitive ecosystems, separated waste collection and wastewater disposal, and the use of portable toilets, all of which highlighted through appropriate signage (BMK and VKI, 2017:8-11). Further, the use of ISO-type eco-labelled products (paper and cleaning agents), sets designed for disassembly with a preference for leased, reused or second-hand material, the provision and subsequent donation of ISO-certified textiles and clothing, certified energy-saving equipment and local eco-certified catering and a marked preference for accommodation enterprises (BMK and VKI, 2017:12-19). Following the success of AE UZ76 seven years after its launch, existing and equally sophisticated ecolabel UZ 62 122 "Green Meetings and Green Events" has been adapted for the certification of the Vienna Shorts film festival, making it the first Austrian sector-related event to be certified sustainable (Vienna Shorts, 2024). In addition, following the success of AE UZ76 seven years after its launch, the existing and equally sophisticated ecolabel UZ 62 "Green Meetings and Green Events" has been adapted for the quality certification of the Vienna Shorts film festival, making it the first Austrian sector-related event to be certified sustainable (Ibid, 2024). Created in 2010, the UZ 62 has a validity of six years, covering a variety of gathering occasions, from congresses, fora, exhibition events and everything in between (Austrian

Ecolabel, n.d.) while maintaining a similar structure of implemented criteria to UZ 76. Moreover, as of 2018, the Lower Austrian Film Commission (LAFC) has been working to underpin the implementation of AE UZ24 and the Austrian sector's overall green transition with the launch of its *Evergreen Prisma*, the first online sustainable production guideline and directory in Austria (Heidsiek, 2020:13), and subsequently, the development of its free-of-charge carbon calculator (designed for use within the UZ24 framework) (Ibid, 2021:19) alongside the formation of Evergreen Prism Academy offering formal training courses for green film consultants (LAFC, 2024); while in 2023, all such efforts were further streamlined with the introduction of ÖFI+ 5% production support bonus, administered by the Austrian Film Institute (Green Film Shooting, 2023).

6.4. Advocacy and Lobbying: Trans-European, Pan-Nordic and International

6.4.1. Cine Regio

As we have already established, fragmentation in terms of geopolitical alignment and sectoral coordination remains a key obstacle (Kääpä, 2018:208-209) and one that has been addressed en-masse by the sector as early as 2012 through strategic initiatives and screen industry collaborations, arguably one of the most important of which came through the endeavours of Cine-Regio, Europe's largest network of regional funds (Soen, 2014: 69). Founded in 2005 as a non-profit consortium of 15 regional film funds (54 out of 12 EU member states, as of now), CineRegio formed its GreenRegio subgroup in 2012, aiming to share and promote knowledge and best practices, developing a shared methodology for sustainability (CineRegio, n.d.a), pertinent to the development of tools, measures, policy and training (Ibid, N.D.b) further aligning such practices with the overall sector's CSR agenda (Evans and Dicks, 2014:4). In itself, as a larger and more credible lobbying structure compared to the individual capacity of each regional fund, Cine-Regio ensured that the personal interests of all its Green-Regio-affiliates remained visible and at the forefront of European media policy (Soen, 2014: 70), leveraging

greater influence particularly after 2014, when the lobby organisation became a part of the European Union's European Regional Development Fund (Hjort and Nannicelli, 2022:313).

6.4.2. Nordic Ecomedia Alliance

Another prominent region-specific approach to industry advocacy is the case of the Nordic Eco Media Alliance (NEMA). Founded in 2020 by industry representatives, such as directors, producers and sustainability managers, from Denmark, Norway, Sweden, Iceland and Finland, and with funding from the Nordic Culture Fund and the Nordic Council of Ministers' Culture and Arts Programme (Nordic Film and TV Fund, n.d.), NEMA aligns its efforts and objectives with an overall pan-Nordic transition strategy called *Our Vision 2030*. Under the aegis of *Our Vision*, the Nordic prime ministers adopted a cooperative strategy for making the Nordic region the most "sustainable and integrated" region in the world by pursuing progress in 45 key SDG indicators (Nordic Council of Ministers, 2021:4). This regional approach is heavily informed by the environmental peculiarities of the Nordic region itself, whose constituent countries share significant natural and geographical markers (e.g. Arctic Ocean, Baltic Sea), historical ties and cultural proximity, in addition to the common (so-called Nordic) welfare model characterised by effective public institutions promoting social equity, health and wellbeing (Ibid, 2019: 5-7). Leveraging this shared culture and looking beyond the mere adoption of best practices, NEMA advocates for a coherent structural change across the Nordic audiovisual sector, particularly with respect to "runaway" co-productions and the unsustainable financing structures that underline them, greatly contributing to the sector's ecological footprint (Nordic Film and TV Fund, n.d).

6.4.3. The Clean Mobile Power Initiative

Another significant type of alliance partnership established to address the sector's alignment and coordination, though purely in technological terms, is that of the US-based Clean Mobile Power Initiative (henceforward, CMPI). Formed in 2023 by Third Derivative, an organization promoting the commercialisation of cleaner energy alternatives for the entertainment sector and industry leaders such as Netflix and The Disney Group (Third Derivative, 2023), both of which, as we've discussed, have been active partners in other key initiatives driving the sector's green transition, the CMPI specifically addresses, as its name suggests, the problem of mobile energy on production sets. Currently, the entertainment industry relies on the use of diesel generators, whose wide use accounts for approximately 15% of total emissions (BFI et al., 2020:6), contributing the equivalent of 700,000 tons of CO2 annually (Third Derivative, 2023). While by now this environmental impact is recognised by all industry stakeholders, there is still a reluctance to adopt cleaner solutions available to the market (BFI et al., 2020:6) due to higher upfront costs, lack of available solutions at scale, limited education and training pertinent to their use and existing complex stakeholder relations and procurement practices across the industry (Third Derivative, 2023). In turn, per the CMPI, solving this problem necessitates action on three levels: 1) demand signalling for cleaner alternatives from major studios in the entertainment industry, through 2) the publication of insights, guides and training material advancing the operational integration of such solutions and further 3) establishing a technological acceleration strategy with bespoke pilot opportunities on productions with allied studios (Ibid, 2023); a shift expected to reduce up to 84% and 82% equivalent CO2 emissions through battery and green hydrogen-powered solutions respectively (Ibid, 2023). As such, and in order to qualify as a "clean" solution, mobile power alternatives to diesel generators have to meet certain criteria and specifications, such as producing up to 140-220 kW of three-phase power on demand for up to 14 hours; being able to be towed by Class 4 or 5 trucks whilst operating independently of stationary fuel and electricity supply sources (RMI, 2023). Further, such solutions should be considerably mobile and reliable, meeting current safety requirements for portable power distribution systems and providing direct current and fast

charging for vehicles, equipment, and other on-location needs while becoming cost-competitive by 2030 (Ibid, 2023). Moreover, through its Cohort programme, the CMPI has identified ten companies with innovative solutions, ranging from storing energy in large banks of lithium-ion batteries, the conversion of electric vehicle batteries into mobile, multipurpose connected power systems, the use of over-the-road energy delivery trailers, to mobile nano-grid technology utilising solar panels, green hydrogen production and storage, with optional wind turbine and atmospheric water generation (Third Derivative, 2023).

6.4.5. Entertainment and Culture for Climate Action

In the form of a conclusion to the previous case studies, a more recent addition to influential advocacy and lobbying initiatives includes the contribution of the UN-backed initiative Entertainment and Culture for Climate Action (ECCA). Founded in 2023 with the underlying principle that the Entertainment and Cultural sector "possesses valuable expertise in cultural and narrative strategy" in audience engagement towards ambitious climate and sustainability initiatives, ECCA explicitly frames the need for both relevant, sustainable content and audiovisual production methods in the context of the United Nations Global Climate Action agenda (ECCA, 2023:1-2). As such, the initiative extends its invitation to various industry stakeholders, which include production companies, studios and broadcasters, film commissions, festivals and policymakers, educational institutions, trade associations, labour unions and guilds, as well as activist and grassroots organisations and non-profit foundations (ENZA, 2023:3-4). Current signatories of ECCA's *Accord* (which exceeds 430 at the time of this writing) are expected to implement at least five of its Climate Action Pathways (Ibid, 2023). Subject to reporting transparency procedures and practices submitted in the UN's Framework Convention on Climate Change (UNFCCC) Data Portal, such Pathways include 1) net-zero commitments in the production of audiovisual material and its constituent value chains, 2) the use of storytelling in interdisciplinary arts in catalysing climate action and awareness among audiences, 3) the preservation and regeneration of biological diversity through more

responsible industry planning, 4) the acceleration of knowledge-sharing with the creative industries and 5) the promotion of widespread climate action through mitigation and adaptation strategies at local, national and global levels (Ibid, 2023).

6.5. Sustainable Production Awards

Aiming for an industry-wide impact by recognising, promoting, and awarding best practices, simultaneously with establishing benchmarks for excellence and innovation in sustainability and diversity within global audiovisual production, is the case of the Global Production Awards (henceforward, GPA). Created in 2023 by Media Business Insight-owned Screen International and Broadcast trade journals as well as KFTV (colloquially referred to as "Kemps"; a leading international audiovisual directory for production services) alongside the support of Olsberg SPI, a leading strategy consultancy for the creative industries, the GPA is an annual event open to all organisations and companies working in film and TV, including studios, production teams and companies, film commissions as well as filming locations and destinations, suppliers and manufacturers (Broadcast Now, 2023). Inaugurated during the same year's Cannes Film Festival, and with a jury consisting of representatives and executives from Warner Bros. Discovery, NBC Universal, Amazon Studios, the CNC (*Centre national du cinéma*; France's National Centre of Cinematography and Animated Pictures), the European Women's Audiovisual Network, the BFI, BAFTA Albert, and the Italian DGCA-MiC (*Direzione Generale Cinema e Audiovisivo - Ministero della Cultura*; Directorate General for Cinema and Audiovisual-Ministry of Culture) among others (Screen Daily, 2023b), the GPA event introduced 12 (15 as of 2024) unique awarding categories, expanding conventional awarding classification boundaries such as e.g. motion-picture-related arts and crafts (i.e. direction, photography, editing), genres, subgenres or a film's artistic and commercial orientations (Kersten and Verboort, 2013: 3). Instead, such categories recognise significant green production initiatives undertaken by films commissions and production companies (*Sustainability Initiative Award*), productions with effect sustainability plans reducing their carbon footprint [(*Scripted and*

Unscripted) Sustainable Production Awards] while benefiting that host them local communities (*Community Impact Award*); productions that effectively promote inclusive practices (*Diversity, Equity and Inclusion Award*); film commissions demonstrating an increased number of productions and attractive incentives, alongside improved levels of services, growing crew base and infrastructure (*Film Commission of the Year Award*); locations of creative importance in production and storytelling (*Emerging Location Award*); sustainable, innovative and efficient operations (*Physical Production Innovation Award*); creative use of locations in scripted and unscripted entertainment (*Outstanding Use of Locations Award*) alongside adaptable, efficient and sustainable-oriented studio services (*Studio of the Year Award*), efficient and low-carbon footprint Virtual Production workflows (*Virtual Production Award*) and a *Special Recognition Award* for outstanding contributions in sustainable production (GPA,n.d.).

7. Production Cultures of the Italian Audiovisual Industry

7.1. Introduction

The present study will posit that while sustainable production and distribution are relatively recent concerns for the Italian audiovisual industry (post-2010s), they will nevertheless inform increasingly how audiovisual material will be commercially produced and distributed in the future. This proposition is supported by considerable evidence; first and foremost being the 2021 budgetary interventions of N.G.E.U. targeting audiovisual production (Cinecittà) and distribution (improvement in the efficiency of cinemas and theatres) via the adoption and subsequent implementation of N.R.R.P (Italia Domani, n.d.; Culture Action Europe, 2021; Fabbrini, 2022). Secondly, our study will also propose that such an industry-specific reform can be seen in the context of a broader momentum of initiatives and actions that aim to promote sustainable development and a green transition in various other sectors. Such agendas often share strongly interlinked and mutually reinforcing processes, ranging from small, everyday changes in civil and entrepreneurial conduct to the far-reaching and long-term regional and transnational reforms promoted by policy networks. Prominent examples include both legally binding and non-binding commitments such as the European Green Deal ("EU climate neutrality by 2050") in conjunction with The Paris Agreement ("keeping the rise in mean global temperature to well below 2 °C"), and the 2030 United Nations Agenda for Sustainable Development ("ending poverty, protecting the planet 2 and improving the lives and prospects of everyone, everywhere").

However, in order to avoid grossly over- or under-estimating the audiovisual industry's green transition initial and long-term impact, we need to, on the one hand, critically assess its viability, anticipated influence and potential disruption over modes of film and broadcast media production developed over time in Italy alongside the deeply embedded cultural, political and financial institutions that rely on the continuance of such production modes.

Simultaneously, It is important to establish a framework for identifying the opposing forces, such as cultural and political mechanisms, that, whether intentionally or unintentionally, have acted and currently act as barriers to such a process. Hence, a chronological analysis of the Italian film industry with particular respect to its modes of production that simultaneously explores the interplay between political and cultural institutions, as well as the role of audiences, will follow below.

Further, we posit here that formulating a history of Sustainability in Italian audiovisual production is inherently complex as it entails considering and constructing two distinct historical timelines: 1) a history of film and media production in Italy and 2) a history of sustainability in Italian film and media production. As the following discussion intends to show, while these two timelines do not appear to engage with each other as historical factors, in the sense that the first timeline precipitates or causally justifies the advent of the second, we will nevertheless make the argument that developments in the second timeline, such as proactive environmental policies and strategies, will increasingly inform how audiovisual material will be commercially developed, produced, and exhibited in Italy, therefore challenging (to an extent) the embedded cultural, political and financial developments addressed in the first timeline.

7.2. A Historical Overview of the Italian Audiovisual Sector

The cinema was born in Europe, with the invention and subsequent patent of the *Cinematographe* in February 1985 by brothers Auguste and Louis Lumière (DPMA, 2022; European Parliament, 2014:2). In Italy that same year, Filoteo Alberini obtained a licence for shooting, projection and the development of film for his invention *Kinematografo* , which he introduced at the Florence *Prefettura* (Degli-Esposti Reinert, 2000:223). Insufficient capital prevented, however, Alberini's invention from catching up with the competition of the Lumières brothers, whose *cinematographe* promptly made its first appearance in Italy in 1896 (Sorlin, 1996:16). Following an enthusiastically received show in Milan, what began as a

travelling attraction became a highly sought-after spectacle, with permanent cinema halls opening in Rome, Naples and Turin by 1899 (Celli and Cottino-Jones, 2007:9).

Equally, in the first two decades of the 1900s and as silent films were produced primarily inside studios with artificial lighting, Italy also witnessed the founding and rapid development of some of its most seminal studios, such as the Rome-based Cines in 1906 and the Turin-based Ambrosio Film in 1904, followed Itala Film in 1907 (Degli-Esposti Reinert, 2000: 223). Italian nobles and wealthy people were among the first investors in the early film industry, who saw it as a form of investment rather than as a medium for social and cultural progress (Ibid, 2000:223). Thus, together with the ever-increasing private investments, and while balancing technology, artistry and aesthetics with low-cost labour (Ibid, 2000:223), the early Italian film industry saw its expansion and consolidation as an industrial organization, both in its domestic market as well as the markets of Europe and North America (Ibid, 2000:224).

To quote Bernadini (1989:341), by 1909, cinema had evolved from a scientific curiosity into a vigorous new branch of show business, and with the Italian film industry already an independent entity with its own industrial and commercial base: Cines was present in most other European capitals, alongside a branch of operations in New York (Degli-Esposti Reinert, 2000:223), shooting on an average one film every day by 1911, while Ambrosio one every two days and Itala one every three days (Sorlin, 1996:30). This pattern of development rendered Italy, together with Denmark, the third-largest exporter of films in the world (Ibid, 1994:44), with France leading at the top (Bernadini, 1989:347). Combined together, all EU productions were, at the time, supplying over half of the American market (Bakker, 2003:3).

Simultaneously, however, Italy's effort to lead in the silent era of international distribution was gradually undermined in the years leading to the First World War. First, Franco-American competition in distribution meant Italian films were less frequently screened, then the industry's own failure to implement verticalisation brought about an economic recession in the production sector (Parc, 2020:10), causing a general drop in production and sales, which was

reflected in the balance sheets of 1909 (Bernadini, 1989:342). In short, vertical integration as a strategy in the context of film production is exemplified by the major Hollywood studios that maintain control over activities spanning both production and distribution, allowing them thus to spread risks over several films while reinvesting their profits in new projects (European Parliament, 2014:1). In contrast to the North American model, the European model revolved around a mere few large vertically integrated film companies and a greater number of small-medium companies (Nicoli, 2017:7). As a result, production companies then reacted by adopting more rigorous budgets and seeking thriftier production methods, while the smaller firms, finding themselves on the brink of foreclosure, sought new loans, dunning their creditors (Ibid, 1989:342). Any effort, though, to move in a different direction was interrupted by the advent of World War I (1914-1918), whereby the crisis of the Italian economy greatly influenced its film industry, forcing thus it to open its market to American films (Degli-Esposti Reinert, 2000:225). As such, after the war, the EU film industry's market share dynamic ran in reverse: films shown in Europe by then overwhelmingly came from Hollywood studios, while US distribution of European films was limited (Bakker, 2003). As a result of the broader post-war economic crisis, short-term capital was in short supply, and the banks acquired huge quantities of government bonds instead of lending money to the firms (Sorlin, 1996:53). As Italy lost its international market share, many studios went bankrupt (Celli and Cottino-Jones, 2007:26), alongside important financial backers of the industry, such as Banca Italiana di Sconto (Degli-Esposti Reinert, 2000:226).

With the advent of the Fascist regime in 1922, censorship was imposed on the film industry, confining it to the government's ideology (Degli-Esposti Reinert, 2000:226). As part of this agenda, the LUCE Institute (*L'Unione Cinematografica Educativa*) was formed in 1924 (Ibid), producing documentaries and newsreels whose projection became obligatory in Italian theatres by 1926 (Celli and Cottino-Jones, 2007:27). A noteworthy observation is that LUCE, which was supposed to serve as a newsreel and film archive, was given substantial government support, yet no help was provided to the general commercial production of films (Degli-Esposti Reinert, 2000:226). Thus, LUCE was the only governmental producer of movies, with private

companies producing all other feature films (Sorlin, 1996:52). Despite not wanting to be nationalised, the studios wanted the state's support, with 371 feature-length films shot in 1920 (the peak year), declining to 114 in 1923, and subsequently to a mere 8 in 1930 (Ibid, 1996:53). While political changes were unfolding, American film studios began to arrive in Italy to make their films on location and to take advantage of Italian expertise and craftsmanship. Notably, MGM filmed parts of the first version of *Ben Hur* (Dir. Fred Niblo, 1925) in the Cines studios in Rome, gradually establishing their production and distribution offices in Italy (Celli and Cottino-Jones, 2007:27).

By 1923, MGM's Italian distribution office paved the way for US films to Italian audiences at the expense of native conglomerate *Unione Cinematografica Italiana* (UCI), which went bankrupt in 1926 (Parc, 2020:10). At this point, another significant change occurred with the introduction of sound films in 1929. In contrast with silent films, the "talkies", as they colloquially became known, clearly revealed the nationality of the performers, as the audience could, for the first time, hear the language used (Ibid, 2020:11). Adapting to this mode of production posed a further challenge, as by then, "standard" Italian was not the dominant language in the country. Besides being used by political and religious authorities or taught in universities and high schools, the vast majority of Italians still used local or regional dialects (Sorlin, 1996:10). In fact, this new advancement triggered more engagement with US films in Europe's cultural sphere (Parc, 2020:11). As such, filmmakers of the time have actively co-operated in giving present-day Italian status as the most commonly spoken idiom (Sorlin, 1996:10). At the same time, more adversity came on an international level through the economic shock of the Great Depression (1929-1939). The Great Depression caused a devaluation of the Italian lira in 1936, resulting in a 60 per cent rise in living costs from 1931 to 1941 (Sorlin, 1996:69). As a result, state control increased with the formation of large state-run industrial holding companies, such as the IMI, the IRI, (postwar ENI), and a national pension system, the INPS, created in 1933 (Celli and Cottino-Jones, 2007:23). Considering the level of state involvement in economic affairs, by the late 1930s, Fascist Italy was as heavily involved in the economy as Soviet Russia (Ibid). As a result, Italy, as well as other European countries, focused on its domestic market and adhered

to protectionist policies while increasing exports and reducing imports (Parc, 2020:9). In the cultural sphere, the Fascist regime introduced regulations in 1933 that forbade Italian films to be dubbed into other languages, simultaneously ensuring that all foreign films were dubbed in Italian (Ibid, 2020:10), a characteristic Italian practice that was already gaining ground from 1932 (Celli and Cottino-Jones, 2007:25). Additionally, in 1934, the Fascist regime created its own General Directorate for Cinematography (*Direzione Generale per le Cinematografia*), as well as opened Cinecittà in 1937, a film studio complex in the outskirts of Rome that allowed all aspects of filmmaking to be completed under one roof (Parc, 2020:10). The production structure of Cinecittà was comparable to that of Hollywood studios (Degli-Esposti Reinert, 2000), whose productions at the time enjoyed nearly three-fourths of the Italian market, compared to the 32 domestically produced films (amounting to a mere 13 per cent of market share)(Celli and Cottino-Jones, 2007). The noted, almost immediate, success of Cinecittà was enhanced by the closure of the domestic film market to US productions in 1938 (Degli-Esposti Reinert, 2000:228) at a time when American producers rejected the Fascist government's monopoly on foreign film distribution (Celli and Cottino-Jones, 2007:25). Gradually, and with trade barriers in place, 177 films were produced by 1942, which accounted for over half of the domestic market (Ibid, 2007:28).

Film production in Italy was never dominated by large studios in the immediate post-war period (Gundle et al., 2020:1). Cinecittà could not offer much after its inactivity during the war years (Degli-Esposti Reinert, 2000:229), though companies such as Lux and Titanus were still engaged in continuous film production on different market levels (Gundle et al., 2020:1). Consequently, only 54 films were made in Italy in 1948, compared with 874 imported (668 from the United States), and only 13% of box office receipts went to Italian filmmakers (Celli and Cottino-Jones, 2007:71). However, the industry survived and slowly started to revive itself, thanks to the activity of a few directors (Degli-Esposti Reinert, 2000:229), who gave birth to Neorealism, one of the most important currents of world cinema (Sorlin, 1996:69). A distinctive feature of Neorealism was utilising location shooting as an inexpensive means of production; through the use of natural settings, city streets and landscapes as a backdrop to stories drawn

from their collective experiences of the war (Degli-Esposti Reinert, 2000:229). However, the reviving effort was undermined by the passage of the Andreotti Law in 1949, which was openly hostile to perceived negative images of Italy allegedly perpetuated by neorealist films (Ibid, 2000:229). In itself another form of state control (Ibid), the legislation sought nevertheless to revive films of Italian origin by granting them tax reduction eligibility and mandating their screening in theatres while taxing imported films (Celli and Cottino-Jones, 2007:71).

Simultaneously, the end of World War II, and within that, the end of Fascist centralisation, also brought about the cultural determination to place cinema at the service of a project of social and political renewal, which led to a number of novel and cooperative production initiatives, as Gundle (Gundle et al., 2020:2), very succinctly points out. Preceded by an "experimental" co-production agreement between Italy and France in 1946 (Parc, 2020:7), the Franco-Italian Co-Production Agreement, as it became known, granted co-production status to "quality films" involving a substantial production budget, provided that all arrangements were co-signed by the federations of French and Italian technicians and producers' associations (Jäckel, 2003:232). In addition, the agreement represented a genuine compromise in cultural production, where notions of "indigenous", "European", and "quality" were brought together in a manner devoid of "bourgeois taste" or the signs of an elitist and high-brow culture usually associated with European cultural production (Ibid, 2003:240). As Parc (2020:1) asserts, the bilateral cooperation stemming from co-productions was perceived as having several significant benefits, most notably: 1) the use of government incentives to share financial burdens and risks among partners, 2) the distribution of films in more than one country to increase market size, 3) advancing technology and skills in the filmmaking and related sectors through spillovers and learning from partnerships, and 4) the promotion of cultural diversity through the introduction of different film styles to the market as well as the enhancement of cultural interaction among partners. This production mode proved to be particularly fruitful, as Italy and France together co-produced over 2,000 films between 1949 and 2013 (Roger, 2021:8). Simultaneously by being a prime example of transnational collaboration, other European national cinemas (notably Spain, Germany, Holland, Hungary, Sweden and Denmark)

followed suit, in a manner that, by the mid-50s, a number of European film producers and government officials had strong hopes for the creation of a 'European Film Community' (Jäckel, 2003:239).

During the late 1950s and early 1960s, the Italian economy grew dramatically; the establishment of the European Common Market by the Treaty of Rome in 1957 helped pave the way to increased exports, rendering Italian industrial production the seventh-largest worldwide (Celli and Cottino-Jones, 2007:85). Equally, on the cinema front, the Italian film industry ranked second only to Hollywood (Ibid, 2007:80); with more domestic films available to Italian audiences in the 1960s and fewer American ones than at any other time in the history of Italian cinema (Sorlin, 1996:142). Such a market share increase was accelerated by the expansion of domestic production houses throughout the early 1960s, to the point that between 1965 and 1970, there were four hundred of them (Degli-Esposti Reinert, 2000:230). It also owed much to the retrenchment of the Hollywood studio system itself: on the one hand, the earlier Paramount antitrust legislation of 1948 forbade American studios to own theatres, thus dismantling its distribution network; on the other, with a marked decrease in spectatorship of Hollywood productions due to competition with the newly introduced television broadcasting (Celli and Cottino-Jones, 2007:86), which as we will discuss later on, proved to be a mixed blessing for the Italian film industry, offering both opportunities and challenges. In addition, as part of the wider reformist tendencies of the 1960s that characterised Italian politics (Ibid, 2007:83), along came the awareness that domestic cinema needed public support (Teti et al., 2019:52). Thus, in 1965, the Corona Law (*Legge Corona*) was passed, which by recognising the film sector's cultural, economic and social importance (Teichmann and Murschetz et al, 2018:337), granted state subsidies of 30% of a film's budget to profit-sharing associations (Sorlin, 1996:148). The Corona Law established the FUS (*Fondo Unico per lo Spettacolo*-Performing Arts Fund) as the only legal entity dedicated to promoting arts and culture in the Italian territory, including opera, cinema, music, dance, theatre and drama (Teichmann and Murschetz, 2018:337). Building on FUS' legacy, similar reforms were subsequently enacted, and funds were created in 1985 and 1994 (Teti et al., 2019:52).

As the 1970s drew near, Italian cinema gradually began to lose its mass appeal due to the completion of television and became more of a high-brow art form, such as the theatre (Nicoli, 2017:9). This decline in attendance amounted to about half a million cinema-goers by 1975 (Celli and Cottino-Jones, 2007:116). Italian television's initial phase coincided with the public service monopoly, as did that of other European countries (Buonanno, 2008:20). The transmission service started in 1954 with Italian state television RAI (*Radioaudiovisione italiana*), with about half of all families owning a television set over ten years later (Ibid, 2008:14; Celli and Cottino-Jones, 2007:80). As in the United States, audiences were captivated immediately by the new medium (Celli and Cottino-Jones, 2007:80); indeed, many of them travelled on foot or by bicycle for several miles every evening to access the new medium in equipped bars, taverns, clubs, churches and cinemas (Buonanno, 2008:14). As a state-owned broadcaster, RAI's shareholders are The Ministry of Economic Development, with a 99.56% stake and the Italian Society of Authors and publishers, with 0.44% (Richeri and Prario, 2016:191), while politically, it has always been aligned with the ruling Christian Democratic Party since its founding (Celli and Cottino-Jones, 2007:115). In 1960, the Italian Constitutional Court formally approved state monopolies for broadcasting, though paradoxically also expressed a desire for diversity. This tension led to the establishment of RAI 2 in 1961, which, aligned with the Socialist Party, provided such diversity through the presentation of other political views and viewpoints, adding to the network's programming schedule, which, until then, had only been broadcast via its main channel, RAI 1 (Ardizzoni and Ferrari, 2010:xii). In 1975, the public monopoly ended, and private companies proliferated from 1976 onwards in a rapid and unsupervised manner; during some periods, there were more than one hundred channels broadcasting (Sorlin, 1996:145).

In this milieu, television tycoon and future Prime Minister of Italy in four governments (1994-1995; 2001-2006 and 2008-2011, respectively) Silvio Berlusconi entered the media market with the launching of Mediaset in 1978, a mass media conglomerate, alongside founding and acquiring several other private television stations (Canale 5 in 1980, Italia Uno in 1982 and Rete

Quattro in 1984), alongside publishing networks (Rusconi in 1982, and Mondadori in 1984) alongside film distribution company Medusa in the 1990s, all operating under Berlusconi-owned Fininvest media holdings company (Celli and Cottino-Jones, 2007:115; Ardizzoni and Ferrari, 2010:xiii; Richeri and Prairie, 2016:184). By 1984, the Mediaset Group became the second-largest television broadcaster in competition with RAI, with both having three national television channels (Richieri and Prairie, 2016:191). The combination of these printing and television holdings would give Berlusconi an unprecedented stake in the Italian media, particularly when combined with the political influence he could exert over RAI state television through appointments in the state agency (Celli and Cottino-Jones, 2007:128). As such, by 1984, a duopoly dominated the Italian television industry, with RAI and Fininvest's Mediaset holding 92% of its market share (Richieri and Prairie, 2016:190). Besides programmes modelled after American television, such as quiz shows, the availability of films via cable outlets and satellite dishes increased competition for traditional cinemas (Celli and Cottino-Jones, 2007:145). As Degli-Esposti Reinert (2000:230-231) suggests, it is useful to identify the production methods that stem from the relationship between cinema and television at the time: first, a regular feature film intended for movie houses but produced by TV; second, a film produced for television programming; and third, a film intended for television audiences but with a narrative structure and duration comparable to a feature film and shot on 16-mm rather than 35-mm film at a low budget (Ibid).

While throughout the 1980s, television was bitterly accused by producers and filmmakers of stealing their audiences, by the 1990s, it was evident that television signalled another type of demand, unconnected with picture theatres and that in reaching wider audiences, the studios had to collaborate with television and adopt techniques and standards alien to their production workflows (Sorlin, 1996:146). In fact, such a compromise proved useful: films have also received substantial financial support from television (through advertising on private TV channels and from RAI fees), and as independent networks emerged, unable to produce their own content, cinema was given another chance (Ibid), though evidently resulting in a more televisual than

filmic aesthetic type of content (Degli-Esposti Reinert, 2000: 231). Nevertheless, domestic cinema attendance to theatrical releases became even more scarce; after falling to 83,000 in 1992, the number rebounded to the low hundreds of thousands in the following years (Celli and Cottino-Jones, 2007:116). As such, Italian film production, much like everyone else, had to assume a much more complex model in its exploitation of films-as-products, including cinema release, pay-television broadcast, satellite, and further digital terrestrial, television broadcast, videocassette sales to Italian news kiosks, as well as games, music cassettes, and packaged sales to minor satellite channels (Wood, 2017:306). On a macro-level, an EU mandate for cultural action was affirmed in 1993 at the Treaty of Maastricht, which addressed the crisis in the film sector across the EU. In addition to asserting the EU's responsibility to take into account cultural aspects in all of its activities, the principle of subsidiarity was also emphasised, underlining the EU's complementary role in the policy-making process (De Vinck and Pauwels, 2017:105). Therefore, the making of national broadcasting policies was becoming increasingly influenced by non-domestic actors, primarily due to subsequent technological advances and the ideological shift toward neoliberalism (Ardizzoni and Ferrari, 2010:3).

The 2000s were dominated by significant shifts in economics, politics, and technology. In 2001, Forza Italia, led by Silvio Berlusconi, won the Italian general elections, forming a coalition government with Gianfranco Fini (National Alliance) and Umberto Bossi (Northern League). Thus, Berlusconi continued to influence overall broadcast market dynamics (Ardizzoni and Ferrari, 2010:17) by drafting policies to his advantage: in 2004, the Italian government passed the Gasparri Law, a new media holdings law that redefined several products and services unbound by existing regulations (Richeri and Prario, 2016:183). The new law banned corporate entities from owning more than 20% of the Italian media market (Ibid). In theory, such a law would have thwarted the established dual domination of Mediaset and RAI, a duopoly that amounted to 45 per cent in audience shares for each party (Haraszti, 2005:3). Unsurprisingly, though, the Berlusconi government's broadcasting policies (2001–2006) were largely driven by Mediaset's needs (Richeri and Prario, 2016:184); thus allowing Mediaset to maintain its

dominant position in broadcasting without violating antitrust limits (Hibberd, 2007:899). As such, this self-serving legislation was renewed in 2011 (Richieri and Prario, 2016), during Berlusconi's last presidential tenure. Simultaneously, Berlusconi's government, concerned with saving money, drastically reduced performing arts credits in 2004 (Sorlin, 2012:55). However, while a decade-long trend at the national level pointed to 36,4% budget cuts from the Ministry of Culture (MIBAC) in the period 2001-2011, amounting to 0,19% of total public expenditure by 2012 (Sacco, 2012:50), movie production in Italy continued to increase, with more feature films produced between 2006-2010 than the previous five years (Sorlin, 2012:56). Partly, this increased activity in film production could be attributed to technological advancements both in the production as well distribution of audiovisual material. Throughout the 2000s, major technological shifts in television distribution models took place after digital terrestrial television (DTT) was introduced in Italy in 2004, providing new, both free and subscription-paid channels to audiences while rapidly replacing traditional analogue television (ATV) (Richeri and Prario, 2016:189). Yet despite the budget cuts, Italian law also introduced tax incentives in the form of tax shelters and credits for film productions in 2007 (Teti et al., 2019: 53). While the tax shelter support scheme was dropped in 2011 due to being rarely utilised on account of its requirement for production companies to reinvest all of their profits in future productions, tax credits became a widespread support system, allocating 15% credits for domestic productions (provided that 80% of production costs were spent in Italy) and 40% for instances of external investments (Ibid). Moreover, a further 25% tax credit was allocated for the executive production of foreign films and a 10% credit for distribution costs of Italian films (Ibid). Simultaneously, the decade saw consumption trends affected by new modes of access to audiovisual content, such as satellite pay TV, Internet Protocol television (IPTV), mobile TV, and web TV (Ibid), the advent of Web.2.0., as well as widespread forms of "informal film distribution" (Lobato, 2012:4) such as online piracy, as a result of wider, internet access. Simultaneously, a parallel revolution was underway in the United States: by 2003, US cable providers had spent $165 billion overhauling their networks for high-speed internet (Conviva, 2021). These upgrades were essential in setting the stage for online video and on-demand content in the US and, subsequently, OTT or Over-the-Top media services (Ibid) such as

Netflix, Amazon, Hulu, and AppleTV. As Italy upgraded its broadband infrastructure with higher internet speeds and more households were equipped with new-generation TV sets, Netflix made its arrival in Italy in 2015, competing with satellite television Sky Italia, Mediaset Premium DDT (defunct as of 2019) and other subscription-based terrestrial channels (Anderson and Rolfe, 2015).

Internationally, the takeover of digitization was seen as capable of changing the film sector's traditional value chain, introducing new stakeholders in the film distribution market, such as the telecommunications industry, and simultaneously altering audiovisual content consumption in a manner driven not only by content but also context and comfort (De Vinck and Pauwels, 2015:116). Costs associated with distribution - 'the Achilles heel of European cinema' (European Parliament, 2014:8) went down, and more importantly, distribution became global (Waldfogel, 2017:200) with simultaneous customisation for different target groups by the addition of subtitles and multi-language dubbing. As such, more distributors became willing to take risks on European film releases (De Vinck and Pauwels, 2015:116). As an extension, the "welfare effects of digitization" (Waldfogel, 2017:209) also extended to production: on the one hand, with filming equipment becoming cheaper, and on the other, with more content being produced through cross-border collaboration, sometimes through innovative co-production and financing models (De Vinck and Pauwels, 2015:116).

In 2020, the global COVID-19 pandemic caused devastating socioeconomic consequences. However, the pandemic has also initiated unprecedented policy developments in the European Union, fundamentally altering the outlook for European integration (Fabbrini, 2022:2). A key policy instrument established by the European Union (EU) to deal with the socioeconomic consequences of the COVID-19 pandemic is the "Next Generation E.U." (N.G.E.U.) Recovery Fund (Ibid). N.G.E.U. empowered the European Commission to issue common bonds on the financial markets, raising €750 billion for the EU. (Ibid) As required by legislation, a National Recovery and Resilience Plan (N.R.R.P.) was adopted by the Italian Government, led at the time by Mario Draghi, setting clear spending priorities for an innovative, green and digital transition,

in order to support the economic recovery beyond the health crisis (Ibid). As part of this initiative, a major financial boost was given to the Italian cultural ecosystem, allocating a total budget of 600 million Euros to the development of its audiovisual sector (Italia Domani, n.d.). The first major investment concerns Cinecittà Studios. Since July 2017, Cinecittà S.p.a., the state-owned company (whose main shareholder is MIBAC), has been in charge of managing Cinecittà Studios and postproduction labs (Film Italia, 2017). However, by 2019, Cinecittà Studios were not able to meet 70% of contemporary international production demands in terms of the capacity on offer: owning to a production structure conceived in 1937 to meet the production needs of that time (Cinecittà S.p.A., 2021:4), the absence of large stages (over 2000 square meters) as well as equipping existing stages with the latest production technologies, such as virtual stage, underwater shooting stage and motion control, has driven productions to towards competing studios, resulting in losses of approximately 25 million Euros (Parlamento Italiano, 2021). As such, $300m has been set aside by N.R.R.P. for investment in the development, for the period running from 2021 to 2026 (Goodfellow, 2022). Such developments will aim to upgrade Cinecittà Studios' capacity on multiple fronts: 1) constructing brand-new studios while reviving existing studio spaces, and investing in cutting-edge technologies, systems and services, and 2) the construction of six brand-new high-tech theatres in an area of 473,000 square meters with annexes and services, together with related systems and roads (Parlamento Italiano, 2021). Moreover, significant attention will be paid to identifying eco-sustainable techniques and technologies that will reduce environmental impact at all stages of the production cycle, with an emphasis on lighting, mobility, and set construction using plant and technological solutions (Ibid). Other investments in the stimulus package target the production and training activities for the Experimental Center of Cinematography, and the restoration of Cineteca; in terms of the preservation and conservation of its heritage and its migration to digital platforms, as well as the capacity building of professionals, with organisational/managerial, creative/artistic and technical skillsets (Ibid). Simultaneously, an additional 300 million Euros were allocated to the improvement of the efficiency of buildings tied to the creative and cultural sectors, ensuring that cinemas,

theatres and museums, all of which often are found within old and obsolete structures, will operate with reduced environmental impact (Italia Domani, n.d.).

Meanwhile, the 2020s also saw the consolidation of domestic regional film commissions, which actively promote the rediscovery of film locations' touristic value through cinema and television (Schoonover and Corsi, 2020:130). Established by regional authorities (Italia Film Service, n.d.), Film Commissions pursue objectives of public interest for audiovisual initiatives in the reference territory, providing logistical assistance, mapping of qualified manpower and the provision of services (Cabrera-Blázquez et al., 2019) as well as assistance with location scouting, the obtainment of shooting permits, and the negotiation of reasonable expenses for travel and accommodation, in addition to regional film funds (Italia Film Service, 2022). Among the top regional funds in terms of support volume are provided in the Apulia Region (Apulia Film Fund 2018/2020 and Apulia Promotion Film Fund), the Piedmont Region (FIP Film Investment Piedmont, Piemonte Doc Film Fund and Torino FilmLab), the Lazio Region (Lazio Cinema International and Lazio Cinema and Audiovisual Fund), and the Alto Adige Region (IDM Film Fund) (Blázquez et al., 2019:54; Italia Film Service, 2022). Other ongoing initiatives include the Friuli Venezia Giulia Film Commission (Trieste), Lombardia Film Commission (Milano), Lucania Film Commission (Potenza, Basilicata), Film Commission Vallée D'Aoste (Aoste Valley), Film Commission Regione Campania (Napoli), Sardegna Film Commission (Cagliari), Toscana Film Commission (Firenze), Trentino Film Commission (Trento), Venice Film Commission (Venezia), Veneto Film and Audiovisual Fund (Veneto), Emilia Romagna Film Commission and Bologna Film Commission (Bologna), Sicilia Film Commission (Palermo), Fondazione Calabria Film Commission (Catanzaro), Genova Liguria Film Commission (Genova), Italian Riviera – Alpi del Mare Film Commission (Cisano sul Neva, Sanova) and Marche Film Commission (Ancona) (Italia Film Service, 2022). By virtue of being invested in sustainable audiovisual productions, many of the initiatives mentioned above are covered extensively and in-depth throughout this research.

A recent development that brings us up to date is the conservative-right and far-right coalition that, since September 2022, has led Italy during, to quote Bompan (2022) "one of the most

complex transitions in the history of [its] Republic and the European Union in general, amid the economic slowdown, the war in Ukraine and the climate crisis". The ruling party, which won with 26 per cent of the vote (Ibid), is Brothers of Italy (*Fratelli d'Italia* or FdI), whose origins date back to post-war Neo-fascism (Hooper, 2022), and led by Giorgia Meloni, who has often maintained populist positions and rhetoric, at times undermining the green transition (Bompan, 2022). While on a European level and in the context of N.R.R.P., Italy is bound towards a long list of reforms and implementations pre-agreed with the European Commission, which practically reduces the autonomy of the ruling party (Fabbrini, 2022:15), a foreseeable challenge comes with Italy's newly appointed Culture Minister Gennaro Sangiuliano, who revealed he wanted to overhaul the FUS, established under Corona Law in 1965, and the way its subsidies are allocated to cultural activities (Goodfellow, 2022).

8. Sustainability in the Italian Audiovisual Industries

8.1. Introduction

The following section is a thorough account of Italian sustainable production norms: it comprises a first attempt at mapping and exploring the seven sustainable production norms developed from 2010 onwards for the Italian audiovisual sector, such as protocols, guidelines, rating systems and carbon calculators, and, within that, the evolution of sustainable production consultancy in Italian production contexts through which certain observations emerge. First and foremost, we observe that Italy offers the highest number of developed norms, surpassing every other country with activity on this front with seven sustainable production norms. While this raises many questions about sectoral uniformity (a notion addressed progressively throughout this study), the sheer number of initiatives comes as no surprise, considering that Italy has been leading the way in ISO adoption for many years (Gelisio and Gisotti, 2019:72). According to the latest ISO Survey (2022), Italy holds the second position globally for ISO 9001 (*Quality Management Systems*) certifications with 94,216 certificates and the third place for ISO 14001 (*Environmental Management Systems*) certifications with 20,294 certificates (RICEC,2024). Furthermore, preceded by China in both certifications, Italy ranks first in Europe for both certification schemes (Simple Que, 2023). Rather than a symptomatic correlation, the argument made here is that activities such as sustainable production consultancy have found fertile ground in a country whose corporate mindset is, to an extent, rooted in CSR and ESG lines and compliance with international standards.

Second, we observe the introduction of a new professional role in Italian audiovisual production: the sustainability manager, and along with it, the introduction of new discourses, objectives and practices (e.g. collection of evidence, calculations and reporting). Although arguably typically working below the line and in an auxiliary fashion, the sustainability manager transversally coordinates aspects of production-related departments, workflows, and suppliers'

environmental performance. Towards this, it will become evident that, in addition to utilising different methodological frameworks, each initiative confers different duties, responsibilities, and importance in this role.

Third, we observe the process—and necessity— for legitimising the compliance of sustainability in audiovisual production through the involvement of verification, certification and accreditation bodies that promote a more quantifiable understanding of audiovisual production that while parallel and complementary to the industry and its workflows concretises Bozak's (2012:3) notion of film as a product with residual industrial process, "materially and economically inseparable from the biophysical environment".

Fourth, we observe a supply chain attached to the audiovisual sector that is increasingly engaged and upgraded towards more ecologically sound directions through the demand of studios and production companies for low-impact alternatives, eco-labelled products, detailed product or service information and the inclusion and, in some instances, prioritisation of local small and medium enterprises (SMEs) invested in sustainability. Within that, we also observe the engagement of third-sector initiatives such as nonprofits, social enterprises, foundations, and grassroots initiatives in film production. The relationship between film production and the third sector (in particular, nonprofits) is not new has so far been articulated along funding lines such as outreach campaigns, Partnership Projects, and Agenda-Based Films (Whiteman, 2003; Hirsch, 2007), as non-profit grants (Garon, 2010), as a business model for film companies (Toti, 2014), as Corporate Citizenship Programs launched by studios (Variety Staff, 2016) or as part of relief non-profits created by celebrity philanthropists (Sancton, 2023). In our immediate context, however, we observe the introduction of specifically environmental non-profits in processes such as sustainability planning, offering localised on-the-ground support with implementation, verification and certification but also in an advisory capacity in the interest of a location's biodiversity, local population, or as simply recipients of donations.

Last but not least, we observe the manner in which cultural production intersects with environmental and, further, economic development through joint initiatives aligning the work of municipal bodies and competent public authorities (in particular, MiC, MiTE) with that of the audiovisual sector and, by extension, the cultural and creative industries at large. Thus, the following case studies are approached chronologically, with each case examined in a linear and sequential manner. Starting with the earliest case study from 2010, each case is explored up to the present day, 2024, before moving on to the next case study. Although the focus is purposefully on the main actors, where necessary, it briefly diverges to integrate additional relevant concepts and underscore contextual information.

8.2. Edison Green Movie

8.2.1. Background

The starting point for the promotion of sustainable strategies in the Italian audiovisual sector can be traced back to 2010, when Francesca Magliulo, then Corporate Responsibility Manager of Edison S.p.A. and current Director of Fondazione EOS (Edison Orizzonte Sociale; for both instances, henceforward Edison), Gianluca Della Campa, Corporate Responsibility Manager and subsequently Marketing Director of Legambiente, and Carlo Cresto-Dina, Producer and Director of Tempesta Film joined forces in the formation and development of the Edison Green Movie protocol (Italian Film Commissions, n.d.; della Campa, personal communication, 2024). As all three organisations represented by those three individuals are pivotal, we need to diverge slightly, broadening the discussion with some background information: since 1883, Italian company Edison has been the oldest energy company in Europe, with 140 years of its recorded history being at the forefront of the energy transition along the country's entire electricity supply chain: from energy production, management and maintenance of generation parks to sales for end customers and, as of more recent years, with activities dedicated to achieving a 40% renewable energy in its energy production mix by 2030 (Edison, 2022:5).

Simultaneously, among its manifold initiatives, Edison since the 1950s has been a shareholder in the historic film production and distribution company Titanus S.p.A., simultaneously with owning the Ivrea Corporate Film Archives, a film library featuring films from the 1920s onwards (BBS Lombard, n.d.). Arguably, one of the most notable aspects in the relationship of Edison with Italian cinema was fostering the creative talent of then-young director Ermanno Olmi, who, at the age of 14, went to work in the company's General Services Department in Milan (Ibid, n.d.). While working for Edison-Volta, Olmi was given a camera and was commissioned to produce a corporate documentary about the construction of a new hydroelectric dam, a task he ambitiously embraced by assembling a crew of 25, transforming the assignment into his first film (Roberts, 2018). Subsequently, and while pursuing after-work activities such as theatre workshops and art-related courses, Olmi persuaded Edison-Volta to establish a documentary division with him in charge, directing between the years 1952 to 1961 some 40 short documentary films, the focus of which has been "people at work" rather than the power plants themselves (Edison, 2015; Roberts, 2018; BBS Lombard, n.d.), all during a period coinciding both with the development of Italian Neorealist cinema and the post-War economic boom, that saw the further electrification of Italian industry (BBS Lombard, n.d.) and the overall modernisation of Italian infrastructure (Burke, 2017:365). In turn, Legambiente, the most prominent and widespread environmental association in Italy, headquartered in Rome and Milan, in addition to 20 more regional offices and a network of more than 600 local groups of volunteers and 115,000 members, donors, by-projects and businesses, is an Italian non-profit organisation founded in 1980 (Legambiente, n.d.). The organisation's mission is to bring scientific-environmental culture to the forefront of national development by advocating for a wiser use of natural resources against all kinds of pollution through the promotion of education policies on multiple fronts (Seemla, n.d.); while Tempesta, formed in 2009, has been the first Italian production company invested in the research and application of eco-sustainable strategies in audiovisual production processes (D'Urso, 2022: 173), some of whose productions will serve as principle case studies in the course of this research.

8.2.2. Development of the Edison Green Movie Protocol

Hence, back in 2010, the meaningful collaboration between the three actors led to the development of the Edison protocol, which was put to the test in the same year's Tempesta's production of Alessandro D'Alatri's film *Sul Mare* (2010), making it the first sustainably produced film in Italy (Green Drop Award, n.d.; Disi and Gisotti, 2016) and further, an additional adoption of the protocol was also promoted by the Apulian Film Commission during the production of Georgia Cecere's *The First Assignment* (Il Primo Incarico, 2010) (Apulia Film Commission, n.d.). The analysis of audiovisual production workflows monitored in *Sul Mare*, conducted by AzzeroCo2, a sustainable consultancy created by Legambiente, and the assistance of the Kyoto Club (an Italian environmental non-profit created in 1999) and consultancy-research institute Ambiente Italia S.r.l. (Edison S.p.A., 2014), eventually led to the development and publication of 'Edison Green Movie - Guidelines on Sustainable Cinema' in 2011 (BBS Lombard, 2024). Subsequently, in 2012, what became the Edison Green Movie protocol was presented to the industry at the Italian Pavilion of the 65th edition of the Cannes Film Festival, with testimonials from director Alessandro D'Alatri and actress Isabella Ferrari (Radio Cinema, 2012) and domestically in the Rome-based art house venue Casa del Cinema (Azzeroco2, 2012). Based on a localised application of the PGA Green Production Guide (Green Film Shooting, 2015b) and Della Campa's professional experience working with ISO 20121 sustainable event certification (Della Campa, Personal Communication, 2024), the protocol promoted sustainable interventions across 38 identified indicators in areas such as energy and material consumption, waste management, transportation of people and production resources, catering, sustainability considerations in internal communications and production coordination, accommodation and compensation of emissions, all the while involving the interventions of suppliers, hoteliers, local administrations and organisations such as film commissions (Edison S.p.A., n.d.).

Under the supervision of an environmental consultant from Legambiente (Edison S.p.A., 2014) and the involvement of newly formed sustainable production consultancy EcoMuvi (see next section), such best practices were implemented in next year's Rai Cinema Paolo Virzì production *Il Capitale Umano* (2014), with the further utilisation of on-location electricity grids, resulting in a 75% reduced environmental footprint, amounting to about 44 tonnes savings in CO2 emissions and the choice of battery-powered neon lights; solutions that combined brought about € 37,000 worth of savings in budget (Green Film Shooting, 2015b). In addition, utilising a total of 170 18-litre water stations during the two-month production of Virzì's film meant avoiding the use of 6,120 single-use bottled water while offsetting an additional 94 tonnes of CO2 (Green Drop Award, 2015). Through the use of Edison Green Movie, similar reductions in emissions and expenses were also achieved in the same year's production of Olmi's *Torneranno i Prati* ("*Greenery Will Bloom Again"*, 2014). Reaching an overall score of 90% implementation of its targets, Olmi's WW1-themed film achieved a 75% cut in its emissions via waste separation and reused material, the replacement of 3400 water bottles with 85, 20-litre water stations, and the provision of zero-km travelled, locally sourced products, resulting in a marked, 20% reduction in the overall cost of meals. Simultaneously, the production enlisted the help of the Veneto Region Forestry Corps and provided work for the local workforce in the set construction of military trenches and special effects such as bombs made with bags of peat, compressed cork and non-toxic coloured powder (Edison, 2014). In addition, in *Torneranno i Prati*, Olmi, shooting on film, consciously reduced the use of celluloid, using a mere 33 thousand meters of Kodak 35mm stock against 50 to 80 thousand meters average of feature films (Ibid, 2014).

Subsequently, similar measures were taken on the sets of *The Rich Man, The Poor Man And The Butler* (*Il Ricco, Il Povero E Il Maggiordomo*, 2014). Directed and acted by renowned comedy trio Aldo, Giovanni and Giacomo (Cataldo Baglio, Giovanni Storti and Giacomino Poretti), and under della Campa's supervision, the film was shot in 65 locations in and around Milan, effectively utilising the city's use of public grids, replacing traditional lamps with incandescent halogen lamps, saving what the equivalent of one hundred thousand meters of

film by going digital, while avoiding altogether the use of polystyrene, chemical paints and other pollutants in its set construction and makeup departments (Caruso, 2014). In addition, the film significantly reduced its paper consumption by opting mostly for email communications, as well as reducing its transport-related CO2 emissions by enforcing a subway and carpooling policy for actors and crew (Ibid, 2014). Likewise, in next year's production of Francesca Archibugi's film *The Name of the Son* (*Il Nome del Figlio*, 2015), simultaneously with strict adherence to Edison's Green Movie protocol, the production broke new ground by supplying water to its troupe directly via the public fountains ("*nasoni*") of Rome (Di Stefano, 2020).

8.2.3. IFC Endorsement and Expansion

In 2015, the Edison Green Movie was endorsed by the Italian Film Commission Association (henceforth, IFC) (Paternò, 2016). As an association, the IFC comprises 20 Film Commissions located all over Italy, consolidating relations with national and international bodies and institutions while closely monitoring sector-related trends and fostering initiatives that promote the sector's growth among its associates (Film Italia, n.d.). Arguably, such an endorsement helped further to domestically diffuse and popularise a new concept in audiovisual production, whose practice in Italy, up to that point, has only been implemented in isolated cases of single producers motivated enough to apply such standards in their productions (Green Film Shooting, 2015b) and across an industry where the overall buy-in for green products, technologies and processes has been equally low (that is, considering other concurrent examples elsewhere in the world), standing at a 19% adoption rate for the period between 2009 and 2012, according to Union Camere (Disi and Gisotti, 2016:5). Thus, IFC associate members Sardegna Film Commission, Trentino Film Commission and Torino-Piemonte Film Commission took initiative and developed their own regional adaptations inspired by the Edison protocol, presenting their localised approaches at that year's MIA Market in Rome (Green Film Shooting, 2015b) while in 2016, the Film Commission Torino Piemonte and Edison

Company signed an agreement to collaborate synergistically at the local level to promote more sustainable film sets in the Piedmontese territory (Paternò, 2016). Subsequently, in 2021, Edison established the EOS Foundation (under whose auspices the protocol is currently operated) with the aim of creating social value in Italian territories where the company is present via the promotion of sustainable and inclusive growth in line with the 2030 Agenda (BBS Lombard, 2024). Acting as the "social" arm of Edison and following its first year of operations, the Foundation boasts a substantial balance between donations collected and donations made, activating 12 projects in Sicily, Lombardy and Piedmont battling the educational poverty of some 2000 children, with the support of 40 territorial partners and 1,300 from local educational communities, in addition to financial aid during the Ukrainian crisis (Edison, 2022). In addition, as part of Edison Next, a decarbonisation initiative for businesses in Italian and Spanish territories founded in 2022, Edison installs new air-conditioning and dehumidification infrastructures in line with principles of sustainable consumption and low emissions to protect and conserve the historic Cineteca Milano archive, home to more than 30 thousand period and restored films produced from the 1950s onward, which following the upgrade, subsequently re-opened its doors to the public (Edison, 2022b).

8.2.4. Recent Developments

Moreover, the more recent collaboration between the EOS Foundation and ANICA Academy is particularly noteworthy. Founded in 1944, ANICA ("*Associazione Nazionale Industrie Cinematografiche Audiovisive E Digitali*"; Italian Association Of Film, Audiovisual And Digital Industries) is a premium Italian association representing Italy's audiovisual sector in dealings with public, private, political, and union institutions through its three divisions. These include producers, distributors, and technical enterprises, such as film studios and sound sets, equipment rental, film printing and development, post-production, and sector-related transport (ANICA, 2012). As part of a long list of enduring and meaningful contributions to Italy's audiovisual sector, ANICA has been a founding partner of the *David di Donatello* Award

(established in 1955) while acting in a representative capacity for the Academy of Motion Picture Arts and Sciences, selecting the Italian Oscar candidates for the Best Foreign Film category and, as of 2017 one of the organisers of MIA (*Mercato Internazionale Audiovisivo,* International Audiovisual Market) in Rome (Ibid, N.D.a) and the more recent launch of its ANICA Academy (*Fondazione ANICA Academy ETS).* Created in 2020, the ANICA Academy ETS Foundation offers highly specialised training courses in audiovisual trades and professions, responding to the growing demand for qualified industry roles (ANICA, 2020). Such a process is accelerated through ANICA's long-held close connections with the Italian labour market (Ibid, 2020) and a board of directors that includes Medusa Film, Netflix, Rai, Paramount, Vision Distribution and Gaumont Italia (Vita.it, 2024). As such, signalling the high value of specialised training and courses in sustainability, and after more than ten years of discussion, ANICA in 2024 partners with the EOS Foundation in the creation of a dedicated course on Sustainability and ESG criteria for the audiovisual sector (Ibid, 2024).

8.3. Green Ciak

8.3.1. Background

The second audiovisual sustainable production norm developed in Italy and arguably the first to highlight the promotion of environmentally friendly messages in equal measures with sustainability in production workflows, as well as the first to have its supervised project receiving domestic critical recognition for its efforts in sustainability is the Green Ciak protocol. Formally known as Eden, the protocol was developed in 2012 by Cremonesi Consulenze S.l.r., a company invested in the study, design and management of energy plans (Gorgi, 2013). Central to the efforts of the Veronese consultant company was the vision of its CEO, Renato Cremonesi. An industrial expert specialising in Electrical Engineering by trade with a keen interest in sustainable development, energy efficiency and renewable energy sources (Cremonesi. R, 2024), Cremonesi noted the need for a broader engagement for these concepts

in a manner that stretches beyond technicians and policymakers convening on a roundtable, aiming precisely towards raising the awareness of the end-consumer; the audience itself (R. Cremonesi, 2024, personal communication). For Cremonesi, while the Italian cinema of the past was reflective of social changes, citing Neorealism's focused themes of post-war reconstruction and upbeat narratives underlined by the unfolding economic boom of the late 1950s and early 1960s (Olmec, 2024:4), today's vision ought to be addressing a new relationship between Humanity and the Environment (Albegna Corsara, 2014), by stimulating responsible behaviour and choices among its audiences, while promoting more equitable and sustainable development models (Olmec, 2024:3). Further, per Cremonesi's hypothesis, if an average of 5 million spectators produce annual emissions of about 50 million tons of CO2, of which 30% can be attributed to their personal behaviours and daily habits, then assuming that a mere 5% of those emissions could be avoided by increased awareness and adoption of sustainable behaviours instigated by normalised, positive on-screen examples, it becomes plausible that an estimated 2.5 million tons can be avoided (Ibid, 2023:13). Towards this, according to Cremonesi, the adoption of the Green Ciak protocol constitutes a beneficial scenario for all stakeholders involved in the process of making a film: from production companies who reduce operational costs by producing the film according to internationally standardized organizational procedures (in Green Ciak's instance, that's ISO 20121), public administrations that promote their territory whilst hosting zero-impact productions, directors whose vision is met with greater acceptance from audiences invested in sustainability, and inspired spectators with the potential to become "conscious protagonists" of the transition towards more equitable and sustainable development models (Olmec, 2024:16-18).

8.3.2. Eden: From Green Screen To Green Living

Leveraging this understanding, Cremonesi has ever since embedded his vision and expertise in Veneto's regional cultural scene, from sustainable film and TV productions to the promotion of sustainability in region-wide film festival networks. As such, a year after its founding, Cremonesi

Consulenze presented its *Eden: From Green Screen To Green Living* protocol during the 2012 Venice Film Festival as a framework for the upcoming Michele Calì's and Federica Andreoli's sustainable production of *Un Angelo All'Inferno* (dir. Bruno Gaburro, 2013) (Inno, 2012; Innocenti, 2012). Central to Cremonesi Consulenze's Eden (now Green Ciak; a norm managed and promoted by Olmec S.r.l., Cremonesi's family-run company founded in 1976) is the nominated Green Manager who, having set up the sustainability plan during pre-production then follows the production troupe during production supervising the agreed interventions (R.Cremonesi, 2024, personal communication). Such interventions are planned to meet three primary objectives: 1) to eliminate the environmental impact of audiovisual productions and 2) to promote positive messages about environmental respect and social responsibility, particularly with respect to 3) raising the audience's awareness about sustainable resource consumption and the transition towards more equitable and sustainable development models (Olmec, 2024:3). In production settings, these three objectives are operationalised along two main axes of implemented actions, the Engineering and the Emotional (Ibid, 2024:10). In the Engineering domain, the sustainable management proposed by Green Ciak adheres to ISO 20121 green procurement standards with an emphasis on reducing the environmental footprint across various production stages. This aspect includes interventions on logistics (such as efficient transportation and eco-friendly catering), services (sustainable sound, lighting and set construction practices), production (eco-friendly scenography, filming and editing processes) and post-production (sustainability in the promotion and distribution of the produced film itself, also taking into account how the film is screened with special provisions such as accessibility features for people with disabilities) (Ibid, 2024:11). In turn, the Emotional aspect focuses on script development, whereby interventions are made to the script, in areas such as plot, location, actions, dialogues, music and planned cinematography (Ibid, 2024:12). Per Cremonesi's strategy, the process of embedding an environmentally-friendly message does not need to distort the script itself: citing the example of leading *Un Angelo All'Inferno*, where prominent Italian award-winning actor Giancarlo Giannini rides a bicycle across Verona, instead of a Vespa, as was initially written in the script, thus subtly highlighting the concept of sustainable transportation (R.Cremonesi, 2024, personal communication). Subsequently, the

phase of implementing Green Ciak's standardised procedures is followed by a thorough calculation of CO2 produced during the making of the film, with the resulting number being offset by projects such as tree planting, as in the case of *Un Angelo All'Inferno* (R.Cremonesi, 2024, personal communication). The process is then completed by a certification system attached to the protocol issued by Olmec S.l.r. itself, making it essentially a self-certification scheme (Ibid, 2024, personal communication).

8.3.3. *Infernet* (2015)

After its renaming from Eden to Green Ciak, the protocol was also applied in the next Calì and Andreoli production of Giuseppe Ferlito's film *Infernet* (2015). With the financial support of Veneto's regional fund for cinema and audiovisual productions, Ferlito's film was produced across various locations in Verona, Venice and Florence (A.C. Production S.R.L., 2015). As such, on account of considerable intercity and local travel and the shortage of electric or hybrid vehicles at the time, Cremonesi Consulenze paid particular attention to optimising the production's transport plans with low-emission cars (R.Cremonesi, 2024, personal communication). Further provisions included arranged accommodation for cast and crew near the filming locations and catering offered by local restaurants, reducing the consumption of plastic containers, resulting overall in a 50% reduction of expected emissions (R.Cremonesi, 2024, personal communication). The film, a gritty social commentary of five interconnected stories around the (mis)use of the internet and social media among teenagers in Italy, proved to be not only a critical success, winning various awards in 2016, such as the niche San Giuliano's Apoxiomeno Prize [*Premio Internazionale Apoxiomeno*; the International Police Award Arts Festival (IPAAF)] for its positive depiction of men in uniform (police and the Carabinieri) (La Nazione, 2016) and the Golden Grifo Award (*Grifo d'Oro*) at Peruggia's second edition of Love Film Festival. Crucially, however, Ferlito's film received more prestigious and influential recognition during its presentation at the 2015 72nd Venice Film Festival, eventually receiving the Festival's Green Movie Award for its timely coverage of cyberbullying and the

problematic use of the internet while "harmonizing social aspects and environmental attention through the film's eco-sustainable production", (A.C. Production S.R.L., 2015), marking the first time in Italy where a film is recognised and awarded based on its efforts in sustainability.

8.3.3. Recent Developments

Following a small string of productions adopting the protocol, among them a collaboration with renowned Italian TV satire *Striccia la Notizia* (1988-; created by Antonio Ricci), the protocol appears not to have built on its initial momentum, receiving arguably less attention in the years to come compared to other sustainability initiatives supervised or led by Cremonesi Consulenze. These include a long-standing collaboration with the Lessinia Film Festival, making it the first sectoral event in Italy to adopt a certified protocol according to the ISO 20121 standard (Bissoli, 2023:73) and, under Cremonesi's subsequent presidency of the festival from 2021 onwards (L'Arena, 2022), a member of the AFIC's (*Associazione Festival Italiani di Cinema*; Association of Italian Film Festivals) green festival working group (Paternò, 2024), and by extension, an early adopter of the AFIC's *Green Festival Guidelines* under the leadership of AFIC Coordinator, Laura Zumiani (see dedicated case study in section 14.2). Moreover, Cremonesi's vision and advocacy progressively expanded in operational scope following the formation of the non-profit entity MyPlanet2050 APS. With the support of the Veronese Chamber of Commerce, which co-financed the initiative as part of Destination Verona Garda Foundation's activities, a destination management organization (DMO) invested in the tourist, cultural and territorial promotion of local landmark areas such as Lake Garda, City of Verona, Lessinia, Pianura dei Dogi, Soave-Est Veronese and Valpolicella (Pianura, 2022) MyPlanet2050 consolidated the festival activity of nine locally-based film festivals under the banner of Verona Green Movie Land, promoting sustain development both in terms of environmentally-themed content curation as well as behind-the-scenes operations (Cronaca di Verona, n.d.). Sponsored by Unicef and Italy's Ministry for Ecological Transition (MiTE), the dense list of Verona Green Movie Land affiliated festivals includes the Soave Cinema Festival, Bardolino Film Festival, the

CINELÀ Festival of African Cinema, the Teodorico Summer Fest, Valpolicella Film Festival, Legnano Film Festival, Believe Film Festival and Lessinia Film Festival (Verona Green Movie Land, n.d.), attracting an average of about 50,000 spectators annually (Giovenco, 2024).

8.4. EcoMuvi

8.4.1. Background

As we have already covered, the introduction of sustainable norms in the Italian audiovisual sector owes much to the resourcefulness and initial efforts of Carlo Cresto-Dina, dubbed "a visionary indie producer and purist of auteur cinema" (Oltolini, 2020). Per Cresto-Dina, "independent production is about preserving the biodiversity" of the audiovisual sector's own ecosystem, protecting it against an "invasion of corporate value extractors" (Niola, 2022). Cresto-Dina's use of metaphor, and perhaps activist sensibility, is literal in this instance: in Cresto-Dina's view, a film set is like a little village, where the behind-the-scenes processes, such as travel, cooking, laundering or other daily routines, imitate life just as much as their on-screen depiction in the fully realized artefact, the film itself. A key part of this "imitation" is energy consumption, the use of resources and pollution that make a film and other audiovisual projects possible; elements that producers are responsible for minimising in a demonstrable manner, especially given the public subsidies they often access and utilise (C.Cresto-Dina, 2023, personal communication). Further, for Cresto-Dina, as a "very exposed industry", the audiovisual sector holds leverage by setting forth a positive example, with the capacity to influence public opinion as well as other industries (Ibid, 2023, personal communication). As such, Cresto-Dina utilised his Bologna-based production company Tempesta S.l.r. as a testing ground for the development of a sustainable norm in Italian audiovisual production. Initially, as we've already explored, this vision was initially fleshed out as a study through Cresto-Dina's collaboration with energy provider Edison in what became Edison Green Movie; however, following differences with regards to vision, scaleability and certification of the protocol, this

collaboration was dissolved (della Campa, 2023, personal communication and L.Chiarini, 2023, personal communication), leading to the formation of EcoMuvi protocol in 2013. On all accounts, it appears that this departure took place during Tempesta's production of Paolo Virzì's *Il Capitale Umano* (2014), a project for which both Edison Green Movie and EcoMuvi claim supervisory responsibility (for the former claim, cf. Edison, 2014; Green Drop Award, 2015:2; Disi and Gisotti, 2016: 4; Italian Film Commissions, 2016; and for the latter, cf. Sarfatti, 2020:24; Solari, 2021:45; EcoMuvi, n.d.) and that hereby are considered as a joint effort.

8.4.2. Early Developments

For Valeria Jamonte, producer and head of content and development at Tempesta, in those early days, the application of what eventually became the EcoMuvi protocol was suggestive, non-compulsory and above all experimental; observing —and taking notice— of what could work and what not in the context of Italian audiovisual production landscape (V.Jamonte, 2023, personal communication). Further, with Tempesta mostly operating as a majority production company, i.e. managing the primary financial and creative control of a project, at the time made it easier for minority production companies attached to its projects, whether as co-producers or international co-producers, to follow the established protocol, in a time where a push from the general culture was absent (Ibid, 2023, personal communication). Another marked difference concerns the manner in which the protocol was administered: per Chiarini (L.Chiarini, 2023, personal communication), though extensive and third-party certified, for the period 2013 to 2016, the EcoMuvi protocol was still a document not systematically implemented through a designated figure or person, such as the sustainability manager, employing instead "a set manager" to oversee the implementation (Disi and Gisotti, 2016:13) along their presumably other duties. Further, the protocol was circulated to all production departments by the producer with the proviso that each department had to adapt its workflow —unsupervised— in order to meet the assigned criteria that the subsequent certification would rely upon. As such, certification was based purely on submitted evidence, with the certifying

body, Bologna-based certification, research and development non-profit consultancy ICEA (*Instituto per la Certficazione Etica ed Ambientale*; *The Ethical and Environmental Certification Institute*), evaluating documents provided by the production (Ibid, 2023, personal communication).

8.4.3. The EcoMuvi-01:2014 Specification

Inspired by the PGA Green, the first edition of the EcoMuvi protocol, *EcoMuvi-01:2014,* promoted concrete actions in eight key areas. 1) Materials, whereby renting was prioritised over purchasing materials related to set design, props, and costumes, as it was the use of recycled or recyclable materials, eco-friendly certified products and laundry services; minimising paper use through double-sided printing on 100% recycled paper, followed by 2) Catering, where the preference is set for local caterers using organic, fair-trade or zero-km produce and culinary products, employing reusable or certified compostable tableware, with special care towards promoting zero waste through rationed food orders and the redistribution or donation of any surplus food thereafter. In 3) Hotels, the preference is for eco-certified accommodation, where this is not an option, the imperative is for the production to ask for certain procedures to be adapted (thus affecting green demand in the hospitality supply chain) in addition to accommodation facilities located no more than 30 km from the set and accessible by public transport. In 4) Waste, appropriate waste separation and disposal is essential, guiding cast and crew through information signs. Further, using 18-litre water flasks or stations instead of 1/2-litre bottles with compostable cups, in addition to equipping the crew with water bottles, thus avoiding the use of plastic, while setting up ashtrays on the set (where smoking is allowed) or equipping the crew with pocket ashtrays. In 5) Energy Consumption, whenever possible, the imperative is for productions to connect to a public electrician grid, using electricity from renewable sources produced on-site or generator sets of Euro 4/5 class, utilizing energy-efficient appliances (washing machine, photocopier, etc.), illuminating the set via the procurement of low-consumption lights and energy-saving bulbs and replacing

disposable batteries with rechargeable ones. In 6) Transport, public transport is prioritised, as is travel by train (rather than plane), making sure that cars/vehicles employed are at least Euro 4/5, and preferably electric or hybrid. Further, optimising the production's transport plan, reducing the number of vehicles via carpooling, and equipping the crew with bicycles for on-set travel. In 7) Communication, the imperative is for crew members, actors, and suppliers to be informed in advance about the adoption of the EcoMuvi protocol, sharing the document and relevant specifications with them, as well as nominating a set manager to prepare, monitor and verify the correct implementation in all of the above (Disi and Gisotti, 2016: 11). Finally, in 8) Data Collection a detailed record of purchases is required; with invoices relating to the purchase of wood, plastic and paint, printed cartridges and paper set to include information on eco-certification or other evidence attesting to the sustainability of the material/item. Further, catering declarations stating that the supplier sources at least 10% of their ingredients within a 50km radius of the sets and whether the produce is organic or fair-trade, in addition to photocopies of all production vehicle licences or booklets (indicating vehicle make and model), expense reports, distinguishing costs for fuel (indicating fuel type and kilometres travelled), train or plane tickets (indicating the route taken), as well as taxis, bars and restaurants receipts (Ibid, 2016: 12).

8.4.4. *Le Meraviglie* (2014) and *Fräulein: Una Fiaba d'inferno* (2016)

Thus, having outgrown its 2013 Paolo Virzi trial, the protocol was "locked" procedurally as a formalised, de facto guideline (L. Chiarini, 2023, personal communication), and subsequently presented in Turin, during the 17th edition of CinemAmbiente festival by Carlo Cresto-Dina and producer Francesca Andreoli (Christophe, 2021:21). Further, its use was promoted in the same year's Tempesta production of Alice Rohrwacher's film *The Wonders* (*Le Meraviglie*, 2014). The significance of this adoption is two-fold: on the one hand, by virtue of being an Italian, Swiss and German co-production, *The Wonders* is the first international film produced using the EcoMuvi protocol (Tempesta S.l.r., 2014). On the other, *The Wonders* inaugurated a

long-standing collaboration between Rohrwacher, a renowned auteur Italian director, Tempesta and EcoMuvi. According to Di Bianco (2020:151), the earth-centred vision of Rohrwacher's eco-cinema, where the relationship "between humans, nonhumans, and the environment [are] at the centre of film narration" matches EcoMuvi's pledge of achieving energy savings and environmental sustainability in film production (Tempesta, 2014) procedurally in its making, narratively in the themes it explores and embeds as well as aesthetically: per the film's production designer Emita Frigato (as quoted in Di Bianco, 2020: 156), the approach of conscientious production and consumption also extended to making props such as statues by utilising canvasses soaked in chalk, instead of utilising the industry-standard blue boards, made of extruded polystyrene (XPS) foam, a non-biodegradable derivate of petroleum; in itself an unsustainable, non-renewable resource contributing towards the accumulation of CO2 in the environment (Godet et al., 2022:1-2, 16). Overall, through effective use of transportation plans and optimised waste management, adherence to the EcoMuvi protocol made it possible to save as much as 5 tons of CO2 in the pre-production and during the production of Rohrwacher's film (Redattore Sociale, n.d.). Further, following its critical success as a recipient of the Grand Prix by the Cannes Film Festival Jury in 2014, *The Wonders* and its sustainable production were put domestically under the spotlight during that year's Venice Film Festival's Green Drop Award, whereby representatives from Italy's Ministry of Cultural Heritage, Activities and Tourism (MiBACT) responded positively to the request of incentives to reduce the environmental impact of domestic film production (Alternativa Sostenibile, n.d.). On this occasion, MiBACT also pledged the formation of a joint technical committee alongside the Ministry of the Environment to oversee the integration of such measures, further supporting the development of guidelines for the production of sustainable films, with the definition of an ad hoc specification (Redatorre Sociale, 2014). Subsequently, the same virtuous example was also applied during Tempesta's and RAI Cinema's co-production of the 2016 Caterina Carone film *Fräulein: A Winter Fairy Tale* (*Fräulein: Una Fiaba d'inferno*). Shot in Bolzano and subsided through BLS Business Location Südtirol's tax credit system (Tempesta Film, N.D.), which, as we will see shortly, developed its own sustainable trajectory, and the support of the Italian Ministry of Culture's Directorate General for Cinema and

Audiovisual (*Direzione Generale Cinema E Audiovisivo*; *DGCA-MiC*), the set of *Fräulein* utilised 30% of its designed and costume material from reused sources; with catering and tableware disposable made entirely of biodegradable and compostable materials, in addition to providing all cat and crew with reusable water bottles (Alternativa Sostenibile, 2016). Further, more than one-third of location shooting was powered by connecting to Bolzano's national electricity grid, replacing the more polluting industry-standard generators (Green Drop Award, 2015:2). As such, with a 75% implementation rate according to EcoMuvi specifications, the protocol's implementation resulted in a 48% reduction of resources used, 60% efficiency in waste management, 70% reduction in energy consumption and 89% fewer air emissions (Disi and Gisotti, 2016:10), resulting in an overall reduction of 10 tonnes of CO2 on-set emissions (Ministero della Cultura, 2016), as well as 28.41 tonnes of CO2 equivalent tonnes, as a result of carpooling, minibuses, and trains (Disi and Gisotti, 2016:13).

8.4.5. The Sustainability Manager

From 2018 onwards, the application of the EcoMuvi protocol was advanced on many fronts. Partly, this was due to the inclusion of a dedicated Sustainability Manager, Ludovica Chiarini. Chiarini, a graduate of a film and media production course in Italy, with subsequent on-the-ground experience as a production assistant and unit manager, later specialized in sustainability and corporate social responsibility in Malmö, Sweden, during her postgraduate studies (L.Chiarini, 2023, personal communication). This versatile, interdisciplinary experience, alongside a keen observation of concurrent developing sustainable norms in audiovisual production, such as the PGA Green, Albert and Ecoprod, as well as a panoramic view of shifting trends in ESG and CSR, allowed Chiarini to maximise sustainable management in line with complex reporting structures and scientific data sets in a seamless manner not compromising towards the artistic aspect of film production (Ibid, 2023, personal communication; Christoph, 2021:29). Per Chiarini (personal communication, 2023, note originally written in 2020), the role of a Sustainability Manager combines "concrete production

competence with theoretical and practical expertise in sustainable business management". This fusion of interdisciplinary skills allows for a feasible and consistent type of management adjusted to the needs of a "project-based industry, where each product utilises a common framework but always has different objectives" (Ibid, 2020). By extension, a Sustainability Manager is responsible for "designing, implementing, and monitoring the sustainability policy and related activities within a production", a work that begins with the analysis and breakdown of the script, identifying and prioritising the specific needs of a project from an environmental management perspective (Ibid, 2020). Those considerations lead to the drafting of an environmental policy, to material usage, waste management, energy usage, and atmospheric emissions, among other factors, which the Sustainability Manager relays to all agents attached to the making of the project: internal, such as individual production departments, crew and cast, and external, ranging from equipment, costume, set construction companies, animal, catering and transportation-related suppliers to public and private permit providers (e.g. municipal offices and film commissions), as well as accommodation facilities (Ibid, 2020). Following this setup, the Sustainability Manager supervises and monitors the implementation of these activities across all production stages, documenting and reporting the progress as per the agreed plan (Ibid, 2020).

8.4.6. *Lazzaro Felice* (2018)

Thus, during Rohrwacher's *Happy as Lazzaro* (*Lazzaro Felice*, 2018) production —a critically acclaimed Tempesta production with RAI Cinema in co-production with French Ad Vitam Production, Swiss Amka Films, and German Pole Pandora and the support of several funds such as MiBACT, Roma-Film Commission, Germany's Medienboard Berlin-Brandenburg and the Council of Europe's Eurimages (Tempesta, 2018)— the role of Sustainability Manager in the EcoMuvi specification was inaugurated; allowing for more targeted interventions tailored to the project's settings. To begin with, *Happy as Lazzaro* had its principal photography in Civita di Bagnoregio (Vivarelli, 2017), in addition to urban locations such as Milan and Turin. Located in

the Province of Viterbo, Alto Lazio, the scenic ancient village of Civita is situated on the plateau of a tuff cliff, which for centuries has been subject to landslide phenomena progressively retreating its slope (Margottini et al., 2013), accelerated soil erosion and, as of recent, increased touristic pressure (Di Veroli et al., 2018:156). As such, during pre-production, EcoMuvi took into consideration the vulnerable biodiversity of the territory, measuring beforehand the vicinity's soil pollution, in addition to the ethical sourcing, treatment and post-filming fate of animals performing in the film (Christoph, 2021:28). Then, in alignment with the protocol's criteria and other tailor-made approaches, *Lazzaro*'s two-month production across three cities, with an average of 70 crew members and a cast up to 100 people resulted in just 80 tons of emitted CO2, instead of what would have been an estimated 250 tonnes without the application of the protocol, the equivalent of 47 times what a European citizen pollutes annually (Oltolini, 2020), in addition to avoiding a further 370 kilograms of plastic waste (Finos, 2021). Moreover, per Chiarini (as quoted in Oltolini, 2020), the set of *Lazzaro* experienced a significant, yet unquantifiable, long-term positive impact on the work habits of its professionals, who would then integrate new environmentally friendly methodologies into their production-related craft, skillsets and workflows.

8.4.7. Protocol Update: An Accredited Proprietary Scheme

By 2020, EcoMuvi, with Chiarini as its active Project Manager, had assumed a more scaleable direction, decoupling its status from a mere Tempesta initiative into becoming 1) an independent sustainable production consultancy company providing a certifiable protocol with international application and 2) an integrated service, with on-ground production support from its EcoMuvi managers (L.Chiarini, 2023, personal communication). A necessary step towards achieving these objectives would require EcoMuvi to register its protocol as a proprietary scheme that is piloted and subsequently standardised as a norm by a legitimate accreditation authority and one whose compliance would be open to inspection by a competent conformity assessment body. As such, in 2020, EcoMuvi enlisted the help of the Milano-based conformity

assessment body Italcert, effectively replacing a long-standing partnership with ICEA. Founded in 1992, Italcert certifies Quality, Environmental and Safety Management Systems in addition to product, service and personnel certification, inspecting and verifying activities under the authorisation of the Competent Ministries (Italcert, N.D.). Central to the collaboration between EcoMuvi and Italcert is the further involvement of Accredia, Italy's sole National Accreditation Body. Per the European Commission's (2008:2) regulation 765 of 2008, accreditation "is part of an overall system, including conformity assessment and market surveillance, designed to assess and ensure conformity with applicable requirements," thereby providing "an authoritative statement on the technical competence" of bodies, organisations, products, services and processes subject to it. Thus at the service of public institutions, private companies and consumers (Accredia, 2017a) and as a signatory member of various international networks and agreements, including the European Accreditation's *Reliable Goods and Services Agreement* (2018), the International Accreditation Forum's multilateral agreements and The ILAC *Mutual Recognition Arrangement* (Accredia. 2017c), Accredia assures the global relevance, conformity, uniformity and quality of standards to those it offers its accreditation (Accredia. 2017c). In this working context, and upon a request made from EcoMuvi to register its protocol as a standard from 2022 onwards, Accredia appointed Italcert as the only conformity body authorised for EcoMuvi-related inspections and purposes, overseeing the quality and due process of its [Italcert's] verification assessments conducted on EcoMuvi-supervised film sets (C. Morlacchi, 2023 personal communication). The work of Italcert in this process is itself subject to ISO protocol norm 17020 (in full, ISO/IEC 17020:2012) (C.Morlacchi, 2023, personal communication), whose inspection parameters focus, among others, on matters pertinent to "the quantity, quality, safety, fitness for purpose, and continued safety compliance of installations or systems" in operation (ISO, 2012).

Thus, in 2022, to further develop the protocol's application and update its prospects, Tempesta S.r.l. transferred the Protocol and Logo to the newly formed EcoMuvi S.r.l. along with all related intellectual property rights and economic exploitation, making Chiarini its CEO (EcoMuvi,2023c). As the subject of a pilot study for standardisation, the EcoMuvi protocol itself

was then updated with new evaluation criteria in 2021 (Christoph, 2021:21). While initially building on PGA's *Green Production Guide*, the protocol's scope was broadened to integrate a comprehensive set of ideas and practices grounded in other existing specifications and methodologies (L.Chiarini, 2023, personal communication). Thus, consulted norms for production settings have included *BS 8909 "Specification for a Sustainability Management System for Film*, the more generic ISO 14001 standard framework for establishing an environmental management system and the ISO 20121 sustainable event management, while for reporting, updated GRI reporting standards and DEFRA's (UK's Department for Environment, Food and Rural Affairs) emission conversion factors (Ibid, 2023, personal communication), which although UK-specific and not accounting for full supply chains nevertheless cover a diverse range of fuels, electricity sources, transport modes, utilities and waste (Lee, 2011:219). In addition, other influential norms consulted include IFS (International Featured Standard) and Fairtrade International's food and textile standards, the reference practices of UNI/PdR 99:2021 to calculate, reduce and offset GHG emissions (developed by UNI, the Italian Organization for Standardisation) and the European Sustainability Reporting Standards (ESRS), issued by the European Financial Reporting Advisory Group (EFRAG), which offer detailed disclosure requirements under the CSRD framework (EcoMuvi, 2023d:8; KPMG: 2024).

8.4.8. Criteria, Performance Score and Areas of Actions

The protocol itself applies to audiovisual projects of varying size and complexity, including film, television, documentary, advertising, short films and music video sets produced in Italy and abroad. Per the protocol, projects are methodologically classified as being either "agile", denoting a running time of shooting days of 12 days or less (usually comprised of short films, advertisements and music video clip sets) and are thus subject to a different methodical approach and required standard compliance, and "standard" where the full range of EcoMuvi criteria applies (EcoMuvi, 2023a:2). In more detail, such criteria underpin the performance

class, rating, and assignment system of an audiovisual product's PEF (Product Environmental Footprint) by allocating an EcoMuvi score as follows: "0 = unsatisfactory"; "1 = satisfactory"; "2 = more than satisfactory"; and "NA = not applicable to the type of audiovisual project) (Ibid, 2023a:6). Productions attaining certification have to meet certain PEF score thresholds: for standard projects, the minimum PEF to be achieved is 25% of the maximum available score, while for agile projects, a minimum of 50% score is required (Ibid, 2323a:8) The allocated score is based on implemented and verified actions within five thematic areas, each containing several subdivisions: in 1) "Organisation of Activities", productions are accessed in their adopted a)sustainability policy, linked to the implementation of department-specific measures and a further engagement with sustainable and ethical sponsors and partners and goals; b) planning, where actions and performance targets are set, and a budget line for sustainability is allocated; c) organisational roles and responsibilities, where department coordinators are engaged to implement and monitor sustainability actions on set, in addition to talents signing Green Rider contracts; and finally d) Communication, where the production communicates their planned actions adequately to all crew through in-person or virtual sessions (on set, internal communications), and as the project progresses, promotes its commitment to sustainable production management via EcoMuvi, disclosing publicly data pertinent to GHG occurring from project reporting (Ibid, 2023a:10-11).

In 2) "Resource Management", the production is assessed as an organisation on its a) reuse of materials and products; b) its use of recycled materials, with at least one production department adopting sustainable sponsors and partners in the procurement of such artefacts; c) digitalisation of administrative duties and reduction of paper use, using when necessary refurbished printer cartridges; d) set design for recovery and recycling (also referred to as designed for disassembly); e) participation in territorial development, where local assets and communities are engaged in resource planning and local filming areas are consciously promoted in the interest of economic development and f) habitat and animal protection. In addition, the production is also assessed on its material acquisition strategy, in particular, g) its use of timber and paper from responsible reforestation (FSC/PEFC), h) sourcing of food

products with a preference for local catering suppliers subject to sustainability guidelines, organic and fair-trade food products, all-vegetarian meal on a weekly basis and rationed portions of food; i) use of second-hand or rented costumes, fabrics with regenerated fibres and the purchase of fair-trade and ethical clothing and accessories; j) sourcing of eco-certified paints, varnishes and detergents as well as biodegradable and refillable cosmetic and cleansing products and k) water-based or biodegradable special effects products (Ibid, 2023a:12-15).

In thematic area 3) "Resource Recovery and Waste Management", productions are assessed in their a) communication processes with personnel and suppliers regarding waste management; b) separate waste collection (mandatory for certification); c) catering waste reduction, using disposable packaging only when necessary; d) wastewater reduction and e) agreements with waste disposal suppliers for the disposal of bulky, "special" (e.g. hazardous, medical, construction and demolition, agricultural, electronic) and ordinary waste. Further considerations include f) tracking the percentage of donated, reused or remanufactured materials from set design and costume departments following production wrap and the minimisation of food waste through donations, normally to cast and crew members, and when possible, homeless shelters and disadvantaged communities, enlisting the help of local NGOs and finally, g) the promotion of a solitary-based circular economy, through transferring materials to organisations capable of regenerating them, in the interest of socio-economic benefits (Ibid, 2023a:16-18). In area 4) "Energy Consumption", the focus is on a) managing energy usage during filming by utilising the national grid when available, electricity from renewable sources, hiring fuel-efficient and low-emission generators and lighting kits, and b) managing energy usage in post-production, with a preference for post-production-labs utilising at least 30% renewable energy in their energy mix, while employing energy-efficient systems to redistribute space heating and cooling from equipment processing and promoting the digital transfer of daily footage. Further, in c) Fuel Consumption Programming, the focus is on hiring vehicles of the latest energy classes (Euro 6 and above), as well as hybrids and electric vehicles alongside transportation plans optimised for carpooling, encouraging further the use of bikes and public

transport and accommodation close to the filming locations (Ibid, 2023a:18-19). Finally, in thematic area 5) "Green House Gas Emissions", the focus is on calculating and managing GHG data by a) consulting GHG emission calculators to set informed sustainability targets and then b) disclosing expected and accrued emission expenditure with production crew in order to raise awareness and ensure those targets are met. Further, ensuring that a c) systematic and transparent access to all direct and indirect data is provided to the inspection body, Italcert. Such data is categorised as being either d) primary, whereby original, qualitative-quantitative measurements derive directly from the project inspected, while (in the absence of primary data) employing e) secondary data, that derive from similar computational contexts or past projects and can thus be used comparatively as a reference; subject, of course, to dutiful evidence (Ibid, 2023a:4, 20).

In a linear fashion and real-world settings, a production's journey to sustainability through EcoMuvi begins with the production enquiring about the protocol, requesting a quote from the inspection body, and then signing a license for the use of EcoMuvi mark. Following the engagement of EcoMuvi S.r.l. attached to the project as a consultancy company, the sustainability policy and plan are developed during pre-production, establishing priorities and allocating sustainability budgets across all production departments (EcoMuvi, 2023d). Within that function, EcoMuvi also oversees the sustainable procurement of certain materials and supplier services (Ibid, 2023d), leveraging a long-standing collaboration with Fairtrade, Portable Electric, Fercam, Iveco, and Enel X, among other organisations committed to sustainability. Utilising such networks, EcoMuvi, as a cross-sectoral intermediary, ensures that top-tier proposals, activities, and sustainable services tailored to the needs of the audiovisual sector become more accessible in the production settings it manages (EcoMuvi, 2023c).

Subsequently, during production, the assigned EcoMuvi Manager, usually a professional hired as an external consultant by or from EcoMuvi or someone internal to the production, monitors and realigns the production team's efforts with the agreed objectives, in addition to communicating with suppliers and other collaborators (EcoMuvi, 2023d). Simultaneously, an

EcoMuvi Manager collects credible evidence from the production offices, filming locations and camp bases, such as receipts, contracts, communications, copies of documentation, and behind-the-scene photographic testimonials (including video) pertinent to lighting setup, set construction, meter readings and grid connections, makeup, special effects and costumes, catering stations and waste facilities. Such support requires in-person attendance for certain parts of the shooting, such as an extended stay from the first day of shooting until a few weeks well into production, then resuming a few weeks before production ends, with other EcoMuvi Managers and Production Assistants (EcoMuvi PAs) filling in when necessary. In the absence of either, tasks are delegated to a production assistant and sent as reports to the EcoMuvi manager at the end of shooting. Further, EcoMuvi Managers are there to ensure adequate behind-the-scenes access to the Inspection Body delegate during what is known as Phase One Inspection (EcoMuvi, 2023d). Ideally conducted in-person, but also through teleconference means, it is a process where the visiting inspector (Italcert representative) evaluates how the production as a whole complies with the specifications set in the EcoMuvi protocol; discerning, along the way, the full or partial awareness of each department with regards to sustainability (C.Morlacchi, 2023, personal communication). Following production wrap and during post-production, the EcoMuvi Manager organises the collected evidence, consolidating the information in the form of reports that are to be presented via a teleconference to the Inspection Body in what is referred to as Phase Two Inspection. Essentially an audit assessing the production's documented environmental claims for certification, Phase Two Inspection involves EcoMuvi and Italcert creating an audit trail, where the claims are triangulated by strong supporting evidence, e.g. a certain claim made about minimum use of transportation (and thus of less emissions), should be matched by the relevant reported fuel expenditure, the specific car rental invoice stating the mileage travelled and vehicle class in addition to corresponding fuel receipts indicating the type and amount of fuel paid for. Then, subject to a strict ISO 17020 methodology (C.Morlacchi, 2023, personal communication), the Inspection Body rejects or verifies the data presented, determining the awarded EcoMuvi mark score.

8.4.9. Recent Developments

As of 2023, the EcoMuvi protocol became successfully accredited as a proprietary scheme on a national level by Accredia, making it the first nationally recognised sustainable production standard for the audiovisual sector (Cinecitta News, 2022). Moreover, on account of Accredia's multilateral recognition agreement frameworks already mentioned, such a status by default extends internationally, making the case for a global recognition of any EcoMuvi certification verified by Italcert. Under its protocol update and the synergistic involvement of Italcert and Accredia, EcoMuvi had reduced and certified the impact of about 50 projects (C.Morlacchi, 2023), including feature film productions by Tempesta, Notorious, Indigo, Picomedia, and Mompracem; TV series for Amazon Prime, Netflix, Disney, Lucky Red, Fremantle, among documentaries, animations, short films and advertisements for Think Cattleya and BRW Filmland (EcoMuvi, 2023c).

8.5. Sardegna Film Commission's *Green Film Shooting* Guide

8.5.1. Background

Among the many defining features of the Italian Republic is its composition: besides the Italian State, such a composition includes Municipalities, Provinces, Metropolitan Cities and regions which, as autonomous entities, possess their own statutes, powers and functions operating in accordance with principles set forth in the Italian Constitution. More specifically and pursuant to the above, within this constitutional framework, the regions of Trentino-Alto Adige/Südtirol in the North, Friuli-Venezia Giulia in the North-East, and Valle d'Aosta/Vallée d'Aoste in the North-West, Sardegna in the Central-West and Sicily in the South are granted special forms and conditions of autonomy (Presidenza della Republica Italiana, n.d.:35-36). Per Cucco (2013:270) pursuant to the production of cinema and entertainment, while the Italian State has yet to establish relevant guidelines that the country's regions must follow, the regions themselves have nevertheless proposed and promoted their own laws, developing intervening mechanisms in support of film productions, such as film commissions and film funds to further stimulate intraregional economic activity. Such is the case of the island of Sardegna, which, to quote Vaughn (2022:60), has evolved into an international standard for runaway productions. In 2002, the Autonomous Region of Sardinia authority established its regional film commission, Sardegna Film Commission Foundation (*Fondazione Sardegna Film Commission*; henceforth SFCF). Formally recognised in 2006 under Regional Law No.20, the SFCF started its activities in 2012, operating as an assistance desk for audiovisual productions, offering technical, logistical and bureaucratic services and further, region-specific production guides, assistance in obtaining shooting permits and liaising with local institutions and, in the process, attracting national and international productions, strengthening local businesses and enhancing the professional growth of local operators (Instituto Luce-Cinecittà, 2013:57-59).

At the helm of the SFCF has been filmmaker and producer Nevina Satta, whose former and current credentials, besides serving as the Foundation's CEO for the years 2012-2024, include

being the Vice President of Italian Film Commissions, Board Member of Cine Regio and the European Film Academy, organiser and program coordinator at various film festivals, as well Professor at film and media faculties in Milan-based Universities (N. Satta, 2023, personal communication; Satta, N., 2023). Upon taking on responsibilities, Satta's focus turned promptly to sustainability (N.Satta, 2023, personal communication), particularly following the flood in the city of Olbia, situated north-east on the island, whereby the city's waterways broke their banks, flooding entire neighbourhoods and displacing around 2,700 from their homes, with estimated damage at around 250 million Euros (Coi, 2023); a tragic event that unfolded amid rising environmental vulnerabilities that have long characterised the island, such as over 50% of its surface being susceptible to desertification due to climatic events, such as droughts and floods, as well as human pressure, such as overgrazing, urbanisation and pollution, alongside the gradual land degradation brought by excessive exploitation of water resources, wildfires, deforestation and soil erosion (Corsale et al., 2020:59, 66).

8.5.2. Heroes 20.20.20.

Per Satta (2023, personal communication), the imperative at the time was not only to pursue environmental sustainability but also to facilitate a dialogue between the island's environmental and cultural offices, which, up to that point, has been considerably absent in what was a territory "divided and segmented into small fiefdoms" (Marceddu, 2023). As such, the SFCF initiated its first sustainable production programme, *Heroes 20.20.20* (a clear nod to the European 2020 strategy), in 2014 (Cine Regio, 2017:5). Launched in collaboration with the Sardinian Regional Department of Industry (*Assessorato dell'industria*) and Sardenia's Energy Service (*Servizio Energia ed Economia Verde*), and the Sardinian Body for Research and Technological Development (*Sardinia Ricerche*), *Heroes* served as a public awareness campaign: on the one hand, celebrating the island's "everyday heroes" of environmental sustainability through thematically relevant SFCF-funded projects (documentaries, web series and short films), while on the other, promoting eco-sustainable best practices at the local level

during the projects' production (Cine Regio, 2015: 16). As such, funded *Heroes* projects had to adhere to contemporary sustainable production norms, utilising primarily the PGA's *Green Production Guide*, in addition to VAF's *e-Mission* programme, Ecoprod's *Carbon Clap* calculator and guidelines and the EcoMuvi protocol; a process underscored with several training and workshop initiatives (Ibid, 2015: 16). Backed with an investment of 2 million Euros, *Heroes 20.20.20* has been successful; notwithstanding the 40 short films produced sustainably under its banner, the project also evolved into a training platform for Italian production companies invested in greening their own production workflows under the tutelage of visiting French, German, Dutch and North American green production experts, during 2015's SFCF-organized *European Cinema & Audiovisual Days* workshop (N.Satta, 2023, personal communication; Cine Regio, 2017:5,8). Subsequently, in the same year, the island hosted other training workshops relating to sustainable production, such as the first session of the week-long MEDIA Creative Europe Programme MAIA in the village of Chia, followed by focused classes on implementing sustainability in the Creative Industries held at Cagliari's Skepto International Film Festival and a further Eco-Manager training facilitated in the Audiovisual section of the International Music Festival Time in Jazz, held at the commune of Berchidda (Ibid, 2015: 17).

8.5.3. The Green Film Shooting Guidelines

Such an exchange of best practices further paved the way for Sardinia's own specific and actionable strategies through the development of its *Green Film Shooting* guide in 2015 (Cine Regio, 2017:5). Initially, the intention was for Sardinia's guide to be an area-specific adaptation of the PGA's *Green Production Guide* (Cine Regio, 2017:5; FSFC, 2015), on account of the island being a hub of international co-productions (N.Satta, 2023, personal communication). Thus, throughout the year, SFCF beta-tested (the localised PGA version) of Edison's Green Movie Protocol (Green Film Shooting, 2016:9). However, as Satta discovered, the PGA framework would have largely unmatched the demands of other existing protocols (such as Albert, Ecoprod or those developed by German broadcasters) used by productions on the

island, adding complexity in terms of interoperability and certification (Ibid, 2023). Thus, a practical solution was found in adapting Trentino Film Commission's *T-Green Film* methodology, still in development at the time, as a more simple, flexible and common base approach, matching the objectives of other sustainable protocol norms in terms of operational efficiency, monitoring of compliance and sustainability reporting (Ibid, 2023). As such, the *Green Film Shooting* guidelines were released in 2016 as an area-specific adaptation of the *T-Green Film* rating system (Cine Regio, 2017:8). The guidelines explicitly aligned themselves with the Europe 2020 strategic objectives for "a smart, sustainable and inclusive growth" (European Commission, 2010:3), which, as previously discussed, preceded the European Green Deal, while introducing a reward of five additional ("green bonus") points, as part of the Foundation's 2016 Hospitality Fund, to further incentivise its adoption by applicants for SFCF's selective cash rebate funding (Ibid, 2017:5; FSFC, 2015). The guidelines promote concrete instructions across five key aspects of production, each linked to one of the five green bonus points, with several optional recommendations (SFCF, 2016:2) aimed at enhancing local synergies between hosted production troupes, eco-organisations and other community-based services operating in the island (FSFC, 2015). More specifically, in 1) Energy Saving, productions are given the choice of one area of action: opting either for temporary connections to the island's national grid for a fixed cost, the use of renewable energy sources on-site, the use of Euro 5 electric generators or the use of fluorescent or LED lighting kits. Further, in 2) Sustainable Accommodation and Mobility, recommendations include opting between an exclusive use of Euro-5 class of vehicles or utilising at least 50% hybrid, CNG (Compressed Natural Gas) or LPG (Liquified Petroleum Gas) fuel alternatives for passenger transport; all the while opting for carpooling and environmentally friendly accommodation within 30 km of the production set. In 3) Choice of Materials, aiming to establish a truly sustainable audiovisual supply chain, the use of ISO 14001 or EMAS-certified suppliers is stressed, as is adherence to the circular economy principles (reduction, reuse, recycling and donation) and within that, achieving a reduction in paper usage opting instead for electronic communications or at least FSC/PEFC certified paper when necessary. In 4) Food, the preference is for zero-km restaurants with locally sourced food, or when utilising catering,

opting for compostable and reusable disposables, simultaneously promoting local and sustainable water consumption, while 5) Waste Management necessitates waste separation for plastics, glass, paper, aluminium, organic and non-recyclable dry waste (Ibid, 2016:2-8). Central to the implementation of all of the above is the appointment of a Green Manager liaising with the production team as well as the SFCF, instructing each production department on areas of action before the start of shooting and providing relevant documentation after, such as reporting dossiers, photos of measures adopted before and a backstage video of at least 3 minutes (Ibid, 2016:4).

Per Satta, the reception, adoption rate and subsequent impact of *Green Film Shooting* were enormous, certifying more than 500 projects ranging from student films and documentaries to feature films and advertisements between the years 2014 and 2022. Further, Satta argues that the introduction of the guidelines instigated a form of systemic change: while the adoption of the guidelines was not mandatory (unless subject to SFCF's selective funds), many productions nevertheless complied in order to access the training on a new production concept provided for free by the SFCF, slowly helping to create a norm in the islands audiovisual production culture (N.Satta, 2023, personal communication). That said, throughout the years, in adherence to the SFCF's guidelines and under Satta's supervision, various films, from critically acclaimed independent dramas to tentpole blockbusters, as well as domestic and international television productions, have sought innovative approaches, complying towards efficient solutions to preserve the island's biodiversity, flora, and fauna while involving in the process the local community, further strengthening suppliers, along with the hospitality, and service sectors. Some prominent and relevant examples in this direction include the RTI and Lux Vide production for Mediaset, *L'Isola di Pietro* (2017-2019), the first sustainably produced Italian TV series (Heidsiek, 2017:9; FSFC, 2018). As a beneficiary of two SFCF funds, Sardinia Hospitality Fund and Filming Cagliari Fund (co-funded with the Municipality of Cagliari), the production received particular on-the-ground support during development and production in location scouting, casting and filming permits, respecting the island's uncontaminated beauty through separate waste collection, and responsible consumption with locally sourced, zero-km

travelled, zero-waste or surplus food catered to the production team, all the while involving en-masse the local communities and suppliers of filming locations in Carloforte, Calasetta, Portoscuso, Cagliari and Carboni**a** (SFCF, 2017). In addition, aiming to go even greener for its third and final season, the production of *L'Isola di Pietro* enlisted the help of the Italian energy service ENGIE, achieving even greater energy efficiency and consumption (MediaKey TV, n.d.). Respectively, great reductions in emissions were achieved in the same year's production of *Figlia Mia* (2018). Directed by Laura Bispuri, the production was powered using mostly available electrical sources, such as public grids, while its catering avoided altogether the use of plastic containers, bringing on-site portable stoves, in addition to locally grown seasonal fruits instead of desserts or industrial packaged snacks, all resulting in considerable budget savings (Heidsiek, 2018:9). Other notable productions adopting *Green Film Shooting*, include Laura Luchetti's award-winning drama *Twin Flower* (*Fiore gemello*, 2018), Netflix production of *What We Wanted* (Was wir wollten, dir. Ulrike Kofler, 2020), *Silent Land* (dir. Agą Woszczynska, 2021) and a multitude of animation films.

Yet, per Satta, compliance with sustainable production norms on the island of Sardegna doesn't end with the adoption of SFCF's region-specific guidelines or with any other protocol, for that matter. In what she calls "creative producing," the role of a film commission is underscored by facilitating a collaborative synergy between local institutions and visiting production teams as well as a creative and efficient sustainable resource utilization, both subject to a commissioner's thorough knowledge of the local territory and its available resources. As an example, Satta cites the filming of (Disney-owned) Hulu's *Catch-22* (2019), a portion of which was shot in Olbia, Sassari. Created by Luke Davies and David Michôd, the 2019 miniseries was also acted, co-directed and co-produced by renowned celebrity human-rights and environmental activist George Clooney, whose previous political thriller about the global oil industry, *Syriana* (2006) was the first carbon-neutral major motion picture, offsetting 100% of its estimated 2,040 tons through investing in renewable energy projects (such as methane generators and wind farms) on Native American-owned land (Warner Bros, 2006). As such, while the production of *Catch-22* adhered to Paramount Television's own green

production protocol (which operationally also matched with Sardegna's *Green Film Shooting*), Satta's local interventions further enhanced the production's efforts in sustainability and cost-efficiency (N.Satta, 2023, personal communication). In one instance, for the needs of a particular scene whereby a military marching band performs synched in traditional formation, Satta made it possible for a locally based marching band to appear instead of having a marching band flown from the US; thus saving a considerable amount of production budget while avoiding the unnecessary carbon emissions per passenger resulting from air travel (Ibid, 2023, personal communication). Further, in consideration of the island's native and endangered sea turtle species, *Caretta Caretta*, who habitually build nests and lay their eggs terrestrially on Sardegna's shores and beaches, and are subject to a very high mortality rate (Regione Autonoma della Sardegna, 2024), as well as on account of the island's endemic species of seagrass *Posidonia Oceania*, which play a crucial role on balancing the Mediterranean basin ecosystem (Natura Italia, N.D.), similar innovative solutions were sought during Disney's 2022 live-action adaptation remake of *The Little Mermaid* (dir. Rob Marshall, 2023). Filmed on location in Santa Teresa di Galleria and Castelsardo and adhering to BAFTA's Albert sustainable production protocol, the set of *The Little Mermaid* took special steps to protect the biodiversity of the beach by installing supported pavement on the sand in order to ensure that the growth of plants was not disrupted (N. Satta, 2023, personal communication). In addition, broadening the film's intentional connection to themes of environmental sustainability, ocean conservation and marine biodiversity preservation (Peradze, 2023), Satta, along with the project's screenwriters, devised a planet placement strategy embedding and, by extension, naturalising the *Posidonia* species as part of the scenery by having the central character Ariel (portrayed by Halle Bailey) emerging out of the water covered in them. (Ibid, 2023, personal communication).

8.5.3. New Animation Sardegna and Green Manager Training

Having developed a "fully-fledged audiovisual ecosystem" with a new generation of local producers well versed in European co-production standards (Green Film Shooting, 2023b), in recent years, the SFCF, under Satta's supervision, continued to expand on previous initiatives simultaneously with exploring new avenues in developing sustainable production training, particularly in the realm of domestic animation production. As of 2023, the animation industry in Italy had a €200 million turnover and was comprised of 49 companies mostly located in the north and central north of the country, including production houses and studio services employing an estimated 6000 professionals such as directors, screenwriters, story-boarders, character and set designers, 2D and 3D animators, CGI artists and technicians, and other animation production-related staff (Cinecittà News, 2023). Per Cartoon Italia, the Italian Association Of Animation Producers (founded in the late 1990s), in addition to many critical issues that, production-wise, have historically included a lack of public support during the development phase of animated films and TV programmes, the development of incentives aimed towards the technological upgrades of existing production facilities (Cartoon Italia and AIFA, N.D.) and the creative brain drain caused by the emigration of domestic animation professionals to other more favourable production-wise destinations, such as France, Belgium and the US (Delmestri, 2002:3; Cinecittà News, 2024), the imperative is also to develop the training of future animators further (Cinecittà News, 2023). As such, inspired by the successful French economic initiative of Pôle Image Magelis in the city of Angoulême (N.Satta, 2023, personal communication), whereby over a period of ten years, a network of production hubs, schools and institutions dedicated to animation production was created with more than 100 companies and 1200 animators settled (Tasciotti, 2019), the SFCF developed a strategy to draw in new investments for animation features and series (Green Film Shooting, 2020:25) by establishing New Animation in Sardegna (henceforth, NAS) a new creative ecosystem based on the island's capital of Cagliari. Utilising an eco-friendly, renovated, former factory turned cultural hub as its permanent training laboratory (Regione Autonoma dellla Sardegna, 2020:1), NAS operates a twelve-week highly specialised training ground and production lab for 2D/3D

animation films, video games and educational projects. Further, owning to Satta's focus on sustainability, NAS also delves into sustainable production approaches, as well as green storytelling explorations of topics such as flora and fauna, sustainability, climate change, and life quality in the context of the UN 2030 SDGs (Heidsiek, 2020:25). Appending to the facilitation of NAS is also the development of a Sustainability Standard for Animation in partnership with Cartoon Italia (Green Film Shooting, 2023b).

In late 2021, the Sardegna2030 regional strategy was approved, with five strategic objectives focusing on capacity-building and innovation ("A Smarter Sardegna"), environmental protection ("A Greener Sardegna"), connectivity and sustainable mobility ("A More Connected Sardegna"), well-being, social inclusion, skills and the promotion of culture ("A More Social Sardegna") as well as territorial development ("*A Sardinia Closer To Citizen*") (Regione Autonoma della Sardegna, 2024). In this context, informed by a renewed strategic vision for development at the regional level as well as picking up from the success of *Heroes 20.20.20*, the SFCF acknowledges the shortage of qualified professionals in sustainable audiovisual and the high demand for such skills (Regione Autonoma della Sardegna, 2022b), addressing the challenge with the introduction of its Green Manager training in 2022. Developed in tandem with ASPAL (*Agenzia Sarda per le Politiche Attive del Lavoro*; *the Sardinian Agency for Active Labor Policies*) and the support of a consortium with key national and international partners such as conformity assessment body Italcert, the Ministry of the Ecological Transition (*Ministero della Transizione Ecologica* ; MITE), various regional ARPAs, the Italian Association of Italian Film Commissions (AFC), Cartoon Italia and RAI-owned and operated RAI Kids (Sardegna Film Commission, 2022), the training offered is as specialised as it is versatile. In part, this versatility lies in SFCF's envisioned role of a "Green Manager", a person "responsible for reducing the environmental impact of sets, defining criteria and protocols, and certifying the environmental sustainability level of productions in relation to a series of parameters and targets" and whose operations expand to include cultural events such as festivals, exhibitions and live performances (Regione Autonoma della Sardegna, 2022b:2-3). Moreover, in addition to prioritising unemployed individuals and professionals with lower incomes, the training scheme

specifically considers applications from two groups of professionals: either audiovisual industry professionals who want to update their skills or environmental consultants who want to expand their expertise towards the creative industries (Ibid, 2022b:3-5). As for the training itself, its curriculum is designed for groups of 10 participants at a time, with a runtime of 150 hours in total. This entails 100 hours of field learning on film sets and live shows (music and theatre stages), while the additional 50 hours, provided remotely, expand on aspects such as an overview of green production protocols and the work of a green manager in development, preproduction and post-production, all in line with the *Green Film Shooting* guidelines (Sardegna Film Commission, 2022).

8.6. Trentino Film Commission's Green Film

8.6.1. Background

The region of Trentino Alto-Adige Südtirol is another autonomous region situated at the alpine periphery of North Italy alongside Aosta Valley and Friuli-Venezia Giulia, all of which operate under distinct regional and provincial laws and special statutes (Palermo and Valdesalici, 2014:181). Bordering Austria to the north and Switzerland in the northwest, Trentino Alto-Adige Südtirol displays a mix of cultures and linguistic varieties; consisting of the provinces of Trento (commonly referred to as Trentino), where Italian is predominately spoken and Bolzano, which is primarily a German-speaking area (Sapienza, 2008:104-105). Perhaps as much as Bolzano, to quote Woelk (2013:126), Trentino constitutes a prime example in taking notice of the many differences that set Italy's northernmost provinces apart from the rest of the country. And rightly so, as the province boasts a per capita GDP, comparable to that of Germany and Sweden, exceeding the Italian average by 27% alongside a robust and diverse production system and an unemployment rate significantly lower than the Italian and European averages, all underpinned by an efficient public administration, cutting edge physical and digital infrastructures, a modern welfare system and healthcare services (Trentino Sviluppo, N.D.).

Moreover, the region also excels in its environmental performance, with the provincial capital city of Trento being the winner of Legambiente's 30th edition of the *Ecosistema Urbano* award in 2023, which came second to Bolzano in 2022, while it has already been a recipient of Legambiente's award in its 28th and 27th editions, in 2021 and 2020 respectively (Legambiente & Ambiente Italia, 2023:12). Naturally, when viewed from the perspective of Sustainable Development, all of the above entail positive contributions towards achieving specific SGSs: per research conducted by D'Adamo et al. (2020:5) Trentino also occupies the first position in achieving SDs 1 ("No Poverty"), 8 ("Decent Work and Economic Growth"), 12 ("Responsible Production and Consumption"), 15 ("Life on Land") and 16 ("Peace, Justice and Strong Institutions"). Per a preceding observation made by Diamantini and Zanon (2000:300), such progress is anchored to an intergenerational, eco-friendly mindset, whereby "accumulations of previous generations' actions have accomplished a transformation in both the territory and the living conditions" therein.

As such, it's no wonder that following the success of *Ecoristorazione Trentino*, an environmental sustainability project initiated by Trentino-based catering associations in 2012, the city wanted to translate this framework programme to film and TV projects utilising the area's rich scenery, in addition to developing funding incentives that would ensure environmental commitment from producers leading such projects (Cineregio, 2015:18). In achieving this, the Trentino Film Commission (founded in 2011) conducted a yearly beta-testing of Edison's Green Movie protocol in 2015, adapting the protocol's application to local needs, while simultaneously creating lists with sustainable amenities offered at the local level, such as green hotels, restaurants and suppliers (Heidsiek, 2016:9). However, per Luca Ferrario, CEO of Trentino Film Commission and former Vice President of Italian Film Commissions, starting anew, the Commission gradually developed its own, simpler regulations including incentives for producers willing to undergo third-party certification for their productions (Di Stefano, 2020). Consequently, the protocol draft was put into the test during 2016's One Art and RAI Cinema production of *Resina* (dir, Renzo Carbonera, 2017) the first sustainable film produced in Trentino (Ibid, 2016:9). With additional support of both Trentino and Hamburg

Film Commissions, Carbonera's film explores a small community's struggles with the effects of climate change in an alpine village (Resina Film, 2017). True to the themes it sets out to explore, and with the support of Trentino-based environmental consultancy company TIS Engineering, the production of *Resina* also employed a variety of sustainable measures, avoiding altogether the use of generators in favour of public grids, utilising electric bicycles provided by the city's local tourist agency (*Azienda per il Turismo di Trento*; *APT Trento*) while arranging a walking distance setup between its on-location camp base, catering station and accommodation premises; in addition to installing reusable water flasks, procuring compostable dishes and cutlery and managing adequate waste differentiation (Resina Film, 2017).

8.6.2. T-Green Film Rating System

Following the successful application of a thorough pilot sustainability plan and coinciding with Carbonera's film release, as well as in celebration of the 100th production supported since its launching in 2011 (T-Green Film, 2017:2), the Trentino Film Commission announced its *T-Green Film* rating system alongside the selected allocation of funding to projects opting for the green certification attached to the system, making it the first regional film commission in Italy to provide such incentives. (Cineregio, 2017:10). The *T-Green Film Guidelines for Sustainable Film Production* rating system promoted sustainability in production settings from an environmental and economic point of view, and within a region-specific context (province of Trentino), requesting mandatory compliance in areas such as devising an overall shared mission to minimise environmental impact while avoiding slowing down the work of the crew, translated into a Sustainability Plan that is to be implemented and supervised by an appointed Protocol Implementation Manager or "Green Manager" with at least two years of production experience (T-Green Film, 2017:3-4); a role later to be re-envisioned as "Green Film Manager", a consultant, "even if working outside production, with at least two years of experience in environmental consultancy" (Green Film, 2023a). However, in successfully implementing all of

the above, productions adopting the T-Green Film were offered a flexible and customisable points-based system with a variety of compliance options in targeted criteria such as 1) energy-saving measures (opting between the use of temporary electricity connections and the choice of Euro 5 generator sets as well as LED or fluorescent lighting kits), 2) a transport optimisation plan minimising vehicle use (to be drafted by the production's Mobility Manager), 3) Ecolabel or Park Quality [*Parco Qualità* developed by Trentiono-based Adamello Brenta Park (Parco Naturale Adamello Brenta, 2019)] certified sustainable accommodation within 10 km of the set and camp base, 4) opting between sustainable sourcing of FSC/PEFC-certified timber and Ecolabel/Blauer Angel varnish and the use of ISO 14001/EMAS suppliers in the making of stage sets (T-Green Film,, 2017:3-18). Further, 5) waste management and differentiation, with documented proof of disposal methods, 6) sustainable catering stations using local water sources (ideally eliminating plastic the use of bottles in the process); all underlined by 7) thorough communication of the project's sustainability efforts, disseminated to all crew members during production and in press kits and media presentations afterwards (Ibid, 2017:3-18). Further, progress made in all of the above was to be verified externally by Trento's APPA (*Agenzia Provinciale per la Protezione dell'Ambiente*; Provincial Agency for Environmental Protection), during pre-production with the submission of sustainability plan and pertinent documentation, during production with an on-set inspection monitoring the implementation of the pre-arranged sustainability plan and, following production wrap, the final certification where all submitted documentation and verified testimonials are triangulated and assessed by APPA to determine if the production qualifies for the T-GREEN FILM certification (Ibid, 2017:3-18). Then, following what would be a successful and verified compliance, adherent productions would then obtain a certification issued by the Trentino Film Commission along with eligibility for an additional awarded funding contribution as a reward for respecting the local environment (Ibid, 2017:3).

8.6.2. Green Film

The concept, methodology and certification attached to the rating system quickly took off throughout 2017, being adopted by various other domestic projects in development or production, such as Christian Mazaritti's comedy *Sconnessi* (2018), historical drama *Menocchio* (dir. Alberto Fasulo, 2018), extreme sports action-thriller *Ride* (dir. Jacopo Rondinelli, 2018), and drama *Il testimone invisibile* (dir. Stefano Mordini, 2018). Despite the considerable success of the *T-Green Film* domestically, the demand and buy-in have been bigger at the European level thanks to the promotional efforts of Cine Regio's Green Reggio special interest group (L. Merzagora, 2023, personal communication). Thus in 2019, the Trentino Film Commission revised its rating system into an open tool that could be exported and adapted to other national or regional concepts, into what is now known as *Green Film*. While maintaining the structural similarities of *T-Green Film, Green Film* introduces three significant revisions: firstly, requirements dependent on implemented actions in Trentino's territorial context were removed, with the scoring mechanism (20 points accrued through the efficient implementation of six criteria) adjusted to facilitate its adoption by other film commissions, funds and producers across Europe (Cine Reggio, 2020: 9). Thirdly, while the initial verification process was dependent on APPA's involvement, monitoring and assessment, in its 2019 edition, Trentino Film Commission further enlisted the help of leading international company Bureau Veritas, a French verification and certification body founded in 1828, in addition to DNV (*Det Norske Veritas*), a Norwegian accreditation body founded in 1864, for the system's international adoptees (Ibid, 2023, personal communication). By 2024, this list expanded to include quality assurance companies DNV Business Assurance S.r.l., and RINA in Italy, along with KPMG in Iceland (Green Film, 2023i).

Consequently, in 2022, the Trentino Film Commission released its second edition of *Green Film* and a facsimile version of the existing rating system catered towards documentary production (Green Film, 2023g), and a pre-assessment tool, developed together with the Belgian-French Greenshot SA's B2B software as a service solution (B2B SaaS) *Greenshot*,

providing producers with a predictive simulation of the best-case scenario and achievable score for their films, based on the entered information (Green Film, 2023e). In the same year, Trentino Film Commission also expanded its reach in the field of sustainable event management by partnering with the Rome-based industry event International Audiovisual Market (MIA). Within the Italian framework and before the advent of state-issued Minimum Environmental Criteria for Sustainable Events (*CAM Eventi Sostenibili*) of late 2022 the only valid protocol has been the international ISO 20121 (Punto 3, 2023). Thus, reflecting a broader shift towards environmental awareness and socioeconomic sustainability in line with the 17 SDGs (Mia Market, N.D.), in 2019, MIA organisers ANICA and APA —the Italian Audiovisual Producers Association— initiated the process of "greening" their annual editions by successfully obtaining the *ISO 20121* certification for sustainable event management, enlisting in the process the Trentino Film Commission alongside Ferrara-based sustainable development strategist firm Punto 3 (Green Film, 2021b). Created in 2012 as a practical management tool for events that demonstrate commitment to sustainability in a "globally recognised manner" (ISO, 2012:7), the ISO 2021's system promotes an iterative methodology revolving around the Plan-Do-Check-Act (PDCA) cycle. Operationally, this setup includes identifying and engaging stakeholders; determining the scope of the management system as well as the governing principles of sustainable development; establishing policies, assigning roles and setting objectives (*Plan*); maintaining and managing resources, communication, documentation, operational control and supply chain management (*Do*); while monitoring performance (*Check*) and further, identifying nonconformities and taking corrective actions according to the drafted policies (*Act*) (Ibid, 2012:7). Thus in collaboration with the Trentino Film Commission, the MIA programme identified areas of improvement, subsequently implementing environmental objectives such as dematerialisation of paper products, preference for local suppliers, awareness raising on sustainable mobility and guest accommodation operations, waste reduction and promotion of separate collection and use of glass bottles and compostable tableware; in addition to pursuing socioeconomic objectives such as inclusion and accessibility, donation of food surplus, and promotion of locally sourced products (Mia Market, N.D.). Further to the above, in its digital infrastructure, MIA opted for a zero-emissions cloud data

server while allocating 5% of its net proceeds from badges sold towards adopting four nectariferous forests, in the market's 2022 edition, subsequently planting 200 trees in 2023 (Ibid, N.D.)

8.6.3. Green Film Awards and Green Film Lab

Subsequently, in 2021, and in collaboration with its provincial APPA, the Trentino Film Commission set up a distinct jury within the Trento Film Festival, granting a Green Film Award in recognition of films invested in sustainable production (L.Zumiani, 2023, personal communication). Competing screened films in the Green Award category are assessed on their demonstrable environmental protection practices and reduced impact, particularly with respect to the preservation of mountain environments and the fight against climate change; in turn, prize recipients are awarded an environmental quality label and the sum of 1500€ (Trento Festival, 2024). Moreover, in same year, the Italian Film Commissions Association endorsed *Green Film* as an industry standard (Biancarelli et al., 2023:17), while more importantly, the Trentino Film Commission joined forces with Torino Film Lab, [an international laboratory working in tandem with the Torino Film Festival in support of emerging talents since 2008 (Museo Nazionale del Cinema, N.D.] in the creation of *Green Film Lab*, the first common European training scheme in sustainable production, based on exploring the use of *Green Film* rating system (Biancarelli et al., 2023:71). With further support from the EU's Creative Media Programme, Torino's National Museum of Cinema and EAVE, the Luxembourg-based European Audiovisual Entrepreneurs network (founded in 1988), the Green Film Lab has been extremely prolific in introducing *Green Film* as a resource, through three-day workshops held in Italy (Trentino in 2022 and at Rome's MIA in 2023), Spain (Mallorca and Sitges in 2022), Iceland (Reykjavík in 2022), Ireland (Dublin in 2023), Poland (Warsaw in 2023) and subsequently Greece (Athens, 2024) and the United Kingdom (Glasgow, 2024). It must be noted that the facilitation of Green Film Lab's brief three-day workshops are not meant to deliver sustainable production training per se or offer green manager quality assured training but rather acclimate the

attending participants opting to use Trentino's rating system with a tailored approach centred around projects they are currently engaged and in development by, simultaneously consolidating efforts to promote a common approach towards the use of best practices at the European level (Torino Film Lab, 2023). As a result, the rating system has been so far adopted by several European regional film commissions and funds, including Wallonia (Belgium), Catalonia, Mallorca and the Basque Country (Spain), Greece, Iceland and Denmark, with some of them making it compulsory (Nausicä Cinéma Durable, 2023b).

8.6.4. Green Film Research Lab

A more recent development is the 2023 *Green Film Research Lab* (henceforward GFRL) study publication. Essentially updating ENEA's (Disi and Gisotti, 2016) study of sustainability in the Italian audiovisual sector (see section *Literature Review*), which primarily located the initial adoption of sustainable protocols in domestic production settings, GFRL introduces a systematic approach, in-depth impact analysis while specifically addressing other economic and environmental quantitative aspects. Financed by the Italian Ministry of Culture (*Ministero della Cultura*; *MiC*) and with the support of an impressive interdisciplinary ensemble that includes the Trentino Film Commission, ANICA, CineRegio and Trento's regional APPA, as well as Emilia Romagna's ARPAE (*Agenzia Prevention Ambiente Energia Emilia-Romagna*) and professors from the University of Bologna's Centre for Research in Environmental Science (*Centro Interdipartimentale di Ricerca per le Scienze Ambientali;* CIRSA), along with sustainable consultancy firm Punto 3, the GFRL study adopts a Life Cycle Assessment (LCA) methodology, which merits here a brief explanation. In simple terms, per ISO (British Standard, 2006:2), LCA is a tool that assesses the environmental impacts and resources used throughout a product's life cycle, from its raw material acquisition through its production, de facto use, end-of-life treatment, recycling, and final disposal (also referred to as the "cradle-to-grave" or C2C approach), with the term "product" here referring to both goods and services (Finnveden et al., 2009:1). Consequently, data gathered from LCA are assessed through a second phase

called Life Cycle Inventory Analysis (LCI) in an input/output fashion, followed by a third phase called Lifecycle Impact Assessment (LCIA), whereby additional information evaluates the environmental significance and impact of such data (British Standard, 2006:v). As a methodology, LCA can assist in 1) identifying opportunities for improvement at various points in the lifecycle of a product, 2) informing decision-makers in industrial or governmental organisations for the purpose of strategic planning, priority setting and product or process design, and further 3) selecting relevant indicators of what constitutes "environmental performance" in terms of measurement techniques and marketing devices, such as eco-labelling schemes, environmental claims or declarations (Ibid, 2006:v).

As such, employing the principles and framework of ISO 14040:2021, the requirements and guidelines of ISO 14044:2021 and the guidelines for the quantification of greenhouse gases and carbon footprint of products of ISO 14067:2018, the GFRL study comparatively analyses a sample of 10 audiovisual projects produced over the period of one year (2021-2022), 5 of which where certified in accordance with the Green Film rating system and 5 that were produced using standard, business-as-usual methods (Green Film, 2023b:1-2). As the productions examined were of different types and sizes and with varying production values, the study adopted a specific unit, matching and calculating the quantity of products or services used per person (crew and main actors) and per shooting day, all in accordance to the criteria specified in the *Green Film* rating system (Ibid, 2023b:2-3). Further, primary data sets were collected on-site with inspections during production, covering areas such as the production's vehicle fleet, the type and number of lighting kits used; the type of electricity supplied; the type of accommodation facilities and the number of nights spent by the troupe and actors; the type of water, hot drinks and meals catered alongside with type and quantity of materials used in sets and costumes, (considering also the origin of such materials and their fate following production wrap), in addition to the waste management strategies and the economic investments in the implementation of such measures. As such, two key findings emerged from the study: 1) in the 21 comparisons made, adherence to the Green Film rating system criteria accounted for less GHG emissions in 19 cases (Ibid, 2023b:4-5), while in most instances 2)

financing the fulfilment of such criteria typically did not imply additional costs for the producers, resulting thus in economic savings in as many as 12 out of the 21 comparisons analysed (Ibid, 2023f).

8.6.4. Recent Developments

In conclusion, a final update that brings us to the present is Trentino Film Commission's shortlisting at the second edition of the Global Production Awards in Cannes, competing for the event's *Sustainability Initiative Award* (GPA, 2024d). The recognition is pertinent to Green Film's 2023 consultation, whereby the Trentino Film Commission launched a public consultation involving 50 stakeholders, such as producers, film funds, green consultants and public environmental agencies, across 7 European countries (Green Film, 2023h). Through online questionnaires, focus groups and active working groups, participants in consultation were asked to evaluate the latest (2022) version of Green Film's rating system, suggesting edits and updates according to their perspectives and needs, in areas such as simplicity, speed, clarity and representativeness, resulting in new, more complete rating system addressing elements of social sustainability (Green Film, 2023h).

8.7. IDM Südtirol's Green Shooting Certificate

8.7.1. Background

The province of Bolzano comprises the other half of the autonomous Trento Alto-Adige Südtirol region, whereby, besides its shared natural heritage and environmentally proactive mindset with Trentino, the South Tyrolean region is also marked by unique characteristics pertinent to its different types of borders: political borders separating the states of Italy and Austria, cultural-linguistic borders and administrative borders that both define as well as divide Bolzano from Trentino (Carlà, 2021:168) and by extension from the rest of Italy (Palermo and Valdesalici, 2014:181). In Bolzano, alpine tourism is one of the most important economic sectors and has been an instrumental driver in preserving the habitat of major parts of the European Alps (Pechlaner and Tschurtschenthaler,2003: 509). As such, from the 1980s onwards, the province, exercising its regional special stature, has made nature and landscape preservation an integral component of its territorial strategy, firmly prioritising a variety of sustainable initiatives, while simultaneously imposing restrictive development plans designed to counteract "urban sprawl and the unguided development of tourist infrastructure" (Kreisel and Reeh, 2011:415). Thus, naturally, when it came to capitalising on its attractive and versatile filming locations that include mountain backdrops, medieval towns, scenic lakes and forests predominantly attracting German and Austrian co-productions (Nausicä Cinéma Durable, 2023b) the province also prioritised preserving these areas as both "living and working spaces" (IDM, N.D.b). An important step towards this direction has been the work of South Tyrol's film funding program. Created in 2010 as a department within BLS Business Location Südtirol Alto Adige, a regional office responsible for location marketing, the film fund has been a key financial and service partner for productions developed and produced in South Tyrol since 2011, through targeted schemes and training programmes, consolidating the region as an attractive filming destination (IDM, N.D.a). Eventually, in 2016, BLS alongside tourist associations TIS Innovation Park, SMG South Tyrol Marketing and EOS (Export Organization South Tyrol), were consolidated; jointly becoming IDM ('"Innovators - Developers-

Marketeers") Verdi Grüne Vërc, 2020). In the same year, the IDM Film Fund & Commission introduced a joint task force with Bolzano's Office for Nature (*Amt für Natur*; *Ufficio Natura*), a public body representing the province's seven protected natural reserves, comprised of mountains, pastures and forests (Autonomous Province of Bolzano-South Tyrol, 2024). Through his interdisciplinary collaboration, a mandatory questionnaire assessing the impact of hosted audiovisual productions on the reserves' native flora and fauna was created, allowing the provincial authority to propose alternative shooting locations, simultaneously ensuring that the assessment was considered in IDM's funding decisions (Cine Regio, 2020:28-29).

8.7.2. IDM's Green Shooting Certificate

With the advent of the COVID-19 pandemic, the province of Bolzano was presented with an opportune moment further to reshape its tourist culture in a sustainable manner aligning with the expectations of the local population (Windegger et al., 2022:5). Thus implementing the example of its neighbouring Trentino's Green Film rating system (Cine Regio, 2020:7), Renate Ranzi, Head of the Film Commission and Location Development at IDM Südtirol, developed the *Green Shooting Certificate* scheme as part of a common, region-specific approach (L. Giuliani, 2023, personal communication). IDM's public and free-of-charge certificate scheme (Nausicä Cinéma Durable, 2023b) requires the submission of a *Green Shooting Checklist* (developed with the assistance of sustainable consultant Phillip Gassmann and private audit company Ökoinstitut (Eco-Institute) alongside the production team's funding application during pre-production (IDM, N.D.b; Öko-Institut e.V., 2022). Appending to the above is also IDM's *Green Shooting Carbon Calculator*. Developed by German environmental consultancy KlimAktiv in cooperation with the MFG Media and Film Society (*MFG Medien- und Filmgesellschaft*) and German broadcaster SWR (*Südwestrundfunk)*, and specifically adapted to South Tyrolean parameters, the online tool assists film and TV productions in managing and reducing their carbon footprints, through data submitted during pre-production, shooting and post-production phases, simultaneously generating comprehensive reports (IDM, N.D.c).

At first glance, much like *Green Film*, the Green Shooting Certificate maintains a certification objective for sustainable practices achieved during audiovisual production and a criteria-based approach subject to a verification process, with the involvement of a green consultant and thorough documentation of implemented measures including on-site inspections from an auditing body (cf IDM, N.D.c:2-4; Green Film, 2022:2-8), yet with a few significant and clearly more sophisticated differences. Firstly, for the purposes of onsite verification (whose positive evaluation counts toward the certification itself), IDM Südtirol involves its provincial, Bolzano-based public authority APA ("*Agenzia Provinciale per l'Ambiente*";"*Landesumweltagentur*" in German) and Ökoinstitut Südtirol. (L.Giuliani, 2023, personal communication), an aspect that, ever since its 2021 update, the Trentino Film Commission outsources to a network of affiliated partners across Europe (Green Film, 2023i). Secondly, IDM's certificate expands *Green Film*'s six criteria ("Green Communications", "Energy", "Mobility and Accommodation", "Catering", "Materials", and "Waste Management") with a seventh ("Green Innovation"). In the Green Innovation criterion, the IDM calls for the planning and implementation of stand-alone, effective, and innovative ideas tailored to the project applying for the certificate not covered in the previous criteria. Proposed examples include the use of VFX instead of filming in sensitive designated areas such as natural parks, the up-cycling of props or the promotion of intraregional CO2 compensation schemes (IDM, N.D.c:14). Thirdly, the region-specificity is further underlined in the *Mobility and Accommodatio*n criterion, with an embedded subsection of four criteria assessing the sustainability of accommodation providers: in sub-criterion A, "Living, Eating and Drinking", the procurement of regional and organic food products is underlined with a strong preference for vegetarian meal offerings, ideally in possession of *KlimaHaus*, a certification developed by local energy agency *Agenzia CasaClima* (founded in 2002) or other similar quality-assured scheme (IDM, N.D.b). Further, fostering territorial cohesion, in sub-criterion B, "We and Our Employees", the emphasis is given to family-run accommodation businesses alongside the employment and training of local employees familiar with local culture and customs, maintaining a certain fluency in spoken South-Tyrolean

languages (German, Italian and some Ladin) (Ibid, N.D.b). In Criterion C "Environment", a preference for state-of-the-art green accommodation infrastructures is promoted via the use of green electricity from regional suppliers, availability of charging stations for electric cars and bikes within 500 meters from the premises, the use of renewable energy sources for heating, water-saving measures, use of biodegradable eco-labelled cleaning agents and locally-produced disposable cosmetic and sanitary amenities (e.g. soaps and shampoo), made of natural ingredients, for the guests' rooms (Ibid, N.D.b). Accommodation facilities and guesthouses also have the duty of providing guests with alternative arrival options, such as trains, long-distance buses and shuttle services, and the supply of regional public transport network cards such as *Guest Card South Tyrol* and *Mobilcard*, while exceeding hospitality, criterion D, "Sustainable Experiences and Awareness" focuses in facilities that involve guests in environmental sustainability topics through information provided on-site, webpages, newsletters or guests' rooms (Ibid, N.D.b).

8.7.3. Expansion and Interoperability

Since their inception, IDM's Green Shooting Certificate and Carbon Calculator were the only accepted sustainable norms for productions utilising the province's locations. However, as of 2023, to accommodate the needs of international co-productions, the IDM Film Commission and Fund has been working towards recognising and working with different national and international sustainable standards, in particular the more widely used German and Austrian standards as well as Trentino's Green Film (L. Giuliani, 2023, personal communication; Nausicä Cinéma Durabile, 2023b).

8.8. Zen2030

8.8.1. Background

As one of the last sustainable protocol developers for the Italian audiovisual sector, Zen 2030 introduces a variety of novel features, expanding the scope and application of sustainable consultancy: whether considering its incorporation as a Benefit Corporation, its strategic orientation emphatically committed toward carbon neutrality with the adoption of relevant ISO methodology or its extended services in the PNRR-powered revival of Cinecittà. Not unlike EcoMuvi, Zen2030 grew out of concrete production settings, owing much to leading independent Italian production company Groenlandia. Recently (2022-) acquired by French multinational and television production and distribution, the Banijay Group, Groenlandia was founded in 2008 by directors Sydney Sibilia, Matteo Rovere, and Andrea Paris, whose Ascent Film was incorporated into what subsequently became the Groenlandia Group (Groenlandia Group, n.d.). Per Gamberini (2022:136), Groenlandia's production house gained prominence for addressing complex issues through its projects with themes related to inclusion, activism, authorship, originality and sustainability, the latter being a commitment extending beyond the company's storytelling focus and well into organisational choices made on every production set of the Group. As such, during Earth Day 2021, Mateo Rovere announced the launching of Zen2030 (short for *Zero Emissioni Nette; "*Zero Net Emissions"), a benefit corporation and a protocol aiming for "self-sustainability, not profit, to achieve zero net emissions by 2030" (Finos, 2021). As coordinates towards similar objectives yet with a methodology that differs from previously reviewed protocols, both the corporation model assumed, the strategies operationalised, and the protocol provided by Zen2030 warrant our further attention.

8.8.2. Benefit Corporations

Per Rosenberg (2011), Benefit Corporations are companies, particularly those operating within a green or ethical niche market, that have "changed their bylaws to take into account the impact of their decisions on the environment, community and employees, as well as profits", arising from the need of social entrepreneurs to set up organisations that fulfil both a profit and a CSR mission (Scuri, 2017:4). For Kim et al. (2016), an organisational setup that utilises the benefit corporation framework is "a way to publicly claim an identity as an organization interested in both shareholder and stakeholder success"; an identity whose competitive advantage, as proposed by Honeyman and Jana (2019:39) includes 1) being part of a global community of leaders, 2) increased credibility and trust building, 3) benchmarking and improving an organisation's performance, further 4) protecting its mission in the long-term, as well as 5) generating press and awareness. Historically, a "Benefit Corporation" constitutes a legal form of enterprise that arguably owes much to the rising prominence of CSR of the late 1990s and 2000s (Agudelo et al., 2019:9) and has been successfully introduced as a concept in many US states thanks to the efforts of the US-based B-Lab Global initiative since 2006 (Scuri, 2017:4). Operationally, per Del Baldo (2019:1) it entails characteristics of a hybrid business model status, that is neither "fully governmental nor fully private nor no-profit". While not required, complementary to pursuing a benefit corporation status is the Certified B-Corp scheme operated by B-Lab (Ibid, 2019:15), a rigorous certification assessing the company's operations, measuring its "positive policies, practices and outputs in areas such as governance, workers, customers, community, the environment", and the sustainability behind the products and services which the organisation sells (Villela et al., 2019:344). Central to B-Lab's certification is for assessed companies to achieve a minimum verified score of 80 out of 200 points on B Impact Assessment, a digital tool that 1) assesses the registered corporation's impact across five categories (governance, workers, community, environment, customers), further 2) comparing their performance with other B-Corp certified businesses while 3) using the platform's resources to identify improvement opportunities and best practices (B Lab, 2024b). Companies receiving B-Lab's certification differentiate themselves as (Certified) B-

Corps among the pool of companies (merely) incorporating themselves as "benefit corporations" (Ramsay and Upadhyaya, 2021:2), with the value of a B-Corp certificate rising ever since (Rosenberg, 2011). As such, per Scuri (2017:5), thanks to their adeptness at monitoring and reporting sustainability as well as accountability and transparency, such organisations are often characterised by outstanding CSR performance while embedding the interests of all their stakeholders in their objectives.

Notably, thanks to the efforts of Senator Mauro Del Barba in 2014, Italy became the second country globally to incorporate the framework, developing the appropriate legal infrastructure that would eventually underpin its passing through the Italian Stability Law (No. 208 on Bill on Benefit Corporations, filed 2015, Art.1, Paragraphs 376-384), (Società Benefit, n.d.). Per Ventura (Peter et al., 2022:652), the "new capitalist paradigm" embodied by the *Società benefit* movement was not a novel experience for Italy but one preceded by a long line of initiatives related to the civil economy and civic humanism of the thirteenth and fourteenth centuries onwards, further developed through the philosophy of Italian Enlightenment. In the Italian context, a benefit corporation does not constitute an additional corporation to the existing S.r.l. (*Società a responsabilità limitata*; limited liability) or an S.p.a. (*Società per Azioni*; public company) structure either; rather, per Del Bado (2019:6), it serves a configuration that each of these corporations can decide to adopt. Further, under Italian Law, benefit corporations are required to produce an annual report, integrated with financial statements and transparent to the public, that addresses three key aspects: 1) the specific objectives, methods, and actions implemented in the interest of the common benefit, 2) the evaluation of the corporation's social impact via means of a third-party standard (such as the GRI reporting framework) and 3) future objectives (and related activities) to be pursued in the following year (Ibid, 2019:6). While the Italian Law accommodates the establishment of Benefit Corporations neatly, it does not offer any particular benefit such as tax relief (Ferlito and Faraci, 2022:4). Nonetheless, the number of benefit corporations in the country has increased exponentially since 2016, with more than one thousand corporations spread unevenly across all industries (Ibid, 2022:4).

Like them, and many other of B-Lab's international registrants [indicatively, as of 2024, a website search on the database of B-Corps using the keywords "film" or "television production" will reveal hundreds of listed Certified B-Corps, among them production companies, animation and VFX studios, and other soundstage facilities (B Lab, 2024a)], Zen 2030 emphatically indicates an environmental mission and commitment to sustainability. Founded directly as a benefit corporation in 2021, the consultancy company pledges that its Common Benefit mission is indeed an extension of its operations that include 1) production consulting, support and assistance services for cinematographic and audiovisual productions, 2) the development of tools for the calculation of direct and indirect GHG emissions, 3) the creation and maintenance of an eco-friendly supplier database, 4) the training of Eco-managers, that is, "professionals capable of planning production by applying prevention, reduction, and compensation principles to all categories of environmental impact" and 5) the promotion of climate change awareness among policymakers, communities and other companies (ZEN2030, 2021:4).

8.8.3. The Zen Protocol

Central to delivering the objectives above is the Zen Protocol, a versatile set up of sustainable interventions with a carbon offsetting component attached to it that, through integrated on-the-ground production support by Zen Eco-managers, is also adaptable and supporting to the needs of other sustainable norms (e.g. BAFTA's Albert) (L. Vecchi, 2023, personal communication). Developed in collaboration with Milanese non-profit network Rete Clima, NGO 16% to Change the World and the Accredia-backed certification body ICQM Institute alongside the scientific-technical support of the Polaris Institute at the University of Milan-Bicocca (ZEN2030, 2021:5), the protocol is managed by the company's Chief Operating Officer, Lorenzo Vecchi. Vecchi's vision for ZEN2030 is informed by an experience that includes 10 years of humanitarian and developmental work in Latin America, the Middle East and Africa.

For Vecchi (2023, personal communication), embedded in this experience is the notion of "reverse engineering", the idea that efficient planning for socio-environmental interventions begins with the end goal in the lifecycle of a product or service —in Zen2030's case, identifying and meeting science-based targets related to production emissions— and then working backwards to determine the steps needed to reach that goal. Building on this approach, the Zen Protocol was developed into two complementary modes: 1) the eco-design of the film sets in preproduction and the reduction and prevention of GHG emissions during production, with on-ground production support from its Eco-managers, in addition to 2) the calculation of residual emissions in order to counteract them (Rete Clima, n.d.a) To that effect, the protocol lists actions that a production and its various departments can undertake during all phases of production to reduce direct and indirect emissions in areas such as 1) mobility, 2) transport, 3) energy, 4) catering, 5) accommodation, 6) materials and 7) waste (ZEN2030, 2021:5). In production settings, the protocol is implemented in three stages: eco-design during pre-production and the subsequent provision of an Eco-manager who coordinates all departments during production, calculation of residual emissions using Zen2030's carbon calculator developed with Rete Clima, and finally the carbon offsetting of the project following production wrap (Nausicä Cinéma, 2023b).

8.8.3. Carbon Neutrality and Net Zero

As Zen2030's name implies, the interconnected concepts of carbon neutrality, carbon negativity and net zero were key in shaping its protocol's scope and methodology as much as they were towards its corporate mission. While as a notion, carbon neutrality was implicitly brought up during the 1992 UN Convention on Climate Change (Chen et al., 2024:1-2), per Rauland and Newman (2015:95), its discourse really gained prominence and momentum during a period of heightened public concern about climate change, accelerated by the advocacy of prominent figures such as Al Gore's *An Inconvenient Truth* (Dir. Davis Guggenheim, 2006) and reports such as IPCC's Fourth Assessment Report in 2007. As a concept, carbon neutrality

implies balancing the amount of CO2 emissions released into the atmosphere (as a result of anthropogenic activity) with an equivalent amount of CO2 removal and offsetting (Hakovirta, 2023:1) and preventing an equal amount of emissions by substituting a non- or low-carbon producing alternative (Murray and Jay, 2009:239). Per Chung and To (2022: 1), the path towards carbon neutrality relies heavily on technological advancements powering the shift towards the use of green and/or renewable energy, as much as it relies on social change, defined as "the adoption of a green lifestyle at the individual level to produce a low-carbon and circular economy at the national level". Appending to carbon neutrality are the terms "climate negative" and "climate positive". Used interchangeably and often colloquially as marketing buzzwords (Anzilotti, 2018), both concepts essentially ask the question, "How much GHGs are being produced and subsequently removed or offset?". Per Safdie (2023), the usage of the terms as a means to describe any given progress made in the reduction of carbon emissions, and depending on the context, carbon positivity may describe business-as-usual and unmitigated approaches, where a business entity—comprising a product, service or total operations— produces an amount of emissions and therefore contributes or adds ("positive") to climate change, or a scenario where the removed total equivalent of GHG emissions of a business entity is less than the emissions released, thus "negative" in the sense of falling below zero on its carbon account balance. Per the Zen Protocol, a production is considered carbon-negative when up to 125% of emissions generated are compensated, usually through the purchase of carbon credits and ecosystem restoration projects (Zen2030, 2022:19). Another overlapping (IPCC, 2022:5) concept used interchangeably (Chen et al., 2024:5) with carbon neutrality is that of "net zero", though one embodying different principles in terms of scale and methodology (Ibid., 2024:3). Whereas carbon neutrality is concerned with the reduction of carbon emissions, net zero aims to ensure that the total amount of greenhouse gases (GHGs)—including carbon dioxide, methane, sulphur dioxide and various hydrofluorocarbons—removed from the atmosphere equals the amount emitted by human activities (National Grid, 2022); in other words, offsetting or removing the same amount of GHG emitted in some other place (Allen, 2021), what for per Chen et al.(2024:3) constitutes a broader perspective and more comprehensive approach to managing emissions on a global scale. Per Fankhauser et al.

(2021:15), while climate ambition has been historically formulated as a stabilised level of atmospheric concentrations during the 1992 UN Convention on Climate Change) or as a percentage of emissions reduction target during the Kyoto Protocol in 1992, as of the 2015 Paris Agreement, the frame of reference has shifted towards a specific target date (e.g. 2050) for reaching target emissions, with almost two-thirds of global emissions covered by net-zero targets.

For Vecchi (2023, personal communication), approaching sustainability through a scope purely calibrated on emissions entails greater efficiency. Emissions, which alone account for more than half of the environmental impact of production, are prioritised not only due to their considerable impact and ease of monitoring but also due to strict adherence to the international standards of ISO 14064 methodology. Essentially addressing the lack of comparability and uniformity among the many environmental management systems on offer (Pyrgioti, 2023) and in order to steer the standardization process (Wu et al., 2014:161), following the success of its ISO 9000 family of standards ("Quality Management"), ISO introduced its 14000 series in 1996 ("Environmental Management Systems") (Corbett and Kirsch, 2009:329). Subsequently, in line with a broader shift that saw GHG becoming a central feature in many international and mutually reinforcing agendas, with net zero emissions becoming the new focus of climate policy (Fankhauser et al., 2021:15), ISO subsequently delivered its three-part 14064 standards in 2006. As of its 2012 update, ISO 14064 consists of 1) ISO 14064-1, which specifies the principles and requirements for quantifying and accounting for GHG emissions and removals at the organizational level; 2) ISO 14064-2, which illustrates the principles and requirements and provides guidance for quantifying, monitoring, and accounting measures to reduce GHG emissions and increase removals at the project level and 3) ISO 14064-3 which sets the rules and guides for managing and validating GHG claims in organisations and projects, in line with quantification, monitoring and accounting methodologies covered in ISO 14064-1 and 14064-2 (Bastianoni et al., 2014:98).

8.8.3. *Romulus* Season 2

Following the establishment of the Zen Protocol along those methodological lines in 2020, the protocol was successfully piloted on the 2021 Groenlandia co-production with RAI Cinema and Amazon Prime Video *BlackOut Love* (dir.Francesca Marino, 2021) (Zen2030,2021:5). Further, in the same year Zen2030 was engaged by Groenlandia to oversee what would be the first of its 20 low emission projects (targeting specifically to bring down emissions by at least by 50%) until the year 2030, starting with the second season of the Sky Original *Romulus* (2020-) (Duesse Media Network, 2021). The last instalment on a franchise of historical dramas dealing with the mythological founding of Rome, preceded by a first season (dir. Matteo Rovere, 2020) and a feature film *Romulus and Remus: The First King* (*Il Primo Re,* dir. Matteo Rovere, 2019), the Sky Italia, Cattleya, Groenlandia and ITV co-production, also directed by Matteo Rovere, *Romulus* Season Two was actually overseen using Bafta's Albert, whose use, as discussed in-depth elsewhere in this study, is mandatory in productions commissioned by the Comcast-owned Sky Group and all of its subsidiaries (United Kingdom, Ireland, Germany, Austria, Switzerland and Italy (G.Raciti, 2023, personal communication). Nevertheless, owing to familiarity with a robust, thorough and precise ISO methodology, in addition to dedicated on-the-ground production support from its Eco-managers and access to an inventory of local, sustainable suppliers, Zen2030's involvement proved to be more than merely complimentary toward the making of the Sky Original with a range unique interventions. Considered Sky Italia's most sustainable production to date (Lang, 2021), the second season of *Romulus* utilised temporary connections to the national power grid, renewable energy derived from certified sources and photovoltaic systems, while its sets were constructed using certified FSC and PEFC wood in addition to material from recycled and renewable sources (Moretti, 2022). Meals were offered to a cast and crew of 200-plus daily with a fully compostable cutlery service utilising a local and organic supply chain, engaging local producers known for their responsible fertiliser- and pesticide-free land use while donating all surplus food (Albert, 2023b). Further, aiming for a maximum reduction of waste, *Romulus*' sets were provided with three dedicated eco-facilities with monitored waste levels, differentiation and eventual collection from private

recycling companies (rather than mere disposal) while keeping the production's mixed waste below 11% of the total waste (Ibid, 2023b). To that effect, all scraps from production sets were recovered and sorted, with textiles recycled or donated to charities, construction timbers returned to their suppliers (thus avoiding landfill disposal), and agricultural waste, such as removed shrubs and grasses to make room for production sets, converted into compost (Ibid, 2023b). Following *Romulus*' production wrap, the collected emission data were then calculated by ICQM in accordance with ISO 14064-1:2019 and verified in compliance with ISO 14064-2, further offsetting 100% of calculated GHG emissions through the purchase of carbon credits by Modern Road Makers Pvt. Ltd., a wind power project based in Rajasthan, India (ICMQ, 2022), thus achieving complete carbon neutrality in accordance to ISO standards (Zen2030, 2022). In addition, aiming to go beyond carbon neutral, Zen2030, with the support of Bafta Albert, organised the reforestation of a degraded Milanese area (*Nova Milanese*) with the subsequent plantation of over 150 trees (Albert, 2023b), a project part of Rete Clima's *Foresta Italia* national campaign (Rete Clima, ND). This initiative made *Romulus* Season Two the first Carbon Negative Italian production (Zen2030, 2022). Further, *Romulus* became one of the three recipients of the Green Movie Award during the sixth edition of the Rome-based Green Movie Festival in recognition of its contribution to the "diffusion of environmental culture in cinema" and the encouragement of zero-impact projects (Green Movie Festival, 2021). Subsequent Groenlandia productions, whose sustainability was overseen by Zen2030, include *This is Not Hollywood* (*Avetrana Qui non e Hollywood*; dir.Pippo Mezzapesa, 2022), *The Law According to Lydia Poët* (*La legge di Lidia Poët*; dirs. Guido Iuculano and Davide Orsini, 2023), tv series *SuperSex* (Created by Francesca Manieri, 2024), *A Dark Story* (*Una Storia Nera*; Leonardo D'Agostini, 2024) and two projects directed by Groenlandia co-founder Sydney Sibilia, *Around the Blue* (2024) and *Il Diario di Bordo* (2024).

8.8.4. Cinecittà REgeneration

A recurrent theme in this research is the observation that often sustainable production consultancy companies in Italy and beyond extend their services in areas adjacent to screen media production, ranging from overseeing the sustainability of film festivals and sector-related events to the greening of actual sound stage studio spaces. For the latter, as we've already seen in the cases of early pioneers such as Warner Bros (Corbet and Turco, 2006:52-54), The Disney Group (The Walt Disney Company, 2005:10), Sony Pictures Entertainment (Sony Pictures, 2022) and the Sky Group (Climate Impact Partners, 2024), such activity was initially carried out internally by the studios themselves as part of their CSR activity, in a self-determining manner. However, following the successful advocacy of the Albert Consortium and the challenge set forth by its *Screen New Deal* (BFI et al., 2020), we posit here that a growing number of physical studio spaces are now coordinating their efforts by aligning with industry-wide frameworks, particularly in areas such as sustainability planning, monitoring, calculation and assessment of data as well as occasionally, certification. Predominantly, this trend is evidenced by the en masse adoption of Bafta Albert's *Albert Studio Sustainability Standard* by an ensemble of prominent studios in 2022, including Warner's Levensden Studios (Warner Bros Studios Levensden, 2024), Sky Studios Elstree (Best, 2024) Pinewood Studios (Pinewood Group, n.d.) and BBC Studioworks (BBC Studioworks, 2023) in the UK, in addition to Sony Pictures Studio Lot in Culver City, California (Albert and Arup, 2023:7) among other leading facilities. Similarly, a pertinent example within our immediate context is Zen2030's collaboration with Cinecittà S.p.a. as part of the latter's Cinecittà REgeneration initiative (Cinecitta, n.d.a).

As we have already outlined, the substantial 300 million Euro investment from PNRR in Cinecittà is articulated along four lines: 1) the construction of new studios and the refurbishment of existing ones (comprising the actual historic Cinecittà complex), alongside additional investments in new in-house digital technologies, systems, and services; 2) the construction of six new high-tech theatres; 3) the enhancement of production and training

activities of the Experimental Centre for Cinematography and 4) the development of infrastructure for both professional and educational use strengthening the skills and competences of professionals (Camera dei Deputati, 2021:103). While per Pizzo (2023:9), "above and beyond the many intentions related to education and training", the Cinecittà project remains at its core a construction project, benefitting Rome's most profitable sector, that of construction, further feeding "the more contentious branch of the urban economy, that of land rent" and therefore contradicting in principle the studio's effort for an "ecological transition"(Ibid, 2023:11), target-wise, sustainability appears to be deeply embedded in the context of the studio's 2022-2026 Strategic Plan, complementing the other planned goals such as infrastructural development, technological innovation, market expansion and talent development (Cinecittà S.p.a, 2021b:5). Developed and completed in 2021 in line with the PNRR framework (Cinecittà S.p.a., 2021a:57) and the intention of positioning the studio as "a sector leader in sustainability and inclusivity" (Ibid, 2021a:57), Cinecittà's 2022-2026 strategy towards sustainability essentially is comprised by two components: 1) an infrastructural one through investments in energy-efficient technology and facilities in the new or existing properties and 2) a strategic one, where green production practices are implemented during all phases of in-house productions hosted in the complex (Cinecittà, 2021b:10).

Infrastructurally, per the Webuild Group subsidiary NBI S.p.a., involved in the construction of the new Cinecittà sound stages, in line with the Italian construction sector's mandatory public procurement requirements and Minimum Environmental Criteria (*CAM*), the investments will ensure that new or refurbished properties alike will have a greater capacity to "balance the energy produced with that consumed", thereby reducing their dependency on the energy distribution network (NBI S.p.A., 2023). As seen in the construction of Cinecittà's T19 theatre, this capacity is fulfilled from the outset through a combination of various infill, insulating, and high-thermal-performance wall packages and the installation of an energy production system (Ibid, 2023). In fact, since 2022, all of the complex's existing studio facilities have been powered with 100% renewable energy, while they anticipate commencing their own self-production of electricity by 2025 through solar panels installed on surfaces of over 9,000

square meters (Cinecitta S.p.A.,, 2024a). Strategically, Cinecittà REgeneration's ESG vision is formulated along both Sustainable Development principles and Paris Agreement discourses (Cinecitta S.p.A.,, 2024b), aiming to further embed socio-environmental considerations and 2050 net-zero objectives across all of the studio's business activities through a series of mitigating actions (Cinecitta S.p.A.,, 2024a). Applying equally to all of Cinecittà's employees, visitors and production troupes, as well as its customers and suppliers, this mitigating strategy is articulated through the publication and updates of Cinecittà REgeneration's *Green Production Standards for Film Crews* (Cinecitta S.p.A.,, 2023). The actions outlined in *Green Production Standards* cover areas such as 1) mobility and transportation, 2) power, 3) accommodation, 4) meals and water, 5) materials, 6) waste and 7) communication. Target-wise, the interventions promoted are on par with most sustainable norms examined so far, potentially even to a complementary extent, in that they establish a priori standard practices within the studio complex that a sustainability manager can work with more easily. Despite being venue-specific, the recommendations are typical, flexible and common sense: from reaching Cinecittà by public transport or carpooling while once in the complex moving around by foot, bike or electric minicar to opting for local accommodation within a 10 km radius from the studios and adopting a zero waste policy while there (Ibid, 2023:3-5). However, while fully optional and offered on a suggestive basis, for the most part, certain considerations stand out as mandatory in the *Green Production Standards*. For instance, precisely because the studio is powered by 100% renewable energy (as of 2022), productions are asked to always use grid energy and never portable generators unless those solutions come with low-impact specifications and performance (such as hybrid, electric, photovoltaic or with alternative fuel). Further, Cinecittà asks that only low-consumption and LED lightbulbs, as well as rechargeable batteries, be used on its premises (Ibid, 2023:3) and that if external catering is brought in, it should be carried out exclusively through washable or compostable containers, while disposable water solutions are forbidden altogether, on account that the complex has its own dispensers throughout all of its sites (Ibid, 2023c:4). In addition, Cinecittà operates a forward circular policy, whereby on the one hand productions can freely browse through the studio's warehouses and recover and use existing (rental or used) material and on other are upon

production wrap urged to donate their props to organisations or companies that can reuse or recycle them (Ibid, 2023:5).

8.8.5. Cinecittà Decarbonisation Plan

A critical component underpinning all of the above mitigative actions is Cinecittà REgeneration's Decarbonisation Plan. The result of a working group between Zen 2030 and Rete Clima, whereby the latter two collected and analysed the data from Cinecittà's annual corporate exercise for the year 2021, subsequently calculating the studio's entire Organisation Carbon Footprint (*CFO*; *Carbon Footprint of Organizations*), allocating produced GHG emissions by Scope and Category (Zen2030, 2022:5; Rete Clima, 2024). Following the completion of these calculations, a medium-term decarbonisation plan was developed in line with the Science Based Target framework (Ibid, 2024), whose exploration merits a small detour. Essentially, a context-based approach to corporate sustainability, aligning and converting corporate carbon reduction targets with climate science consensus and global decarbonisation objectives (Giesekam et al., 2021:2,16), per Rete Clima (2024), Science Based Targets (SBTs) are objectives for the reduction of CO2 emissions and other climate-altering gases that are first and foremost consistent with the Paris Agreement and IPCC's scientific vision and output, such as the substantial reduction of global greenhouse gas emissions to maintain global temperature increases to well below 2°C, gradually limiting 1.5°C above pre-industrial levels, in the understanding that such an achievement will significantly reduce the risks associated with climate change (UN, 2015:3). The most widely used criteria for defining what constitutes a "science-based target" are the SBTi Net Zero Standards, drawn by the Science Base Target Initiative (henceforward, SBTi), a partnership between the UN Global Compact (UNGC), the World Resource Institute, the Carbon Disclosure Project (CDP) and the World Wide Fund for Nature (WWF) launched in 2014, aiming to support the corporate and finance transition towards setting and meeting more ambitious climate mitigation objectives (Giesekam et al., 2021:2; Rete Clima, n.d.b). Per Giesekam et al. (2023:5), to receive SBT approval from the

Initiative, companies that commit to aligning with SBTi's Net-Zero Standard are obliged to report their company-wide Scope 1 and Scope 2 emissions, with a further Scope 3 screening attached to the process, during which if the Scope 3 type of emissions is found to represent 40% or more of the total (Scope 1-3) emissions, then also setting a Scope 3 target becomes mandatory. These target boundaries are articulated along near-term (5-10 years) and long-term (2050 or sooner) goals (SBTi, 2024a:14), for which corporate performance is planned and operationalised through specific approaches such as the Absolute Contraction Approach (ACA) which aims for a linear reduction in absolute emissions (total amount of GHGs) and the Physical Intensity Contraction Approach (PICA), which targets the reduction of intensity within the emissions of various industrial sectors, aiming to produce less emissions per unit of output and is, therefore, subject to a Sectoral Decarbonisation Approach (SDA) (Schweitzer et al., 2023:200). Operationally, we can argue that, while SBTi-related targets are prioritised by committed entities, they still operate within the bounds of ESG (on account of their environmental focus) and are contributive towards CSR performance. As such, eligible SBTi membership organisations, which by design include parent companies and subsidiaries, alongside non-subsidiary independent companies with fewer than 500 employees that utilise the framework as Small and Medium Enterprises (SMEs)(Science Based Targets, 2022:1), can access the benefits of associating with the Initiative, which per the SBTi, include enhanced brand reputation, increased investor confidence, regulatory resilience, boosted innovation, cost saving and competitive advantage (Galvin, 2018).

8.8.6. Science Based Targets

In addition to having defined a decarbonisation plan for Cinecittà as part of the latter's REgeneration project in 2022 and in a manner consistent with eligibility for SBTi membership (Rete Clima, 2024), Zen2030 and Rete Clima also helped the studio transition to 100% renewable energy, installing 60 water dispensers supplying water from the national water network while creating a policy for the promotion of reusable bottles to reduce plastic

consumption drastically, and a digital signature protocol system to reduce paper printing (Zen2030, 2022:5). Further, in the same year Zen2030 oversaw sustainability at the 5th edition of Rome Video Game Lab (RVGL, henceforward), hosted at Cinecittà. Consisting of workshops, panels, educational master classes, exhibitions and demos, which essentially extended both Zen2030's services and Cinecittà's commitment on the event front, the annually held RVGL has been the first carbon-neutral and low-impact event produced by the studios (Cinecittà S.p.A, 2023:3). Procedurally, this operation entailed an initial logistical assessment followed by defining guidelines and actions aimed at minimizing the event's impact, which was shared with visitors, guests, exhibitors, and suppliers (Cinecittà S.p.A, 2023:2,4). Among the many actions promoted was the adoption of a plastic-free policy, utilising rented furniture for the venue's decoration, serving a predominantly vegetarian catering menu with fully compostable or washable service and donating any food surplus to non-profit organisation Banco Alimentare di Roma while in its entirety, the whole event was powered solely via 100% renewable through Cinecittà electrical grid connection (Ibid, 2023:4). Simultaneously, performance in the above areas was monitored, a function that made possible the calculation of the event's total emissions, which were subsequently converted into tons of CO2 by technical partner Italian Climate Network association ONLUS (Ibid, 2023:3-4), and compensated through a certified sustainable development project in Peru (Zen2030, 2022:6).

9. Integration of Sustainability in Audiovisual Production

9.1. Introduction

The previous section provided a structured historical review of sustainability in audiovisual production, registering the notion of film (and broadly, audiovisual) products as "environmentally determined and determining" cultural artefacts (Bozak, 2012:4), a perspective that contributes holistically towards existing frameworks aimed at historicising film, that per Hagener and Zimmermann (2023:13), include the examination of film as a story of progress or decay, an aesthetic and technological object, or simply, a socio-economic trajectory of its industries. More importantly, in constructing a history of sustainability in audiovisual production, we broadly uncovered the key theoretical concepts of its practice, such as the notion of footprint in the sector's operations and beyond, the influence of policy frameworks, whether voluntary (SDGs) or mandatory (Paris Agreement and the European Green Deal), alongside the development of sustainable protocols from the sector's grassroots (bottom-up) and corporate (top-down) strategies at scale as part of a wider ESG push, and further, the necessity for verification and certification of environmental compliance on production sets.

By contrast, in the following sections, the focus is specifically on the integration of the above concepts within audiovisual production settings. Here, by *integration*, we refer to the manner, capacity, and extent to which 1) sustainability professionals are attached to production settings and 2) sustainability norms are embedded into established production workflows in tandem with current and future 3) industry-endorsed solutions. Thus, utilising mainly primary data, the ensuing analysis will explore the lived experience, considerations and insights of professionals driving sustainability in the sector alongside the more critical observations of (both emerging and established) scholars invested in this line of research. Further, it will explore what constitutes optimal and less ideal scenarios for integration, showcasing poignant instances and events of how sustainability is embedded during all stages of production, from project

development, pre-production, production and post-production to sustainability reporting and certification, often differentiating between substantial and minimal efforts, as well as between holistic and purely environmental approaches. Concurrently, our attention is engaged across the implications of integrating sustainability in all production departments, as well as in the production of different genres, such as animation, documentary, sports and sector-related live events. In doing so, the discussion will highlight best practices and strategies, as well as production settings and dynamics that are relevant towards benchmarking the case of Italy, underpinning thus the study's concluding remarks for domestic policy, industry and academia.

9.2. The Role of Sustainability Manager

9.2.1. By any other name: The Sustainability Manager in Audiovisual Production

Known generally as an "Eco-Manager"(Victory, 2014), "Eco-Supervisor" (O'Brien, 2014), "Green Runner" (Cineregio, 2015:23), "Eco-Assistant"(Jimenez-Morales and Lopera-Marmol, 2021:2), "Sustainability Consultant" (Screen Daily, 2021; Torchin, 2022), "Green Film Manager" (Green Film, 2022) or "Green Film Consultant" (Bundesverband Green Consultants, 2020; LAFC, 2022; Film Commission Südtirol, 2023) "Green Steward" (Greenshoot, 2023) and "Green Producing Agent" (BMK and VKI, 2017:6); a role that as we have seen, by any other name, implies "a seasoned production professional…[who]…functions as a department head alongside other crew department heads" (O'Brien, 2014:14), planning, implementing and managing sustainability from prep through wrap (Ibid, 2014). Although such features are indeed a *sine qua non* for this type of employment, its actual practice varies greatly depending on the production context. While Torchin (2021) suggests that generally, such a role sits comparatively low on the production hierarchy and is often reduced to a mere function delegated to production runners (L.Vecchi, 2023 and A. Knott, 2024, personal communication; Hadas, 2024:7), sustainable production professionals working in dynamic film production environments emphasise the importance of their involvement in the process of making a film

across logistical, technical and coordinating domains. For leading practitioner Jennifer Sandoval (J.Sandoval, 2023, personal communication), Sustainable Production Specialist and Industry Relations Executive at US-based Earth Angels, the role is crucial both temporally and financially, involving essential research besides on-the-ground work that productions simply do not have the time to commit to. For the tentpole films and popular TV productions that Earth Angels works primarily with, this includes understanding the physical characteristics of the shooting locations, analysing local regulations and available infrastructures related to waste management and composting while facilitating the rentals of clean mobile power solutions such as electric generators, which will subsequently inform the strategies behind a production's waste and energy plans (Ibid, 2023), in addition to working closely and in real-time with the production team, manager and studio executives, optimising the production budget and, to that effect, identifying potential cost-benefit measures (Ibid, 2023).

Per Marie-Louise Smith, founder and managing director of UK's Neptune Sustainability, the indispensability of the role further extends also to its communication component, with Sustainability Managers being required to report back on collected data metrics through comprehensive and technical written reports (L.M.Smith, 2023, personal communication). Further, for Matteo Sant'Unione, Board Member of the German Federal Association of Green Film & TV Consultants, the role pertains much to stakeholder engagement, functioning as a bridge between funders and broadcasters, balancing the practical demands of production workflows with the regulatory compliance and other sustainability goals set by the producers. Moreover, per Renato Cremonesi of Green Ciak, besides planning, monitoring, and reporting environmental compliance in accordance with established protocols, the role's importance is also articulated across educational lines, with the Sustainability Manager providing pertinent training to operators during the entirety of shooting (R. Cremonesi, 2023, personal communication), instigating a change of habits on set, whereby crew and department directors have overcome their resistance towards adopting new practices or modifying their workflows when needed (V.Jamonte, 2023, personal communication).

9.2.2. Career Pathways of Sustainability Managers

A general observation among full-time employed sustainability managers interviewed for this study is that, for the most part, they are film and media production graduates at the University or college level, with subsequent (considering a 5-10 years expertise benchmark) seasoned freelance work in the production (as unit production managers, production coordinators and often producers) and directing departments (as directors and assistant directors). For some, the switch to sustainability in audiovisual production was facilitated through additional education such as focused Master's degrees in sustainability-related studies (indicatively, bearing names such as "Leadership and Sustainability" and "Sustainability Studies"), attended in their country of origin or beyond and, as of 2022, a monthly focused training on sustainable production itself through quality assured training at Germany's Stuttgart Media University (*Hochschule der Medien HTM*); a training model that per the course's graduate, certified Green Consultant and Trainer Dörte Schneider-Garcia (2023, personal communication) is expected to spread gradually over Europe, with regional adaptations developed to be integrated in Portuguese, Norwegian, Swedish and Finnish university curricula. In addition, there have been fewer instances during data collection where the opposite trend is observed, with STEM graduates (in particular Natural Sciences majors in fields such as Biology) entering the audiovisual sector and applying their scientific knowledge and skills transversally, although, per Janka Neostupovà's (2023, personal communication) observations, post-COVID, there is a growing tendency whereby demand for sustainability professionals sees positions getting filled in the industry also by such graduates, who, by necessity, build up their production skills on the spot.

Within those career trajectories, and acknowledging the interdisciplinary nature of the work, sustainable production professionals themselves offer diverse suggestions as to what constitutes the ideal educational background for the trade's prospective candidates: per early practitioner, renowned horror director, producer, actor and author of *Low Impact Filmmaking* (1993, US: Glass Eye Pix), Larry Fessenden (2024, personal communication), the implications of the role are practical, advocating for a flexible approach to hiring, whereby professionals from

varied backgrounds bring unique perspectives on production sets. For Gabriele Raciti (2024, personal communication), Sustainability Manager at Sky Italia, the essential prerequisite is a firsthand experience of life on production sets and their workflows, challenges and dynamics, a basic familiarity with which is typically provided at a foundational level in film and media production courses. In contrast, per Smith (2023, personal communication), an environmental science degree is more beneficial for the job's demands than a traditional film degree, an understanding that per Hadas (2024:22) primarily views sees sustainability department roles as essentially science communication roles.

9.2.3. Employment Models and Organisational Structures

As we have already established, the role and job description of a sustainability manager, alongside the media policies and production practices that underpin them, have been generally grouped in the literature fittingly under the term "Environment Management of the Media" (Kääpä, 2018; Kääpä and Hunter, 2022:312) while demand for such services is client-driven and thus customised (J. Sandoval, 2023; M.L.Smith, 2023; personal communication), policy dependent and constantly evolving (M.Sant'Unione, 2023) and is met through diverse context-dependent business-organisation formation. Further, the advent of this specialisation has also been framed in the context of the green job market (Disi and Gisotti, 2016:5; M. Gisotti, 2023, personal communication) and as part of a broader trend in emerging production-related roles (Screen Daily, 2021), putting policy and accountability into operation (Torching, 2022), all of which, besides their commonalities, are often characterised by different organisational setups.

Per Kozar and Sulich's bibliometric study (2023:11) on the growing phenomenon of "green jobs," a useful distinction is made between proposed name variants such as "green employment," "green collar," and "sustainability jobs," with bibliographic references towards green collar jobs articulated broadly along engineering and renewable energy technology and

sustainability jobs along strategy formulation lines. Both of these directions have experienced rapid growth, with strategy formulation administered through the services of environmental consultancy firms. Per Taberham (2021:15-16), environmental consultancies have become increasingly global in their reach and operations, diversifying their areas of work while organising themselves into specific market sectors (Ibid, 2021:51). As such, catering to the audiovisual sector, the concept most closely resembling this strategic (but also operational) service provision is known as 1)"sustainable consultancy" or "service" which (is usually formed by) and typically employs sustainable production professionals as its chief strategists (EcoMuvi,2023c; Vecchi, 2023; Earth Angel Sets, n.d.), as employees on a freelance, project-to-project basis (with work, however, all year round, given the growing demand for such services). Further, sustainability professionals are employed as 2) full-time in-house sustainability managers for studios (Belli, 2024), broadcasters and production companies (Raciti, 2024, Sant'Unione; 2024, personal communications) as well as film commissions and institutes tied to regional funding for audiovisual productions (T. Wagendorp, 2023; Austrian Film Institute, 2024) and 3) more recently, an integrated service within companies offering 360° Health and Safety services (Czech Film Commission, 2024).

9.2.4. Sustainability Consultancies and Services

Per Chiarini (2024f, personal communication), there is tension surrounding the professionalisation—and, by extension—classification of environmental roles within the audiovisual sector. Central to this broader debate is whether sustainable production companies indeed comprise "services" or "consultancies", to which Chiarini (Ibid, personal communication) distinguishes between a more substantial engagement through direct involvement in production set operations and workflows (*services*) as opposed to merely providing guidance remotely without any practical engagement (*consultancy*), limiting the capacity to effect real change. However, semantics aside, for the purposes of this research,

while the nuances of both terms are acknowledged, the terms "consultancy" and "service" are used here interchangeably.

Thus, in the first instance, companies offering sustainability consultancy services for audiovisual sets generally distinguish their labour between strategic and operational roles in a tiered manner. In the case of EcoMuvi, a senior EcoMuvi Manager is normally the principal strategist of a production's sustainability plan, directing accordingly (in a hybrid, on-location and remote manner) a small (1-3 people) team of other junior EcoMuvi Managers and assistants overseeing and documenting the plan's implementation during production (EcoMuvi, 2024). For Earth Angels Sustainable Sets, primarily catering to medium or high-budgeted productions (ranging from over 5 to well over 40 million US dollars), the division of labour (for a team of 18 people) is organised along specialised lines, with executive areas such as client accounts, industry relations, analytics and marketing working in tandem with specialised roles such as Energy Strategy Manager and Materials Manager overseeing key operational areas (Earth Angel Sets, 2024). For Earth Angel's operations during production, an Eco Supervisor oversees one or more Eco Coordinators, who in turn supervise the company's division of Eco Representatives (Eco-Reps), that is, dedicated sustainability assistants assigned to on the ground with department heads for the entirety of the shooting (J. Sandoval, 2023; Earth Angel Sets, 2024).

9.2.5. In-House Professionals

In the second instance, whereas professionals as part of sustainable production consultancies are concerned with the planning, implementation, monitoring, and reporting of sustainability in audiovisual productions, especially in the context of co-productions, the in-house sustainability professionals attached to studios and broadcasters generally act as intermediaries between all parties working in the making of the film, ensuring that the studio's or broadcaster's devised sustainability strategy is translated across the board, a task whose (project-specific) implementation in production and reporting is often outsourced to third-parties such as

sustainable consultancy companies, such as EcoMuvi or Zen2030 (G . Raciti, 2024, personal communication). As such, per Sky Italia's Raciti (2024, personal communication), SkyUk and SkyItalia, as subsidiaries of the NBC Universal-owned and Comcast-partnered Sky Group, must adhere to enterprise guidelines in alignment with the multinational giant's ambitious environmental impact program, *Sky Zero*, an SBTi-approved plan that aims to achieve net zero emissions by 2030, through a 50% reduction of its operational emissions worldwide (Sky Group, 2021). Similarly, per Amazon Italia's Belli (2024, personal communication), a flexible approach with multiple compliance levels aligns with the conglomerate's wider ESG vision, encompassing all of its business units and their operations ranging from retail and consumer goods, web services and security as well as subsidiaries, which include Amazon Studios and as of 2022, MGM Studios (Amazon, 2023:3). Lastly, when it comes to permanent in-house sustainability roles in film commissions, per Tim Wagendorp (2023, personal communication), Sustainability Coordinator at the Flemish Audiovisual Fund (VAF), the role is fulfilled in an advisory capacity, with audiovisual projects receiving production support by having an orientation meeting with the Fund, on how to integrate sustainability in their workflows, along with training pertinent to the use of the Eureca (European Environmental Calculator), a resource that helps productions calculate their carbon plan as well as create their environmental action plan.

9.2.6. Safety and Support Services

In the third instance, a newer organisational structure sees the inclusion of environmental stewardship in audiovisual production along with many emerging production-related roles putting policy and accountability into operation (Torching, 2022), such as accessibility and intimacy coordinators, executive coaches, mental health and well-being facilitators, crisis management and COVID compliance officers (Screen Daily, 2021), and on-set safety and health specialists (Robb, 2022), into a diversified package of services. A prime example of this type of business formation is the Prague-based New Era Safety. Founded during Covid, a period that,

per the Czech Republic's Audiovisual Producer's Association (*Asociace Producentů v Audiovizi*), the country's audiovisual industry experienced a dynamic market growth largely driven by international productions (Asociace Producentů v Audiovizi, 2023), New Era Safety is actively engaged in all aspects of "safety" and "support" within the creative industries, aiming for seamless communication and implementation of international safety protocols (Czech Film Commission, 2024). Per the company's chief Health and Safety and Mental Health Advisor, Janka Neustupovà (2024, personal communication), the vision is for the services on offer, which, next to sustainability manager and coordinator, include specialised and certified safety roles such as Health and Safety, Mental Health First Aider and Wellbeing Advisors, Fire Safety and Intimacy Coordinators, to address a gap in the Czech film industry, articulated in terms of human resource management and occupational safety in audiovisual sets.

9.2.7 Industry Buy-In

A general observation is that the manner, capacity, and extent to which sustainability professionals, irrespective of their organizational affiliation or operational framework, are attached to audiovisual projects largely depends on the industry's endorsement, support, and overall buy-in for such services. Typically, sustainability initiatives in production settings require strong buy-in from leadership —in particular, producers— within studios and production companies (B.Belli, 2023; J.Sandoval, 2023; Torvai, 2023; personal communications). Further, per Thierry Hugot (2023, personal communication), Programme Manager, Financial Controller and Head of the Sustainability Study Group at Eurimages, private production companies are often more advanced in adopting sustainability than public companies or administrations operating in the sector, displaying a leadership beyond the protection of the environment to also address other elements of sustainability such as diversity and gender equality, with certain large corporations such Netflix and Disney further at the forefront of investing technologically also in the sector's decarbonisation (C.Winslow, 2024, personal communication). Besides the institutional and ESG push already discussed, such a buy-in has also been articulated as a

means to access local and national funding (M. Cucco, 2023, personal communication), complying with the demands of broadcasters (G.Raciti, 2024, personal communication), tending to the needs of international co-productions in runaway filming destinations (e.g. Central and Eastern Europe) where such norms do not concretely exist (J.Torvai, 2023, personal communication; J.Neustupovà, 2024; personal communication), as well as aligning with an audiovisual supply chain, that is increasingly becoming more sustainable, such as equipment rental companies (M. Sant'Unione, 2024, personal communication).

9.2.8 Timing of Planning Sustainability

This top-down buy-in and key players' willingness to invest in sustainability also correlate with successful implementation. Typically, the implementation of sustainability in production sets appears to have a momentum of its own, running parallel to a project's pipeline; as such, achieving consistency with the intent of embedding proactive and environmentally forward policies in a production plan is subject to effective timing. An early, proactive sustainability planning during pre-production allows for the procurement of mobile power alternatives such as solar generators, which can reduce costs and environmental impact by avoiding the use of traditional generators (Sant'Unione, 2024, personal communication), but even in instances where such advanced technology is not available at scale, a well-thought-out plan can still significantly reduce resource use and associated costs (Schneider-Garcia, 2023, personal communication). Out of necessity, this mindset also acts as a significant exercise in budget optimisation for small, independent European companies that typically produce content with under one million Euros budget, where, due to financial constraints, waste and irresponsible consumption of resources are not an option (M.L.Smith, 2023, personal communication). In contrast, larger productions operating with budgets of about 150 million Euros tend to be more wasteful, using excess resources often because —paradoxically—the budget allows for it (Ibid, 2023).

On the other hand, late-stage considerations of sustainability can lead to complications with certification, post-shooting requests, additional paperwork, and missed opportunities for intervention, all of which, per the previous point raised regarding budget savings, could potentially translate to higher production costs. For Earth Angels, late involvement in pre-production planning is the rule rather than the exception, often with purchases that undermine the effort for sustainability, such as procured plastic on set (Sandoval, 2023, personal communication). Similarly, per Chiarini (2024, personal communication), many of EcoMuvi's previous requests for sustainability services have occurred during the actual production and often as late as post-production of a project due to misinformation and lack of awareness from prospective clients; a significant delay that per Italcert (C.Morlacchi, 2023, personal communication) weakens the application of the EcoMuvi protocol as much as any compliance with most other specifications. As such, per company policy, EcoMuvi does not offer its services on projects that have begun shooting or animating (L. Chiarini, 2024, personal communication). Occasionally, however, requests from projects already in progress yet with extended production pipelines are accepted, as in the case of documentaries that follow a longitudinal production mode. Such projects may halt their production for years, and upon resuming, producers often find they have to comply with new funding conditions (Ibid, 2024, personal communication).

Equally rare are the instances where sustainability professionals are directly involved in the development phase of a project. Per Chiarini (2024, personal communication), such instances usually concern recipients of development funding from the European Commission's *Creative Media* programme, which encourages sustainability considerations in its funding applications by awarding referral points to applicants who incorporate these elements in their strategies alongside addressing gender balance, inclusion, diversity and representativeness (European Commission, 2024a); an approach that significantly updates eligibility criteria, which, per Moore and O'Meara (Batty and Taylor, 2021:45) are typically concerned with the artistic and commercial value of a project and the promotion of national culture. However, in the context of planning sustainability (and as indicated, subject to an industry buy-in from the top down), the

line between development and pre-production is blurred, with the former increasingly bleeding into the latter, adding a new dimension to the involvement of the sustainability professionals, thereby deepening the overall integration of sustainability in a project.

9.3. Script Development

9.3.1 Climate Storytelling in Development

To begin with, we need to retrace the definition of "development" here. Broadly, per Batty and Taylor (2021:1), development is a "creative, commercial and social practice in which ideas, emotions, people and personalities combine and work within the practicalities, policies and rapid movements of the screen industry". As a process, it involves transforming a story idea or concept into a viable screenplay, attaching along the way creative elements (e.g. directors or actors) that enhance the project's value and attractiveness for investment (Freedman-Doyle, 2012:55) while estimating a preliminary budget (Clevé, 2006: 142) before the screenplay can be presented to financiers and investors, directors and actors (Grove, 2004:339). As such, in building up the marketability of a project as well as conducting its early logistical planning, it is reasonable to assume that sustainability has not traditionally been seen as a priority during the phase development, particularly with regard to storytelling, as evidenced by the findings of *A Glaring Absence: The Climate Crisis in Virtually Nonexistent in Scripted Entertainment* (Giaccardi et al., 2022).

However, as evidenced by a recent industry-wide trend for many of the sector's key players, the pursuit of sustainability starts at the development phase of a project, broadening the discussion on how sustainability is scoped and formally operationalised in production settings. Prominent examples include Warner's environmental storytelling content strategy, permeating through all of its subsidiaries, including the Cartoon and Network and Discovery Channel's range of content (Warner Bros, 2024), in addition to Netflix's Sustainability on Screen strategy,

which supports creators "from pitch to play through subject matter expertise and research assistance" during script development (Netflix Inc, 2023). Along similar lines is the Sky Group's Planet Test framework, which commissions new productions on account of content that 1) raises awareness around environmental issues, 2) demonstrates positive actions aligned with the UN's Good Life Goals, and further 3) engages viewers' attention beyond the program itself through messaging, end cards, and sharing sustainable production practices, with the ultimate goal of inspiring a sustainable living (Sky, 2022:8). Equally, NBC Universal's GreenerLight Program, focuses on integrating sustainability throughout the entire filmmaking process, from development and production to distribution (NBC Universal Media, 2023). Moreover, as previously noted, this shift in storytelling priorities is supported by the ongoing advocacy of various other actors, including initiatives from non-profit organisations and sector-affiliated charities, such as BAFTA Albert's *Planet Placement* guide (Albert & Futerra, 2019), the Climate Lens narrative strategies put forth by Good Energy (Good Energy Stories, n.d.), and National Resources Defence Council's Rewrite the Future programme (National Resources Defence Council, n.d.), all of which provide resources and consultancy on embedding environmental themes.

9.3.2 Genre Conventions and Approaches

Per Chiarini (2024, personal communication), when it comes to scripted entertainment, such narrative strategies are operationally still in their infancy, and however aspirational they may be, they are not yet fully implemented. Further, Chiarini distinguishes between two types of "climate content". The first comprises a placement approach, whereby climate—and broadly, sustainability-related themes are integrated into a film's narrative, albeit in a subtle and often superficial manner. Such examples include signage related to recycling as part of the mise-en-scène, props (typically, actors sporting biodegradable cups or driving electric vehicles) or inserting brief mentions of sustainability and climate change in scripted dialogues without making either a focal point in the storytelling. Further, as Chiarini notes, such attempts are

often last-minute additions when production teams recognise opportunities to gain sustainability points or meet green production standards, in itself, an environmentally tokenistic approach that can potentially lead to greenwashing (Ibid, 2024).

In turn, the second approach is integrative, where sustainability is woven into the very fabric of the production, not merely hinting at or mentioning climate issues but making them a central and integral part of the storytelling (Ibid, 2024). Per Chiarini, this approach is rare and is typically instantiated in genres such as sci-fi, adventure, fantasy, and, naturally, documentaries (Ibid, 2024). In general, as proposed by Hayward (quoted in Chandler, 1997:60), genre conventions change "according to the ideological climate of the time", often displaying genre-bending crossovers (e.g. ecohorror), "shaped by cinematic tropes as well as contemporaneous conventions and [environmental] concerns"(Freer, 2023:11). Per Neagu (2017:238), operating within the realm of popular sci-fi entertainment, such on-screen imaginings playing on "the imminence and immediacy of disaster" form part of what has been termed "post-apocalyptic fiction", with other related subgenre classifications to include "disaster movies"; usually involving a group of characters making their way towards survival (Keane, 2006: 16). Equally, as proposed by Wheeler (2005:2), another classification enlists the notion of "future histories" narrated in four forms: the *utopian*, acting as a commentary on the "perfect" civilisation, offered in contrast to the world as it is; the *dystopian*, revolving around the theme of escaping from a declining civilisation; the *arcadian* wherein characters navigate a world without civilisation and the *post-apocalyptic* form, portraying the struggle to rebuild or return to civilisation. Potentially, however, a more fitting, encompassing term is "climate fiction" or "Cli-fi". A term coined in 2015 by journalist Dan Bloom, Cli-fi refers to (primarily) English-language films that explore climate change themes (Svoboda, 2016:44). According to Svoboda's analytic classification (Ibid, 2015:44-49), such films can be grouped thematically into seven categories:

2. *Flooding and Sea-Level Rise*, with examples such as *Waterworld* (dir. Kevin Reynolds, 1995), *The Flood* (dir. Tony Mitchell, 2007), and *Noah* (dir. Darren Aronofsky, 2014);

3. *Extreme Weather Events* such as those depicted in *Into the Storm* (dir. Steven Quale, 2014);
4. *Ice Age Scenarios* like those explored in *2012: Ice Age* (dir. Travis Fort, 2011);
5. *Melting Arctic* as seen in *The Last Winter* (dir. Larry Fessenden, 2006);
6. *Famine/Drought* as represented by the *Mad Max* franchise (1979-2024);
7. *Preclima(c)tic Stress Disorder*, focusing on the psychology of those affected by climate change, as explored in films like *Tomorrowland* (dir. Brad Bird, 2015);
8. *Antagonists:* Where, for example, aliens come to Earth to either colonise it or preserve its fauna and flora, with either scenario implying the extinction of mankind, as portrayed in *The Arrival* (dir. David Twohy, 1996) and *The Day the Earth Stood Still* (dir. Scott Derrickson, 2008).

Of course, climate narratives can also be relayed in a more affirmative and positive manner. Per producer, early-pioneering practitioner and founder of EcoMuvi, Carlo-Cresta Dina (2023, personal communication), the constant "bombardment of doom predictions" can potentially have the opposite effect by desensitising audiences to negative and alarming messages regarding climate change. Further, per Sandoval (2023, personal communication), a broad and creative approach to content creation could see such elements integrated into various other genres, such as comedy and animation, as instantiated by Netflix's satire *Don't Look Up* (dir. Adam McKay, 2021), whereby a comet, with the potential to cause an "extinction-level event" is heading towards Earth. Per Little (2022:2), McKay's insightful socio-environmental commentary soft-sells the idea of climate action in a manner that audiences are positioned to learn from by presenting us with both subtle and overt analogies and metaphors for the looming and expected effects of climate change, as well as the public's response toward it, all without even directly mentioning climate change. Moreover, for Smith (2023, personal communication), narrative can also set the audience's mood for wider (and arguably, more constructive and mobilising) emotional responses beyond climate dread by showcasing role-model-like "sustainable superheroes". Towards this, as Clayton (2020: 2) reminds us that emotional responses like distress and fear resulting from awareness of climate change—

conceptualised as "climate anxiety," "eco-anxiety," and "climate grief"— are shaped by social context, wherein media representations play a significant part in how people perceive the effects of climate change, especially in cases where such perceptions are not based on direct, lived experiences of, for example, increased extreme weather events or discrete natural disasters related to climate change (Ibid, 2020: 2).

9.3.3 Early Marketing Strategies

In certain contexts, consistency with the project's early marketing strategy is also key towards embedding sustainability in scripted entertainment. Per Mingant et al. (2015:2), the standard approach to marketing a movie initially involves identifying the target audience by analysing its "film marketing mix" (directors, actors, script, genre, and age classification [for example, Parental Guidance (PG), PG-13, and R (Restricted) ratings] (Ibid., 2015:2), and further mapping out the film's Strengths, Weaknesses, Opportunities and Threats, known as SWOT analysis. Informed by this analysis, film marketers then segment the audience, identifying a primary target group and any potential secondary groups that the film could potentially cross over, eventually determining the film's positioning relative to other films and its engagement with audiences (Ibid,2015:2). Within those operational standards of the film marketing trade, per Film Marketing Strategist, Audience Designer and researcher Niccolò Gallio (2023, personal communication), while producers tend to think that nothing about sustainability can be too upfront during film development, they are happy to engage with it as a concept, especially if it translates effectively to marketing activities and assets (Gallio, 2023; personal communication). As such, leveraging sustainability into an early marketing strategy during script development involves identifying relevant elements and translating them into communication activities in a way that does not detract from the main narrative or story (Ibid, 2023). In turn, if sustainability comprises an element of a project's marketing campaign, then a second layer concurrent with the film's completion necessitates further relevant marketing strategies for festival runs and distribution (Ibid, 2023).

9.4.The Sustainability Plan as a Component of Pre-Production Planning

9.4.1 Introduction

Per Patz (2010:19), preproduction is the tail end of development and officially starts when the production office opens. In that setting, pre-production planning for the project's execution occurs before the shooting begins (Murry and Öman, 2024:2) through the completion of discrete tasks such as screenplay and other breakdown forms, the shooting schedule, location scouting, budget, casting and unions, permits, hiring staff and crew, unit supervision, permit clearance, equipment rental and stock, lab supervision, payroll service, insurance, postproduction preparation (Clevé, 2006:12). Further, per Cartwright (1996:2) in achieving cost-effectiveness and time efficiency, pre-production planning ought to be more thorough to include considerations such as post-production, but also duplication and distribution of the completed project.

In line with industry standards and subject to the "materiality" of audiovisual production, such specific planning and task management is facilitated by dedicated production roles attached to a project: for instance, the Production Manager assembles the script breakdown (Clevé, 2006:23-24), the Line Producer oversees the budget breakdown and the Location Manager manages location logistics (Patz, 2010:2015). Further, the Transportation Coordinator hires drivers, assigns them vehicles, and oversees their maintenance (Koster, 2004:231), and the Wardrobe Department oversees the procurement, design, sewing, fitting and cleaning of new or rented costumes (Koster, 2004: 203-207; Clevé, 2006:109), while the Set Dresser rents or purchases all materials needed to decorate a set or location, ensuring it aligns with the Director's desired aesthetic (Clevé, 2006:109). In addition, on a hired-as-needed basis, the Animal Wrangler is responsible for the handling and sometimes sourcing of animals (Ibid, 2006:28, 109), while the SFX (Special Effects) Supervisor in close communication with the camera, art direction and set-building departments, oversees digital and optical digital effects (Ibid, 2006:109).

9.4.2 The Utilisation of Production Breakdown Sheets

As such, excluding climate storytelling consultations during development, it is during planning this long list of tasks that considerations of sustainability are brought on board in production, a process that ideally begins with the breakdown of a finished screenplay. Per Clevé (2006:23-24), the script breakdown sheet is the single most important production form during pre-production and one that provides a "first glance" good estimate of logistic considerations such as a production's size, the duration of its shooting period, its necessary cast members and within that, the required locations and sets, travel and transport, wardrobe and props, special effects and equipment; all of whose elements and descriptions are either marked and identified in a scene-by-scene manner or through reviewing the entire script (Wales, 2004: 4).

Vis-à-vis the above, per Chiarini (2024d, personal communication), sustainability managers utilise a wide array of production forms deriving from the script breakdown. Combined with the original script, these include the shooting schedule, the location breakdown, the transport plan and lists of suppliers, with additional documents utilised from various other departments, covering elements such as special effects, the use of animals on set and working with child actors or extras (Ibid, 2024d). As resources towards an effective pre-production plan for sustainability, according to Chiarini (Ibid, 2024d), such documents facilitate a more practical order than the sequential structure that typically follows a script breakdown sheet, an approach that in itself aligns the shooting schedule with all the logistical needs related to sustainability.

9.5 Location Management

9.5.1. On Location Sets

For Chiarini (2023a, personal communication), the work of sustainability managers is directly tied to location management, whereby location logistics and arrangements influence energy

use and waste management on set. However, per Sandoval (2023, personal communication), sustainability managers rarely have a say in the choice of location, save for the instances where connection to a national grid is an option, [thus eliminating the need for fuel-powered generators (T.Wagendorp, 2023, personal communication)], which potentially suggests that in certain settings, considerations of sustainability are secondary to other logistical and creative priorities relating to location use. Towards this, per Chiarini (2023a, personal communication), location managers are also responsible for mediating between production needs and other meaningful considerations such as environmental regulations, the biodiversity of sensitive locations that may be secured for filming, the use of animals in those location settings and crew and talent accommodation and lodging structures.

9.5.2 Biodiversity

Per sustainability professional Julia Torvai (2023, personal communication), Co-Founder of Budapest-based Green Eyes Productions, biodiversity is not a consideration in carbon footprint calculation, nor is it accounted for in the scope of GHG factors. Yet, it remains a substantial consideration for local authorities, if not for the numerous co-productions that primarily utilise location shootings (Chiarini, 2023a, personal communication). As such, it is not uncommon for local environmental bodies such as public natural reserves and forests to impose strict sustainability regulations, such as the banning of generators during bird breeding seasons (T.Wagendorp, 2023, persona communication) or demand alternatives to bright lights that could disturb the mating rituals of other animal species, such as insects during night shoots (L.Chiarini, 2023b, personal communication). Such restrictions frequently add to a long list of challenges that, per Hardgreaves-Mackintyre (2021:6), have long characterised the dynamics between local authorities and Location Managers, with the former often making decisions too slowly to meet the latter's time-sensitive demands. Towards this, per Chiarini (2023b, personal communication), sustainability managers, working in tandem with location managers, often negotiate access for locations with sensitive or rich biodiversity during the pre-production

planning through close partnerships with local film commissions and environmental bodies, ensuring as well as reassuring relevant authorities that special provisions are proactively in place during the filming process (Ibid, 2023b, personal communication).

9.5.3 Working with Animals

Pertinent to the biodiversity of locations as well, a standard sustainability consideration in and of itself is animal welfare assessment on production sets, occurring during filming and off-set hours and encompassing the period before and after production. Generally, in dominant discourses of sustainability, animal welfare appears to be primarily articulated on account of its utilisatory function. Per Keeling et al. (2019:2), the contribution of animals in achieving the SDGs has not been acknowledged or made explicit, while animal references, considerations, or recommendations in the SDG literature highlight 1) the role of animals in supporting anthropocentric activities such as food security, transport and employment or 2) their capacity to contribute towards environmental degradation through gaseous emissions, water and soil pollution or ecosystem damage. Other specific mentions include 3) animal welfare and abuse in the context of intensive selection and breeding of species in food production, as well as 4) the relationship between animals and human health, with explicit mentions of zoonotic diseases (e.g. SARS-CoV-2) or the misuse of antimicrobials and anthelmintics in animal treatment (Ibid, 2019).

However, whether for utilitarian —or indeed— ethical reasons, as Peters (2020:2) points out, the interaction between humans and other animals is highly regulated on a domestic, local, regional, and international level by relevant legislation that seeks to conserve endangered species and protect wild animal habitats while upholding biological diversity (Ibid, 2020:2). Such regulations also apply to our immediate context, given that animal actors are used in different types of filmed media, such as movies, TV series, commercials, promotional work, corporate training videos, photography, and music videos, whether to add on-screen realism as

background elements or to serve as pet companions or even antagonists (Hitchens et al., 2021:2). Indicatively, and in instances where the audiovisual sector can be subject to, examples of relevant regulation include the Animal Welfare Act, operating at a federal level in the US, whose compliance on production sets is overseen by the American Humane Association (Rizzo, 2021), the Rabies Act of 1974 in the UK (The Animal Welfare Consultancy, 2019), and a comprehensive set of regulations promoted by the European Union, such as the Council Regulation of 2005 ("*On the protection of animals during transport and related operations"*) (Council Regulation 1/2005, 2005), the animal welfare framework under the 2009 Treaty of Lisbon, where animals are recognised as sentient beings, placing an ethical obligation on the EU and its Member States (including Italy) to prevent their maltreatment, pain, and suffering (European Food Safety Authority, n.d.).

Yet, despite all the proactive and progressive policies in place, the efficacy and implementation of regulation promoting animal welfare and preventing cruelty to animal actors during production has at times been disputed on the grounds of 1) limited scope and lack of stringent penalties, leading to weak enforcement and minimal prosecution of violations (Iacona, 2016:40-41). Furthermore, Rizzo (2021) notes that 2) regulations such as those enforced by the Animal Welfare Act can be rather ambiguous in defining which species qualify as "de facto" animals. Such an ambiguity often excludes a range of species such as birds, rats, mice bred for research, horses not used for research purposes and other farm animals used or intended to be used as food, as well as 3) the liabilities of film producers in cases of animal mistreatment. Given that with the rise of animal activism and ethical consumerism, the audiovisual sector's over-reliance on using animals for entertainment purposes has been increasingly under the spotlight and scrutinised by the general public, with audiovisual industries risking losing their "social licence to operate", should they fail to demonstrate their commitment to animal welfare (Hitchens et al., 2021:2). As such, the feeding, watering, cleaning, training, loading, transferring, immobilising and working conditions of animal actors on set are delegated to designated professionals known as animal handlers, animal coordinators and wranglers,

working in tandem with veterinarians on sets to ensure fair treatment, further minimising associated risk (American Humane Association, 2015).

However, animal welfare implications in all of the above only account for the use of animals *during* the actual production, minimally addressing what happens off-set where animal actors are lodged (Hitchens et al., 2021:2) or, in most instances, their fate after production wrap occurs (L. Chiarini, 2023, personal communication). As Chiarini (Ibid, 2023) points out, existing laws are concerned only with the treatment of animals during production. In most cases, this poses no problem given that most animal actors are sourced as rentals from agencies that handle the animal's welfare, both before the shooting as well as after it. However, for scenarios where (particularly farm) animals are purchased rather than rented, EcoMuvi enforces a non-negotiable welfare compliance, ensuring a safe, healthy and ethical relocation of animals after production, usually by arranging their adoption by local farmers. As such, failure to properly ensure animal welfare disqualifies a production from receiving an EcoMuvi certification (Ibid, 2023). Simultaneously, for smaller and more common animals that are bought, simpler solutions often include crew adoption, and, in the case of procured insects such as ants, once released for the needs of a scene and begin to disperse, they are left to integrate back into their natural habitat (Ibid, 2023).

9.5.4 Accommodation and Lodging

From a sustainability standpoint, accommodation and lodging considerations are critical components towards effective location management. Generally, per Patz (2010:69), accommodation should be approached just like location scouting, necessitating adequate research and photo documentation of rooms and facilities. On average, hotels are preferred, with one large room allocated as production headquarters and several adjacent rooms nearby serving various other production departments (Koster, 2004: 226), such as makeup, costume and green rooms. However, per Koster (2004:219), when films or shows are shot over several

months, renting apartments makes more financial sense, as they can be as affordable as one-third or one-quarter of what would be the cost of a suite in a moderately-priced hotel. Further, an additional consideration in location management is that of the base camp (or circus), where all the unit, hair, makeup, wardrobe and dressing room trucks are parked (Patz, 2010:220), typically located in proximity to the set (or shooting location). Ideally, then, when planning for sustainability, the common thread in all approaches advocated for by all sustainability protocols, guidelines examined, and professionals consulted is minimising the proximity, and therefore the footprint of transport, between accommodation and production headquarters, base camps and shooting locations. Within that understanding, special provisions also apply to the accommodation structures of lodging crew and talent.

Talking about her work in an advisory capacity to Accommodation Coordinators, Chiarini (2024g, personal communication) mentions a prescriptive framework for evaluating the sustainability of accommodation structures. Whereas the final choice is subject to a given production's budget allowances (or constraints thereof), sustainability managers at EcoMuvi emphasise the energy certification of lodging facilities with certified structures in accordance with ISO 13811 (ISO/TS 13811:2015 *Tourism and related services — Guidelines on developing environmental specifications for accommodation establishments*) preferred (EcoMuvi, 2024b). Further, other certifications encouraged for consideration include 1) global certifications, such as Green Key, B Corporation, Earth Check, Biosphere, ECO Certification, Green Key Global, Hostelling International, and Green Tourism Active; 2) region-specific certifications, such as EU Ecolabel and Ecostars (European Union) and 3) country-specific certifications such as Blue Angel (Germany), Austrian Ecolabel (Austria), GreenHospitality.ie (Ireland), The Green Star Hotel (Egypt), and GreenStep's Sustainable Tourism (Canada) (Ibid, 2024b). In addition, and in view of involving the local community and host populations where the shooting takes place, Chiarini advocates for prioritising smaller, locally-run accommodation establishments, Bed and Breakfasts and apartments versus multinational hotel chains (L Chiarini, 2024g, personal communication; EcoMuvi, 2024b).

9.6. Transportation Department

9.6.1. Transport Plan Optimisation

From a sustainability perspective, transportation plans for production fleets and cars are articulated in terms of efficiency and optimisation. Per Wales (2017:419), a general observation is that the size of a transportation department in the making of a film is directly correlated to the production budget, with a single truck used to support the needs of multiple departments such as grip, camera, electric and sometimes even craft services during low-budget productions. In contrast, high-budget productions typically allocate individual vehicles to each department, including dedicated trucks for wardrobe, makeup and art departments (Ibid, 2017:419). As such, per *The Screen New Deal* (BFI et al., 2019:5), the bigger the budget, the bigger the procurement of production vehicles, thus increasing emissions and, by extension, a greater need for optimisation and proactive, mitigative planning. Further, as the influential study from the BFI, BAFTA Albert and Arup points out, transport itself has the most considerable impact in terms of carbon emissions, accounting for just over 50% of total emissions in large-scale, tentpole productions, 70% of which is attributed to land travel, with the remaining 30% linked to air travel (Ibid, 2019:6).

9.6.2 Land Travel

However, efficiency and optimisation need not be conflated: even in times when the uptake of battery electric vehicles (BEVs) at the expense of existing Internal Combustion Engine (ICE) vehicles constitutes a global trend (Morgan, 2020: 953), the very idea of "optimisation" is contested. Citing the UK Government's *Road to Zero* (Department of Transport, 2018:7) ambitious transition strategy, whereby the uptake of new electric cars and vans by 2030 is expected to be in a range between 50% and 70%, Morgan (Ibid, 2020:953) distinguishes between 'superior technology' and 'superior choice', making the case for an efficient yet

problematic transition at scale. As such, per Morgan's observation, a 1:1 substitution ratio of BEVs for ICE vehicles creates a problem reminiscent of the "Rebound Effect", whereby a net growth of vehicle ownership with reduced emissions capabilities simply creates a class of new emission sources that still contribute largely to overall global emissions (Ibid, 2020: 965). Per Lorenzo Vecchi (2023, personal communication) of Zen2030, sustainable solutions to conventional petrol and diesel cars and vans are not necessarily sustainable unless logistic parameters, such as charging infrastructure and proper vehicle use, are properly planned, warning us further that a wrong approach can lead to more emissions if electric vehicles are properly charged. As such, alternative solutions to ICE vehicles should be part of a thought-thorough, process-driven approach rather than quick fixes to meet the sustainability quota imposed by funders, certifiers or relevant authorities. From a funder's perspective, per Tim Wagendorp (2023, personal communication) of the Flanders Audiovisual Fund, the debate between electric versus diesel vehicles ought to be secondary in terms of transport efficiency, with productions focusing instead on the overall reduction of transport needs through "eco-design", better location scouting and planning and the use of dedicated, transport optimisation software. Equally, from a certifier's perspective, Chiara Morlacchi of Italcert advocates for the use of public transportation in large cities as a more sustainable option, particularly for productions that require high mobility in multiple locations, reducing reliance on private vehicles.

9.6.3 Air Travel

Arguably, the audiovisual sector's idea of and the response towards air travel optimisation for production transportation extend even further than its ground operations counterpart, adding heavily to the debate of what essentially constitutes "sustainability". The carbon footprint of general aviation —which, per Boyd (2017: 657) includes all civilian aviation involving paid passenger transport, such as the airlines and charter operations, as well as the use of private jets— has become the elephant in the room in the decarbonisation debate of the

transportation sector. Reasons include the aviation sector's rising growth rate, which over the last four decades has been on the increase at an average rate of 5% per year, coupled with few options for reducing carbon emissions per passenger-km and, further, the stark realisation that only a mere 2% to 3% of the world population take an international flight over the course of a year; thus rendering air travel unequally distributed among a small number of high-footprint, hypermobile travellers (Bows-Larkin et al., 2016:1-2).

As such, a systemic push to address the audiovisual sector's use of aviation at an industry level fosters the development of drastic solutions at multiple levels during pre-production sustainability planning. For Matteo Sant'Unione (2023, personal communication), a Board Member of the Association of German Green Consultants in Film and TV, the uptake of sustainability in audiovisual productions should be propelled further through a points-based system. Presumably as an update to existing regulations of the Green Shooting Card, which include "the five-hour rule", whereby domestic and international flights are not permitted if a corresponding train journey towards filming destinations can be covered in less than five hours (Arbeitskreis »Green Shooting«, 2021:8) and following the stricter regulations of the German Film Law of 2022 (EAO, 2023), such an amendment would target specifically the reduction of air travel in productions in a manner both incentivising further the use of alternative transportation (e.g., trains), while penalising the use of unnecessary and excessive flights (2023, personal communication). Per Alissa Aubenque (2024, personal communication), Director of Operations at France's Ecoprod, the requirement of mandatory carbon footprint reporting for publicly funded projects creates a foundation for stricter regulations in air travel, effectively forbidding the use of luxury travel. As such, a proactive approach to reducing high-emission options within the sector necessitates banning the use of private jets and helicopters tied to crew or talent transport altogether in order to attain Ecoprod's sustainability label.

Moreover, for Maria Kushirenko (2023, personal communication), Founder and Sustainability Producer at Russia's Sister Mary, the reduction of extensive air travel can be achieved by hiring

regional talent from the target destination. Inspired by the BBC's sustainability strategy behind the production of its Natural History Unit documentary series *Patagonia: Earth's Secret Paradise* (produced by Tuppence Stone, 2015), whereby the hiring of a local Chilean crew saved over 100 metric tonnes of carbon emissions, notwithstanding considerate budget savings and the empowerment of the local economy and production resources (Albert, 2019b), Kushirenko sought the same strategy when planning the filming of *The White Ship* (dir. Inga Shelepeva, 2024). Shot on location in the region of Yakutia (Far East Russia) and effectively, Russia's first sustainably produced feature film, *The White Ship,* involved a thorough preproduction planning, where sustainability had to be leveraged remotely due to severe budget cuts in the film's funding from the Russian Ministry of Culture following the events of February 24, 2022. As such, in addition to standard considerations for sustainability, travel between Moscow and Yakutia (approximately 4,350 km, an equivalent distance between Madrid, Spain and Stockholm, Sweden) was minimised through the hiring of local Yakutsk-based professionals, such as operators and line producers. In addition, eco-supervising training sessions for the entire crew were provided, effectively minimising the need for Moscow-based sustainability managers to travel to Yakutia (Ibid, 2023).

Further, per Swedish producer and sustainability expert Ronny Fritsche (2024, personal communication), extensive air travel as a phenomenon in the sector can also be perpetuated through co-production funding and tax incentives that, in effect, disincentivise the very cause of sustainability. Citing the example of Austria's incentives for sustainable film production, where a 5% Green Film Bonus is offered for productions that meet certain ecological standards baseline on top of a 30% grant on production costs incurred within Austria, Fritsche highlights a fundamental contradiction. While such incentives promote eco-friendly practices, their international production recipients are incentivised to travel to Austria, leaving a high environmental impact through air travel. Equally, per Fritsche (Ibid, 2024), a further contradiction presents itself with regard to the social pillar of sustainability: while Sweden as a filming destination upholds stringent working standards through union regulations, such as an eight-hour workday, such standards do not influence location choices for productions in the

same way that tax or environmental incentives do. As such, Swedish majority productions with budget restraints can circumvent such standards by opting for locations in countries with more lenient labour laws, such as extensive working hours, effectively bypassing Sweden's labour laws while, again, adding to a carbon footprint accumulation by air travel.

9.7 Waste and Resource Management

9.7.1 Circular Economy and Lifecycle Thinking in Waste Management Planning

On all accounts, the understanding of waste in audiovisual production becomes a complex endeavour if that understanding is broadened enough to consider lifecycle thinking or view "waste" as scoped "emissions" and further, projecting this understanding across the various production stages and workflows notwithstanding the multiple (first- and second-order) suppliers who provide essential services for the audiovisual industries. Contributing significantly to the production ecosystem, per Yale (2010:3), such suppliers include lumber sales, catering, hotels, and restaurants, which in the US alone had, at a time, comprised about 1.7 million jobs. As such, waste management logistics in pre-production planning entail a holistic approach that takes stock of supply chains and resource management, production budget and logistics, as much as de facto considerations relating to waste treatment, such as differentiation and disposal strategies. Per Birgit Heidsieck (2023, personal communication), Green Film Consultant at the German Federal Film Board and Editor of Green Film Shooting magazine, this logic is exemplified by adhering to the principles of circular economy: ideally, 1) avoiding the use of materials altogether; in turn, 2) if use is necessary, prioritising reuse of resources and, failing that 3) recycling what has been used. However, as Heidsieck further points out, with only approximately 9% of items being effectively recycled and with incineration and landfills comprising less favourable options, minimising waste from the outset through careful selection of materials designed for efficient disposal should be the primary objective (Ibid, 2023). As such, per Chiarini (2024g, personal communication), the *quality* of waste is just as important as

its *quantity*, on account of its potential to be recycled, composted, or simply reduce further categories of waste generated and within that, eliminating the need for different disposal strategies, adding significantly to the production budget.

Per Chiarini (Ibid, 2024g), in thinking proactively about all the above, the salient point behind every efficient waste management planning strategy is distinguishing between common, everyday waste —such as paper, plastic, glass and compostables— which, in production settings are usually procured in much higher quantities, and special waste, such as hazardous chemicals, wood and large, non-recyclable materials. As soon as such details are identified, the EcoMuvi team then focuses on getting quotes and, if needed, product information from vendors, discerning between ideal and less ideal options that make financial, environmental, and socially forward sense (Ibid, 2024g). In tandem with all other responsibilities, sustainability managers then must also navigate all the local recycling and waste disposal strategies where the shooting takes place, a particularly relevant consideration for Italian production settings, where recycling categories can significantly vary from one location or municipality to another (Ibid, 2024g).

9.7.2 Sustainable Sourcing of Materials

Given this, while the pursuit of sustainability in audiovisual production settings is context-dependent and negotiable and, as such, open to alternatives (for example, train over air travel), in planning ahead for waste management department, certain restrictions in place are foundational requirements in most sustainable production protocols and guidelines (indicatively, cf Ecoprod, 2017:9; Green Film, 2022:18; Arbeitskreis »Green Shooting«, 2021:12). One such type of waste to be avoided is procured single-use plastic on sets used predominantly for bottled water, craft and catering utensils and packaging.

Per early pioneering practitioner Larry Fessenden (2024, personal communication), the use of plastic constitutes "a great tragedy" that, due to its cumulative effect, degrades ecosystems and ecological welfare, as evidenced by discarded plastic's impact on wildlife and marine species and the pollution of coastal regions and other natural habitats. As such, from his early involvement in sustainability during the filming of *No Telling* (dir. Larry Fessenden, 1991), an experience that much informed his subsequent authoring of *Low Impact Filmmaking* (Fessenden and Ellenbogen, 1993), Fessenden had advocated for alternatives to single-use plastics (Ibid, 1993: 29), mainly when it came to bottled water; a consideration that now is standard practice in sustainability pre-production planning. Per leading sustainability professional O'Brien (2014:4), it takes 17 million barrels of oil to meet the US's annual demand for bottled water (typically made of PET plastic), which would have been enough to fuel 1.3 million cars for a year. Further, Americans throw out 38 billion empty water bottles, which, if not recycled, end up in landfills or waterways, taking up to an estimated 1000 years to fully decompose (Ibid, 2014:4). Equally, in Italy, a proportionally similar outcome sees the country consuming 11 billion litres of bottled water annually, corresponding to approximately 242 thousand tons of plastic (Ecco, 2022:47). However, when it comes to amending such a usage pattern efficiently, both Gianluca Della Campa of Edison Green Movie (2024, personal communication) and Lorenzo Vecchi of Zero2030 (2023, personal communication) advocate for a full lifecycle analysis (usually conducted in accordance to ISO 14040 Standards) for all products set to replace procured water in plastic bottles, such as aluminium-based multiple-use bottles, which although highly recyclable and cost-efficient (Rosa et al., 2020:54035), rely on a more energy-intensive production process than PET/PLA bottles (Taburini et al., 2021). Further, per Della Campa's observation (2024, personal communication), while a 100-person crew consumes an average of three to four water bottles per shift in any given production setting, consumption tends to be irresponsible, with many crew members usually opening a bottle of water, taking a sip, and then leaving it unfinished lying on set, resulting in what would be approximately 40 meters per day of plastic if lined up, reaching about 1,200 km if extrapolated over 30 days (Ibid, 2024, personal communication).

In contrast to the above, per Della Campa's logic, if the exact equivalent of 200 litres of water were to be catered on a production set through water dispensers (with a low-end estimate cost ranging between ten euro cents per litre of water), the switch alone could also lower significantly production costs with a total cost of a mere 20 euros versus what would have been 200 euros for daily bottled water bulk orders. Still, though, water fountains or dispensers are not a panacea for sustainability: as Tim Wagendorp of the VAF asserts (2023, personal communication), it matters little if the intention —or indeed, the solution— for procured water is sustainable if the execution itself involves transporting water from long distances, adding to carbon emissions and logistical costs. Further, another dimension that is often unaddressed in the procurement of water for production sets is the social aspect. For Amelia Knott, Founder of the research think tank TV Industry Human Rights Forum (2024, personal communication), a common limitation in pre-production planning includes efforts to provide for crew welfare while overlooking broader implications related to human rights, such as the impact of resource origin and allocation to the local populace. For Knott (Ibid, 2024), such examples include location shooting in water-scarce desert environments, where access to water is prioritised for production crews, often without asking where the water is sourced from and where it would be used otherwise, with potentially negative consequences for the affected parties.

9.7.3 Craft and Catering

A lifecycle and circular thinking are also necessary in the case of craft and catering services supporting audiovisual production sets. However, Birgit Heidsieck (2023, personal communication) advises careful consideration in pre-production planning when selecting environmentally positive alternatives to plastic. Per Heidsieck, since the introduction of the EU's Single-use Plastic Directive of 2019, which effectively saw the banning of readily available single-use items such as plates, containers, cups, straws, cutlery, and stirrers (European Parliament and Council, 2019:1), a common pitfall includes the purchase of cheap, branded "sustainable" products that despite being made of paper or sugarcane, are coated with

Perfluoroalkyl and Polyfluoroalkyl Substances, commonly referred to as PFAS. Used for their properties as water and grease-resistant agents in moulded, food contact materials (FCMs) such as cups and disposable food containers (Tajvidi, 2023), PFAS are colloquially known as "forever chemicals" due to their extreme resistance to environmental and metabolic degradation (Cousins et al., 2020), which ultimately defeat the purpose behind their purchase. Further, per Lorenzo Vecchi (2023, personal communication), while the procurement of compostable cutlery in itself reflects an informed step towards sustainability in pre-production planning, often, such products are sourced from distant locations, such as China, adding significantly to a footprint via travelled mileage.

Moreover, the agency of sustainability professionals, when planning ahead the procurement of environmentally friendly alternatives, is not atomic, requiring a networked, multilateral engagement with various other stakeholders, particularly suppliers. Further appending to craft and catering operations is the actual procurement of food and beverages. As a general observation, in terms of sustainability, food is articulated not only in terms of its carbon footprint (e.g. GHG emissions related to meat production) but also in terms of proximity of the supply chain, cost-effectiveness and nutritional value, which, as factors, are often logistically interconnected. Per producer Valeria Jamonte of Tempesta Slr (2023, personal communication), stable relationships with local suppliers can ensure access to biodegradable and reusable tableware as well as local produce, notwithstanding discounted prices. Further, demand for sustainable alternatives pushes suppliers, even in the most remote areas, to meet that demand by updating their stock, thus gradually greening the supply chain (Ibid, 2023). For Nevina Satta (2023, personal communication), former CEO of Sardegna Film Commission, sourcing locally can also reflect and, by extension, promote the cultural preferences of the hosting locality while meeting budget constraints. Citing an observed example of coffee served in production settings, Satta contrasts two coffee preparation methods: the popular, capsule-based machines like Nespresso versus the large, traditional Moka stove-top machines typically used in Sardinian communities. With a view to improving both efficiency and sustainability, Satta points out that a Moka-serving setup for 20 people equates to the time needed to make

just about five capsule-based coffees, which, in addition to saving time, also reduces the wastage of used coffee pods while promoting the local beverage culture and suppliers (Ibid, 2023). Yet, while principally fundamental, sourcing locally does not address all aspects of sustainability, especially when it comes to food catered on production sets. Per practitioner, researcher, and founder of Bogotà-based environmental film festival Planet On, Norma Cuadros-Gonzalez (2023, personal communication), the food menu on offer is as important as the sourcing of its ingredients, with plant-based dishes comprising more healthy and nutritious, economical and less footprint-intensive choices compared to red meat options. While an emphasis towards plant-based menu options can be criticised as a "trivial detail" and even a "hard-sell" for sustainability, per Cuadros-Gonzalez (ibid, 2023), it is nonetheless substantial given that Colombia's hydroelectric energy infrastructure, in most cases, aligns with low-carbon standards, thus rendering catered food and, in particular, the sourcing of beef, surprisingly a more carbon-intensive factor in production settings than for instance, fuel usage (P. Kääpä, 2023, personal communication).

9.7.4 Art Department

Per Wales (2017:296), the Art Department is one of the most critical departments in film production and one whose work, much like the Camera Department, is seen entirely on the screen. As such, one of the Art Department's primary responsibilities is the curation of a film's visual elements, including colour, tone, feel, sets, wardrobe, and textures (Koster, 2004). Operationally, this implies significant pre-production planning, but unlike other departments, no formal production wrap is necessary (Ibid, 2004: 158) other than the breaking down of sets (a process known as *strike*) and waste removal, such as the disposal of paint, wood and other set construction materials, thereby restoring the location or studio to its original condition before its occupation and usage by production crew (Ibid, 2004:164).

Arguably, despite an evolving history of practices and innovations parallel to the evolution of the filmmaking craft itself, it appears that bibliographically considerations of sustainability among art departments and production designers professionals are a fairly recent advent, recognised at an industry level first in the US, following the publication of the California Integrated Waste Management Board-commissioned influential report *Sustainability in the Motion Picture Industry* (Corbett and Turco, 2006:2) and, upon that, operationalised as part of influential initiatives, particularly *The Green Production Guide* by the Producers Guild of America, in tandem with more formal recognitions such as, for example, the UK-based Planet Positive Award, created by the British Film Designers Guild (BFDG, henceforward) in 2023 in association with BAFTA Albert and the support of Sky Studios Elstree (British Cinematographer, 2024), where environmentally forward practices from Art Departments are awarded and incentivised.

9.7.5 Sustainable Set Design and Construction

In terms of sustainability, among established practices and workflows in the Art Department, and per the sheer volume of materials and resources it demands, the most carbon-intensive aspect is arguably the construction of film and TV sets. In principle, per Heidsieck (Green Film Shooting, 2021c), for an audiovisual production to effectively minimise the environmental impact of its set design and construction, it is essential to share information on innovative methods alongside eco-friendly products and the choice of sustainable materials, alongside standard operations, the reuse, storage and recovery of existing set decoration elements. As such, the longer materials remain in the material cycle, the more resources are saved while carbon resources are avoided, resulting in more economic benefits (Ibid, 2021c).

In practice, however, for Chiarini (Ibid, 2024g), such considerations necessitate a dedicated budget line both for the Set Construction and other production departments in general, a common oversight among Line Producers. As Chiarini points out, Line Producers are not

generally trained to consider waste as an added cost factor in the overall production budget. As such, unforeseen waste costs often arise in the form of Line Producers struggling to approve waste management quotes upon production wrap, given that waste for disposal is paid by weight when handled by independent contractors in Italy and, more often than not, set constructions make for a bulkier and therefore more expensive type of waste (Ibid, 2024g). A further consideration pertains to the choice of vendors themselves, where, per Chiarini, productions frequently opt for the ones charging less upfront, often overlooking the fact that a cheaper set construction typically involves low-quality, sometimes hazardous materials; an oversight potentially leading to increased volumes of waste and difficulties in recycling, further driving up wage management costs (Ibid, 2024g).

In light of the above, the fate of used sets and set pieces from audiovisual productions upon production wrap can be a rather ambitious endeavour in real-life production settings and a significant concern for sustainability professionals during pre-production planning. Ever since the CSR institutionalisation of US studios (see discussion in section 6.1.2.), common circular approaches of US studios have included the internal reuse of set materials or the outsourcing of such assents as rentals (Corbett and Turco, 2006:89), practices still in place today (Fierro, 2024). Other solutions advocated for by the industry (Corbett and Turco, 2006:105; Albert, BFI, & Arup, 2020:13) include set constructions that are designed for disassembly (DfD, henceforward). Firmly rooted in the principles of circularity as well as lifecycle analysis and thinking (Crowther, 2005:1), DfD comprises an emerging and "promising sustainable design paradigm" for the construction sector development", where a systematic disassembly of building components follows the reverse sequence of its assembly process, where for example, individual parts of construction, such as walls and windows, are made in layers or as separable, non-permanent joints (Arisya and Suryantini, 2021:1-2), with the use of screws, bolts or clips and thus can be taken apart efficiently without damaging the materials, for them to be reused, repurposed or recycled.

However, taking stock of the constraints inherent in existing solutions, Chris Gilmour (2024, personal communication), CEO of UK-based Vectar Sets, addresses the inability to recycle set pieces, which, combined with a general reluctance, particularly from film productions, to embrace set reuse, perpetuates the generation of significant waste from physical sets. Even in cases where such management of resources is feasible, storage space, transportation and, in some instances, rebranding of used sets can outweigh the benefits, both logistically and financially (Ibid, 20234, personal communication). As such, addressing both this lack of efficiency and the overall reduction of the carbon footprint associated with set construction, Gilmour's focus and proposed solution lies in the innovative manufacture and use of engineered paperboard. Branded as Vectar Boards and certified by the Forest Stewardship Council (FSC) (Ashden, 2024), the boards of Vectar Sets, made of Nordic timber waste (typically sawdust and offcuts) from managed Swedish forest wood that is then converted into a dense, high-quality and fully recyclable paperboard (Ibid, 2024, personal communication). According to Gilmour, due to the slow growth of Nordic forests, the wood fibres are exceptionally long, giving the material a high strength-to-weight ratio that is 90% lighter and carbon-intensive than Medium Density Fiberwood (MDF), used conventionally in the construction of sets. Such properties allow for the versatile use of engineered paperboards, particularly favoured by broadcasters and advertisements as well as film and TV productions in the UK, Spain, Italy, Germany and Canada. Examples include lightweight pitch-side desks and studio sets for the BBC and ITV and other time-sensitive production settings such as advertisements for sports retailer Adidas, where a number of high-profile footballers were required to have their own personalised branded set, necessitating a streamlined workflow for the art department, with a change of set occurring every 20 minutes. Further to the above, during a Channel 4 coverage of the UEFA European Championships, traditional wooden flats —each weighing up to 60 kilograms to create a realistic studio environment—were efficiently replaced with lightweight, adjustable Vectar Boards, weighing only 5 kilograms; a substitution that achieved the desired aesthetic look while reducing labour and handling needs. To a similar effect, for ITV's docudrama mini-series *Waco Untold: The British Stories* (directed by Stuart Bernard, 2023), a domestic interior setup featuring two-wall configurations was rotated and altered through 12

different set designs in a day by Gimour's creative team without disrupting continuity or camera and lighting setups.

However, despite notable collaborations with producer Ridley Scott in *Alien: Romulus* (directed by Fede Alvarez, 2024) and (undisclosed) work on projects for Steven Soderbergh and Disney, Gilmour notes that there is a clear struggle in shifting established production practices and priorities. Per Gilmour, such a risk aversion for innovative and sustainable solutions is evident, particularly when it comes to large-scale film productions utilising extensive crews with fixed, established workflows, on account that such solutions may compromise the flow, stability or quality expected from high-stakes projects (Ibid, 2024, personal communication); ironically, despite the fact that often in such production settings, the construction of sets may require up to 300 people at any one time (Ackland-Snow and Laybourn, 2017:111). In contrast, Gilmour points out that industry buy-in for engineered paperboards is much greater when it comes to smaller productions, where budget, time constraints and adaptability take precedence, such as advertising or TV projects (Ibid, 2024, personal communication).

9.7.6 Sustainable Fashion and Costume Design

A second sustainability consideration in the Art Department is the sourcing of materials for costumes. As with other sustainability considerations, sustainable sourcing is ideally planned ahead during pre-production, where the same foundational principles of circularity apply to character-bespoke costume design or simply readymade solutions such as procured fashion. Per Pantouvaki et al. (2021: 73-74), discourses of circularity in performance costumes are not new. They are owing to a rich history of developments in theatre, with garments, costumes, and costume parts from everyday fashions reused as stage costumes from Elizabethan theatre to Commedia dell'Arte. However, in recent years, budgetary restrictions have directed theatrical costume professionals towards more concrete circular economy approaches and, by extension, sustainable costume practices (ibid, 2021:74).

The same, however, cannot be said about audiovisual production settings, where costume design and procured fashion are indispensable means of shaping characters, expressing emotional attitudes and promoting the development of the storyline in film and television drama works, as well as the overall lifestyle and cultural connotations of the times such works explored on-screen (Yin, 2023:62-63). As such, in fast-paced production settings, usually relying on short timeframes and short-term thinking and solutions, prioritising "indispensability" leads to excess clothing purchases and, thus, unnecessary costs. Per actor, scenographer and fashion stylist for audiovisual projects, Matteo Gavotto (M Gavotto, 2024, personal communication), established workflows, limited budget lines, and tight deadlines often mitigate against sustainability, with logistical challenges including the lack of actor fittings and the demand by sector-related agencies for multiple live options (i.e. clothing and wardrobe in various sizes) for characters in scenes; resulting both to waste of excess clothing as well as resorting to e-commerce and fast fashion bulk orders (Ibid, 2024, personal communication).

Much like the procurement of single-use plastic in the craft and catering arena, mass-produced fast fashion, as it relates to costume department operations, can be considered one of the most damaging environmental practices. Per Niinimäki et al. (2020), from its production to consumption, the overall impact of the textile and fashion value chain on the environment includes over 92 million tonnes of waste produced per year and 79 trillion litres of water consumed, notwithstanding significant chemical pollution and CO2 emissions. Broadly, the term fashion is usually associated with the textile and apparel industries; it also extends to include leather-related industries as well as the production of accessories, such as jewellery, glasses and watches (D'Amico et al., 2013:2). In turn, per Jung and Jin (2014:512) the modifier "fast" implies a rapid mode of production, with a short lead time, lower cost and quality-compromised, often toxic, materials as well as low-paid and often questionable labour practices, both in developed (Hammer and Plugor, 2019) as well as developing countries (Jin, 2022).

As an antidote to this mode of production and consumption, the concept of "sustainable fashion" arose in the 1960s, when consumers became aware of fashion's environmental impact, demanding that the industry change its practices; and has subsequently been used interchangeably with eco-, green-, and ethical fashion discourses (Henninger et al., 2016:400). Per Henniger et al. (Ibid, 2016) as sustainable fashion is both context and person dependent as well as subject to greenwashing, it is essential that organisations —and by extension industrial sectors— identify their own criteria of what constitutes sustainable fashion. For Milan-based Art Director and fashion stylist for film, TV, publishing and fashion shows, as well as creator of Mediaset Infinity's docu-series *Green is the New Black* (2024) Camilla Grandi (C. Grandi, 2024, personal communication), conscious and sustainable clothing and costume choices take stock of five key factors: 1) materials, 2) ethical production, 3) longevity, 4) transparency and 5) waste reduction.

Materials comprise the foundation of sustainable fashion, utilising eco-friendly and low-impact textiles, such as organic cotton, hemp or recycled fabrics. In turn, ethical production implies fair wages, safe working environments and respect for worker's rights. Further, longevity emphasises durability and timeless design, thus encouraging consumers to invest in pieces that last rather than opting for fast fashion items that quickly fall out of style or wear out. Moreover, transparency about sourcing and manufacturing processes behind the scenes empowers consumers to make more informed choices, with the story of the garment itself enhancing its market value or appeal. Lastly, waste reduction ultimately promotes a circular economy where second-hand items, vintage pieces and garments from surplus fabric aid the reuse, recyclability and, ultimately, reduction of waste (C. Grandi, 2024, personal communication).

Similar to the strategies employed in set constructions, a repeating feature in Italy and abroad involves the storage, reuse, and rental outsourcing of previously used costumes (M. Gavotto, 2024; C. Grandi, 2024; L Chiarini, 2024g). Further, a supplementary strategy includes "upcycling", a collection of circular practices, such as creative and innovative repair, reuse and redesign of used textiles, aiming towards the creation of a new product of higher quality than

its compositional elements (e.g. used and wasted clothing products and components (Sung, 2023: 3722, 3727). Usually considered upon production wrap (L. Chiarini, 2024, personal communication), per Sung (2023:3721, 3727), while mentioned distinctively, upcycling often overlaps with the term "circular economy", comprising clearly a sub-set of the latter. As such, it is fully supported by circular economy policies, regulations and guidelines (Ibid, 2024: 3727). In this context, per Gavotto (2024, personal communication), a future, more sustainable direction and industry practice, not just for the audiovisual sector but for the cultural industries broadly, includes the creation of closed-loop, upcycling clothing and costume networks, which could facilitate seamless, cross-sectoral collaborations between cinema, theatre and professionals of the tailoring trade.

However, a major barrier in costume asset management is that such efforts remain largely personal for the sector's stylists, with long hours of unpaid labour for filing, cleaning and archiving inventories not compensated in production settings (Ibid, 2024, personal communication). Further, per Chiarini (2024g, personal communication), even in more organised settings facilitated by large production companies, such assets are stored in a very generalistic, unorganised manner by a crew (usually production assistants) that is paid on a weekly basis to facilitate production wrap, and within that, asset management. Moreover, with production budgets shrinking globally and budget cuts occurring both for pre- and production wrap phases, inventory management often proves to be an arduous task, resulting in significant amounts of unindexed clothing-related assets being stored in boxes at large storage facilities (Ibid, 2024g).

9.7.7 Sustainable Costume Care

As Chiarini (2024g, personal communication) further points out, the footprint scope of costume-related asset management also extends to their maintenance and care, particularly regarding fabric washing and treatment workflows. With strict adherence to the European

framework for the energy efficiency of electronics, professional, non-household washing machinery and non-household washer-dryers are subject to Directive 2006/42/EC of the European Parliament and of the Council on machinery safety and design standards (European Parliament and Council, 2006). As such, sustainability managers ought to consider (and later on, monitor closely) the use of washing machines and dryers used in costume care, particularly with respect to their energy class, microplastic filtering capacities and the use of environmentally friendly detergents and chemicals (L. Chiarini, 2024g, personal communication). However, given that in real-life production settings, such machines are procured by the same companies that also rent production trucks and fleets and are often mounted in the trucks themselves, the above considerations often become an oversight. In addition, if the task of caring for costumes is outsourced to professional dry cleaning services external to the production, it is important that such services are certified according to international standards (Ibid, 2024g, personal communication), such as ISO 14001.

9.7.8 Cosmetics

Naturally, consistency with the intent of greening audiovisual sets also takes into account the usage of hair and make-up products during production. Given that, in most instances, hair and makeup artists do not start work until production begins unless special effects makeup or masks are required (Clevé, 2006:104), sustainability managers have little influence over product selection other than advising for sustainable and environmentally friendly alternatives (L Chiarini, 2024g, personal communication).

Per EcoMuvi (EcoMuvi, 2024e), first and foremost, a cosmetic product's performance and the results it yields are prioritised, considering factors such as lighting, location, time constraints and relevance to the performer's skin type, tone and in some instances, personal preferences for particular cosmetics (Joni, 2021). Then, in instances where Hair and Makeup artists upgrade or re-stock their makeup kits through new purchases, it is essential that conscious and informed

choices are made with regard to packaging, ingredients and certification but also origins, thereby considering ethical practices and supply chain transparency in the product's manufacturing (EcoMuvi, 2024e).

In general, per Sahota (2014:6), cosmetic products are typically housed in excess layers of plastic packaging, which, besides contributing to high product prices, do not biodegrade in landfills and thus have a detrimental effect on the environment. Against this, EcoMuvi (Ibid, 2024e) advises for products made with recycled and, further, recyclable materials such as paper and plastic. Within those provisions, opting for cosmetic brands that allow for refills is encouraged, as are brands that offer take-back services. In terms of ingredients, the imperative is to exercise caution regarding the health risks of silicone, parabens, petrolatum, foaming sulfate and PFA-based products, as well as products with artificial fragrances, given that all of the above are directly absorbed by the skin (Ibid, 2024e). Further, EcoMuvi emphasises the need for attention when it comes to sourcing natural ingredients and the questionable labour practices behind their harvesting (Ibid, 2024e). Such examples include the use of mica, a naturally occurring (but also synthetic) mineral used for its reflective and luminous properties in makeup products such as eyeshadows, highlighters, blushes, foundations, and other products, whose extraction in countries like India and Madagascar often relies on child labour due to the small, confined spaces required to access and collect the mineral stone. As such, a more favourable alternative is the use of lab-produced, synthetic mica, which is purer and completely free from plastic and exploitation (Ibid, 2024e).

Further, the sourcing of palm and coconut oil-based ingredients must be examined and reconsidered. A vegetable oil predominantly grown in Indonesia and Malaysia, palm oil is responsible for the deforestation and, ultimately, the destruction of tropical rainforests, threatening the habitats of endangered native orangutan species (Sahota, 2014:6), notwithstanding further biodiversity loss, threats to indigenous communities and significant CO2 emissions due to forest clearing for production expansion (EcoMuvi, 2024e). In the case of coconut oil, caution must be exercised regarding its sourcing destination and methods, with

documented instances of coconuts being harvested by monkeys in Thailand, which, kept chained, are exploited for their efficiency in picking coconuts faster than humans at no cost (PETA Asia, 2022), in addition to deforestation and increased monocultural farming practices, due to high demand (Ibid,2024e).

In addition, owing to the historical use of testing methods on animals (typically conducted on rabbits and mice) and the ensuing scrutiny from the public, media and NGOs (Sahota, 2014:3), our attention is drawn towards the preference for cruelty-free and occasionally, vegan products (EcoMuvi,2024e). By default, in the first instance, per EU Regulations on Animal Testing, which saw the 1) banning of animal testing for finished products in 2004, 2) the banning of animal testing for individual ingredients, and 3) the banning of cosmetics tested on animals, including those produced out of the EU all cosmetic products in the EU are cruelty-free (Ibid, 2024e). Further, entering the discourse of vegan beauty products, Joni (2021) highlights that the word "vegan" can, in fact, be a misnomer, considering that vegan ingredients are often made from synthetic, petroleum-based chemicals, which pose hazards both towards the environment, animal and occasionally human health. Simultaneously, as EcoMuvi (2024e) points out, sustainability is not inherently synonymous with vegan product choices: for example, beeswax ingredients, however sustainably sourced they might be, are not suitable for vegan products. As such, per Joni (2021), a complex trade-off occurs where synthetically produced vegan-friendly beeswax alternatives are often shipped across the world, adding, through (indirect) Scope 3 emissions, to an overall carbon footprint that fundamentally contradicts the principle of minimal environmental impact.

As such, to make more informed choices and avoid supporting and, by extension, perpetuating an unethical supply chain, EcoMuvi suggests considering products bearing the B-Corp certification, where brands are benchmarked against high social and environmental standards, accountability, and transparency, guaranteeing that the certified company is committed to balancing profit with socio-environmental purpose (Ibid,2024e). Other suggestions include

designated certifications and labels indicating that the ingredients are organic, natural, vegan, cruelty-free, or sourced through fair trade (Ibid,2024e).

9.8 Energy Plan

9.8.1 The Use of Generators in Production Sets

As it has already been established throughout this study, audiovisual productions require substantial, high energy demands and extensive use of power-intensive equipment. In production settings, the Electric Department handles all powering aspects of the set, such as the usage of electrical equipment, lights, the electrical truck and, by extension, the generator (Koster, 2004: 174), which can comprise a self-contained unit or one that is often mounted or built-in to a truck. Working under the direction of the Director of Photography, who determines the powering priorities of each scene, such tasks are overseen by the production's gaffer and electricians (Clevé, 2006:2) and the generator (or "genny" in the US) operator, which ensures that such equipment is in position at the beginning of the day, fully fueled, and ready for the gaffer to tie in all appliances in need of power (Wales, 2017: 341-342). Per Wales (Ibid, 2014), the use of generators depends heavily on filming location characteristics, with, for example, outdoor and night-time settings in remote locations such as forests necessitating the use of a generator due to lack of accessible power sources. Further, access to on-site (private or public grid) electricity that is subject to permission or approval can also affect a production's decision to bring a generator (Ibid, 2014). As to the type of generator, any choice is subject to precision and reliability relative to the needs of a project. As such, per Boyechko (2022), the Electrical Department has to understand the required wattage of the lighting equipment hired to illuminate a scene, ideally aiming for an appliance that can yield about 20% more output than is needed. That is because, unlike connecting to a power grid, which in principle provides a steady supply of electricity, generators can have minor fluctuations in their power delivery; as

such, maintaining a buffer below the maximum load would ensure a more reliable performance (Ibid, 2022).

9.8.2 Industry-endorsed Solutions to Diesel-powered Generators

However, while generators are a key element to current production practices and workflows, the environmental impact associated with their use warrants our attention. Per research conducted by Albert, Arup and the BFI (2020:12) supporting the needs of a tentpole film with a budget of over 70 million US dollars, the usage of production energy utilities accounts for 30% of the production's overall carbon footprint. A further breakdown of that estimate reveals a notable 30% reliance on gas usage (for heating or gas-powered equipment purposes) and, further, a 70% electricity usage supporting the lighting, camera equipment and all other electric needs in a production set, primarily through the use of generators (Ibid, 2020:12), whose climate impact is higher when running on conventional diesel (Fritsche et al., 2020:7) and petrol (also referred to as gasoline). In themselves, refined by-products of crude oil — namely diesel and petrol— are supported by an immense infrastructure, including 132 refineries and 190,000 miles of pipelines in the US alone (US Energy Information Administration, 2024; American Petroleum Institute, n.d.), a physical and institutional entrenchment known as "carbon lock-in", which, according to the World Resources Institute (Sato et al., 2024) perpetuates, delays, or prevents the transition to alternative and more sustainable energy types. By now, as a cornerstone in each sector's green transition roadmap, the detrimental effects of diesel in tandem with diesel-dependent equipment are acknowledged; as such, in our immediate context, discourses centre around 1) the sector's overreliance and overuse of portable, diesel-powered generators, 2) their eventual replacement by more sustainable alternatives, available at scale and affordable or competitive prices further, 3) available infrastructure such as national grids.

9.8.3 Diesel-powered Alternatives

In global production settings, and per sustainable production practitioners from Latin America (N. Cuadros-Gonzalez, personal communication), the US and Canada (J. Sandoval; C. Winslow, personal communications) to Russia (M. Kurishenko, personal communication), China (C. Wang, personal communication), India (S. Nakkai, 2024, personal communication), the UK (M. L. Smith, personal communication), Germany (B. Heidsiek, 2023, personal communication) and Italy (L. Vecchi, 2023, personal communication) the hiring and usage of diesel-powered generators as a longstanding practice comprises the norm for powering audiovisual sets, despite the sector acknowledging their detrimental effect. Further, such a dependency is also marred with overuse: per Cuadros-Gonzalez (2023, personal communication), a "bigger is better" mindset prevails in the industry, where the capacity of hired generators far exceeds the need of the project. Simultaneously, Sandoval (2023, personal communication) observes that in US television productions, such oversized, maximum-capacity generators are frequently activated and left running in the background, sometimes without even being used.

According to Gassman and Guttefarde's (2021:69) predictions, the industry is set to keep using conventional diesel-powered generators for a while despite the development of newer diesel-dependent norms set to replace them, such as generators catering to Stage V standards. Developed to meet the world's most rigorous standards for non-road mobile machinery (NRMM), a class of diesel engines that includes construction equipment, railroad engines, inland watery vessels and off-road recreational vehicles and, among them, portable diesel generators used to power up film sets, the Stage V standards adopted by the EU Parliament in July 2016 set strict limits towards exhaust emissions of particulate matter (PM), particle numbers (PN) and nitrogen oxide (NOx)— all critical metrics in air pollution and emissions control— through the innovative use of diesel particulate filters (DPFs) and selective catalytic reduction (SCR) systems (Shao and Dallmann., 2016:1; Atlas Copco, 2020:3).

9.8.4 Hydrogen Power Units

Arguably, hydrogen power units are one of the more promising industry-endorsed solutions for cleaner energy for audiovisual sets and one that could effectively replace diesel generators (B. Hiedsieck, 2023; J. Sandoval, 2023; M L Smith, 2023; C. Gilmour, 2024; C. Winslow, 2024, personal communications). Valued for its potential as a carbon-free solution, hydrogen, the simplest member in the family of chemical elements (Encyclopedia Britannica, n.d.), has gained global recognition as a unique energy source and potential fuel (Dash et al., 2023:1), and as part of long-term decarbonisation policies and national roadmaps among the Group of Twenty (G20) and the European Union (International Energy Agency, 2019:21). Based on its environmental impact, hydrogen production is classified into three main groups: green, based on renewable energy sources (see discussion in the following section) such as solar, wind and hydropower; blue, based on coal gasification and natural gas aided by carbon capture and storage systems (CCS) and red, which is produced through the use of conventional fossil fuels, yet without emissions capture, thus making it less sustainable (Ibid, 2023:1). In general terms, per the International Energy Agency (International Energy Agency, 2019:17) hydrogen supports a resilient green transition and sustainable future via two fundamental capacities: 1) existing applications of hydrogen can use alternative and cleaner production methods for producing hydrogen, simultaneously utilising a more diverse set of energy sources while 2) harnessing produced hydrogen either as an alternative to conventional (diesel or petrol fuels) or as a supplement in expanding electricity usage, either in its pure form or converted into hydrogen-based fuels such as synthetic methane, synthetic liquid fuels, ammonia and methanol.

However, in our immediate context, and despite its transformative potential as a cleaner alternative to diesel, the adoption of hydrogen and hydrogen-powered technology remains significantly underutilised. Per Winslow (2023, personal communication), one of the main barriers to the adoption of hydrogen is the significant costs associated with developing and implementing hydrogen-based technologies. As Winslow notes, in US production settings, while both hydrogen and hydrogen-based storage battery systems have been piloted and are

available, they often come with a "green premium", thus making them more expensive for an average production company to hire than traditional diesel generators; further, rendering such solutions as viable options for established industry players whose production budgets allow for flexibility, such as Netflix and Disney (Ibid, 2023). In addition, Winslow explains that both national and state-level regulations influence hydrogen infrastructure, often creating a complex patchwork of regulations that companies must navigate. Often, some regulations deter companies from investing in hydrogen and clean tech, while others award incentives and non-dilutive funding opportunities that include grants, tax credits or rebates, such as, for example, the large federal bill known as the US Inflation Reduction Act (IRA) of 2022 (Ibid, 2023). Similarly, the same sentiment is echoed in Europe, where, per Heidsiek (2023, personal communication), the lack of supportive policies, regulatory frameworks, and real-world implementation at the EU level adds weight to the audiovisual sector's own inherent systemic resistance and a persisting reliance on fossil fuels rooted in well-established practices and vendor relationships (C. Winslow 2023, personal communication). Further, as a result of all the above, even in cases where demand is evident, the use of hydrogen-powered technologies in audiovisual production settings is often characterised by limited supply and availability at scale (B. Heidsiek, 2023; M. Sant'Unione, 2024; L. M. Smith, 2023; C. Winslow, 2023, personal communication).

9.8.5 Renewable Energy Sources

While hydrogen (alongside electricity) in itself is not a primary energy source but an energy carrier that stores, transports and delivers energy derived from other energy sources, including fossil-based ones (Rosen and Koohi-Fayegh, 2016:10), several practitioners draw our attention towards the potential inherent in renewable energy sources (or "renewables", in the vernacular). Per Liao and Wan (2022:3), unlike fossil fuels, renewable energy is sourced from abundant and readily available natural sources that are replenished faster than they are consumed. Such sources primarily include biomass (occurring from the burning of wood and

charcoal, animal products, manure, and plant remains, as well as municipal solid waste); hydroelectricity (deriving from the kinetic energy of moving water); solar energy (utilising the sun's radiation in applications such as solar water heating systems, photovoltaics (PV, henceforward), and solar thermal systems); wind energy (obtained through the kinetic energy of moving air) as well as tidal and geothermal energy (Ibid, 2022:1-3). In addition, green diesel, also known as "renewable diesel", "second generation diesel", hydrotreated vegetable oil or hydrogenated vegetable oil (HVO), derived from organic matter such as wood, oilseed crops, seaweed and animal and fish waste, has the capacity to provide for cleaner combustion with a reduced impact on the atmospheric accumulation of CO2 (Douvartzides et al., 2019:2). Per the International Energy Agency (2021:3), renewables have been the "success story" following the aftermath of COVID-19, with a 3% growing demand across key sectors such as power, heating, industry and transport in 2021, while further predictions see potential renewable electricity generation demand reaching an increase of almost 70% by 2028 (IEA, 2023:15). However, considerable barriers towards a timely green transition exist, with the energy crisis triggered by the Russian Dederation's invasion of Ukraine, causing an unprecedented rise in natural gas and coal prices; leading to significant government intervention in energy markets, aiming at protecting consumers from soaring energy prices (Ibid:2023:51,15). Despite their necessary—and by all means, justifiable—nature, such interventions created uncertainty for investors regarding future investment conditions, thereby driving up costs and contract prices for both wind and solar PV projects (Ibid:2023:23).

Consequently, a mixture of both opportunities and challenges affecting every aspect of the economy is also mirrored in sustainable audiovisual production on multiple levels that sustainability managers have to navigate when drafting a production's sustainability policy. Per Vecchi (2023, personal communication), renewables are the primary energy choice when adhering to Zen2030's protocol due to their stability and reduced need for fuel transportation. However, in Italian audiovisual production settings, the choice of renewables is not always feasible nationwide, with many regional disparities in renewable grid connection capacity, notwithstanding instances due to infrastructure delays, such as a two-month waiting period

before such connections can be established to the benefit of a production (Ibid, 2023, personal communication). Similarly, scenarios involving the use of other renewables, such as green diesel, are marked by uneven distribution. Per Sandoval (2023, personal communication), the adoption of renewable diesel is not widely available in major North American cities such as New York City or Toronto but is in California, subject to proactive policy contexts and regulatory frameworks, such as the California Low Carbon Fuel Standard (LCFS), which see the active and incentivised promotion of cleaner alternatives (Cullenward, 2024:7). As such, it is evident that governments and policymakers hold significant responsibility in incentivising the audiovisual sector's green transition, just as they do for every other sector: as Marks (2023, personal communication) notes, in a capitalist economy, demand and competition for energy drives the economy as much as it drives politics. Further to this, per Cuadros-Gonzalez, unless government-supported infrastructure is established, the conversation essentially reverts back towards the use of diesel generators, sustainable alternatives for which, per the previous point raised, are not always affordable or available at scale (C. Winslow 2023, personal communication).

Taking stock of the technological options above, alongside their logistical constraints and obstacles in practical applications, as well as different localised sustainability frameworks and infrastructures —or lack thereof— is, per Raciti (2024, personal communication), part of a professional role whose function is in a consultant capacity, to determine feasible solutions that ensure sustainability compliance in all production departments, including the Electrical Department. As such, per Vecchi (2023, personal communication), any solution can be optimal or subpar, depending on the context in which it is considered or, indeed, applied. As an example, Vecchi observes that when shooting in rural Sicily, where temporary renewable connections might be unavailable or out of reach, the use of a diesel generator compliant with the latest Euro 6 standards for reduced emissions is often a flexible and enough justifiable solution for accreditation, verification and certification bodies, provided such an option is proposed a priori in relevant guidelines (Ibid, 2023, personal communication).

9.8.6 From Sustainability Planning to Operational Policy

Navigating options and identifying optimal solutions tailored to a project and its needs across all production departments, the Sustainability Manager then creates the project's sustainability policy, which —ideally and subject to timely planning— is delivered and disseminated during late pre-production. In the case of EcoMuvi (L. Chiarini, 2024h, personal communication), the policy is outlined in a brief, usually 2-page document. On its first page, the document lists key production personnel, such as the project's designated sustainability manager, producer and unit manager, assigning responsibilities so that different aspects of sustainability are met. Simultaneously, other parameters of the project are addressed, such as the production budget, the type and duration of the project, i.e. "agile" projects, such as short films and documentaries, advertisements, music videos or other audiovisual projects requiring less than 12 days of filming, with everything else classified as "standard" (EcoMuvi, 2024f:4). Further, an acknowledgement of the production's voluntary adoption of the EcoMuvi protocol for certification purposes, followed by a breakdown of what such an adherence entails in production settings. On its second page, the policy document addresses the specific needs of the project in terms of location (and thereby, its biodiversity value), use of resources, energy requirements and their conservation, setting key priorities among these aspects. As such, the finalised policy is then distributed digitally (per the sustainability principle of reduced paper use in all facets of production) to all crew, either by the appointed Sustainability Manager or through the production's company internal channels (such as project or production company-specific digital platforms), before the shooting starts, alongside a thorough introduction of what EcoMuvi is and how it works on set, establishing clear expectations for every crew member, particularly for those not familiar with sustainability practices on set (L. Chiarini, 2024h, personal communication).

9.9.1 Presence of Sustainability Managers on Set

A prosaic argument that one can easily be led to make about the phase of production (or "shooting") is that, logistically, it would be a more straightforward process than its preproduction backbone component. After all, having thoroughly assembled a crew, identified and secured locations and scheduled activities, and pooled together other creative, technical, and logistical resources during the latter, production would then ideally only be subject to a coordinated execution and wrap. However, such an argument underestimates the real-time challenges, adaptation and complexity of coordinating multiple departments in the making of a project. Along similar lines, a comparably simplistic assumption can also be made about planning the sustainability policy in preproduction vis-à-vis its execution on set. As such, broadly, as much as a seasoned unit production manager working directly under the producer is required to oversee the day-to-day running of the crew and set according to scheduled activities (Wales, 2017:173), or Heads of Departments overseeing specific aspects pertinent to their craft (L. Vecchi, 2023, personal communication) so is the on-site expertise and indeed, the presence of a "central figure" responsible for sustainability needed (R. Cremonesi, 2024, personal communication) to discern which policies on set are more effective, raising the crew's awareness about sustainability issues and alternatives and simultaneously minimising any "inconvenience to the crew" and established workflow processes, while ensuring on-set compliance (Victory, 2014: 26).

While Sustainability Departments (for lack of a better term) in most production settings lack standardised structures or descriptions of roles for its professionals, and therefore, such responsibilities are negotiated between the production company or studio in tandem with the sustainability consultancy or service (J Sandoval, 2023, personal communication; Hadas: 2024:7;), certain common threads necessitating the presence of sustainability professionals during production can be identified in a manner that accords with established guidelines (predominantly PGA's Green Production Guide) or protocols that are subject to verification and eventual certification. Therefore, as operationalised by most sustainable production norms,

such on-site support can be articulated along the lines of 1) monitoring and documenting the sustainability performance of scheduled activities, 2) meaningful interventions such as crew training, real-time consultation and realignment towards one or more protocols, as well as 3) liaising with suppliers and other collaborating stakeholders attached to the project, and 4) facilitating the access of inspection bodies for performance evaluation and verification purposes as part of the certification process, while 5) navigating resistance, whether rooted in established workflows, generational divide or knowledge gaps.

9.9.2. Monitoring and Documenting Sustainability Performance

Beginning with monitoring, Chiarini (2023, personal communication) makes a case for balancing the direct, on-site involvement of sustainability managers with the need for the production departments and their teams to take ownership of sustainability in their respective workflows. As such, EcoMuvi's approach sees the inclusion of sustainability managers during critical junctures of a project, such as the start and end of production and during any key location changes over its course; an approach that, for Chiarini, essentially prevents dependency on sustainability managers, instigating capacity-building through cultural change of habits on sets, where each crew member, having been trained, becomes autonomous and accountable for sustainability in their own workflows (Ibid, 2023, personal communication). In contrast, per both Vecchi of Zen2030 (2023, personal communication) and Cremonesi of Green Ciak (2024, personal communication), in-person on-site support by sustainability managers should be constantly provided during the entire filming process, on account that sustainability is a new addition, not fully prioritised, integrated or sufficiently nurtured in production settings.

Whether ongoing or indeed strategic in-person support is facilitated, an important component of monitoring is the documentation of sustainability performance and the environmental impacts of production. Essentially a process of thorough data collection, documentation ensures that the production keeps adequate records in areas such as its usage of fuel and other

energy needs, alongside the purchase and rentals of all items and materials used, ranging from transport vehicles and generators hired to filming equipment and lighting kits, and from set, props and costumes materials to catering and office supplies. (Hadas, 2024:7). Such records are evidential and consist of collected invoices and data (e.g. readings, photos or production notes) pertinent to energy consumption, transport and asset management, which later on are consolidated as deliverables to evaluate a project's management and sustainability compliance by the certifier (C. Morlacchi, 2023, personal communication).

9.9.3. On-site Interventions

Appending to Chiarini's point about capacity building is the notion of on-site crew training and real-time consultation with the sustainability manager throughout production. Ideally conceived as part of a communication strategy facilitated internally from the production to its crew (EcoMuvi, 2024f:14), the process takes new contours within active production settings when sustainability managers consult with each department, raising awareness around role-specific responsibilities and workflow-related sustainability issues. Per Smith (2023, personal communication), such an intervention is essential given that a lack of formalised training characterises many professional roles in audiovisual production that highly influence sustainability. As an example, Smith cites key roles such as transport captains and location managers, whose training and acquisition of skills are not typically included in formal industry programmes (such as those offered by Screen Skills in the UK) or even through facilitated apprenticeships but rather learned on the job. As such, an intervening sustainability manager oughts to provide informed and prompt answers to practical queries, ranging from whether the choice of an electric or diesel car would better suit specific project needs (L. Vecchi, 2023, personal communication) to how to properly facilitate the removal and recycling of set assets or materials during production wrap (V. Jamonte, 2023, personal communication), and proper waste separation and disposal in accordance with the local guidelines where the principal shooting takes place (J. Sandoval, 2023, personal communication).

In addition, while the function of on-site training transcends mere compliance with sustainability protocols, hoping to instigate a long-term cultural shift in the long-term (R. Cremonesi, 2024, personal communication), it is still a process of realignment towards the sustainability policy agreed upon in pre-production and overall compliance (EcoMuvi, 2024f:9) with one or indeed, multiple protocols. Per film commissioner Luisa Giuliani of IDM Südtirol (2023, personal communication), European co-productions who utilise Südtirol-Alto Adige's scenic locations have to comply with two, sometimes three sustainability protocol norms, guidelines or calculators simultaneously, owning to compliance with multiple funding requirements. As an extreme (but plausible) example, such a scenario could imply compliance with Trentino's Green Film rating system, tied to regional Italian funding, the use of BAFTA's Albert calculator mandated by broadcasters, and Germany's Green Shooting Card protocol, all in tandem with IDM's own Green Shooting Certificate guidelines. As such, a production crew stationed at Südtirol-Alto Adige would have to navigate different requirements, which, even though intersecting, would necessitate the meaningful intervention of sustainability managers.

9.9.4. Liaising with suppliers

Essentially, the engagement of sustainability managers with a production's suppliers is a bilateral and mutually beneficial process for both parties: on the one hand, liaising with suppliers of hospitality goods can almost always guarantee the procurement of biodegradable alternatives on set (V. Jamonte, 2023, personal communication), while liaising with energy suppliers can meet logistical needs such as the procurement of renewable energy (N. Cuadros-Gonzalez, 2023, personal communication). On the other hand, it signals and stimulates demand for more sustainable or local alternatives (N. Satta, 2023, personal communication), thus greening the entire supply chain attached to the sector in a feedback loop manner. In addition, as Beatrice Belli of Amazon MGM Studios notes (B. Belli, 2023, personal communication), the relationship between the production and its suppliers has been

instantiated with instances of direct, systemic benefits for both parties, where, for example, suppliers of LED lighting kits or electric generators receive tax incentives for offering discounted rentals to productions, therefore driving down procurement costs for the production.

Where the two parties disengage is in that, arguably, not all vendors attached to the audiovisual sector's supply chain position themselves as a priori "sustainable". Per Sabri and Nadarajah (2016:39), in principle, a business deciding to make changes in their practices or additions to their stock will somehow affect their profitability: "sensibly", so their managers "will hinder changes to maintain what they have believed [to be] as their most optimal profits" (Ibid, 2016:39). Along those lines, per Della Campa of Edison Green Film (2023, personal communication), when it comes to vendors providing lighting kits rentals, it is logical that the latter will prioritise the rentals of an existing inventory consisting of traditional luminaire assets (e.g. bulb-based, Tungsten or Halogen lights), due to the amortised costs of acquiring them, rather than investing in sustainable artificial lighting alternatives, such as LED. Equally, per sustainability expert and film commissioner Tim Wagendorp of the VAF (2023 personal communication), the reverse scenario also occurs, with productions in mainland Europe being sold water fountains transported from the UK and even compostable cups that cannot compost, a disservice that essentially amounts to greenwashing.

9.9.5. Facilitating Access of Inspection Bodies on Audiovisual Sets

While audits have long been a standard practice in the audiovisual sector, primarily in the form of final cost reports prepared by a Production Accountant to meet the requirements of a project's financiers (Patz, 2010:433), they are arguably a fairly recent addition to assessing the non-financial environmental performance of productions during principal photography. In this context and according to ISO 9000:2005 (ISO, 2005: v, 16), which essentially is "a specification about specifications" that describes the fundamentals and terminology of quality management

systems, an "audit" is defined as a "systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled". Per Mazé et al. (2016:1-3), alongside the rise in EU requirements, both private and public authorities introduced a number of voluntary quality assurance and labelling regulations subject to auditing policies, with recent trends in the industrial sector indicating that such auditable voluntary schemes are increasingly complementing mandatory regulations. Whereas dominant sustainability norms and guidelines such as PGA's Green Production Guide and BAFTA's Albert are not subject to a mandatory auditing mechanism (Raciti, 2024, personal communication), in the EU and particularly the Italian audiovisual sector, audits are an integral part of compliance verification, leading to certification. As such, compliance verification for sustainability performance involves facilitated access to real-time production settings by a third-party Conformity Assessment Body [Italcert in the case of EcoMuvi (EcoMuvi, 2024f:4)] or a Verifying Body, such as Bureau Veritas and DNV in the case of Green Film (L. Merzagora, 2023, personal communication) and further ICQM in the case of Zen2030 (L.Vecchi, 2023, personal communication).

Per Cresto-Dina of Tempesta and Founder of EcoMuvi (2023, personal communication), audits solidify the notion that sustainable production protocols are voluntary yet enforceable norms and not mere recommendations, acting as mechanisms for productions to demonstrate their reduced environmental impact as promised during their EU funding applications. As such, in production settings overseen by EcoMuvi, a Phase One audit conducted shortly before production wrap ensures that compliance with the protocol for certification purposes is met (EcoMuvi, 2024f:4). Typically, the process involves a visit (or facilitated teleconference) from a certifier-approved auditor, who assesses premises, including location sets or studios, craft and catering stations, base camps and production offices, as well Art and Set Department labs and storage facilities, gathering the required evidence to evaluate compliance (or lack thereof) in accordance with the EcoMuvi protocol (C. Morlacchi, 2023, personal communication). Further, per Morlacchi of Italcert (2023, personal communication), the evidence collected during this visit is not meant to quantify or account for a production's GHG footprint merely but to address

broader environmental benchmarks per EcoMuvi's specification in areas such as the management of waste, infrastructure and assets, energy development and consumption and transportation and by extension, the production company itself from an organisation management perspective (Ibid, 2023, personal communication). Lastly, per Chiarini (2023, personal communication), the results and shortcomings of such an assessment are communicated directly to the project's producer(s).

Whereas one of the central arguments around audits is that by being "linked to a method of feedback and motivation", they positively drive professional development by "unmasking areas requiring improvement" (Habiba, 2006:241) as well as innovating the governance practices of global commodity and supply chains (Mazé et al., 2016:1), they are nevertheless occasionally received with scepticism. Per Funnel and Wade (2012:434-435), the potential for rivalry and conflict in auditor–auditee relationships often makes the process essentially "a negotiation", an escalation during which could pose a threat to the credibility of the audit scheme essentially by questioning the auditor's ability to provide reliable, fair or useful findings. Speaking from an auditor's perspective, Morlacchi (2023, personal communication) notes that Phase One Audits are often characterised by discrimination on the part of the auditee (the production and its crew), which often signals gaps in their understanding or commitment to the protocol and certainly a late adoption of the norm. Moreover, per Schneider-Garcia (2023, personal communication), other setbacks include the high costs associated with instigating the process of third-party assessment bodies, which often discourage small-budget productions from pursuing auditable sustainable production norms altogether.

9.9.6. Navigating Resistance to Change

Per Lonzano (2012:19), a common challenge of organisations adopting voluntary tools (e.g. sustainability reporting schemes and certifications) and initiatives (e.g. adoption of EMSs) in

order to address their sustainability often includes the lack of engagement with "soft" issues in the process, such as the change in values, visions, philosophies, policies, and management practices that such adoptions imply, which potentially might lead to resistance. Towards this notion, Sant'Unione (2024, personal communication) notes that the work of sustainability managers stretches beyond embedding their technical knowledge and practical expertise in audiovisual production sets, often to include more diplomatic communicative efforts in addressing resistance towards essentially what is perceived as a disruptive structural and cultural change (L. Chiarini, 2023, personal communication) in productions with constantly changing personnel (C. Morlacchi, 2023, personal communication).

For the sector's professionals invested in sustainability, such resistance is articulated—and expected— along several lines. For a start, Cuadros-Gonzalez (2023, personal communication) points to an industry culture that inherently avoids both transparency and accountability for the environmental impacts of its operations, a pattern conveniently sustained through the performative adoption of various "green seals" on offer, schemes that often are leniently obtained through minimal efforts, such as basic sustainability reporting. Further, Chiarini (2023, personal communication) observes that the more seasoned (and arguably older) Italian professionals in audiovisual sets, as "owners of their craft", tend to perceive that craft as an extension of their expertise and, further, their established workflows as part of "a very traditional industry". This is often the case for creative and artisanal departments such as Set Design and Construction, where the sourcing of certified wood (i.e. FSC) and non-toxic paints and varnishes (i.e. those meeting stringent EU Ecolabel criteria) are often grounds for negotiation between the artist and the sustainability manager (Ibid, 2023). As such, a mindset of "we've always done it this way" (K. Astikainen, 2023, personal communication) or "if it is not broken, why fix it?" mentality (B. Alassad, 2024, personal communication) prevails despite the potential for improvement in efficiency or even creativity, let alone sustainability. Further, resistance to change is also articulated through generational dynamics, with more junior crews of professionals generally being more receptive and responsive towards organisational change, not only in the context of sustainability and protocol compliance (L. Chiarini, 2023; E. Doxiadi,

2023; S. Nakai, 2024; P. Manera, 2024 personal communication) but also in areas adjacent to the social pillar of sustainability and DEI frameworks, such as working conditions, gender balance in crew composition, and mental health on set (R. Day, 2024; R. Jones-Lee, 2024; L. Johanssen, 2024; A. Knott, 2024; J. Neustupová, 2024, personal communication). Moreover, resistance can also be parsed as a logistical challenge: per Raciti (2023, personal communication), pushbacks are also expected from producers in cases where sustainability protocols are viewed as too strict and difficult to implement in Italian production contexts, making them perceived as both an added cost and added labour of significant complexity, to an existing heavy, time-sensitive and budget-constrained workload (M. Cucco, 2023; V. Jamonte, 2023; C. Lejeune, 2023; M. L. Smith, 2023, personal communication).

10. Post-Production and Other Stationary Workflows

10.1. Introduction and Scope

Broadly, post-production is an umbrella term for a variety of technical and creative tasks that stretch beyond the assemblage of a project through editing, including the integration of film titles, credits and motion graphics, the incorporation of music, sound effects, ADR (*Automated Dialogue Replacement*; also referred to as looping), colour correction and colour grading, dubbing and foreign audio delivery requirements (Spohr et al., 2019:21-25).
Considering the radical shifts in post-production over the last few decades, such as the transition from analogue to digital workflows and delivery on account of cost savings, the proliferation of NLEs (non-linear editing systems) and other technological advances (Wales, 2017: 453-454), the conversation to be had about sustainability in the Post-Production Department predominantly revolves around digital workflows (L. Chiarini, 2024e, personal communication). This includes shooting, editing and finishing digitally, apart from the rare instances where a reverse film transfer (e.g. digital-to-film output) is necessitated for access to certain global film markets and film festivals that only accept film prints for theatrical

distribution (Patz, 2010:411); a mode of delivery implying significant chemical and material waste given extensive handling processes such as film stock development and prints (L. Chiarini, 2024e, personal communication).

However, from the viewpoint of a sustainability manager, such a predominantly digital discourse expands to include other essentially stationary and lab-based workflows, such as animation, visual effects and, to some extent, virtual production, media libraries, archives and storage facilities, and remote collaboration tools or technology (E. Doxiadi, 2023; C. Formenti, 2023; L.Chiarini, 2024e; C.Lejeune, 2024). Of course, such an expansion should not be mistaken for equivalence but rather understood as a framework for identifying, managing and reporting common elements pertinent to the sustainability of such workflows. Towards this, of particular relevance are considerations in areas such as resource use, material and electronic waste, as well as data collection and governance, precisely because of the digital infrastructure (e.g. studios and facilities) such workflows often share (L. Chiarini, 2024e, personal communication) and whose challenges, as Biancarelli et al. (2023:56) observe, also characterise in general most tertiary sector businesses. While largely outside the scope of this research, the sustainability of building infrastructures such as studios that host post-production facilities can be subject to certifications such as LEED (Leadership in Energy and Environmental Design) in the US (Karakhan, 2016:2), BREEAM (Building Research Establishment Environmental Assessment Methodology) in the UK and mainland Europe (Statista, 2024a) and is therefore considered in the assessments and consultations of sustainability managers (see discussion on sections 8.8.4-8.8.5), the emphasis given currently is primarily on quantifying the energy supply that powers the machinery and hardware of stationary workflows.

10.2. The Carbon Footprint of Stationary Workflows: A Macro Perspective

As such, first and foremost, per EcoMuvi (2024f:27), an adequate sustainability performance in stationary workflows utilises facilities that, on account of their sources of energy, promote a renewable energy mix for at least 30 per cent of the energy they provide. This can be subject

to green energy suppliers catering electricity to the facilities (Ibid, 2024f:27) or, ideally, through a facility's own self-reliant renewable energy infrastructure, such as installed solar panels mounted on roofs or walls and quieter, non-disruptive wind turbines (Albert et al., 2020: 27; Biancarelli et al., 2023:56; EcoMuvi, 2024f:27). While a minimum threshold of 30 per cent renewable energy mix, specific to EcoMuvi, might seem moderate, it's significance becomes evident when considering the overall footprint of stationary workflows in terms of energy consumption; insights towards which are offered by Grenoble-based academic and practitioner Cedric Lejeune. A media technology engineer by trade, specialised in sustainable innovation around digital cinema workflows and Co-Founder of Holli, Lejeune (2024, personal communication) estimates that a visual effects artist's carbon footprint in France averages about 8 kilograms of CO2 equivalent per workday, which can be considered significant if scaled across the post-production workforce of the industry globally. In breaking further down this estimation, key contributors are attributed to workstation energy, including screens and monitors (1.5 kilograms), air conditioning systems, central storage and other operational equipment (3 kilograms) in tandem with Scope 3 emissions, external to the post-production facilities, related to food (2 kilograms) and commuting to the facilities (1.5-2 kilograms) (Ibid, 2024). Further to Lejeune's estimations, the same footprint rises up to 10-12 kilograms in coal-dependent countries such as Poland, where 60 per cent of total electricity generation derives from hard and lignite coal combined (Statista, 2024b) and China, which maintains the greatest number of coal powerplants globally (Statista, 2024c). Moreover, given that budgets allocated to post-production are relatively fixed, tasks pertinent to visual effects and animation are often outsourced to countries like India (predominantly), where wages and facility rentals are cheaper and coal accounts for more than 70 per cent of the country's electricity generation (Kay, 2024). Per Lejeune (Ibid, 2024), such solutions result in tradeoffs between cost-efficiency and sustainability, underlying the notion that often cheaper solutions may result in bigger carbon impacts.

10.3. Hardware: Energy Requirements, Production and Obsolescence

A second consideration pertains to the equipment, where the energy class of hardware is considered, with particular emphasis on technical specifications and energy-related certification marks attesting to computational energy efficiency, such as Energy Star and EPEAT (Electronic Product Environmental Assessment Tool) (L. Chiarini, 2024b, personal communication). Without diverging unnecessarily into overly technical details, the "impact of post-production is productivity" (C. Lejeune, 2024, personal communication), essentially boils down to excess computational power and cooling infrastructure requirements of the stations used (e.g. editing and grading suites, on-site render farms and storage systems) (L. Chiarini, 2024b, personal communication), particularly energy intensive in the case of 3D animation facilities (Biancarelli et al., 2023: 57). Further, while not subject to a project's sustainability assessment (for the time being) but rather an attempt at greening the post-production supply chain by fostering multilateral collaboration between its various actors are the various strategies for the repurposing of obsolete equipment and hardware. As Chiarini (2024b, personal communication) notes, the post-production department is characterised by a rapid turnover of electronic waste, or "e-waste" in the vernacular, which presents us with a two-fold problem: 1) the impact of (the eventual) disposal of such devices and parts 2) on account of how they were manufactured. In addressing the first component, per the World Health Organisation (WHO, 2024), e-waste, which includes computers, mobile phones, large household appliances, and medical equipment, comprises one of the fastest-growing solid waste streams globally, with 62 million tonnes produced globally, a mere 22 per cent of which is only formally tracked as collected and recycled. In our immediate context, per research conducted by the UK festival and event industry green forum Vision: 2025 Group (Riach, 2020), in UK studio settings, LED screens require an update on average every two years, while the average life of a laptop in the audiovisual sector is about eight months. Such estimations are particularly problematic as approximately 32 tonnes of electronic assets across 453 production companies and facilities constantly wait to be replaced, eventually becoming e-waste (Ibid, 2020).

In principle, the European Union framework includes stringent sets of legislation for the handling of waste flows, including e-waste, such as The Basel Convention of 1989 ("*On the Control of Transboundary Movements of Hazardous Wastes and Their Disposal"*) and the RoHS (Restriction of Hazardous Substances) Directive, which, launched in 2002, instigated a global effort for the restriction hazardous substances in electronics, leading to several adoptions of RoHS-equivalent requirements in Turkey, Ukraine, The United Arab Emirates, Brazil, China, India and several US states, among others (Horn, 2016:1-4). However, to quote Bisschop (2012:332), often as a result of such stringent e-waste regulations, the costs associated with waste management, making waste a globally valued market commodity and a way "to externalise the harm and create a distance between producers and consumers, on the one hand, and those affected by the dumping or recycling of the products on the other". As such, a considerable portion of this e-waste makes its way into domestic landfills or, as eloquently stated by Milburn (Starosielski and Walker, 2016:81), shipped "to countries with less-than-stringent disposal regulations, [where] they add to a steady release of toxic chemicals into the atmosphere, the oceans, and the soil". When (illegally) shipped from mainland Europe, such destinations include predominantly West African countries such as Nigeria, Ghana, Cameroon, Togo Senegal, Benin, Ivory Coast, Liberia and Nigeria and Southeast Asia countries such as Vietnam (Bisschop, 2012:230). In turn, what adds weight to such an outcome is the manner in which certain electronic appliances have been manufactured. Per Milburn (Ibid, 2016), their components often rely on the mining of coltan and other mineral stones through processes that contribute to the depletion of wildlife habitats and the onset of humanitarian crises in coltan-rich regions such as, for instance, the Democratic Republic of Congo. Further, per WHO (2024), several other toxic substances are involved in the making of electronics: while not harmful during their regular consumer use as appliances (or parts thereof), when disposed of, electronics [which can take millennia to fully decompose (Gonzalez-Monserrate, 2022)] gradually release toxicants, such as lead, especially if they are recycled through improper but fairly common practices, such as open burning in landfills.

As such, in addressing and partially mitigating the above concerns, Chiarini (L. Chiarini, 2024b, personal communication) recommends looking for products or product parts that provide an ethical Certification of Origin, in itself subject to international social and ethical audit frameworks such as the Responsible Bussiness Alliance's (RBA) Code of Conduct (Responsible Business Alliance, 2024) and AccountAbility's AA100, both of which comprise subsets of corporate social reporting (Greenwood, 2006:2). Further, Chiarini underlines the importance of expanding the functional lifecycle of such assets in a sector-wide manner through circular practices such as sustainable repurposing, either as donations to animation, VFX and post-production schools or startups that can disassemble and recondition them sustainably (L. Chiarini, 2024b, personal communication).

10.4. Data Management and Cloud Storage

A third consideration that sustainability managers address relates to data management, which is examined along several lines: the footprint associated with the storage and transfer of digital data and, within that, the use of cloud storage, as well as governance integration. For a start, EcoMuvi prioritises and awards the digital transfer of daily footage from the production to the facilities (2024f:27) in a bid to minimise the need for travelled mileage that the physical drop-offs of various hard drives entail, such as back-and-forth exchanges between the post-production facility to the colourist, the audio team and dubbing services. Despite this being an ideal scenario, digital transfers are mired with unique challenges for sustainability. As such, as a part of a dynamic development for the EcoMuvi protocol, Chiarini (2024b, personal communication) insists on testing and refining indicators that address the complexities of digital transfer, such as the long-term impact of downloads and uploads facilitated by audiovisual production. Further, she demystifies the popular notion that sees cloud storage as "immaterial", emphasising that it relies, in fact, on a carbon-intensive network of computers aboard terrestrial data centres and clusters of servers (Periola et al., 2024:2). Per Pitre and Chauviré (2022) these can either be 1) on-premise data centres owned by the user (e.g. post-

production facility), 2) traditional data centres for which the users rent physical machines for dedicated use or 3) cloud data centres. Moreover, per Gonzalez-Monserrate (2023), data centres, where video and other production-related assets are stored, rely overwhelmingly on air conditioning systems to diffuse concentrated heat away from computers, a process underscored by a hyper-redundant setup ensuring that fail-safe systems are in place to maintain operational continuity at all times. This process often consumes most of the energy catered on-site, primarily supplied by diesel generators, with only 6-12 per cent of that energy used for actual computational processes (Ibid, 2023).

Arguably, solutions concretely addressing the above would largely necessitate both advancements in technology and top-bottom interventions. On the one hand, the ICT sector embraces technological innovation that addresses Cloud sustainability, including proposals to host future data centres in non-terrestrial locations such as the stratosphere, underwater, or even in space (Periola et al., 2024:1). On the other, per Laura U. Marks (2023, personal communication), government intervention is necessitated on two levels: national and international. In the first instance, carbon emissions generated from data centres (and, by extension, networks, telecoms and streaming platforms) ought to be subject to domestic regulations, data cap usage and, further, the introduction of virtual carbon taxes. This is particularly urgent given that ongoing well-intended corporate efforts, such as investments into renewable energy sources, carbon-neutral or carbon-negative operations and climate pledges of leading corporations, such as Microsoft, Google Cloud and Amazon Web Services, fail to achieve "a sustainable reduction of their emissions in absolute terms" (Pitre and Chauviré, 2022). Subsequently, even if sufficiently implemented, such a regulatory framework should be imposed in a globalised market, as in the context of digital distribution and streaming, consumers could circumvent national regulations related to data caps by accessing services from other countries through, for instance, the use of virtual private networks (VPNs) (L. U. Marks, 2023, personal communication). As such, in tandem with domestic-international regulations, a virtually applied carbon tax would further motivate the optimisers (e.g. owners of data centres, server farms or streaming platforms) to reduce their carbon footprint in order to

avoid a penalty (Moghaddam and Cheriet, 2017: 12). However, as Marks (2023, personal communication) speculates, such solutions could inadvertently lead to higher service costs, affecting consumer demand, while providing competitors with an edge in a highly-competitive market; arguably disincentivising factors for a sufficient buy-in.

10.5. Company-Embedded Governance Strategies in Sustainability and DEI

As such, issues related to energy consumption and digital storage, subject to technological-infrastructural changes and robust regulation, constitute areas that are beyond the immediate control of post-production facilities or, for that matter, sustainability managers. However, bottom-up interventions are feasible and, therefore, optionable and pursuable, and, per Chiarini (2024b, personal communication), subject to effective governance practices at the organisational level, aiming to ensure transparency and accountability in the collection of post-production data. Broadly and in a sector-agnostic context, per Du Plessis et al. (as quoted in Naciti et al., 2021:56), corporate governance is "a set of rules and organisational structures that are the basis for correct business operation, understood as [a] compensation for the interests—sometimes divergent—of stakeholders". Within the word "correct" lies the notion of "good governance", which Keping (2017:6-7) break down into a framework of six essential functions: 1) legitimacy (voluntary recognition of authority); 2) transparency (access and participation of the public to "political" information duly communicated), 3) accountability (keeping people and institutions responsible for fulfilling duties and obligations, pertinent to the positions they hold), 4) the rule of law (a sound legal system that prioritises equality before the law), 5) responsiveness (the notion that public administrative authorities and bodies must respond to the demands of citizens, in a timely and proactive manner) and 6) effectiveness (rational, scientifically-designed and flexible administrative structures, procedures and activities, delivered with minimised costs). Whereas the above principles are concerned with sustainability governance on a macro-systemic level, per Chiarini (2024b, personal

communication), in the microcosm of post-production, they can be articulated across short-term and long-term interventions, with a specific focus on transparency and accountability.

In the first instance, short-term governance strategies that would be necessitated are monitoring and transparency in the process of data collection from post-production, VFX and animation facilities. Per Christina Formenti (2023, personal communication), a Udine-based academic researcher, president of the Society for Animation Studies and council member of the Visible Evidence documentary group, particularly in the case of animation, such data often go underreported and, for that matter, under-researched. This is due mainly to the absence of established protocols or indicators specific to sustainable animation production — though some are in development (L. Chiarini, 2024b, personal communication), a gap that persists despite the Italian Ministry of Culture's 5-point incentive offered to sustainable animation projects (Ibid, 2024b). In the second instance, studio organisations and post-production facilities will have to consider a gradual, non-disruptive infrastructural shift powered by more sustainable energy sources, alongside identifying, developing and incorporating criteria and indicators as diverse to include elements from ethically sourced hardware to DEI policies. In the case of the latter, first and foremost, Chiarini emphasises the inclusion of a disabled workforce. Various studies find that disabled professionals in UK audiovisual production are often underemployed, with 1.9 per cent of the total workforce identifying as blind or visually impaired and 8.7 per cent as deaf or hard of hearing (Creative Diversity Network, 2024:19), 6.9 per cent of which assuming a post-production role in 2023 (Ibid, 2024:19). Further, disable professionals can be targets of negative or discriminatory attitudes (Tidball and Bunting, 2021:34) and often subject to a "ghettoisation of roles", with their skills utilised solely on the creation of deaf content and programming (Jones & Tomsett, 2024:2). This situation is predicted to improve, with leading industry player in UK's sector embracing co-creation governance models to address the inclusion of disabled workforce, as well as its inclusion in sustainable production norms such as BAFTA Albert (T. Motye, 2023, personal communication; see discussion in section 3.2.4.) To that effect, similar governance is necessitated in Italy, where the conversation to be had about disability inclusion is largely absent in the audiovisual sector

and more pronounced in the theatre and performing arts circuit, thanks to the advocacy and efforts of cultural associations such as the Parma-based Lenz Foundation (*Lenz Fondazione*). Per the Foundation's promoter and producer Alessandro Conti's (2023, personal communication) observations, besides the advocacy of leading outspoken artists with disabilities and Italy's participation in EU projects such as Creative Europe's Europe Beyond Access, the cultural sector in Italy often approaches disability—particularly mental disabilities and intellectual challenges—with a paternalistic attitude.

11. Sustainability Reporting

Per Afolabi et al. (2022:5), sustainability reporting has been defined as "the disclosure of non-financial aspects of a company's performance that are not captured within the mainstream of financial reporting to their stakeholders". In turn, per GRI Chairman Eric Hespenheide (Segal, 2020), such information is critical to inform decisions for a company's stakeholders, which, among others, range from its employees to policymakers and from customers to investors; notwithstanding that the internal accountability and external scrutiny that the practice of sustainability reporting entails may incentivise companies to improve their performance (Allison-Hope, 2016:3). According to Hahn and Kühner (2013:6), the initial starting point for any approaches towards sustainability and other CSR-related reporting ties directly back to the normative concepts that underscore both sustainability and CSR. In the first instance, sustainability emphasises the concepts of 1) the Tripple Bottom Line, 2) Intra- and inter-generational justice and 3) how these two are expressed through short-, long- and longer-term perspectives, overlapping with CSR in the latter's emphasis on ethical behaviour and corporate accountability. As such, this corporate accountability sees the organisation undergoing an internal performance measurement along economic, environmental and social lines, a process known as sustainability accounting, through the use of indicator-based metrics, standards and methodologies. Such a review is then communicated to the organisation's external stakeholders (that, for instance, may include the public, suppliers, investors and governments)

through either 1) isolated reports that address only one dimension (e.g. environmental or social), 2) specialised reports (addressing any two dimensions) and 3) integrated reports that cover all three aspects, thus presenting a more holistic view (Ibid, 2013:7). Per Larrinaga and Bebbington (2021:162-163), producing a sustainability report comprises a standard business practice at least for large companies nowadays, notwithstanding the fact that such reports remain voluntary; an approach institutionalised (and, arguably homogenised) through the use of established reporting standards such as those proposed by the GRI in the late 1990s.

Per Chiarini and Khedachi (2019), however, while the same characteristics would theoretically apply to the sustainability reporting for the audiovisual sector globally, in practice, they diverge in several key ways: 1) as a project-based industry and owning to its flexible, dynamic and unpredictable non-standardised routines, the audiovisual sector, poses significant challenges for sustainability reporting. Further, such challenges occur in a landscape characterised by 2) the absence of cohesive, uniform and standardised reporting standards and 3) diverse internal and external stakeholders with different interests and expectations that such reporting has to meet (Ibid, 2019:9, 11, 19). Moreover, Chiarini and Khedarchi (2019:8) note that, given the voluntary nature of sustainability reporting, a defining feature for quality, in-depth and impactful reporting is institutional and regulatory force. As an example, while this has been historically the case for corporate sustainability reporting, which essentially transitioned from a mere environmental reporting framework in the 1980s to a more holistic market mechanism in the 1990s through interventions made by the European Commission (Larrinaga and Bebbington, 2021:176), and the more recent addition of strict environmental reporting regulations such as Directive 2014/95 of the European Union, the same cannot be said for the audiovisual sector, whose "strong turnover of material and human resources" often place its reporting practice outside the scope of such frameworks (Chiarini and Khedachi, 2019:9). In particular, the Directive 2014/95/EU does not apply to the audiovisual sector, as its scope is limited to big companies and corporations, and evenin those cases its provisions are not always translated into national regulation, reducing it essentially into a (de facto) *directive* rather than [an] administrative reinforcement" (Ibid, 2019:43). As such,in addition to the largely

voluntary and unstructured nature of such efforts, sustainability managers are presented with a unique set of challenges related to 1) the process of compiling sustainability reports itself, followed by issues related to the 2) transparency of production data, 3) the use of carbon calculators and the (often complex) 4) interoperability of reporting structures.

11.1. The Mechanisms of Sustainability Reporting

Per Chiarini (2023a, personal communication), sustainability reporting is a document-driven process, where administrative and production data from every production department (e.g. set design, costume and wardrobe, transportation) are thoroughly processed as supporting evidence towards the certification of an audiovisual project (EcoMuvi, 2024f:19). Such documents are then matched to a production's daily call sheets, shooting schedules, transport plans and other production notes pertinent to the "materiality" of the project (M.L. Smith, 2023; C. Lejeune, 2024, personal communications) and processed in accordance with established reporting standards and sector-specific indicators and benchmarks, with particular reference to ISO 20121 (*Sustainable event management systems - requirements and guidance for use*) (L.Chiarini, 2023a; R. Cremonesi, 2024; G. Dellacampa, 2024; personal communication) and further (in the case of EcoMuvi), the GRI, the IFS Food Standard (and other norms related to fairtrade food and texile standards), the European Sustainability Reporting Standards (ESRS) the British BS 8909 and DEFRA, and the Italian UNI PDR 99 (*emissions compensation and carbon credit generation*) (EcoMuvi, 2024f:33; L.Chiarini, 2023a, personal communication). Once processed, triangulated and verified, such data are then approximated to emission factors (such as GHG and CO2-equivalent metrics), accounting for both the total and (department or resource) specific carbon footprint of a project through the use of dedicated carbon calculators. A similar output can also be requested as an estimate before principal photography starts, subject to the commissioning of audiovisual projects (Ecoprod, 2017:8; BAFTA Albert, 2021:2; Arbeitskreis »Green Shooting«, 2021:4).

Subsequently, once such information is consolidated it can be then presented as a cogent case for assessment to the certifying authority (C. Morlacchi, 2023, personal communication) (EcoMuvi, 2024f:19).

11.2. Transparency of Production Data

According to Fung et al. (2007:2, 6), the idea of a targeted transparency policy is not just that "the public deserves better information" in order to make more informed choices for safer, healthier and better quality goods and services through financial and non-financial disclosures (including sustainability reporting), but also that such information can initiate "a chain reaction of new incentives", where organisations improve practices, services and products while reducing risk. However, in our immediate context, where a full disclosure in the collection of accurate and quality data for reporting purposes is necessitated, this condition is not often met. Per Rome-based producer and Head of Studies at Green Film Lab Giovanni Pompilli 's (2023, personal communication) observation, transparency is not achieved due to two main reasons: 1) either data requested for certification purposes are deliberately concealed from the production or sustainability managers, or 2) they are simply unavailable due to insufficient data collection.

In the first instance, per observations made by Flanigan (2002:74-76, 89), from a US legal perspective, full disclosures might be avoided on the part of the producer(s) or studio in order to mitigate the risk of increased liability. As Flanigan posits, if a relevant production note (articulated as an "Environmental Impact Statement") is prepared and highlights the risk of potential damage to the environment or community where the shooting occurs, it can be used as evidence in court to establish a case of negligence or breach of permit requirements granted by relevant authorities, if the mitigating actions proposed by the production company are not followed, notwithstanding the potential negative publicity from protesting environmental action groups. Similarly, as Cuadros-Gonzalez (2023, personal communication)

points out, even in cases where a production's adequate preventive (e.g. through sustainability planning and environmental impact assessments) and mitigative (e.g. through carbon offsets) actions eventually lead to a project's certification producers are reluctant to disclose to the public or press what such a certification entails in terms of impact achieved or avoided. Per observations made by the British Film Institute (2020:21), this is particularly the case for US productions, where PGA's Green Production tools (PEACH, PEAR and PLUM) are widely utilised, but collected data pertinent to emissions and environmental impact are not shared or aggregated to create a complete picture. Moreover, as Véronique Pevtschin of the Greenshot (2024, personal communication) argues, the undisclosed nature of production data pertinent to sustainability may also stem from sustainability managers themselves. This is because project-specific methodologies, research, planning and ultimately innovative approaches to sustainability comprise an intellectual property (IP) belonging to the sustainability manager or consultancy. Such an argument is also echoed by Vecchi of Zen2030 (Nausicä Cinema Durable, 2023) on account of disclosing green suppliers' lists and contacts: whereas these are freely provided to productions working with Zen2030, the challenge would be to share such information with the general public, given that the viability of the consultancy's business model currently depends on keeping such resources exclusive.

In the second instance, the challenge of transparency that arises from insufficient production data is often attributed to constraints such as limited time and resources in production settings. Per Fessenden (2024, personal communication), in low-budget production contexts, even the best intentions or aspirational goals towards sustainability might fall short due to the competing priority of delivering the project on time and on budget. Consequently, unless sustainability managers are present to monitor and collect such data consistently throughout the shoot (Vecchi, 2023, personal communication), such tasks are usually assigned to production assistants rather than fully-fledged sustainability managers (A. Knott, 2023, personal communication). As a result, such a strategy can potentially lead to oversights in data collection on account that it lacks the skillset of a dedicated sustainability manager, who constantly

engages in a feedback loop with production departments and other stakeholders, saving time and ensuring consistency in data collection (J. Sandoval, 2023; L. Vecchi, 2023, personal communication).

11.3. The Use of Carbon Calculators

As Jetter (2020: III) observes, the use of carbon calculators has evolved into a de facto tool for the quantification and accounting of GHG emissions in film and TV productions. Carbon calculators are situated in the broader context of eco-feedback design (Aichholzer et el., 2012:86); in itself is a strategic framework that aims to encourage sustainable behaviour by making users, such as individuals, households and organisations, aware of their resource consumption, fostering "feelings of sympathy or responsibility for the environment" (Bao et al., 2016:1). Per Birnik (2013:282) this is achieved by establishing a direct link between a user's self-reported or surveilled activities (e.g. power consumption in kilowatt-hours and kilometres travelled), and (their corresponding, quantified) emissions, relating such data to the consumption of fossil fuels (such as diesel) used to generate electricity, heating and mobility of vehicles. As such, in the context of a broader, sector-agnostic green transition, the intended effect is a stimulated "rethinking of habits" for the users (Aichholzer et el., 2012:86), simultaneously engaging policymakers and local authority planners towards data-driven optimal strategies advancing the cause of decarbonisation (Morgan et al., 2021:1). However per Morgan et al. (Ibid, 2021), the rationale and methodology of calculating the emissions of individuals or organisations fail to recognise that such users' choices in consumption, are "constrained by a host of contextual factors", which may differ significantly depending on location. As such, as Padget et al. (2008: 106-107, 113) warn, carbon calculators are marked by inconsistencies in their emissions outputs, which can vary as several metric tons per annum when accounting for individual activities, a limitation that, given their central role in carbon emission reduction may indeed misinform relevant strategies. Moreover, per Birnik (2013:293), a greater debate dominates the discourse around carbon calculators regarding which

greenhouse gases should be included in the design of a calculator. Towards this, opinions range from focusing exclusively on carbon dioxide (CO2) emissions to incorporating all GHG emissions covered under the Kyoto Protocol, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF_6) into a single calculator (Ibid, 2013)

.

Such issues and limitations resonate deeply in our immediate context, the audiovisual sector. Indicatively, per Jetter's (2020) extensive research, while most sector-specific calculators examined (indicatively, PGA's PEAR, BAFTA's Albert, Ecoprod's Carbon Clap and VAF's now defunct E-mission) allow for data recording pertinent to energy consumption, 1) not every calculator considers the origin of its emission sources, 2) or thoroughly accounts for methods of transport, omitting train, public and ship transport or specific types of air travel such as helicopters and private jets. Further, in taking stock of 3) accommodation, not all calculators consider hotel classes or alternatives such as flats and houses, nor do they thoroughly account for 4) data related to different types of waste and related disposal options. Moreover, they often do not thoroughly account for 5) detailed catering information such as menu and ingredients and, in some instances, exclude such data entirely, while only 6) examining emissions from post-productions marginally (Ibid: 2020:28-33).

Thus, consistent with Jetter's (Ibid, 2020:III) conclusion that a carbon calculator alone "cannot be the only [referential] instrument to produce film and television in a sustainable way", sustainability managers navigate such disparities in a variety of ways. For Russian sustainability manager Koshirenko (2023, personal communication), such limitations can often be compensated through 1) cross-referencing outputs from multiple sector-related carbon calculators to triangulate more accurate estimates. Further, per Wagendorp (2023, personal communication), 2) European average emission factors can effectively address many reporting aspects for productions taking place in mainland Europe, apart from energy. However, regional-specific details must be considered in the case of energy consumption, as its production varies significantly between European regions. As an example, Wagendorp

highlights that one unit of carbon per kilowatt hour in Poland equates to a mere 0.4 units in Norway, making thus the use of emission averages misleading.

Moreover, according to EcoMuvi's reporting methodology(2024f:30), 3) in cases where the calculation of emissions is hindered by insufficient, untraceable or absent primary data from the production itself, secondary data should be utilised as supporting information wherever possible to fill that gap in the carbon calculator. Primary data here refers to source-specific information such as consumer diesel (in litres and per hour) and invoices detailing exact energy usage, while secondary data implies information from related but less detailed sources, such as runtime hours of vehicle or equipment usage, which would require additional calculations and interpretations on the part of the sustainability manager. Per EcoMuvi's methodology, secondary data are acceptable only if substantiated by documentation provided by the production or its suppliers (L. Chiarini, 2024h, personal communication).

11.4 Interoperability of Reporting Structures

For Cooper and Michelon (2021:14), a common issue in the practice of sustainability reporting is the plethora of reporting standards and frameworks. In terms of their disclosure requirements, per Prigge and Wilke (2020) such sustainability reporting norms include the GRI (Global Reporting Initiative), which focuses on economic, environmental and social impact disclosures; the SASB (Sustainability Accounting Standards Board), whose disclosures regard the environment, social capital, human capital, business model, leadership, governance and innovation; the more climate impact-oriented TCFD (Taskforce on Climate-related Financial Disclosures) which promotes disclosures based on an organisation's governance, strategies and targets, as well as risk management and climate metrics; the CDP (Carbon Disclosure Project) focusing solely on an organisation's impact on climate change, forests and water security; and the B-Corp, whose broad range of factors include employee and supply chain diversity and gender equity, in creating value local economies and the environment. The latest acronym addition to this long list includes the legally enforced CSRD, the Corporate Social Reporting

Directive. Conceived in accordance with the guidelines of the 2017 European Non-Financial Reporting Directive that suggested minimum disclosures on environmental, social and employee matters and respect for human rights as well as anti-corruption and bribery matters (Cooper and Michelon, 2021:12), the CSRD requires companies —whether large or listed SMEs—with more than 250 employees to report in accordance to more detailed requirements, particularly in the case of sustainability risk as well as environmental and social impacts (Searoutes, 2023; European Commission, 2024b). Adding volume to the uncertainty of what has largely (and humorously) been considered an "alphabet soup" (Financial Times, 2020), this proliferation of acronyms and reporting norms, as Allison-Hope (2016:8) argues, appears both confusing and conflicting for sustainability practitioners on account of countless pages of guidance that are constantly updated and revised. In addition, per Gutterman (2021:3), whereas some organisations limit their disclosures to their bare minimum (e.g. regulatory requirements, such as those of the CSRD), others, on account of increased attention from investors and to satisfy the requirements of different stakeholders, demonstrate their commitment to ESG by adopting two or more reporting standards.

The above facts are both reflected in and occasionally intersect with the audiovisual industry in two significant ways. In the first instance, the audiovisual sector mirrors the plethora of sustainability reporting structures through its proliferation of sustainable production protocols and certification schemes. Where this becomes problematic in terms of added workload for productions and their sustainability managers is in the context of co-production funding, where productions often have to navigate multiple reporting structures, each of which may be related to specific regional (e.g. film commissions) or national (e.g. tax credit) funding requirements. As an example, for a French-German-Italian co-production, publicly funded by regional funds from all three countries, the sustainability manager has to navigate and fulfil requirements from different norms subject to the specific fund accessed. While in France, this involves adhering to the Ecoprod protocol and providing carbon estimates using the Carbon Clap calculator. Respectively, while in Germany, the co-production has to comply with the Green Shooting Card and work its carbon estimates with KlimAktiv's Green Shooting calculator. In turn, while in

Italy, any of the several voluntary Italian norms on offer, some working independently across the country (Edison Green Movie, EcoMuvi, Green Ciak and Zen2030) while others are tied to regional film commission funding (Sardegna Film Commission's Green Shooting Guide, Trentino Film Commission's Green Film and IDM Südtirol's, Green Shooting Certificate guidelines (L. Giuliani, 2023; N. Satta, 2023, personal communication). This scenario also expands to include sustainability norms such as those mandated by subsidiaries of international broadcasters present in Italy, such as the compulsory use of BAFTA's Albert calculator and subsequent Albert certification for all Sky Studios Italia productions (G. Raciti, 2024, personal communication). Simultaneously, it also includes meeting the requirements of streamers, where Amazon Studios Italia productions have to commit to the use of the US Green Production Guide's PEACH and PEAR mandated by the main entity, US-based Amazon Studios (B. Belli, 2024, personal communication).

In the second instance, the audiovisual sector intersects directly with the wider sustainability reporting discourse through the recent and obligatory addition of the aforementioned CSRD. As Chiarini (2024g, personal communication) highlights, CSRD as a legal EU mandate —in effect as of 2024— has turned sustainability from a mere "competitive advantage" into legal compliance, marking a shift in the priorities of senior executives and legal consultants related to the audiovisual sector in Italy and across Europe. Per Chiarini's observations, enterprises whose major activities revolve around the production of film and TV projects currently have to report upon their production-related operation or face fines, something towards which independent third-party accredited certification schemes will be key, on account of their robust, verifiable data collection methodologies and thorough supply chain reporting. Further, per Schneider-Garcia's (2023, personal communication) insights, production companies not currently obliged to comply with CSRD requirements may still find themselves compelled to do so due to a growing stakeholder-driven trend where supply chain partners subject to CSRD in order to meet their own sustainability goals and criteria, impose similar reporting demands even on smaller production enterprises. Per Pevtschin of the Greenshot (2024 personal communication), this is particularly the case for digital corporate advertisements, which, as

externally purchased services, are classified as Scope 3 emissions and, therefore, have to be included in an organisation's annual CSRD reporting. Moreover, per Chiarini's overall projections, such a shift will potentially affect existing sector sustainability norms, particularly sustainable production protocols that rely on self-assessment, self-certification or non-accredited certification processes (2024g, personal communication). In addition, as per Cedric Lejeune (2023 personal communication), despite the CSRD's potentially disruptive nature, properly communicating its varying levels of precision and regulation compliance to Europe's audiovisual sectors could foster both a harmonisation of existing reporting structures as well as advancing the sector's growing awareness around its sustainability issues.

11.5 Digital Solutions in Reporting

Despite its inherent challenges, navigating all of the above is a common occurrence when reporting on an audiovisual project's sustainability. Per Chiarini (2024g, personal communication), the standard approach includes leveraging the common baseline criteria (e.g. in areas such as energy, transportation, accommodation, resources and waste) found in most protocols, guidelines and checklists that are promoted or mandated by regional film commissions or municipal authorities, ensuring that sustainability monitoring, data collection and ultimately reporting fulfils the requirements of all different parties. Similarly, from a funder's perspective, the challenge of interoperability is also addressed pragmatically. As Thierry Hugot (2023, personal communication) of the European cinema support fund Eurimages argues, manually aggregating data resulting from an Italian-French co-production's sustainability reports — e.g. data derived from Green Film or EcoMuvi and Ecoprod, respectively— serves little if that data process can be automated. As an example, Hugot draws a parallel between sustainability calculators and Movie Magic, a film production budgeting tool that allows for seamless data conversion between various budget reporting models, adapting,

for example, a US-tentpole budget template into HBO format and then seamlessly converting the same values into a French-specific Canal Plus template.

To that effect, one such available solution is the Belgian sustainable production management platform, The Greenshot. Created in 2018 and launched in 2021 by Co-CEO Max Hermans, The Greenshot provides a 360-degree service in three key areas: budget, planning and sustainability. In budget management, the platform offers streamlined financial operations that, in addition to accounting and payroll, extend to include expense tracking, purchase orders and the handling of invoices. In team and project planning, centralised tools cover scheduling, talent management and team communication, while in sustainability, the platform allows for real-time carbon tracking, automated data collection and full integration with regional EU reporting and certification requirements for Trentino Film Commission's Green Film, Ecoprod Label and the Carbon Clap calculator, the Belgian tax shelter and the francophone Belgian Wallimage, in addition to meeting the requirements of US industry standards such the Green Production Guide and those of the CSRD (The Greenshot, n.d.a; n.d.b; n.d.c; n.d.e). This holistic function has arguably addressed a critical gap in the sector, as evidenced by The Greenshot's adoption by major players such as Apple TV Plus, Marvel Studios, Paramount, Max Originals, and Amazon Prime Video (Ibid, n.d.f). Per Véronique Pevtschin (2024, personal communication), Co-CEO of The Greenshot, the platform's advantage lies in the effortless digitisation of every aspect of production management, which, owing to its built-in OCR (Optical Character Recognition) technology and AI features is able to automate and categorise the extraction of data from invoices, integrating them into carbon calculators, which are continuously updated with every new input to reflect the most accurate status of a production's emissions. Such accuracy is also at the heart of the platform's reporting capabilities: per Pevtschin, upon the completion of a recent undisclosed eight-episode TV series, the platform digitised and processed about 6,000 production documents, generating a total of 50,000 data points for reporting purposes, limiting thus manual work for both production accountants and sustainability managers.

12. Certification

12.1 Introduction

Broadly speaking, certification can be seen as the culmination and cornerstone of an organisation's previous efforts, initiatives and activities related to sustainability. However, this can be a reductive understanding if presented without acknowledging the semantic nuances behind the term "certification" itself and, ultimately, the complexities of the process. To begin with, according to Mori Junior et al. (2016:580-581), certification schemes "are processes by which products or services are produced and provided according to predetermined standards". In principle, such processes are assessed against the established standards, where, if successful, a certification or label is then awarded, making the claim that the certified product or service meets those standards (Ibid, 2016). However, as Waldrop et al. (2017:1) note, such claims are typically classified as "credence-good attributes", meaning that they are "unobservable" by the consumer, either on account that it is impossible or too expensive for the consumer to verify the authenticity of such claims, leading them to accept such claims at face value (Hietala, 2024). Within that, as Hietala (Ibid, 2024) points out, the methodologies that make those claims credible differ vastly, given that not only do different industries generate different carbon emissions but also have different assumptions of how such emissions can be quantified and, indeed, be accounted for, particularly with regards to Scope 3 emissions.

Further to this, initiating a certification process is a costly endeavour, particularly for small and medium enterprises (SMEs), who lack the money to "adjust to the new business realities" (Klapper and Beinker, 2017). Beyond the costs associated with the process itself— which includes labour-intensive data gathering and compliance audits— in many instances, the process also involves investing in new equipment or infrastructure to meet the environmental standards required for achieving the certification (Ibid, 2017). Contributing insights from a financial perspective, Anastasia Giakoumelou (2023, personal communication), a Professor of

Corporate Finance at Ca' Foscari University in Venice and Bocconi University in Milan, posits that the overall lack of standardisation in certification, coupled with the financial barriers to obtaining it has led to a fragmented landscape where a hybrid model of certification dominates current practices. This hybridity, Giakoumelou argues, consists of independent, third-party certifications, which, on account of their considerable expenses, are accessible only for "big players" (e.g. banks and multinational corporations), leaving SMEs essentially to self-declare or self-certify. Further to Giakoumelou's understanding, whereas third-party certifications operate like credit ratings, meaning that they shift the burden of assessment from internal stakeholders (the company) to external entities (the certifiers), self-certifications who lack specific liabilities and external checks can result in false, inaccurate or incomplete claims (Ibid, 2023). In addition, according to Chung and Park's (2022:2-3) observations about US Fairtrade certification schemes, a trade-off between market expansion and certification standards is evident, whereby Fairtrade certifiers often lower their certification standards in order to make their certification model more accessible (and potentially more affordable) to farmers.

While not providing a complete picture of the general certification landscape, the points above draw notable parallels with the state of sustainability certifications in the audiovisual sector globally. Towards this, and as discussed over the course of this study, it is evident that sector-specific certifications differ significantly in terms of their 1) methodological rigour and flexibility and 2) semantic distinctions pertinent to certification entities and sector-specific standards, while they converge in their 3) underutilisation of certification marks as marketing assets within film promotions and press kits. Ultimately, these distinctions prompt us to ask the following critical question: Should sustainability efforts in audiovisual production settings be evaluated based on their intentions, measurable outcomes or through the certifications they attain?

12.2 Methodological Rigour and Flexibility

In the first instance, it is generally accepted that for mainland Europe, the German Ecological Minimum Standards for Film and TV, as well as the Austrian Ecolabel, comprise the most rigid and demanding frameworks on account that their compliance, verification, and, subsequently, certification are mandatory, subject to public funding (R. Fritsche, 2024; S. Geronimaki, 2024; G. Raciti, 2024; personal communication). Conversely, Trentino's Green Film is widely regarded as the more lenient, user-friendly, voluntary-compliant approach, providing accessibility for entry-level producers (B. Belli, 2024; S. Geronimaki, 2024, personal communication) and supporting audiovisual sectors that, despite their limited infrastructure and resources, begin their journey towards sustainability in production settings, such as for instance the audiovisual sector of Greece (S. Geronimaki, 2024). Further, while all sustainable production protocols are widely aligned with global climate goals and are, in some instances, further informed by wider sustainability discourses such as the UN SDGs—that is, by incorporating concepts of social justice and equity alongside their environmental scope —the methodologies underpinning their corresponding certifications are often subject to criticism within the sector. Per Kääpä (2018: 82), in the case of the US-driven Green Production Guide's Green Seal certification, such criticism largely stems from the absence of cross-border agreements and standardised measures to ensure the accuracy of calculated emissions, which can seen as a discrepancy in certain European and Latin American production contexts (N. Cuadros-Gonzalez, 2023; M. L. Smith, 2023; B. Belli, 2024).

12.3 Certification Entities, Standards and Semantic Boundaries

In the second instance, tension can be observed between the semantics surrounding the concepts of certification, the object that is intended for certification and the certifying entity. As an example, when considering ICQM-issued certifications on behalf of Groenlandia S.r.l. (ICQM, 2023; Ibid, 2024b) and Buddy Films S.r.l. (Ibid,2024a) productions adhering to the

Zen2030 protocol, it becomes evident that the certification issued verifies the GHG emissions quantification, monitoring and reporting in accordance with the internationally recognised norm ISO 14064-1:2019, in addition to verifying the total offset of such projects through the purchase of carbon credits. While more of a semantic distinction, this suggests that while the Zen Protocol promotes a holistic lifecycle approach encompassing multiple dimensions of environmental sustainability on the audiovisual sets it oversees (see discussion in section 8.8), the ISO 14064 framework that supports its certification is fully focused on a single dimension, unlike other norms found in the ISO 14000 ("Environmental Management") family of standards, such as the ISO 14001 ("Environmental Management Systems") which accounts for more areas such as pollution control, waste management and resource efficiency (ISO, n.d.).

Next, examining the notion of "authority" in certification further complements and substantially extends our discussion on the current state of sector-specific certifications. In the European context, certification bodies, along with inspection, validation and verification bodies, laboratories, and proficiency testing providers, are exclusively accredited by the European Cooperation for Accreditation (EA, henceforward). A not-for-profit association registered in the Netherlands, EA has been officially designated by the European Commission under Regulation (EC) No 765/2008 to develop and uphold a multilateral and mutual recognition agreement (MLA), ensuring the presence of a harmonising accreditation framework that covers countries of the European Union, as well as members of European Free Trade Association (EFTA) (European Accreditation, n.d.). Considering the case of Italy, the only national accreditation body signatory to the EA MLA framework is Accredia (Ibid, n.d.b), which, appointed by the Italian government, operates under the strict regulatory oversight of the Ministry of Enterprises (*Ministero delle Imprese*) and Made in Italy. As per Renato Cremonesi (2024, personal communication), the monopoly and rigidity of this system effectively render certifications, such as those offered by Green Ciak and Green Film (and arguably most sector-specific protocol norms), as essentially self-certifications. Exceptions to this include the EcoMuvi protocol, which, as of 2022, became an Accredia-accredited proprietary scheme (C. Morlacchi, 2023, personal communication), and technically, the BSI 8909 ("Standard for Specification for a Sustainability

Management System for Film") developed by the British Standard Institute, which, while not subject to an EA MLA accreditation, owing to its long-standing reputation and credibility, is subject to various global multilateral agreements, spanning Europe, the US and China (BSI Group, n.d.).

Of course, the argument that widely accepted sector-specific norms might, in fact, function as either partial- or self-certifications doesn't necessarily undermine their purpose, utility or, indeed, buy-in and adoption in audiovisual production settings. For instance, the Green Film rating system, whose certification marks are issued by territorial body Trentino Sviluppo S.p.A.— an in-house entity of the Autonomous Province of Trento (Trentino Sviluppo, n.d.) that currently is not Accredia-accredited— has gained notable popularity, with an adoption exceeding the numerous Italian film commissions that endorse it, to include countries such as Belgium, Spain, Denmark, Iceland, and Greece. Equally, the Albert certification that is issued by Albert, a non-EA MLA accredited body that self-describes itself as "a screen industry organisation for environmental sustainability" (Albert, n.d.), has emerged as the leading industry standard for the UK, mandatory for use within the BBC, ITV, Channel 4, UKTV, Sky, and Netflix (Biancarelli et al., 2023:33), while it is additionally recognised as a valid output by the Italian Ministry of Culture and regional film commissions in meeting established funding conditions for project applicants (L. Chiarini, 2024e, personal communication). Similarly, the US-based Green Seal, while not an accredited certification scheme in the way that ISO is, is nevertheless awarded by the Environmental Media Association for (primarily) high-end productions that comply with the Green Production Guide and is further used by the US Federal Government, numerous State governments and other US civic and environmental organisations (Green Seal, n.d.). Instead, what the above arguments suggest is that currently, (non-accredited) certification frameworks, in whatever form they take, are precisely and decidedly industry-led, bottom-up responses to regulatory gaps operating at the national or EU level (C. Formenti, 2023; M. Gisotti, 2024; personal communication); serving either as sustainable solutions or strategic opportunities for productions to access public financing,

particularly in the case of Italy (M. Cucco, 2023; G. Della Campa, 2024; personal communication).

12.4 From End Credits to Impact: Rethinking Sustainability Certification Marks

As a general principle, once sustainability reporting is submitted to the issuing certifying authority, which, as discussed, can either be an independent, third-party certification body or the protocol provider itself (e.g. self-certification) and is successfully verified and evaluated, a certification mark is issued. This mark, which, by any other name, is referred to as a "badge", "seal", "logo", or "label", can then be leveraged by the certified project to its advantage, prominently displayed in end credits, film marketing, press kits and conferences, as well as accompanying featurettes such as short, behind-the-scenes documentaries highlighting sustainability efforts during production (Albert, 2023c; Green Film, 2023a; Environmental Media Association, 2024; EcoMuvi, 2024f:14). However, while, to quote Chiarini and Khedachi (2019:34) "legitimacy seems to be gained by the simple recognition of a "green logo" provided by any certification", in practice this achievement is often reduced to nothing more than logo displays on end credits and, as Sandoval (2023, personal communication) saliently asks, "how many people [actually] watch the credits?". Per academic Cristina Formenti's (2023, personal communication) observations, the issue is further compounded by the fact that, while certain productions have achieved the Green Film mark and other labels, such marks often fail to (even) appear in the end credits. Worse still, as Heidsieck (2023, personal communication) points out, many broadcasters who have obtained such marks tend to cut end credits short in order to display their own advertisement clips for the next show or programme.

This underutilisation of marks awarded in recognition of sustainability efforts is duly noted also by the providers of sustainability protocols themselves. Per Linnea Merzagora, Project Manager of Green Film (2023, personal communication), while a dedicated criterion in the rating system —subject to awarded points— is allocated to the communication of such efforts for external

audiences, it's the one aspect that productions adhering to Green Film engage with the least. Similarly, in the case of EcoMuvi, compliance points are awarded if sustainability efforts are strategically communicated to targeted audiences and the press, conveying the commitment to adopting a sustainable management system (EcoMuvi, 2024f: 14). Further, per film marketing strategist Niccolò Gallio (2023, personal communication) the disconnect between sustainability certification and promotion highlights that essentially, communicating sustainability in the audiovisual sector predominantly operates in a business-to-business (B2B) context, targeting workshops, labs and professional markets; arguably, an echo chamber with industry insiders and stakeholders already aware or invested in sustainability. Instead, Gallio argues that the sector could expand such communications by assuming a more business-to-consumer (B2C) approach. This notion ties back to the concept of audience engagement as a catalyst for change (see discussion in section 6.4.5), though it reframes "engagement" in this instance to include the "final consumer's awareness of the environmental impact of the products [or projects] they choose to support" (L. Chiarini, 2023a, personal communication). Such an understanding positions audiences-as-consumers as instrumental actors towards incentivising productions to be more sustainable by signalling demand, provided, of course, that they are aware of the "materiality" of media production in the first place. However, per Giakoumelou (2023, personal communication), such a materiality is difficult for consumers to discern, unlike, for instance, the fashion industry, whose tangible products can become more easily associated with their production processes. Further, for Formenti (2023, personal communication), even if a niche group of environmentally conscious consumer audiences exists, they arguably place their trust in the certification mark attained despite the lack of disclosed supporting data. To this, Cuadros-Gonzalez (2023, personal communication) adds that data, in fact, are a more impactful contribution to sustainability than superficial and performative certifications granted based on minimal reporting requirements, helping the sector as well as audiences to understand, quantify and articulate the environmental impact of the moving image better.

Recognising the disconnect between the monodirectional B2B communications surrounding the achievement of sustainability certifications and the potential of untapped B2C strategies aiming for direct audience engagement, several sustainability professionals advocate for leveraging talent, in particular environmentally-oriented celebrities (C. Cresto-Dina, 2023; C. Formenti, 2023; V. Jamonte, 2023, personal communication). Per Boykoff and Goodman (via Abidin et al., 2020:289), celebrities are individuals with "an elevated voice in the media and the capacity to shape public opinion more than others, in both qualitative and quantitative terms". In this context, Abidin et al. (Ibid, 2020:393) highlight various tropes where celebrities and environmentalism intersect. Pertinent to the audiovisual sector, these can range from ambassadors (e.g. NGO celebrity patron actors such as Harrison Ford and Cate Blanchett) and television conservationists in commercial TV (such as Steve "the Crocodile Hunter" Irwin) to celebrity animals (such as Knut, the Polar Bear, used in televised climate change campaigns) as well as normal, everyday people (e.g. climate advocate Greta Thunberg). Often, such examples are framed as contradictory, as instantiated by Leonardo di Caprio's (exemplar) climate advocacy in *Before the Flood* (dir. Fisher Stevens, 2016), whose filming was nevertheless made possible through extensive air travelling across five continents and the Arctic (Formenti, 2022: 183). Towards this, recent industry trends in sustainability include the advent of BAFTA Albert's "Green Rider", a contract where actors, directors and screenwriters commit to sustainable measures on set in areas such as travel, costume and makeup while actively advocating for compliance with sustainable protocols during press conferences and industry events. Notable examples include actors Jessie Buckley, Kaitlyn Dever, George McKay and director Kevin McDonald (Albert, n.d.b). To the same effect, as early as 2016, following the release of Tempesta-produced comedy *Fräulein: Una Fiaba d'inferno* (dir. Caterina Carone, 2016) in Italy, a series of photo calls were arranged with the film's prominent actors next to a banner that read "Made with EcoMuvi"(C. Cresto-Dina, 2023, personal communication).

13 Education and Training of Future Practitioners

13.1 Introduction

Having covered the historical development of sustainable production norms and their on-the-ground integration into production settings, this study has explored the audiovisual sector's efforts towards implementation of such practices through grassroots initiatives (stemming from the screen sector itself) and the momentum generated by top-down policy processes (at the regional and EU level). Yet, as the sector progresses towards a future standardisation of these norms and practices, one critical aspect remains to be addressed: the education and training of future practitioners. As such, this section explores the foundational elements for a training framework around sector-related sustainability issues where capacity-building remains essential. To this end, we look at existing training structures for sustainability in film and media production curricula on offer both at the university and industry levels, pointing towards their potential as well as limitations and discrepancies, addressing along the way the following three key questions: Who needs to be educated, and in what context? What are the required components of such an education? And how such an education should be delivered?".

13.2 Modes of Education: Formal and Informal Training and Intersections

Firstly, we observe that sustainable production training can and do occur in formal, informal and non-formal (used here interchangeably) learning settings, a further distinction between which is necessary. From an Educational Research perspective, Malcolm et al. (2003:3) identify four important dimensions that differentiate formal and informal training: 1) processes, 2) locations and settings, 3) purposes and 4) content. A *process* denotes structured, didactic and assessed teacher-led activities in formal settings, whereas more democratic, collaborative and student-led approaches are characterised as informal. In turn, a *location and setting* perspective views schools, colleges and universities as formal contexts. These are contrasted

with professional spaces (such as workplaces) and non-professional spaces (e.g. masterclasses and events), which are considered informal due to their more open-ended nature, which either sees fewer time constraints, no specified curricula and a lack of predetermined learning or external certification. Further, in *purposes*, Malcolm et al. distinguish between formal learning, where the primary and intended purpose is to acquire knowledge or skills, and informal learning, which may occur as an unintended outcome from activities such as workplace productivity courses. Moreover, in *content*, a semantic distinction is made between the learning outcomes deriving from established, high-status expertise, understanding and practices (formal), such as vertical and theoretical knowledge, versus the development of new or emerging knowledge (informal) (Ibid, 2003:3).

An additional educational framework for sustainable production is also emerging in the context of sector-specific artistic residencies. Arguably positioned at the intersections of formal and informal education, per the European Union (2014:9), artistic residences are programmes that "provide artists and other creative professionals with time, space and resources to work, individually or collectively, on areas of their practice that reward heightened reflection or focus". They typically offer accommodation, coaching, production support and presentation facilities, often involving the participation of scientists and professionals from various disciplines, while they focus on "tangible outcomes" such as the production of art (broadly), focused projects, exhibitions and workshops (Ibid, 2019). While the concept of a "residency" for artists is open and fluid and has recently expanded to include a diverse range of activities and engagements, including "digital space residencies" (Ibid, 2009:9), per Res Artis (2020:6), the hallmarks of such programmes "connect the local with the global" and as such comprise tools for "inter-cultural understanding and capacity building". Such notions 'are cornerstones of cultural policy at the EU-level' and are therefore supported under Article 167 of the Treaty on the Functioning of the European Union (TFEU) as means that promote the diversity of European cultures (European Union, 2008; Ibid, 2019:9). Further, they increasingly intersect with sustainability, in context of EU's Greening of the Creative Europe programme (EECA,

2024:3) with participating regency organisations that incorporate sustainability in their operations awarded extra points in their application process.

13.3. The Evolution of Film and Media Education in Academia: Historical Challenges and Future Opportunities

A subsequent observation is that sustainable production training is currently firmly rooted in its targeted context, broadly referred to as "film school" rather than fields such as environmental science or the environmental humanities. While this placement is both logical and expected, it is also subject to layered interpretations pertinent to two characteristics most film curricula inherently share: 1) the alignment or disconnect between production skills taught and industry demands and, further, 2) the intrinsic cross-disciplinarity of film and media as a field of study. In the first instance, per Banks (2019:73, 74), film and media production education, while not a requirement for work in the audiovisual sector, operates as a pre-industry programme where students acquire skills, build a resume and make industry contacts. As Sheffield (2001:23) argues, film schools have always served as gateways to the sector since their very inception as an academic discipline, particularly following the collapse of the Hollywood apprenticeship system in the late 1950s, which led then-aspiring auteurs to seek film-related education and training in colleges and universities. However, Sheffield notes, the film graduate-industry connection is rarely established, given that historically, the majority of production-focused curricula tend to be very general and rather inflexible in their offered specialisation when it comes to practical filmmaking skills required for production-specific jobs, e.g. producers, cinematographers, lighting technicians, editors, audio engineers and animators.

In the second, the theoretical study of film, which today, per Andrew (2009:883-884) is situated as a subset of "media studies", is an umbrella term for various fields of studies, including (primarily) Film Studies, Cinema Studies, Television Studies, Visual Arts, Cultural Studies, Film and Media History, and Moving Image Studies. Such fields have, according to Altman (2009:

134-135), come a long way to "secure dependable institutional recognition and shared assumptions" about the study of film as an academic discipline with "undergraduate and graduate education, book publishing, and tenure decisions". Initially, as noted by Andrews (2009:879), in the context of US academia, the study of film, owing to the medium's popularity and commercial value, was regarded as having "the effect of devaluing the humanities". Thus, a race for institutional recognition took shape in the 1960s and 1970s, a period that Altman (Ibid, 2009) characterises as being marked by a "foundational schizophrenia" during which the academic study of film, in its attempt to gain institutional specificity, drew heavily on literature and art. In doing so, cross-analytical techniques for the study of (rented) substandard film stock such as super-8 and 16mm were developed, while settings such as museums, festival screenings and televised programmes were employed as further theoretical tools (Ibid, 2009). By the 1980s and 1990s, this recognition evolved further alongside an increased corpus of academic publications pertinent to the history of film and its analysis (including both film-specific and cross-disciplinary approaches). Such progress was bolstered through the proliferation of new and more accessible audiovisual formats, such as videotape, laserdisc and DVD (Ibid, 2009). Then, from the 2000s onwards, the field expanded to include a diverse range of study subjects stretching from "familiar research paradigms" (e.g. aesthetic and psychoanalytic inquiries, auteur theory or gender studies) to incorporating new theoretical frameworks (e.g. ecocriticism and ecocinema) and new areas of focus such as video games and other digital media (Ibid, 2009). Per Altman, such a shift, spearheaded by the proliferation of online content, was marked by large-scale research projects and multi-volume works, alongside a declining interest in film-specific analyses and an overall increase in cross-disciplinary publications.

Arguably, then, the long-standing disconnect between academia and industry could benefit from embedding sustainability training into film and media curricula. By leveraging the field's innate cross-disciplinary nature, such an embedding can provide a fertile ground for equipping future practitioners with the specialized skills necessary to meet both environmental challenges and production demands.

13.4 Overview of Sustainable Production Training

This section will explore how sustainable production training is currently administered through both pre-industry programmes and specialised courses on offer. However, the scope of this overview is confined to long-standing, consistent, ongoing and structured curricula with measurable outcomes (e.g. student assessment and certification or accreditation) or novel approaches (e.g. hybrid artistic residences). As such, the section deliberately excludes the more informal approaches to sustainable production learning, such as various introductory workshops to sustainable production offered sporadically at universities, online, or during industry-related events, like film festivals.

A common observation is that sustainable production training typically centres on established norms (e.g. Green Production Guide, BAFTA Albert, Green Film) and is often designed to reflect the environmental requirements of specific regional and national production contexts (see BVGFCD, n.d.) or as part European co-production networking initiatives (Torino Film Lab, n.d.). In the US, this norm is the Green Production Guide, whose training is administered by The Green Film School Alliance (henceforward, GFSA). Per its own admission, the GFSA is an organisation committed to integrating industry-level sustainable production practices into film school programs and, further, striving to establish "common language, standards, and tools to their institutions" (Green Film School Alliance, n.d.). Formed in 2020 as a coalition of 11 leading film schools, including California State University, UCLA, New York University and New York Film Academy, GFSA expanded significantly by 2022, growing its membership to a network of 27 affiliated universities (Ibid, n.d.). The training evolves around PEACHy, a lightweight version of Green Production Guide's PEACH (Ibid. n.d.). Like its prototype, PEACHy is subject to a certification, The Green Seal for Students, which is awarded by the Environmental Media Association based on a scale of 100 points, requiring a minimum of 50 points earned to qualify. The process is based on documented self-assessed compliance across seven key areas during the production of student films: 1) Production, which encompasses development, pre-production, principal photography and suppliers, followed by proposed

sustainable practices in 2) Art Construction, Props and Set, Camera, 3) Grip and Electric Departments, 4) Catering and Craft Services, 5) Costume, Wardrobe, Hair and MakeUp, 6) Special Effects, 7) Transportation. Interestingly, while PEACHy's proposed actions are comprised of fairly standard and common considerations shared among most sustainable norms (e.g. reduce-reuse-recycle and donate circular strategies, opting for ethical suppliers and electric-hybrid over diesel vehicles), the checklist notably prioritises and incentivises digital filmmaking over analogue, awarding points for productions that aim for digital workflows and format rather than using film stock, or favouring digital over practical effects (Green Film School Alliance, 2021). Arguably, this notion, championed at an educational level by leading US film schools, reflects the growing influence of sustainability as a key driver of production workflows and one that increasingly sidelines traditional analogue techniques such as the use of film stock, which has historically defined both the medium and its discipline, on account of its environmental impact.

Similarly, in the UK, the BAFTA Albert Education Partnership ensures that its ten university affiliates, which include the National Film and Television School, Bournemouth University, The Confetti Institute of Creative Technologies and Central Film School, accompany their hands-on training through adherence to BAFTA Albert's Student Carbon Calculator and best practices (Albert, 2019c). The training that lasts one week (Bournemouth University, 2021) covers four areas: 1) the history of sustainability in the screen industries and the role of BAFTA Albert's in this process, 2) climate change essentials, sustainable production skills and 4) sustainability storytelling strategies, all of which fulfil the requirements of the Carbon Literacy Trust charity (Albert, 2019c; Climateq, n.d.). Per the charity's *Carbon Literacy Standard* (Carbon Literacy, 2018:8-15), the proposed carbon literacy training promotes a 1) learning method, where training constitutes at least one day of learning, delivered either in person or online; 2) learning outcomes related to GHG science, the impacts of climate change and the basics of carbon footprint. It does so by promoting 3) values such as individual and collective agency, equity and fairness and 4) action-based learning, where participants propose and implement meaningful interventions for the reduction of carbon footprint. In addition, eligible graduates

receive an industry-recognised certification in sustainable production from BAFTA (Bournemouth University, 2021).

In the case of Germany, the introduction of Ecological Minimum Standards for Film and TV has made sustainable production considerations —such as appointing a sustainability manager on set and accounting for carbon emissions during pre-production and post-wrap (Heidsiek, 2021:4)— mandatory for public funding. This shift led to the development of the first and only de facto sustainability training programme globally, the Green Consultant Certificate, backed by quality-assured accreditation (Hochschule der Medien, n.d.). The training is administered by Stuttgart Media University (*Hochschule der Medien Stuttgart*) and the HFF University for Television and Film Munich (Hochschule für Fernsehen und Film München) and is targeted towards all film and media professionals with expertise in production, directing, editing or Head of Department roles. Its curriculum consists of three modules: Module A1 consists of a preparatory online phase that concludes with a multi-day on-site training in Stuttgart, where students are taught 1) the theoretical and legal foundations of Sustainability, 2) the basics of Environmental Management Systems and reporting, utilising the DIN 14001 (the german standard equivalent to ISO 141001), EU's EMAS (Eco-Management and Audit Scheme) and DNK, the German Sustainability Code (Deutscher Nachhaltigkeitskodex) reporting framework. Further, it covers 2) green production project management with particular attention to 3) high-impact processes across energy, transport, materials and disposal. Moreover, trainees are introduced to 4) sustainability project planning and implementations and 5) the use of carbon calculators (utilising the MFG C02 calculator). Subsequently, in Module 2, participants are required to deliver a sustainability action plan for an existing or hypothetical project with strict adherence to the German Ecological Minimum Standards, whose successful evaluation awards trainees with the Green Consultant Certificate. This certificate has academic merit on account that it corresponds to 6 ECTS (European Credit Transfer System) points, reflecting the depth and rigour of the programme, which consists of a workload of 180 hours over the course period of around 14-16 weeks (Hochschule der Medien, n.d.). Further, certificate holders are eligible

for membership in Germany's Federal Association of Green Film and TV Consultants (BVGFCD, n.d).

In Italy, amidst a proliferation of irregularly held, quasi (e.g. sustainable storytelling) or partial (e.g. limited solely to sector-specific ESG strategy, planning or reporting) or now defunct sustainable production training facilitated over the last decade by film commissions, sustainable consultancies and protocol norms providers, Green Film Lab stands out as the only active and relevant educational initiative, pushing the agenda of sustainability through its multiple editions held over Europe. Operating under the aegis of Torino Film Lab, the Green Film Lab bases its training components on Trentino's Green Film rating system. The training programme, developed by Rome-based producer Giovanni Pompilli and co-funded by Creative Europe, Trentino Film Commission and EAVE (European Audiovisual Entrepreneurs), is structured around three core objectives: 1) an introduction to sustainability, 2) the conception of a sustainability plan and 3) the certification process for audiovisual projects (Torino Film Lab, n.d.; G. Pompilli, 2023, personal communication). Conducted as three-day workshops, such modules are taught in a practical, project-based approach, where participants work collaboratively in groups to explore best practices in all areas outlined in Trentino's rating system: energy-saving, transport, accommodation, catering, set decoration, waste management, recycling and communication, alongside consideration of social impact (TorinoFilmLab, n.d). However, per Green Film project manager Linnea Merzagora (2023, personal communication), the training comprises the first effort in Italy and Europe to address an industry-wide gap for common training in sustainable production. Beyond that, the learning serves primarily as an introductory module on using Trentino's rating system. As such, it does not qualify participants as sustainability managers upon its completion, nor does it provide a formal certification or specialised training in the use of carbon calculators (TorinoFilmLab, n.d).

The latest and arguably innovative addition to the landscape of Italian sustainable production training is the film-specific artistic residency CinemAbruzzo Campus. Held annually at the rural mountainous region of Forme di Massa d'Albe, Abruzzo, and organised by the Avezzano-based

CinemAbruzzo Social Promotion Association, the Campus promotes an intensive, hybrid six-month training that is both online and residential in nature. In the first two months, participating filmmakers engage online with the basic concepts of sustainable production, team formation and intense scriptwriting sessions towards the development of treatments for three short fiction films and two short documentaries focused on the past, present and possible futures of the Abruzzo region (CinemAbruzzo, 2023:3,4). As such, they become heavily versed in the rich history of the region, the environmental importance of its Natura 2000 network of protected areas, and their distinctive vulnerabilities that include earthquakes (indicatively the 1915 Avezzano and 2009 L'Aquila calamities) and avalanches (such as the 2017 Rigopiano disaster) (Di Matteo and Cavuta, 2018:191).

During the residence training, sustainability is embedded on two levels: 1) fostering an environmental awareness that would inform region-specific sustainable storytelling at the script level in tandem with 2) sustainable production practices underpinning the creation of the stories produced. In the first instance, participants immerse themselves in "experiential tourism" (CinemAbruzzo, 2023:2; P. Santamaria, 2023, personal communication). Framed as part of the "Experience Economy", which extends across diverse sectors of the service industry—including entertainment attractions, hospitality venues and customer service (Smith, 2006:2)—experiential tourism with its active and participatory approach denotes a departure from traditional "mass" tourism. As such, on the residency's third month, participants visit Forme in person for a period of 21 days, where they are introduced to the local culture, traditions and culinary delights, experiences that also serve to inform the creative process of the first week's finalisation of screenplays, location scouting and other logistical needs. In the second instance, during the second week, participating artists transition into production, supported by an on-site crew that involves professionals such as assistant directors, cinematographers, sound specialists, acting coaches and sustainability managers provided by EcoMuvi. However, informed by the author's experience as a sustainable production trainer during the 2024 edition of the Campus, the involvement of sustainability managers at this stage can be characterised as rather informative, if not symbolic. Due to budget constraints,

projects commissioned by CinemAbruzzo do not rely on the use of generators, extensive transportation or the generation of excess waste. As such, sustainable practices are, for the most part, simulated rather than enacted, with sustainability managers guiding resident filmmakers during their productions through scenarios that would typically occur in real-life, larger-budget productions. Subsequently, with production wrapping at week two, the third week is dedicated to offline editing and sound design of the five completed short films, at the end of which participants leave the residence. Then, the following three months are dedicated to off-campus post-production activities such as colour correction, sound mixing, graphics, and the creation of Digital Cinema Packages (DCPs) for distribution, all managed by industry professionals attached to the Campus (CinemAbruzzo, 2023:5).

13.5 Limitations and Opportunities of Current Training Frameworks

Far from exhaustive, the overview above provides a concise outline of the dominant approaches currently available at scale for sector-specific sustainability training. From a purely academic perspective, integrating such approaches into formal educational settings, such as university curricula, is both a timely and important contribution that not only addresses the need for an upgraded industry-relevant skillset but also advances the discourse of sustainable production on an academic level, utilising the discipline's inherently fertile cross-disciplinary theoretical framework. However, from an industry standpoint that favours practicality while fostering a long-term cultural change at the production level, three key discrepancies can be observed: 1) the disconnect of theory and practice, 2) the generic training and its role-specific gaps, which in turn lead to 3) inflexibility in sustainability management and reporting frameworks.

In the first instance, the argument is that existing training available at scale is rooted in formal educational settings that arguably provide "a safe environment" for sustainable productions, failing to reflect the time, money or logistical constraints of enacting sustainability in real-world

production scenarios. Per Raciti (2024, personal communication) of SkyItalia, while an educational background in production that embeds sustainability is timely and essential, an on-set experience of production is indispensable; thus, practical, hands-on training should complement theoretical modules. In the second instance, the available training often remains generic, lacking specialised roles and department-specific approaches, with various practitioners and academics pointing towards the fact that sustainability in production is highly context-dependent. As such, following a generic induction to sustainability, writers, directors, and producers would need to cultivate a sensibility of how their creative decisions impact both storytelling and production demands. Similarly, costume designers would need targeted training on the acquisition, use and treatment of sustainable materials and their repurposing strategies. At the same time, gaffers would benefit from targeted training on the use of more sustainable lighting alternatives, conducting energy audits and utilising carbon calculators (P. Kääpä, 2023; J. Torvai, 2023; T. Wagendorp, 2023; S. Geronimaki, 2024; M. Sant'Unione, 2024, personal communications). Further, such role-specific training should leverage the environmental dimension as the main driver of learning via the exploration of discourses such as climate science and planetary boundaries while also addressing the social and economic aspects of sustainability and their relevance to specific production-department workflows (D. Schneider-Garcia, 2023; T. Wagendorp, 2023; G. Dellacampa, 2024, personal communication). Respectively, in the third instance, the proliferation of sustainable protocol norms, as well as norm-specific training, can create inflexible approaches in terms of sustainability management and reporting, particularly in the case of co-productions. In principle, per Chiara Morlacchi of Italcert (2023, personal communication), a common approach, unified framework, and horizontal diffusion (involving, again, all production departments and stakeholders) of sustainability competencies and skill requirements must be clarified at the European and global levels in order to ensure cross-border production standards.

13.6 Proposed Structures of Education and Training

13.6.1 Building Capacity Across Internal and External Stakeholders

Revisiting perspectives gained throughout the course of this study, both through secondary sources and primary data, as well as the author's personal observations during their mandatory industry placement, this section will aim to identify and propose 1) the key components of an "ideal" sustainable production training package offered at scale, 2) the relevant stakeholders for such a targeted training, and further 3) in what capacity identified parties are to be engaged with the learning process. In delivering this, the proposed conceptual framework and training structure aims to integrate and potentially reposition current sustainability discourses, strategies, and regulations to identify training baseline criteria that, independent from established protocol norms, are flexible in their applicability across diverse production settings. Towards this, the first step is to acknowledge the tripartite nature of such training. On the one hand, such training should consider internal stakeholders in the audiovisual sector, such as future (and in some cases existing) sustainability managers, alongside standard production roles spanning all phases and departments in audiovisual production. Simultaneously, in view of greening the entire supply chain appending the audiovisual sector, a modicum of training aiming for basic awareness could also extend to external stakeholders, such as collaborators and suppliers, supporting the making of audiovisual projects in any capacity. As such, three distinct training modules are proposed, each geared towards achieving specific learning outcomes.

13.6.2 Module One: Training for Sustainability Managers

Starting with theory, in considering the strategic competencies required for the audiovisual sector's green transition, training for sustainability managers should thoroughly address the concept of sustainability, whether understood as something purely environmental ("green"

discourse) or, more broadly, as holistic (sustainable development). In this regard, it can be argued that the United Nations' SDGs framework remains foundational in its capacity to instil an understanding of how actions in one area (or "Goal") can promote and address impact in multiple areas, owning to the framework's interconnected and mutually reinforcing objectives spanning the environment, society and the economy. A simplistic yet straightforward example of this logic would, for instance, see the reduction of waste in a production set (SDG 12: Responsible Consumption and Production) extend to a decrease in carbon footprint (SDG 13: Climate Action) while simultaneously addressing food security (SDG 2: Zero Hunger) by donating surplus food upon wrap to NGOs and local communities in the vicinity that a set is based. However, the 17 SDGs can be quite unspecific and theoretical (K. Astikainen, 2023, personal communication), requiring a practical adaptation by sustainability managers to project-specific production settings. Similarly, if part of a strategy, they must be communicated appropriately and in a clear and accessible manner to producers, the crew and other stakeholders (e.g. suppliers, environmental authorities, local communities) (N. Cuadros Gonzalez, D. Schneider Garcia, 2023, personal communication). Other discourses are equally relevant: The Paris Agreement and the work of the IPCC can inform subsequent practices, such as calculating and reducing emissions, where a "funnel-like", layered approach moves from the broad (e.g. carbon neutrality by 2050 and limiting warming below 2°C) to the specific (e.g. reduced single-plastic use on set) (B. Alassad, 2024, personal communication). Likewise, the European Green Deal framework can substantially inform a sustainability manager's approach in areas such as circular economy practices, green public procurement and waste reduction, as well as help them to navigate compliance towards relevant policies on the local, national and European levels (M. Cucco, 2023, personal communication).

In practical settings, concretising a sustainability manager's training would involve equipping them with a combination of both hard and soft skills. Per Balcar (2016:2, 4), hard skills are practical, tangible and job-specific skills "embodied in acquired qualifications", whereas soft skills relate to interpersonal interaction, such as barriers to communication and cooperation. In the first instance, we posit here that hard skills in the arsenal of a sustainability manager can be

considered the mastery of various sustainability reporting frameworks. This, in theory, is not a tall order if such training is benchmarked on a more thorough and rigorous reporting framework —such as the CSRD and the GRI— requiring extensive familiarity with advanced discourses such as double materiality, scoped emissions and a more thorough understanding of supply chains and processes of third-party assurance (such as verification and certification). The argument made here is that if a sustainability manager can navigate the advanced reporting frameworks of the aforementioned, they are well-positioned to manage most of the sector's sustainability reporting requirements, which by comparison are less complex and rely on fairly basic reporting structures (M. Cuadros-Gonzalez, 2023, personal communication). Similarly, extensive familiarity with the ISO 20121 standard, considered the "mother guide certification" (G. Dellacampa, 2024, personal communication), or its closely related European counterpart EMAS (Eco-Management and Audit Scheme), is essential, as is a certain proficiency with lifecycle analysis tools (L. Vecchi, 2023, personal communication).

In the second instance, given that the adoption and effective implementation of sustainability in audiovisual sets is an ongoing process, subject to constant negotiation with everchanging personnel, certain soft skills are also necessitated, particularly relating to leadership development and communication skills. Broady, per Day (2001:581, 585), the overall purpose of leadership development is to foster the intrapersonal capacity-building of an organisation's human capital (individual knowledge, skills and abilities) and social capital (networked relationships among individuals that enhance cooperation and resource exchange). The consideration of such strategies, per Production Wellbeing and Inclusion Consultant Valeria Bullo (2024, personal communication), is largely overlooked in an industry where managing large, diverse groups of people often leads to interpersonal conflicts. Further, as freelance film producer, executive coach, and CEO of The School of Curiosity Matteo de Castello (2023, personal communication) argues, such strategies can be proactively adapted to the nuances of the audiovisual sector through practical frameworks such as Agile methodologies, which encompass effective communication and productivity in high turnover, project-based environments.

The above should be accompanied by a thorough and practical understanding of film and media production encompassing two dimensions. First, a linear understanding of all phases of the production pipeline, from preproduction to distribution, is needed. Second, a hierarchical understanding of the various roles comprising the audiovisual production ecosystem —such as producers, financiers, Heads of Departments, crew, suppliers and auxiliary workers— with a particular focus on the "materiality" underlying the associated workflows of each. Towards this, according to Sant'Unione (2023, personal communication), a hands-on apprenticeship as a green production assistant (or Green PA) following the training and acquisition of pertinent hard and soft skills should be a mandatory step before one earns the title of a "Green Consultant" for audiovisual sets (or sustainability manager, for that matter).

Based on the author's observations, insights, and reflective praxis gained through facilitated internships for film and TV sets overseen by EcoMuvi, a Green PA, working under the guidance of a seasoned sustainability manager, focuses on operational sustainability tasks during production. These include maintaining compliance in accordance with the sustainability plan drafted in pre-production and, to that end, raising awareness among the crew and liaising with heads of departments. Within that function, the apprentice Green PA oversees waste and its differentiation while also monitoring and documenting energy use and other consumption habits on set to support subsequent reporting, verification, and certification processes. Along the way, they gain exposure to the more intensive tasks that a fully-fledged sustainability manager oversees, such as drafting a sustainability plan and project management strategies, facilitating access for independent third-party auditors, final carbon calculation and sustainability reporting, and collaborating with a range of external stakeholders ranging from regional authorities and municipalities to film commissions, funders and suppliers.

13.6.3 Module Two: Role-Specific Training

This module targets the entire crew involved in the making of an audiovisual project. Beginning from the production department, this would include Producers, Directors, Assistant Directors (ADs) and Production Assistants (PAs), extending to the Camera Department, with the Director of Photography and any operators and assistants working under their lead. Further, the Lighting and Grip Department, with its Gaffers and the Grip Team; the Art Department and its Production Designers, Art Directors, Set Designers, Dressers and Prop Masters; the Costume and Makeup Department, with its Costume Designers, Wardrobe Supervisors and assistants, Makeup Artists and Hair Stylists; Special Effects Supervisors and Technicians and further, the Transportation Department and other miscellaneous crew and auxiliary workers such as medics, health and safety officers, animal handlers and child welfare workers, catering and craft services, location scouts, construction crews. Arguably, certain departments and roles would be excluded from this list, such as the Sound Department, where nowadays, for the most part, they use rechargeable batteries for microphones, audio mixers and other sound equipment.

Yet, unlike the uniform training previously proposed for sustainability managers, the proposed structure here takes into account the varying levels of involvement specific to the role-based functions of each professional. For instance, focused modules on sustainable procurement, disposal and repurposing of materials for the Art and Costume Departments are of no interest or relevance to the Lighting and Grip Department or Generator Operators. Instead, these departments would require training focused on sustainable alternatives to traditional luminaire assets or diesel-run generators. Similarly, transportation managers would benefit from training on route optimisation for less travel mileage (M.L. Smith, 2023, personal communication) and technical knowledge for hybrid or electric vehicles (EVs), such as utilising charging infrastructures, planning charging schedules and EV battery maintenance.

13.6.4 Module Three: Basic Awareness Raising for Suppliers and Other External Collaborators

Finally, this module targets external stakeholders, such as suppliers, vendors, and contractors, who contribute indirectly to the production of audiovisual media. However, unlike prior modules, this would necessitate a decidedly narrower scope, emphasising instead awareness raising over comprehensive training. For instance, while food caterers attached to a project may not need detailed knowledge of their role in the audiovisual sector's green transition, they ideally should know about the product sourcing data required for sustainability reporting and be able to provide such information promptly upon request from the sustainability manager. Similarly, suppliers involved in transportation rentals and logistics must understand their responsibility to provide detailed information about their rentals to a production crew, including vehicle make and model class, engine specifications, and travelled mileage— a practice that, based on the author's experience as Green PA, can be inconsistent, particularly in rural settings. Therefore, this module primarily aims to inform suppliers on the importance of proactive tracking of such information when bulk pre-orders or rentals are made from the productions themselves, ensuring easy retrieval and traceability for their sustainability managers during the verification and certification processes. Likewise, independent contractors employed in set construction very often supply their own low-cost materials and tools, which can complicate rather than facilitate efficient waste disposal following production wrap. In addition, this section would also extend to address the role of municipal waste management authorities and sanitation departments, whose often inconsistent or irregular collection services (M. Cuadros-Gonzalez, 2023, personal communication) can result in waste accumulation and undifferentiated retrieval despite the best efforts of production teams and sustainability managers.

13.6.5 Delivery Mechanisms and Interconnectedness of Modules

The primary goal of delivering this training at scale and in a uniform manner is to engage all stakeholders with sustainability by establishing a common language and habitual set of best practices, gradually embedding them in all production departments, stages and settings. This can be achieved by increasing the buy-in in a horizontal manner across all departments, transforming it into a shared responsibility rather than an isolated effort. To achieve this, however, we contend here that such training and capacity building would first require vertical buy-in from the highest levels of European cultural policy (e.g., Creative Media Desks). Such institutional support could involve both funding the development of the training itself or mandating its attendance by production crews as a compulsory prerequisite for funding incentives, thus ensuring horizontal collaboration. The diffusion of such training should ideally occur at the national level through screen unions and guilds, regional film commissions, and audiovisual funds (R. Fritsche, 2024, personal communication), which not only get to set their own quotas for the training's outcomes but also adapt it to their specific regional context (e.g. available infrastructure, biodiversity, metrics). As to the delivery mechanisms themselves, in the interest of a sustainable as well as digital transition, the most efficient mode of delivery would have to utilise a hybrid, two-phased model. This would begin with 1) an e-learning training platform and, where relevant, be followed by 2) an on-set hands-on experience.

In the first instance, harnessing technology enables the integration of multimedia content ranging from slides, video tutorials and case studies to quick reference guides and quizzes that track participant progress in the training. Simultaneously, the digital nature of this training phase would eliminate any (unnecessary) transportation-related emissions generated from attendees travelling to the destination of a training centre. Furthermore, digital enrolment and attendance in such training should be rooted in real-world production settings, with a customary modular content diffusion based on 1) the production needs, 2) the locations involved, and 3) the budget of a project during the early pre-production. A variety of logical reasons necessitate this timing: ensuring that all stakeholders internal to the production —

early-stage sustainability PAs, Heads of Departments and their crews— are aligned with a project's specific sustainability goals, allowing time for fundamental skills development learning on-the-go strategies for adaptation in their respective workflows while in the case of external stakeholders such as suppliers allowing for a cost-efficient, proactive supplier engagement, for smoother operations and supplies that meet sustainable certification standards.

13.6.6 Expected Challenges and Barriers

Although a more structured proposal is outside the purview of this study, we can easily argue that in practice, designing such a curriculum would necessitate a thorough interdisciplinary collaboration between STEM (Science, Technology, Engineering, and Mathematics) disciplines, marketers, academics and policymakers related to culture and the environment. This presents us with our first challenge, that of coordinating and achieving consensus in what potentially would be diverging but also competing priorities for those involved in the curriculum design (P. Kääpa, 2023; T. Wagendorp, 2023, personal communication). For example, academics may emphasise theoretical depth and critical rigour; STEM professionals would capitalise on data-driven accuracy and practical solutions, whereas marketers would focus on audience engagement and accessibility of information for a general audience.

A second challenge comes in the form of unavailable, consistent and comparable data related to the sector's sustainability issues as well as its value chain (Gassmann and Guttefarde, 2021:9; Fioroni et al., 2023:7). This discrepancy would create difficulty in benchmarking and standardising practices in a pan-European manner and has, in fact, been unsuccessfully addressed by a pilot project commissioned by the European Audiovisual Observatory (EAO). Per the Observatory, despite extensive efforts, nine green labels (indicatively, Albert, Austrian Ecolabel, Ecomuvi, Ecoprod, Green Film, Green Motion, Green Screen Stamp, Green Shooting Certificate IDM, Tenerife 3) and four carbon calculators (Albert, Ecoprod, Eureca and Klimaktiv) participating in the pilot project failed for the most part to produce consistent carbon footprint

reports for the year 2022. Towards this, the EAO concluded that there is still "a lack of maturity in the European film and audiovisual sector when it comes to collecting homogeneous data on sustainability at national and pan-European level" (Fioroni et al., 2023:7). However, a more recent and promising development includes the Horizon Europe MovieTwin Project, where the proposed use of digital twin simulation technology aims to mine, collect and integrate emissions data in real-time concrete production settings (Enterprise Europe Network, 2024:1-3).

14.0 Future Directions and Implications for Practice, Policy and Research

14.1 Introduction

The present study has thoroughly addressed the fragmented landscape of sustainability in audiovisual production through three main inquiries: 1) its historical development, 2) its on-the-ground implementation in production settings, and 2) its education and training potential in global as well as domestic levels. Historically, whereas the study is framed within a particular production context (Italian), its findings suggest that there is nothing inherently Italian about the field of practice. Instead, most domestic approaches at the EU level largely model, adapt and advance the more visible and dominant international approaches in sustainable production, tailoring them in respective localised contexts. Notably, however, the main observation that is to be made as to the origins of sustainable production, both globally and in Italy, is that it initially emerged from grassroots advocacy within independent film production and that, over time, such efforts have been progressively adopted by major industry players, such as studios and media conglomerates, as integral components of broader ESG and CSR strategies aligning with a shifting global legislative landscape. As such, the overview presented in this study is fittingly positioned as part of a broader momentum that extends well beyond the audiovisual sector through the en-masse adoption of global environmental agendas heralding new directions in climate policy negotiations, such as the Paris Accords, the UN Sustainable Development Goals, the European Union's comprehensive Green New Deal framework, followed by the post-COVID-19 recovery measures introduced by Next Generation EU, all of which operate in a complementary and mutually reinforcing manner. Further, the study has examined strategies that are increasingly affecting audiovisual production and its supply chain through the introduction of an ensemble of new stakeholders, including environmentally determined territorial authorities, non-profit global initiatives and organisations, third-party independent certification bodies and novel mandatory reporting frameworks, such as the CSRD. In the second and third instances, given the legally bound nature of the above frameworks, broadly, any conclusions to this study are foregone: the

environmental pillar is now an enduring fixture in the screen industries, and any conversation to be had should centre on how the audiovisual sector aligns with and operationalises the objectives of such agendas. In this context, considering that such initiatives remain nascent, evolving and largely unstandardised, the study's final observations can be considered speculative, forward-looking assumptions that rely on insightful synthesis and thematic organisation rather than a definite, hypothesis-based testing grounded on highly empirical and quantitative results. While the present approach still allows for a broad, nuanced and in-depth exploration of the field, it inherently falls short of providing conclusive statements derived from (disclosed) quantitative data, such as the rate of adoption in Italy and beyond or data relating to production emissions used as benchmarks for comparative analysis. Thus, in the form of a conclusion, the following section identifies the potential future of this evolving practice while examining its implication for policy development and academic research.

14.2 From Set to Stage: Sustainability in Cultural Festivals and Events

Our first argument suggests that a sustainability manager's role is poised to expand beyond the mere oversight of audiovisual production settings, evolving into a broader consultancy function, with potential spillovers into film festival operations and other sector-related live events. According to Elsaesser (2005:100), film festivals have since the 1970s successfully served as platforms for various socially progressive causes that thematically have included environmental issues, minority and pressure groups, women's rights, LGBTQ+ agendas, partisan politics and protests. Per de Valck and Zielinski (de Valck and Damiens, 2023: 309; M. de Valck, 2023, personal communication), however, it is only more recently —particularly following the advent of COVID-19— that "awareness for operational logistics […] laid along an ecological yardstick" has increased among both festival organisers and visitors. After all, as Raj and Griffin (2024:4, 6) highlight, from a sustainable events management perspective, film festivals share many of the same logistical challenges related to environmental sustainability found in audiovisual production settings; these include waste, energy, transport and

community impact considerations. In addition, they also share similar mitigating strategies that range from zero-waste goals, such as the reduction of single-use plastics and proper waste separation, to energy efficiency through investments in renewable energy sources for stage and facilities and the promotion and incentivisation of cleaner, public transport options, carpooling and bicycle schemes, all in alignment with sustainability standards such as the ISO 20121 and its British predecessor, the BS 8901. However, per Renato Cremonesi of the Green Ciak protocol and Verona Green Movie Land film festival collective (2024, personal communication), the prohibitively high costs of certifying ISO 20121 compliance for film festivals—ranging between 10 and 20 thousand Euros— render such schemes accessible only for well-funded festivals. As such, in response to the recent implementation of the CAM (*Criteri Ambientale Minimi*) Eventi ministerial notice by the Italian Ministry of Culture (in effect as of 2023), which mandates eco-friendly commitments by integrating sustainability criteria into funding evaluation, alongside other cultural, economic and social objectives for delegate applicants of film and audiovisual festivals, thematic reviews and screenings, awards and cinematheque activities (Ministero della Cultura, 2023:2,6,18), AFIC, the Italian Association of Film Festivals established its Green Festival Working Group, whose *Green Festival Guidelines* promote a set of relevant best practices (Cinecitta News, 2024). Developed in collaboration with ISPRA (*Istituto Superiore per la Protezione e la Ricerca Ambientale*; the Italian Institute for Environmental Protection and Research), the Guidelines advocate for interventions across ten key thematic areas: 1) sustainable mobility, 2) sustainable energy consumption, 3)minimising the use of printing materials, 4) implementing recycling installations, 5) waste reduction and management, 6) advancing food sustainability and 7) production of gadgets, 8) managing guests' activities sustainably and fostering the overall promotion of 9) social sustainability and 10) environmental awareness (D'Urso, 2022:175). For Trentino-based Laura Zumiani, General Programmer at Trento Film Festival and Coordinator of AFIC's Green Festival Guidelines (2023 personal communication), the Green Festival Guidelines aim to bridge the funding disparities between smaller film festivals and larger, commercially-oriented film festivals of Venice, Rome and Turin, aligning the sustainability strategies of all AFIC-affiliated 115 film festivals, and ensuring a common, accessible approach for festivals that operate with minimal state financial

support (e.g., €10,000), or those with more significant allocated resources (e.g. €200,000). Further, Zumiani acknowledges the overlapping nature of sustainability in the production and subsequent exhibition of audiovisual media and emphasises the critical component of including sustainability managers in the operational structures of film festivals, particularly in their capacity to manage and certify sustainability initiatives (Ibid, 2023, personal communication).

14.3 Holistic Approaches to Audiovisual Sustainability Reporting

Throughout the course of this study, the social pillar of sustainability has been frequently highlighted as intersecting with its environmental counterpart, with multiple practitioners hinting at this connection as a potential future direction. This connection has been articulated explicitly through responsible supply chain practices, such as supporting the local community hosting an audiovisual production by purchasing locally, donating sets, props, obsolete equipment, and food leftovers from sets to local communities and schools, or ensuring that a shooting location is left in the same or better condition after production occurs (L. Chiarini, 2023; N. Satta, 2023; D. Garcia-Scheinder, 2023; P. Manera, 2024; M. Sant'Unione, 2024, personal communications). Implicitly, while the primary focus remains primarily environmental, such intersectional connections could extend to include other diverse social considerations internal to the production, such as incorporating and fulfilling disability criteria within existing sustainability frameworks, implementing inclusive practices addressing the gender balance gaps, ensuring safer working environments and prioritising the mental health and wellbeing of the crew as critical factors that contribute in the overall value of sustainability efforts (E. Brosnan, 2023; T. Motye, 2023; L. Johanssen, 2023; A. Aubenque, 2024; R. Jones-Lee; personal communications). Whereas existing audiovisual funding structures, such as Eurimages, treat such considerations as parallel priorities —separating DEI and sustainability into distinct funding applications, managed by different respective departments and incentivised through separate funding schemes (T. Hugot, 2023, personal communication)— streamers such as

Amazon communicate such efforts into single, integrated ESG reports (B. Belli, 2023, personal communication).

Therefore, in this section, we forward the notion that such efforts can indeed comprise a future area of focus for sustainable production norms, with their reporting components extending beyond an environmentally-focused structure towards a more integrated sustainability reporting in areas such as Social and Governance, that sustainability managers and consultancies provide to producers and studios, in order to satisfy the demands of a wider ESG chain of stakeholders, such as investors and audiences. Additionally, such efforts could contribute to sustainability-driven image-building, enabling studios, production companies, and even celebrity actors to project a stronger socio-environmental public identity through strategic project choices and promotional activities. By necessity, such a direction could arguably see the development of social indicators, metrics and reporting structures in existing sustainability protocols, focusing on internal production aspects, such as accessibility and gender balance, as well as the availability of resources, staff training, contingency planning and satisfaction surveys related to mental health and well-being on set, paralleling the attention given to addressing social impacts external to production.

14.4 From Bonus Points to Budget Lines: Incentivising Sustainable AVP in Italy

So far, the argument made is that sustainability in the audiovisual sector has historically comprised an isolated, sector-specific effort driven by the ESG and CSR initiatives of major studios, the grassroots advocacy of independent productions, and, at the European level, a combination of incentives and eco—bonuses tied to regional film commission funding applications, alongside occasional mandatory compliance and reporting legislation to compliance and reporting (e.g. CSRD). In the Italian context, the first support mechanism for sustainability emerged in the 2020 Call for Selective Contributions (*Bando per Contributi Selettivi)* issued by the Italian Ministry of Culture—then known as *Ministero per i Beni e le*

Attività Culturali e per il Turismo (MiBACT), or Ministry for Cultural Heritage, Activities and Tourism. This initiative offered production applicants an additional five evaluation points towards a maximum score of 100 points (MiBACT, 2020:14, 28-29, 42) if an environmental sustainability certification was declared at the application stage and certified by accredited bodies following production wrap. Subsequently, the 2020 Call for Selective Contributions has served as a foundational framework upon which regional film commissions have modelled their respective funding structures to encourage sustainability. However, these incentives have, for the most part, remained optional rather than mandatory. An exception to this has been the 2023 mandatory adoption of sustainable protocols and verified compliance for all projects utilising location shoots in the region of Torino-Piemonte, where failure to adhere to these protocols or demonstrate compliance during sustainability audits conducted by independent third-party authorities could result in the revocation of funding allocated to beneficiaries (Regione Piemonte, 2023:1-2). Yet despite the stringency of such measures, Paolo Manera, Director of Film Commission Torino Piemonte (2023, personal communication), emphasises that building an efficient ecosystem that balances ambition with practicality requires sustainable production practices to be grounded in simple and accessible protocols that foster awareness and cultural change in the sector rather than mere mandatory compliance. This sentiment is similarly echoed by Fabio Abagnato, Director of Emilia-Romagna Film Commission (2023, personal communication) and Sardegna Film Commission's former CEO, Nevina Satta (2023, personal communication). Finally, a more recent and arguably transformative development (M. Cucco, 2023; C. Cresto-Dina, 2023, personal communication) is the inclusion of dedicated budget lines for sustainability and the recognition of sustainable protocols as eligible, reimbursable expenses in the revised Tax Credit of late 2024 (Ministero della Cultura, 2024:6).

14.5 Politicisation and De-Politicisation of Climate Agendas and Targets

While such developments and progressive shifts set a precedent for aligning Italian audiovisual production with global climate goals, they prompt the delicate question of how such advancements are positioned within and influenced by the broader Italian political landscape. Specifically, the politicisation and depoliticisation of climate change discourses by Italy's ruling party raise questions about the future of funding allocation and policies related to the audiovisual sectors' green transition. Per De Wilde and Zürn (as quoted in Biancanala et al.,2023:179), politicisation refers to the process of bringing an issue into the political domain, where it becomes subject to decision-making and disputes over potential solutions. As noted by Biancanala et al. (Ibid, 2023), scholarly consensus identifies three core dimensions of politicisation: 1) the salience, importance and visibility of the issue introduced in public debate;2) the expansion of actors involved in the debate, including policy-makers, citizens NGOs, industry groups, academics and scientists; and 3) the polarisation among these actors, reflected in divergent opinions and stances on the issue introduced. Conversely, when these dimensions are absent, an issue becomes depoliticised as the political character of decision-making processes is stripped away, thus reducing the issue to the realm of mere "scientific expertise or fate" (Ibid, 2023). Both paradigms take new contours under the leadership of Giorgia Meloni, whose cabinet is a coalition of right-wing and nationalist parties, including Brothers of Italy (Fratelli d'Italia), Lega per Salvini Premier, Forza Italia and Noi Moderati; an ensemble that, per Bompan (2022) has "no history of thinking and acting about the environment and energy". Meloni's opposition is divided among left-wing parties, such as Partito Democratico and Alleanza Verdi e Sinistra, and centrist parties, including Azione and Italia Viva, alongside Movimento 5 Stelle (Media Freedom Rapid Response, 2024:6), all of which significantly shape environmentally policy discourse as they advocate for ambitious reforms aligned with the EU Green Deal. In contrast, Meloni's government critiques such policies as economically burdensome and ideologically driven from the left (Biancanala et al., 2023, p.178; De Benedetti, 2024), often dismissing them as "climate fundamentalism" (Di Sario, 2022).

Largely, Meloni's approach to climate change, widely described as populist (Bompan, 2022), reflects a politicisation of the issue whereby climate policies are framed as ideological tools imposed by the left, disruptive to traditional industries and livelihoods. Instead, her coalition promotes an understanding of the environment rooted within a broader "God, fatherland, and family" ideological framework (De Benedetti, 2024). Conversely, a tendency towards depoliticisation can be observed in statements by the coalition's Minister of the Environment and Energy Security, Gilberto Pichetto Fratin, who has occasionally downplayed the anthropogenic factors of climate change, attributing it mainly to natural causes (Giordano and Mathiesen, 2023). In addition to seeking revisions to the EU Green Deal and proposing radical revisions to its Greenhouse directive, —which sees a ban on the production of petrol and diesel cars starting in 2035 onwards, justified by the need to protect the agricultural sector (Biancanala et al., 2023:178) — Meloni's government has faced criticism of aligning its stance with the interests of the fossil fuel industry and big corporations (De Benedetti, 2024). Then, despite a mixed performance in following through with EU directives and the NRRP (Pizzimenti, 2023: 194-195), Meloni's government has nevertheless pledged to uphold the EU-mandated net zero-targets established by the national unity government of Mario Draghi. After all, the legally binding nature makes it difficult for the current cabinet to change priorities in its recovery spending, given the risk of Brussels freezing payments (Di Sario, 2022).

Although largely unrelated to the above, one such priority that has remained unchanged is the generous 40% tax credit, increased from 30% during the COVID-19 pandemic. While this measure has been instrumental in attracting more international productions to Italy (Vivarelli, 2022), its use by Italian productions has sparked debates under the current government, with concerns that way too many domestic productions claim the tax relief while only a select few secure any meaningful international distribution (Dams, 2024a). However, contrary to the assumption that Italy's current government lacks the potential for transformative momentum, multiple sources emphasise that, for the most part, structural mechanisms and institutional frameworks within Ministries and Commissions largely function independently of political

leadership. This autonomy ensures a certain continuity in cultural funding, including instances where that funding is used to incentivise sustainability in production sets, even amidst governmental changes (M. Cucco, 2023; L. Merzagora, 2023; L. Vecchi, 2023; P. Santamaria, 0224, personal communication).

Conversely, the main argument proposed forward suggests that while the development of sustainable production practices is ultimately a story of progress and heightened awareness globally, it is set against a looming short-term deadline—the year 2050. Such an urgency is underscored by the United Nations Environmental Programme's alarming Emissions Gap Report of 2024, which calls for transformative and aggressive action to meet critical climate targets. Per the report (UNEP, 2024:XVII), current policies implemented are projected to limit global warming to 3.1°C over the course of this century, leaving virtually no possibility of achieving the Paris Agreement target of limiting warming goal to below 1.5°C. Only the most optimistic scenario — where "the most stringent pledges currently made" with regards to NDCs (Nationally Determined Contributions) by the signatory countries to the Agreement "are fully implemented" could limit warming to 1.9°C; a notable step down from the 1.5°C goal set by the Agreement in 2015 (Ibid, 2024). Per the UNEP, addressing this challenge requires action on three fronts: 1) closing the (negatively) projected 2030 and 2035 emissions and implementation gap, 2) submitting updated NDCs with more ambitious mitigation targets for 2035, and 3) committing to fully achieving the existing emission cuts already pledged (Ibid, 2024:30). In light of this, we contend that sustainability in audiovisual production should be approached as an apolitical priority that transcends the ideological baggage of the political divide —whether framed as partisan left-right dynamics or conservative-progressive interpretations of the strategies for achieving green transition. After all, as Besley and Persson (2023: 1884,1901) point out, political incentives and the inability of governments to commit to future policies often undermine the long-term effectiveness of environmental strategies, as "policy decisions in a political equilibrium tend to prioritise short-term utilitarian welfare" over what would be sustained, long-term and future-oriented actions.

14.6 Conclusion: A Roadmap for Transformation

Thus, in recognising the importance of a longer-term perspective, the following and concluding section presents a holistic framework that attributes feasible, desirable, and pursuable strategies for audiovisual production, framing their implications for industry practice, policy development and future research into theoretical perspective drawn by the Environmental Humanities. Within this perspective, Gagnon-Thompson and Barton's ecocentric-anthropocentric values-based framework and Corbett's *Spectrum of Environmental Ideologies* are synthesised to point out potential trajectories through which the sector can reimagine its practices through the lens of sustainability.

In understanding and articulating a social group's predisposed attitudes toward the environment and the motives underlying those attitudes, Gagnon Thompson and Barton (1994:149-150) emphasise a distinction between ecocentric and anthropocentric values. Simply put, an ecocentric viewpoint values nature for its own sake, assuming that the environment is worthy of protection for its intrinsic and inherent value. In contrast, an anthropocentric view posits that the environment should be protected for its role in maintaining or enhancing the quality of life for humans (Ibid, 1994), essentially serving a utilitarian function. Expanding on this continuum, Corbett (2006:26-29), in her seminal work *Communicating Nature,* distinguishes between five ideological paradigms along the ecocentric-anthropocentric spectrum that comprehensively provide a cultural context for understanding human-environmental interactions.

In 1) *Unrestrained Instrumentalism*, Corbet identifies an unsustainable mindset where all natural resources are available solely for human use, with no limitations or restrictions in their exploitation. By extension, this understanding also implies a prime, baseline example of an anthropocentric point of view. Akin to a "business as usual" approach in audiovisual production, this paradigm encompasses scenarios where profit and efficiency are blatantly prioritised over sustainability through reliance on high-impact practices, such as the excessive

use of diesel generators, single-use materials, and inefficient resource allocation, leading to substantial carbon emissions. Such an approach would also signify zero innovation, resistance to the adoption of sustainable technologies, such as clean mobile power solutions, and a broader failure to meet the growing expectations of stakeholders and shareholders for ESG accountability, which in some European production contexts (e.g. Germany and Austria) would be subject to penalisation. As such, policy-wise, this paradigm underscores the need for stricter regulations mandating the adoption of sustainability protocols, metrics and certifications. On an academic level, scholarly research could greatly benefit a lot from long-term, environmental-economic quantitative studies that establish baseline indicators for focused production contexts — such as national industries or workflow-specific frameworks— which have been covered to some extent (see Corbett and Turco, 2006; Albert et al., 2020; Sustainable Production Alliance, 2021). Additionally, further investigation into behavioural and institutional barriers hindering the sector's transition toward the adoption of greener practices would be essential.

In 2) *Conservationism*, Corbet attributes the use of natural resources in a wise manner to benefit the greatest number of people. Here, the value of nonhuman entities —broadly encompassing the environment and its inhabitants— is again utilitarian, meaning that they are valuable only as resources for human use, and their conservation is towards that end. Conservationism essentially comprises a baseline "resource efficiency" scenario for our immediate context where material and energy use on set are taken into account incrementally, with small provisions such as minimising waste in a basic recycling manner and adopting sustainable alternatives such as LED lighting kits, hybrid or electric vehicles, subject to adherence is easy-to-adopt green protocols or generic guidelines. Undeniably, an entry point for sustainability in audiovisual production, such an approach would enable production companies to meet early-stage ESG objectives and fulfil basic compliance and reporting requirements. Policy measures supporting this mode of production should incentivise broader lifecycle accountability and prioritise funding allocation for productions that adopt these measures, whether through selective, tax-credit-based incentives or EU funding mechanisms. In

this paradigm, various research lines could focus on quantifying the scalability of existing baseline sustainability indicators across diverse local and global production contexts. While feasible and pursuable, a conservationist approach is arguably not strategically desirable, as it lacks the depth needed to drive a more transformative change and largely characterises the current state of sustainable production today.

In 3) *Preservationism*, Corbet outlines approaches that safeguard resources for human use and enjoyment in ways that transcend their mere instrumental value, such as their scientific, ecological, aesthetic, and religious significance. Such a perspective could manifest as limited-location use agreements for principal photography to reduce the impact of productions through, for instance, reliance on virtual production workflows and eco-friendly set designs. In principle, such an approach would also foster longer-term sustainability planning strategies through funding-mandated creative and logistical planning during early pre-production, whereas policy development would see more thorough provisions for compliance in areas such as the biodiversity of vulnerable locations used for filming. Similarly, scholarly research would gain a lot from engaging with the carbon footprint of emerging technologies such as virtual production.

In 4) *Ethics and Values-driven Ideologies*, a mindset is promoted in which nonhuman entities are recognised as having inherent value beyond their utilitarian, scientific, aesthetic or religious significance, while humanity, co-existing as part of the same biotic community, perceives itself more humbly and less hierarchically. In our context, this would entail implementing decisive workflow changes that involve transparently reported lifecycle assessment for all facets of production and adherence to strict zero-waste and zero-emissions principles. In addition, such a trajectory would also see enhanced social and environmental goodwill internally and externally to the production through ethically-driven working shifts for production crews and through active engagement and support with local communities to ensure a positive collaboration with hosting regions. Policy implications would point to the need for more thorough lifecycle assessments as a criterion for funding eligibility. Meanwhile, research could

greatly benefit from exploring audience perception of sustainably produced content, its impact on market dynamics and the development of narrative and communication strategies to enhance audience engagement.

Finally, in 5) *Transformative Ideologies*, Corbet envisions a holistic and radical transformation of anthropocentric relations with the environment towards more eco-centric ones, with sustainability prioritised as a core value. At the policy level, such a paradigm would involve the audiovisual sector achieving full alignment with the Paris Agreement and the EU Green Deal, potentially incorporating sector-related targets into Nationally Determined Contributions (NDCs)— a critical mitigating gesture already trending in hard-to-abate sectors such as industry and construction (World Resources Institute, n.d.). This could also involve adopting renewable energy-only shoots, integrating virtual production, and compulsory contributions such as carbon offsets in cases where final emissions reported exceed the initial carbon estimate declared before production. In effect, this would be similar to the Polluter-Pays-Principle, an economic, ethical and legal instrument reflected in the UN's Rio Earth Summit Agenda 21 (Khan, 2015:638). Undoubtedly, this paradigm would also require strict compliance with sustainability protocols and transparent, in-depth reporting structures, with the introduction of even stricter development of mandatory obligations and policy incentives supported by industry-wide commitment and long-term investments in infrastructure. At its extreme, whether driven by the necessity to adapt to shifting climate and green transition agendas or simply an overregulated landscape of mandatory compliance, such an approach could potentially pave the way to discourses surrounding "de-growth". Whether viewed as a theory, strategic approach or critique, per Kallis et al. (2020:viii), the goal of degrowth is "to purposefully slow things down in order to minimise harm to humans and earth systems". In such a capacity, degrowth thinking could challenge the post-COVID EU funding allocation structures, particularly in Italy, pointing to the proliferation of productions fuelled by public funding and tax incentives. For many sustainability professionals, such a surge in production has distorted the market and led to inflated costs, notwithstanding the likely amplification of environmental footprint linked to both production and distribution settings, with releases occupying

significant server spaces and digital archival resources (B. Heidsiek, 2023; N. Satta, 2023; T. Wagendorp, 2023; D. Schneider-Garcia, 2023, personal communications). Building on this, the same rationale would also apply to the implementation of digital caps on online distribution through stringent international regulations, specifically targeting OTT, SVOD and AVOD streaming services (L. U. Marks, 2023, personal communication). Simultaneously, scholarly research could gain a lot from exploring the feasibility of degrowth-oriented production models for the audiovisual sector, the development of sustainability metrics related to virtual production workflows, and how investigating how identified, quantifiable baseline criteria related to the sector's sustainability issues can be effectively integrated into Nationally Determined Contributions (NDCs) to instigate a further transformative push.

As Nicoli (2017:11) aptly observes, the film industry "develops in a series of stages—creative, productive and distributive—that are sequentially interdependent." We argue here that embedding sustainability discourses and practices within the audiovisual sector not only enriches these interconnected stages but fundamentally redefines them at a time when such transformation is urgently necessitated. This evolution expands the sector by integrating a new set of considerations and practices into established production workflows while simultaneously introducing an ensemble of new stakeholders, supply chain requirements, and compliance frameworks. With the advent of new regulations, such additions must be navigated successfully in an increasingly obligatory manner, challenging the industry's traditional modus operandi to question not just how it functions but why. Thus, this reevaluation of the sector's raison d'être positions sustainability as both an opportunity for innovation and a potential disruptive complication—often making it difficult to discern between the two. As Nenni et al. (2024:1) argue, the interplay between sustainability-related innovation is highly context-dependent: when innovation is entrenched in "a linear industrial and economic system dominated by competitive dynamics, the race for productivity, profitability optimisation, the predation of natural resources, and short-term-oriented strategies," its impact can be minimal and negatively disruptive. Against this backdrop, the Italian audiovisual sector's 15-year journey toward sustainability stands out as both a prolific and instructive example, marked by the

development of sustainable production norms, knowledge exchange initiatives, advocacy networks, and funding support mechanisms. These efforts demonstrate distinct conceptual, methodological, operational and occasionally regional approaches that not only meet the demands of sustainability but also compel the industry to reimagine its practices along established global climate, circular economy and developmental agendas.

Bibliography

Abidin, C., Brockington, D., Goodman, M. K., Mostafanezhad, M., & Richey, L. A. (2020). The Tropes of Celebrity Environmentalism. *Annual Review of Environment and Resources*, *45*(1), 387–410. https://doi.org/10.1146/annurev-environ-012320-081703

A.C. Production. (2015). *Infernet: Pressbook* [Promotional brochure]. A.C. Production S.r.l.

Accredia. (n.d.a). *Ruolo internazionale*. Accredia. Retrieved April 8, 2025, from https://www.accredia.it/chi-siamo/ruolo-internazionale/

Accredia. (n.d.b). *Organizzazione*. Accredia. Retrieved April 8, 2025, from https://www.accredia.it/chi-siamo/organizzazione/

Accredia. (n.d.c). *L'accreditamento in Italia: da SIT, SINAL e SINCERT alla nascita di Accredia*. Accredia. Retrieved April 8, 2025, from https://www.accredia.it/comunicazione/notizie/laccreditamento-in-italia-da-sit-sinal-e-sincert-alla-nascita-di-accredia/

Ackland-Snow, T., & Laybourn, W. (2017). *The Art of Illusion: Production Design for Film and Television*. The Crowood Press.

Adelopo, I., Yekini, K., & Raimi, L. (2017). Bridging governance gap with political CSR. In D. Crowther & S. Seifi (Eds.), *Development-oriented corporate social responsibility: Volume 1: Multinational corporations and the global context* (pp. 35–56). Routledge. https://doi.org/10.9774/GLEAF.9781783532445_4

AFIC. (2022, October). *Green Fest Trieste: Presentation*. https://www.aficfestival.it/wp-content/uploads/2021/10/Presentazione-Green-Fest-Trieste_ENG-.pdf

Afolabi, H., Ram, R., & Rimmel, G. (2022). Harmonization of sustainability reporting regulation: Analysis of a contested arena. *Sustainability, 14*(9), 5517. https://doi.org/10.3390/su14095517

Agency for Home Affairs. (ABB Flanders) (n.d.). *Towards a Local Energy and Climate Pact 2.0 between the Government of Flanders and the Flemish local governments*. Retrieved April 20, 2024, from https://www.abbflanders.be/content/files/1151-26498-the-local-energy-and-climate-pact-of-flanders-33c2f4b283d0dcca.pdf

Aichholzer, G., Allhutter, D., & Strauß, S. (2012). Using online carbon calculators for participation in local climate initiatives. In E. Tambouris, A. Macintosh, & Ø. Sæbø (Eds.), *Electronic participation. ePart 2012: Proceedings of the 4th International Conference on Electronic Participation* (LNCS 7444, pp. 85–96). Springer. https://doi.org/10.1007/978-3-642-33250-0_8

Ala-Uddin, M. (2019). Sustainable discourse: A critical analysis of the 2030 agenda for sustainable development. *Asia Pacific Media Educator, 29*(1), 1–11. https://doi.org/10.1177/1326365X19881515

Albenga Corsara. (2014). *La Green economy per il cinema: a Venezia anche Alessandra Bergero*. https://www.albengacorsara.it/2014/09/02/la-green-economy-per-il-cinema-a-venezia-anche-alessandra-bergero/

Albert. (2019b). *Employing local crews when filming abroad*. Retrieved from https://wearealbert.org/2019/07/04/employing-local-crews-when-filming-abroad/

albert. (2019c). *Education partnership*. https://wearealbert.org/education-partnership/

albert. (2021). *Albert carbon calculator: A quick start guide*. British Academy of Film and Television Arts. Retrieved from https://wearealbert.org/wp-content/uploads/2021/05/calculator-quick-start-guide-2021-compressed-compressed-1.pdf

Albert. (2022, July). *Certification cheat sheet*. https://wearealbert.org/wp-content/uploads/2022/07/Certification-Cheat-Sheet-Jul-22.pdf

albert. (2023, February 22). *Romulus II wins battle against unsustainable production*. https://wearealbert.org/2023/02/22/romulus-ii-wins-battle-against-unsustainable-production/

Albert. (2024b). *Creative Offsets*. https://wearealbert.org/creative-offsets/

Albert. (2024c, August 5). *Studio Sustainability Standard*. https://wearealbert.org/2024/08/05/studio-sustainability-standard

Albert. (2024d). *Green Rider*. https://wearealbert.org/green-rider/

albert & Arup. (2023). *Studio Sustainability Standard*. Retrieved April 20, 2024, from https://wearealbert.org/wp-content/uploads/2023/07/TheStudioSustainabilityStandard_2023-FINAL.pdf

albert, BFI, & Arup. (2020). *Screen New Deal: A route map to sustainable film production*. Retrieved April 20, 2024, from https://wearealbert.org/wp-content/uploads/2021/03/Screen-New-Deal-Report-1.pdf

Albert & Futerra. (2019). *Planet placement: Your guide to creating world-changing content*. Retrieved from https://wearefuterra.com/thinks/planet-placement-guide

Aldo, Giovanni & Giacomo, & Venier, M. (Directors). (2014). *Il ricco, il povero e il maggiordomo* [The Rich Man, the Poor Man and the Butler] [Film]. Medusa Film.

Alghamdi, O. A., & Agag, G. (2023). Unlocking the power of reporting: Exploring the link between voluntary sustainability reporting, customer behavior, and firm value. *Sustainability, 15*(21), 15584. https://doi.org/10.3390/su152115584

Allen, J. (2021, April 27). *Net-zero, carbon-neutral, carbon-negative*. University of Newcastle. https://www.newcastle.edu.au/hippocampus/story/2021/carbon-jargon

Allison-Hope, D. (2016). *A proposal for the future of sustainability reporting*. BSR. Retrieved from https://www.bsr.org/reports/BSR_Future_of_Reporting_2016.pdf

Alternativa Sostenibile. (n.d.). *Cinema e sostenibilità: connubio vicino?* Retrieved April 8, 2025, from https://www.alternativasostenibile.it/articolo/cinema-e-sostenibilita-connubio-vicino-.html

Alternativa Sostenibile. (2016, November 11). *Efficienza energetica: l'industria del cinema può essere sostenibile*. Retrieved June 6, 2024, from https://www.alternativasostenibile.it/articolo/efficienza-energetica-lindustria-del-cinema-pu%C3%B2-essere-sostenibile

Altman, R. (2009). Whither Film Studies (in a Post–Film Studies World)? *Cinema Journal*, *49*(1), 131–135. https://doi.org/10.1353/cj.0.0160

Álvarez, F. (Director). (2024). *Alien: Romulus* [Film]. 20th Century Studios.

Amazon. (2023). *2023 Amazon sustainability report*. Retrieved from https://sustainability.aboutamazon.com/2023-amazon-sustainability-report.pdf

American Humane Association. (2015). *Guidelines for the safe use of animals in filmed media*. Retrieved from https://www.animallaw.info/sites/default/files/jouranimallawvol12.pdf

American Petroleum Institute. (n.d.). *Where are the pipelines?* Retrieved from https://www.api.org/oil-and-natural-gas/wells-to-consumer/transporting-oil-natural-gas/pipeline/where-are-the-pipelines

Anderson, A., & Rolfe, P. (2015). *The challenges Netflix faces in Southern Europe*. The Hollywood Reporter. https://www.hollywoodreporter.com/news/general-news/challenges-netflix-faces-southern-europe-800903/

Andrew, D. (2009). The core and the flow of film studies. *Critical Inquiry, 35*(4), 879–905. Retrieved from https://www.journals.uchicago.edu/doi/abs/10.1086/599587

ANICA. (2012). *Italy: Your Best Shot* [Presentation slides]. https://www.anica.it/online/tax_credit/ITALY_YOUR_BEST_SHOT_10092012_slides.pdf

ANICA. (2020, October 16). *Nasce la Fondazione ANICA Academy*. https://www.anica.it/news/news-anica/nasce-la-fondazione-anica-academy

Antonio Ricci (Creator). (1988–present). *Striscia la Notizia* [TV series]. Mediaset.

Appelgren, L. (2018). The impact of regional film funds on the European co-production model. In J. Hammett-Jamart, P. Mitric, & E. N. Redvall (Eds.), *European film and television co-production: Policy and practice* (pp. 265–279). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-97157-5

Apulia Film Commission. (n.d.). *Non c'è tempo per attendere, occorre fare*. https://www.apuliafilmcommission.it/non-ce-tempo-per-attendere-occorre-fare/

Araújo, J., Pereira, I. V., & Santos, J. D. (2023). The effect of corporate social responsibility on brand image and brand equity and its impact on consumer satisfaction. *Administrative Sciences, 13*(5), 118. https://doi.org/10.3390/admsci13050118

Arbeitskreis »Green Shooting«. (2021, October). *Ökologische Mindeststandards für deutsche Kino-, TV- und Online-/VoD-Produktionen*. MFG Baden-Württemberg. Retrieved from https://www.green-motion.org/files/16_green_motion/Dokumente/OEkologische_Standards_Januar_2024.pdf

Ardizzoni, M., & Ferrari, C. (Eds.). (2010). *Beyond monopoly: Globalization and contemporary Italian media*. Lexington Books.

L'Arena. (2022, January 17). *«Il caso Film Festival? La risposta sono i fatti»*. https://www.larena.it/territorio-veronese/lessinia/il-caso-film-festival-la-risposta-sono-i-fatti-1.9131220

Arisya, K. F., & Suryantini, R. (2021, April). Modularity in design for disassembly (DfD): Exploring the strategy for a better sustainable architecture. *IOP Conference Series: Earth and Environmental Science, 738*(1), 012024. https://doi.org/10.1088/1755-1315/738/1/012024

Arnott, J. C., & Lemos, M. C. (2021). Understanding knowledge use for sustainability. *Environmental Science & Policy, 120*, 222–230. https://doi.org/10.1016/j.envsci.2021.02.016

Aronofsky, D. (Director). (2014). *Noah* [Film]. Paramount Pictures; Regency Enterprises; Protozoa Pictures.

Asociace Producentů v Audiovizi. (2023, June 29). *The Czech audiovisual industry is booming, with a turnover of over CZK 15 billion in 2022*. https://asociaceproducentu.cz/en/posts/czech-audiovisual-industry-booming-turnover-over-15-billion-2022

Association of Film Commissioners International (AFCI). (n.d.). *Best practice: Understanding & establishing a film commission*. Retrieved from https://afci.org/wp-content/uploads/2024/02/AFCI-Best-Practice-Understanding-Establishing-a-Film-Commission.pdf

Atlas Copco. (n.d.). *Power generators ready for Stage V*. Retrieved from https://www.atlascopco.com/el-gr/construction-equipment/products/stage-5-emission-regulation-mobile-equipment/stage-v-emission-regulation-generators

Atlas Copco. (2020). *The route to Stage V compliance and beyond*. Atlas Copco Power and Flow Division. *Retrieved from* https://www.atlascopco.com/content/dam/atlas-copco/construction-technique/portable-energy/documents/pfl-downloads/stage-v-generators/Stage-v-generators-ebook.pdf

Audubon New York. (n.d.). *NBC Universal's Green is Universal initiative*. Retrieved from https://ny.audubon.org/nbc-universals-green-universal-initiative

Austrian Ecolabel. (n.d.). *Green meetings and events*. https://www.umweltzeichen.at/en/green-meetings-and-events/home

Autonomous Province of Bolzano – South Tyrol. (2024). *Concept of South Tyrolean nature parks*. Retrieved May 31, 2024, from https://nature-parks.province.bz.it/en/concept-of-south-tyrolean-nature-parks

AzzeroCO2. (2012). *Edison Green Movie alla Casa del Cinema di Roma*. https://www.azzeroco2.it/edison-green-movie-alla-casa-del-cinema-di-roma/

Bakker, G. (2003). *The decline and fall of the European film industry: Sunk costs, market size and market structure, 1890–1927* (Working Paper No. 70/03). London School of Economics and Political Science, Department of Economic History. Retrieved from https://eprints.lse.ac.uk/22366/1/wp70.pdf

Balcar, J. (2016). Is it better to invest in hard or soft skills? *The Economic and Labour Relations Review, 27*(4), 453–470. https://doi.org/10.1177/1035304616674613

Banks, M. (2019). Film Schools as Pre-Industry: Fostering Creative Collaboration and Equity in Media Production Programs. *Media Industries Journal*, *6*(1). https://doi.org/10.3998/mij.15031809.0006.105

Bao, Q., Shaukat, M. M., Elantary, A., & Yang, M. C. (2016). Eco-feedback designs: A balance between the quantitative and the emotional. In *Proceedings of the ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (IDETC/CIE 2016, August 21–24, 2016, Charlotte, NC). American Society of Mechanical Engineers. https://doi.org/10.1115/DETC2016-59376

Barcelona Film Commission. (2020). *Guide to good practice in audiovisual production*. Institut de Cultura de Barcelona - Ajuntament de Barcelona. Retrieved from https://www.bcncatfilmcommission.com/sites/default/files/GUIDE%20SUSTAINABILITY-ENG-WEB_0.pdf

Barkemeyer, R., Holt, D., Preuss, L., & Tsang, S. (2011). What happened to the 'development' in sustainable development? Business guidelines two decades after Brundtland. *Sustainable Development*. Wiley Online Library. https://doi.org/10.1002/sd.521

Barnett, M., & Finnemore, M. (2012). *Rules for the world: International organizations in global politics*. Cornell University Press.

Bastianoni, S., Marchi, M., Caro, D., Casprini, P., & Pulselli, F. M. (2014). The connection between 2006 IPCC GHG inventory methodology and ISO 14064-1 certification standard: A reference point for the environmental policies at sub-national scale. *Environmental Science & Policy*, *44*, 97–107. https://doi.org/10.1016/j.envsci.2014.07.015

Batty, C., & Taylor, S. (Eds.). (2021). *Script Development: Critical Approaches, Creative Practices, International Perspectives*. Springer International Publishing. https://doi.org/10.1007/978-3-030-48713-3

British Broadcasting Corporation. (n.d.). *Our story*. Retrieved April 12, 2024, from https://www.bbc.co.uk/sustainability/our-story/

BBC Natural History Unit. (2015). *Patagonia: Earth's Secret Paradise* [TV series]. BBC Two

BBC Outreach. (2006). *Corporate responsibility & partnerships: 2006 review*. BBC. Retrieved from http://downloads.bbc.co.uk/outreach/2006_review.pdf

BBC Studioworks. (2023, October 18). *BBC Studioworks tops global BAFTA sustainability standard*. *BBC Media Centre*. https://www.bbc.co.uk/mediacentre/studioworks/2023/studioworks-tops-global-bafta-sustainability-standard

BBS-Lombard. (n.d.). *A conversation on sustainable cinema*. https://www.bbs-lombard.com/a-conversation-on-sustainable-cinema/

Beeton, S., & Cavicchi, A. (2015). Not quite under the Tuscan sun… The potential of film tourism in Marche Region. *AlmaTourism: Journal of Tourism, Culture and Territorial Development, Special Issue* 4, 145–166. https://doi.org/10.6092/issn.2036-5195/4958

Berg, S. (2024, May 3). *Sustainability in the film industry: Green motion in Germany*. Deutschland.de. https://www.deutschland.de/en/topic/culture/sustainability-in-the-film-industry-green-motion-in-germany

Bergmann, M., Carpenter, K., & Rego, J. (2014). *AWAY WE GO: A pilot study of sustainable film production practices*. Producers Guild of America. Retrieved from http://greenproductionguide.com/wp-content/uploads/2014/04/pga_green.pdf

Bernard, S. (Director). (2023). *Waco Untold: The British Stories* [TV series]. MultiStory Media.

Bernardini, A., Cherchi Usai, P., Sopocy, M., Noble, W., & Koszarski, R. (1989). An industry in recession: The Italian film industry, 1908–1909. *Film History, 3*(4), 341–368. Indiana University Press. https://www.jstor.org/stable/3815048

Besley, T., & Persson, T. (2023). The political economics of green transitions. *The Quarterly Journal of Economics, 138*(3), 1863–1906. https://doi.org/10.1093/qje/qjad006

Best, K. (2024, May). *PGGB and Sky Studios Elstree to host Sustainability Behind the Lens. The Location Guide*. https://www.thelocationguide.com/2024/05/pggb-and-sky-studios-elstree-to-host-sustainability-behind-the-lens/

Biancalana, C., Ladini, R., & Visconti, F. (2024). Climate change in Italy: Towards the politicization of an issue. *Italian Political Science, 18*(3), 177–193. Retrieved from https://italianpoliticalscience.com/index.php/ips/article/view/257/164

Biancarelli, M., Julien, L., & Roche, A. (2023). *The challenges of the environmental transition of the film and audiovisual industry*. Nausicä. https://nausicacinemadurable.fr/wp-content/uploads/2024/02/the-challenges-of-the-environmental-transition-of-the-film-and-audiovisual-industry-2.pdf

Biermann, F., Kanie, N., & Kim, R. E. (2017). Global governance by goal-setting: The novel approach of the UN Sustainable Development Goals. *Current Opinion in Environmental Sustainability, 26–27*, 26–31. https://doi.org/10.1016/j.cosust.2017.01.010

Bird, B. (Director). (2015). *Tomorrowland* [Film]. Walt Disney Pictures.

Birnik, A. (2013). An evidence-based assessment of online carbon calculators. *International Journal of Greenhouse Gas Control, 17*, 280–293. https://doi.org/10.1016/j.ijggc.2013.05.013

Bispuri, L. (Director). (2018). *Figlia mia* [Film]. Vivo Film; Colorado Film; Rai Cinema.

Bisschop, L. (2012). Is it all going to waste? Illegal transports of e-waste in a European trade hub. *Crime, Law and Social Change, 58*(3), 221–249. https://doi.org/10.1007/s10611-012-9383-0

Bissoli, G. (2023). *I film festival e la promozione del territorio: L'esempio del Film Festival della Lessinia* [Master's thesis, Università degli Studi di Padova]. Università degli Studi di Padova, Dipartimento dei Beni Culturali. Retrieved from https://thesis.unipd.it/retrieve/bdb848b1-0858-4dd4-abad-a3186c18906f/Bissoli_Giovanni.pdf

B Lab. (n.d.a). *Find a B Corp*. B Corporation. Retrieved April 9, 2025, from https://www.bcorporation.net/en-us/find-a-b-corp/?query=television

B Lab. (n.d.b). *B Impact Assessment*. B Corporation. Retrieved April 9, 2025, from https://www.bcorporation.net/en-us/programs-and-tools/b-impact-assessment/

BMK & VKI. (2017). *Austrian Ecolabel Uz76 R1a: Green Producing*. Austrian Ministry for Sustainability and Tourism (BMK) & Austrian Consumer Information Association (VKI). Retrieved from: https://www.umweltzeichen.at/file/Guideline/UZ%2076/Long/Uz76_R1a_Green%20Producing_2017_EN.pdf

Bodansky, D. (2016). The legal character of the Paris Agreement. *Review of European, Comparative & International Environmental Law, 25*(2), 142–150. https://ssrn.com/abstract=2735252

Bompan, E. (2022). *Italy's turned right. What are the impacts for the ecological transition?* Renewable Matter. https://www.renewablematter.eu/articles/article/italys-turned-right-what-are-the-impacts-for-the-ecological-transition

Bournemouth University. (2021). Bournemouth University media students receive BAFTA sustainability certification. *Bournemouth University News*. https://www.bournemouth.ac.uk/news/2021-05-27/bournemouth-university-media-students-receive-bafta-sustainability-certification

Bows-Larkin, A., Mander, S. L., Traut, M. B., Anderson, K. L., & Wood, F. R. (2016). Aviation and climate change – The continuing challenge. In *Encyclopedia of Aerospace Engineering* (pp. 209–213). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780470686652.eae1031

Boyd, D. D. (2017). A review of general aviation safety (1984–2017). *Aerospace Medicine and Human Performance, 88*(7), 657–664. https://doi.org/10.3357/AMHP.4862.2017

Boyechko, S. (2022, January 12). Using Honda generators in filmmaking. *CineD*. https://www.cined.com/using-honda-generators-in-filmmaking/

Boykoff, M., & Goodman, M. K. (2009). Conspicuous redemption? Reflections on the promises and perils of the "celebritization" of climate change. *Geoforum, 40*(3), 395–406. https://doi.org/10.1016/j.geoforum.2008.04.006

Bozak, N. (2012). *The cinematic footprint: Lights, camera, natural resources*. Columbia University Press.

Boyle, D. (Director). (2001). *The Beach* [Film]. 20th Century Fox.

Brandi, C., Dzebo, A., & Janetschek, H. (2017). *The case for connecting the implementation of the Paris Climate Agreement and the 2030 Agenda for Sustainable Development*. Deutsches Institut für Entwicklungspolitik (DIE). https://hdl.handle.net/10419/199809

British Cinematographer. (2024, February 13). British Film Designers Guild unveils Planet Positive Award contenders. *British Cinematographer*. Retrieved from https://britishcinematographer.co.uk/british-film-designers-guild-unveils-planet-positive-award-contenders/

British Film Institute. (2020). *Green matters: Environmental sustainability and film production – An overview of current practice*. Bigger Picture Research. Available at: https://www.bfi.org.uk/news/green-matters-environmental-sustainability

British Standards Institution. (2005). *Quality management systems: Fundamentals and vocabulary* (BS ISO 9000:2005). BSI Standards. Retrieved from: https://knowledge.bsigroup.com/products/quality-management-systems-fundamentals-and-vocabulary?version=standard

British Standards Institution. (2006). *Environmental management — Life cycle assessment — Principles and framework (BS EN ISO 14040:2006)*. British Standards Institution. Available at: https://landingpage.bsigroup.com/LandingPage/Undated?UPI=000000000001139131

Breidenich, C., Magraw, D., Rowley, A., & Rubin, J. W. (1998). The Kyoto Protocol to the United Nations Framework Convention on Climate Change. *The American Journal of International Law, 92*(2), 315–331. https://doi.org/10.2307/2998044

Brereton, P. (2005). *Hollywood utopia: Ecology in contemporary American cinema*. Intellect Books.

Broadcast Now. (2023, January 16). *Global Production Awards launched by Screen International and Broadcast*. https://www.broadcastnow.co.uk/events/global-production-awards-launched-by-screen-international-and-broadcast/5178601.article

Brown, H. S., de Jong, M., & Levy, D. L. (2009). Building institutions based on information disclosure: Lessons from GRI's sustainability reporting. *Journal of Cleaner Production, 17*(6), 571–580. https://doi.org/10.1016/j.jclepro.2008.12.009

Bulloni Yaquinta, M. N., Del Bono, A., Vocos, F., Cabrera, N., & Borroni, C. (2021). *Impact of the COVID-19 pandemic on the audiovisual and live entertainment sector in the Americas: A study in eight countries*. International Federation of Actors; UNI-MEI; FIA-LA; Panartes. https://fia-actors.com/2021/02/23/impact-of-the-covid-19-pandemic-on-the-audiovisual-and-live-entertainement-sector-in-the-americas-a-study-in-8-countries/

Bundesverband Green Film & TV Consultants (BVGCD e.V.) (n.d.). *Das Berufsbild*. Bundesverband Green Film & TV Consultants Deutschland. Retrieved from https://bvgcd.de/berufsbild/

Buonanno, M. (2008). *The age of television: Experiences and theories* (J. Radice, Trans.). Intellect Books.

Bureau Veritas. (n.d.). *Green film*. Retrieved from https://www.bureauveritas.it/needs/green-film

Burke, F. (Ed.). (2017). *A companion to Italian cinema*. Wiley-Blackwell.

Busch, P.-O., Heinzel, M., Kempken, M., & Liese, A. (2020). Mind the gap? Comparing de facto and de jure expert authority of international public administrations in financial and agricultural policy. *Journal of Comparative Policy Analysis: Research and Practice*. Advance online publication. https://doi.org/10.1080/13876988.2020.1820866

Cabrera Blázquez, F. J., Cappello, M., Fontaine, G., Talavera Milla, J., & Valais, S. (2019). *The promotion of independent audiovisual production in Europe* (IRIS Plus 2019–1). European Audiovisual Observatory. https://www.obs.coe.int/en/web/observatoire/iris-plus

Cadman, T. (2011). ISO, TC 207, and the 14000 Series. In *Quality and legitimacy of global governance* (pp. 75–108). Palgrave Macmillan. https://doi.org/10.1057/9780230306462_4

Calabrese, A., Costa, R., Levialdi Ghiron, N., & Menichini, T. (2019). Materiality analysis in sustainability reporting: A tool for directing corporate sustainability towards emerging economic, environmental, and social opportunities. *Technological and Economic Development of Economy, 25*(5), 1016–1038. https://doi.org/10.3846/tede.2019.10550

Caldwell, L. K., & Weiland, P. S. (1996). *International environmental policy: From the twentieth to the twenty-first century* (3rd ed.). Duke University Press.

Camera dei Deputati. (2021). *Mission 1: Digitization, Innovation, Competitiveness and Culture*. https://www.camera.it/temiap/2021/03/25/OCD177-4876.pdf

Caradonna, J. L. (2014). *Sustainability: A history*. Oxford University Press.

Carbonera, R. (Director). (2017). *Resina* [Film]. Black Bee Productions; OneArt; Trentino Film Commission.

Carbon Literacy Project. (n.d.). *The Carbon Literacy Project*. Retrieved from https://carbonliteracy.com/

The Carbon Literacy Trust. (2018). *The Carbon Literacy Standard Version 2.5*. Retrieved April 20, 2024, from https://www.carbonliteracy.com/wp-content/uploads/2018/12/The-Carbon-Literacy-Standard-Version-2.5.pdf

CarbonNeutral (n.d.). *Sky*. Retrieved April 1, 2024, from https://www.carbonneutral.com/examples/sky

Carlà, A. (2021). Securitizing borders: The case of South Tyrol. *Nationalities Papers, 49*(2), 315–332. Retrieved from https://www.cambridge.org/core/journals/nationalities-papers/article/securitizing-borders-the-case-of-south-tyrol/03C03885E5156CFA11B0E5038A78034C

Carone, C. (Director). (2016). *Fräulein: Una fiaba d'inferno* [Film]. Tempesta Film; Rai Cinema.

Cartwright, S. R. (1996). *Pre-production planning for video, film, and multimedia* (Vol. 1). Focal Press.

Caruso, M. (2014). *Ciak sostenibili per Aldo, Giovanni e Giacomo*. Wise Society. https://wisesociety.it/piaceri-e-societa/ciak-sostenibili-per-aldo-giovanni-e-giacomo/

Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., Jäger, J., & Mitchell, R. B. (2003). Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences, 100*(14), 8086–8091. https://doi.org/10.1073/pnas.1231332100

Catalan Institute for Cultural Companies (ICEC). (n.d.). *Guide to implementing sustainability criteria in filming and film shoots*. Catalunya Film Commission. Retrieved April 20, 2024, from https://www.bcncatfilmcommission.com/sites/default/files/Guide-sustainable_filmings_CFC%20%281%29.pdf

Cavuta, G., Di Matteo, D., Ferrari, F., & Fuschi, M. (2018). Abruzzo as a two-faced region: Between vulnerability and environmental safeguard. *Romanian Journal of Geography, 62*(2), 185–201. Retrieved from https://journals.indexcopernicus.com/api/file/viewByFileId/431205

Cecere, G. (Director). (2010). *Il primo incarico* [The First Assignment] [Film]. Palomar.

Celli, C., & Cottino-Jones, M. (2007). *A new guide to Italian cinema*. Palgrave Macmillan.

Ceron, M. (2023). The National Recovery and Resilience Plans: Towards a Next Generation of Fiscal Coordination? *Politics and Governance*, *11*(4), 324–338. https://doi.org/10.17645/pag.v11i4.7359

Cesaro, L. (2022). Film Festivals and Ecological Sustainability in the Age of the Anthropocene. *Cinergie – Il Cinema E Le Altre Arti*, *11*(22), 83–96. https://doi.org/10.6092/issn.2280-9481/15632

Chandler, D. (1997). *An introduction to genre theory*. Aberystwyth University. Retrieved from https://www.researchgate.net/publication/242253420_An_Introduction_to_Genre_Theory

Channel Four Television Corporation. (2010). *Annual report and financial statements 2010*. Channel Four Television Corporation. Retrieved from https://assets-corporate.channel4.com/_flysystem/s3/2017-06/annual_report_2010.pdf

Channel Four Television Corporation. (2011). *Report and financial statements 2010: Incorporating the Statement of Media Content Policy*. Presented to Parliament pursuant to Paragraph 13(1) of Schedule 3 to the Broadcasting Act 1990. https://assets-corporate.channel4.com/_flysystem/s3/2017-06/annual_report_2010.pdf

Chapain, C., & Stryjakiewicz, T. (Eds.). (2017). *Creative industries in Europe: Drivers of new sectoral and spatial dynamics*. Springer International Publishing.

Chen, G., Lim, M. K., Yeo, W., & Tseng, M.-L. (2024). Net zero vs. carbon neutrality: Supply chain management challenges and future research agenda. *International Journal of Logistics Research and Applications*. Advance online publication. https://doi.org/10.1080/13675567.2024.2359058

Cherry, M. (Creator). (2004–2012). *Desperate Housewives* [TV series]. ABC Studios.

Chiarini, L., & Khedachi, N. (2019). *Sustainability reporting in project-based industries: A European study with a focus on the motion picture industry* [Master's thesis, Malmö University]. Malmö University. Available at: https://www.diva-portal.org/smash/get/diva2:1483221/FULLTEXT01.pdf

Child, B. (2011, April 1). Fade out from the UK Film Council ... to the British Film Institute. *The Guardian*. https://www.theguardian.com/film/2011/apr/01/uk-film-council-british-institute-bfi

Chung, A. W. L., & To, W. M. (2023). A bibliometric study of carbon neutrality: 2001–2022. *HKIE Transactions, 30*(2), 1–11. https://doi.org/10.33430/V30N2THIE-2022-0056

Christophe, E. (2021, October). *Distillare la realtà: Modalità di lavoro e pratiche produttive alternative sui set di Alice Rohrwacher* [Master's thesis, Politecnico di Torino]. Politecnico di Torino, Corso di Laurea Magistrale in Ingegneria del Cinema e dei Mezzi di Comunicazione. Available at: https://webthesis.biblio.polito.it/20523/

Chu, K. W. (2016). Ecocinema. *Journal of Chinese Cinemas, 10*(1), 11–14. https://doi.org/10.1080/17508061.2016.1142728

Chu, K. W. (2017). Ecocinema. In K. Gabbard (Ed.), *Oxford bibliographies in cinema and media studies*. Oxford University Press. Retrieved from https://www.researchgate.net/publication/329376437_Oxford_Bibliography_Ecocinema_Gabbard_Krin_Ed_Oxford_Bibliographies_in_Cinema_and_Media_Studies_Oxford_University_Press_2017

Chung, D., & Park, S. J. (2022). The Effects of Competition Between Fair Trade Organizations. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4219361

Cinecittà News. (2022). *EcoMuvi: Primo standard riconosciuto per il cinema sostenibile*. Retrieved June 6, 2024, from https://cinecittanews.it/ecomuvi-primo-standard-riconosciuto-per-il-cinema-sostenibile/

Cinecittà News. (2023a). *Animazione in Italia: 200 milioni di fatturato all'anno*. Retrieved May 31, 2024, from https://cinecittanews.it/animazione-in-italia-200-milioni-di-fatturato-all-anno/

Cinecittà News. (2023b). *Il diario di bordo del velista Soldini sarà un docufilm diretto da Sydney Sibilia*. Retrieved May 31, 2024, from https://cinecittanews.it/il-diario-di-bordo-del-velista-soldini-sara-un-docufilm-diretto-da-sydney-sibilia/

Cinecittà News. (2024). *Tusma (l'associazione Cartoon Italia): Made in Italy sì, ma non per l'infanzia*. Retrieved May 31, 2024, from https://cinecittanews.it/tusma-lassociazione-cartoon-italia-made-in-italy-si-ma-non-per-linfanzia/

Cinecittà S.p.A. (n.d.a). *Cinecittà REgeneration*. https://cinecitta.com/en/studios/cinecitta-regeneration/

Cinecittà S.p.A. (2021b). *Bilancio al 31.12.2021* [Annual financial report]. https://www.cinecitta.com

Cinecittà S.p.A. (2021a). *Business plan 2022–2026* [Corporate strategic document]. https://cinecitta.com/public/amm_trasp/2021/BP_Cinecitta22-26.pdf

Cinecittà S.p.A. (2023). *Cinecittà Green Standards for Film Crews*. Retrieved from https://cinecitta.com/wp-content/uploads/2024/02/Cinecitta_Green-Standard_VDEF-@dec23_EN.pdf

CinemAbruzzo Aps. (2023). *CinemAbruzzo Campus 2023: Guidelines for applicants*. Retrieved from https://cinemabruzzo.com/wp-content/uploads/2023/06/CABC2023-_-Guidelines2023.pdf

CineRegio. (n.d.a). *About CineRegio*. https://www.cineregio.org/about_cineregio/

CineRegio. (n.d.b). *GreenRegio: Sustainable film production*. https://www.cineregio.org/greenregio/

CineRegio. (n.d.c). *Green Regio*. Retrieved October 3, 2023, from https://www.cineregio.org/subgroups/green_regio/

CineRegio. (2015). *CineRegio Green Report 2015 on sustainability in the European regions*. CineRegio. Retrieved from https://www.cineregio.org/dyn/files/pdf_download/8-file/CineRegioGreenReport2015_INTERNET_SinglePages.pdf

CineRegio. (2017). *CineRegio Green Report 2017 on sustainability in the European regions*. CineRegio. Retrieved from https://www.cineregio.org/dyn/files/pdf_download/10-file/CineRegio2017_GreenReport_INTERNET_single_pages.pdf

CineRegio. (2020). *CineRegio Green Report 2020 on sustainability in the European regions*. CineRegio. Retrieved from https://www.cineregio.org/dyn/files/pdf_download/11-file/CineRegio_GreenReport2020_25022020_SinglePages.pdf

Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders, 74*, 102263. https://doi.org/10.1016/j.janxdis.2020.102263

Clean Mobile Power Initiative. (n.d.). *Clean mobile power initiative*. Retrieved from https://cleanmobilepowerinitiative.org/

Clémençon, R. (2012). Welcome to the Anthropocene: Rio+20 and the meaning of sustainable development. *Journal of Environment & Development, 21*(3), 311–338. https://doi.org/10.1177/1070496512457289

Clevé, B. (2006). *Film production management* (3rd ed.). Focal Press.

ClimateQ. (n.d.). *Proud to be part of Albert – BAFTA's brilliant sustainability scheme*. Retrieved December 12, 2024, from https://www.climateq.co.uk/resources/proud-to-be-part-of-albert-baftas-brilliant-sustainability-scheme/

Clooney, G., Heslov, G., & Davies, E. (Executive Producers). (2019). *Catch-22* [TV miniseries]. Hulu; Anonymous Content; Paramount Television; Smokehouse Pictures.

Coi, G. (2013, November 25). *How concrete killed a city*. Politico. Retrieved April 8, 2025, from https://www.politico.eu/article/olbia-floods-2013-cleopatra-sardinia-italy-urban-sprawl-rivers/

Comcast Corporation. (2020). *Sky environmental sustainability*. Comcast Corporation. https://corporate.comcast.com/values/report/2020/sky-environmental-sustainability

Consell Nacional de la Cultura i de les Arts (CoNCA). (2020). *Environmental leadership in the Catalan cultural and creative sector*. Generalitat de Catalunya. Retrieved from https://conca.gencat.cat/web/.content/arxius/publicacions/IC19_Sostenibilitat-WEB_DEF.pdf

Connell, J. (2012). Film tourism – Evolution, progress and prospects. *Tourism Management, 33*(5), 1007–1029. https://doi.org/10.1016/j.tourman.2012.02.008

Copp, S. F. (2009). Corporate social responsibility and the Companies Act 2006. *Economic Affairs, 29*(4), 16–21. https://doi.org/10.1111/j.1468-0270.2009.01942.x

Cooper, S. M., & Michelon, G. (2022). Conceptions of materiality in sustainability reporting frameworks: Commonalities, differences and possibilities. In C. A. Adams (Ed.), *Handbook of Accounting and Sustainability*. Edward Elgar Publishing. https://research-information.bris.ac.uk/en/publications/4941bc86-9c17-496c-a7a8-9fdaffdcf347

Corbett, J. B. (2006). *Communicating nature: How we create and understand environmental messages*. Island Press.

Corbett, C. J., & Kirsch, D. A. (2001). International diffusion of ISO 14000 certification. *Production and Operations Management, 10*(3), 327–342. https://doi.org/10.1111/j.1937-5956.2001.tb00207.x

Corbett, C., & Turco, R. (2006). *Sustainability in the motion picture industry*. California Integrated Waste Management Board. Retrieved from https://www.ioes.ucla.edu/wp-content/uploads/2016/10/mpisreport.pdf

Corsale, A., Gallicchio, E., & Sistu, G. (2020). *Sustainable tourism and peripheral areas: A political ecology reading of tourism development in Sardinia*. In *Anthropocene and Islands* (Geographies of the Anthropocene Series). Il Sileno Edizioni. Retrieved April 8, 2025, from

https://www.ilsileno.it/geographiesoftheanthropocene/Anthropocene%20and%20Islands/Abstract/2%20-%20Corsale%20et%20al.pdf

Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations. (2005). *Official Journal of the European Union*, L3, 1–44. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32005R0001

Cousins, I. T., DeWitt, J. C., Glüge, J., Goldenman, G., Herzke, D., Lohmann, R., Ng, C. A., Scheringer, M., & Wang, Z. (2020). The high persistence of PFAS is sufficient for their management as a chemical class. *Environmental Science: Processes & Impacts, 22*(12), 2307–2312. https://doi.org/10.1039/D0EM00355G

Creative Diversity Network. (2024). *Diamond: The Seventh Cut – Contributions to UK television 2022/23*. Creative Diversity Network. Retrieved from https://creativediversitynetwork.com/wp-content/uploads/2024/09/Standard-main-Report_Diamond-The-Seventh-Cut_CDN_12-Sept-2024pdf.pdf

Cremonesi, R. (n.d.). *Renato Cremonesi* [LinkedIn profile]. LinkedIn. https://www.linkedin.com/in/renato-cremonesi-b54a1017a/

Cronaca di Verona. (n.d.). *Verona terra di cinema sostenibile*. Cronaca di Verona. https://www.cronacadiverona.com/verona-terra-di-cinema-sostenibile/

Croll, B. (2022, January 20). *Sustainability initiatives like Ecoprod gain traction in the film industry*. Variety. https://variety.com/2022/artisans/global/sustainability-ecoprod-1235166969/

Crowther, P. (2005, August). *DfD: Themes and principles*. RAIA/BDP Environment Design Guide. Royal Australian Institute of Architects. Retrieved from https://eprints.qut.edu.au/2888/1/Crowther-RAIA-2005.PDF

CSRwire. (2009, April 20). *NBC Universal goes green behind the scenes*. Retrieved from https://www.csrwire.com/press_releases/28207-nbc-universal-goes-green-behind-the-scenes-

Cubitt, S. (2005). *EcoMedia*. Rodopi.

Cubitt, S. (2017) *Finite Media: Environmental Implications of Digital Technologies*. Duke University Press.

Cucco, M. (2013). From the state to the regions: The devolution of Italian cinema. *Journal of Italian Cinema & Media Studies*, *1*(3), 263–277. https://doi.org/10.1386/jicms.1.3.263_1

Cucco, M., & Richeri, G. (2021). *European film commissions as transcultural promoters and mediators. Journal of Transcultural Communication, 1*(1), 45–57. https://doi.org/10.1515/jtc-2021-2005

Cullenward, D. (2024). *California's Low Carbon Fuel Standard*. Kleinman Center for Energy Policy, University of Pennsylvania. *Retrieved from* https://kleinmanenergy.upenn.edu/wp-content/uploads/2024/10/KC-Paper-16-Californias-Low-Carbon-Fuel-Standard.pdf

Culture Action Europe. (2021). *Culture in the EU's national recovery and resilience plans: The state of play one year after the launch of the campaign to earmark 2% in the post-pandemic strategies*. Brussels: Culture Action Europe. Retrieved from https://cultureactioneurope.org/wp-content/uploads/2021/11/NRRPs_analysed_digital.pdf

Czech Film Commission. (2024). *New Era Safety s.r.o.* Retrieved from https://www.filmcommission.cz/en/director/new-era-safety-sro/

D'Adamo, I., Gastaldi, M., Imbriani, C., & Morone, P. (2021). Assessing regional performance for the Sustainable Development Goals in Italy. *Scientific Reports, 11*, Article 24117. https://doi.org/10.1038/s41598-021-03635-8

D'Agostini, L. (Director). (2024). *A Dark Story (Una storia nera)* [Film]. Groenlandia, Rai Cinema.

Daidj, N., & Jung, J. (2011). Strategies in the media industry: Towards the development of co-opetition practices. *Journal of Media Business Studies, 8*(4), 37–57. https://doi.org/10.1080/16522354.2011.11073530

D'Alatri, A. (Director). (2010). *Sul mare* [Film]. RAI Cinema.

D'Amico, S., Giustiniano, L., Nenni, M. E., & Pirolo, L. (2013). Product lifecycle management as a tool to create value in the fashion system. *International Journal of Engineering Business Management, 5*(Special Issue on Innovations in Fashion Industry), 33. https://doi.org/10.5772/56856

Dams, T. (2021, February 18). *Netflix and German media firms launch green production initiative*. IBC. Retrieved April 22, 2024, from https://www.ibc.org/news/netflix-and-german-media-firms-launch-green-production-initiative/8033.article

Dams, T. (2024, February 15). *Italian government reforms could prove a challenge to film producers*. Screen Daily. Retrieved from https://www.screendaily.com/features/italian-government-reforms-could-prove-a-challenge-to-film-producers/5190591.article

Dash, S. K., Chakraborty, S., & Elangovan, D. (2023). A brief review of hydrogen production methods and their challenges. *Energies, 16*(3), 1141. https://doi.org/10.3390/en16031141

Day, D. V. (2001). Leadership development: A review in context. *The Leadership Quarterly, 11*(4), 581–613. https://doi.org/10.1016/S1048-9843(00)00061-8

Daymon, C., & Holloway, I. (2010). *Qualitative research methods in public relations and marketing communications* (2nd ed.). Routledge. https://doi.org/10.4324/9780203846544

De Benedetti, F. (2024, December 5). *A single narrative: Culture and media under Giorgia Meloni*. Green European Journal. Retrieved from https://www.greeneuropeanjournal.eu/wp-content/uploads/pdf/a-single-narrative-culture-and-media-under-giorgia-meloni.pdf

Degli-Esposti Reinert, C. (2000). Italy. In G. Kindem (Ed.), *The international movie industry* (pp. 223–233). Southern Illinois University Press.

Del Baldo, M. (2019). Acting as a benefit corporation and a B Corp to responsibly pursue private and public benefits: The case of Paradisi Srl (Italy). *International Journal of Corporate Social Responsibility, 4*(4), 1–23. https://doi.org/10.1186/s40991-019-0042-y

Deloitte Norway. (2019). *Sustainability and integrated reporting: An analysis of the 50 largest companies in Norway*. Deloitte AS. Retrieved from https://integratedreporting.ifrs.org/wp-content/uploads/2020/02/IR-and-Sustainability-Report-Deloitte-Norway.pdf

Department for Transport. (2018). *The road to zero: Next steps towards cleaner road transport and delivering our Industrial Strategy*. Retrieved from https://assets.publishing.service.gov.uk/media/5b968e3ee5274a13859deed2/road-to-zero.pdf

Delmas, M. A. (2002). The diffusion of environmental management standards in Europe and in the United States: An institutional perspective. *Policy Sciences, 35*(1), 91–119. https://doi.org/10.1023/A:101610880

Delmestri, G. (2002). *An Arabian Phoenix: Trust, cooperation and performance in the Italian animated cartoons industry*. Milan: SDA Bocconi - Bocconi University School of Management. Retrieved from https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID318902_code020731670.pdf?abstractid=318902&mirid=1

Department for Transport. (2018). *The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy*. https://assets.publishing.service.gov.uk/media/5b968e3ee5274a13859deed2/road-to-zero.pdf

Derrickson, S. (Director). (2008). *The Day the Earth Stood Still* [Film]. 20th Century Fox.

Deuze, M., & Prenger, M. (2019). *Making media: Production, practices, and professions*. Amsterdam University Press. https://doi.org/10.2307/j.ctvcj305r

Diamantini, C., & Zanon, B. (2000). Planning the urban sustainable development: The case of the plan for the province of Trento, Italy. *Environmental Impact Assessment Review, 20*(3), 299–310. https://doi.org/10.1016/S0195-9255(00)00042-1

Di Bianco, L. (2020). Ecocinema *Ars et Praxis*: Alice Rohrwacher's *Lazzaro Felice*. *The Italianist*, *40*(2), 151–164. https://doi.org/10.1080/02614340.2020.1764726

Di Meo, N. (2007, September 11). News Corp sets green goals. *NPR*. Retrieved from https://www.npr.org/2007/09/11/14316809/news-corp-sets-green-goals

Di Sario, F. (2022). Italy's Giorgia Meloni is right-wing — but not on climate change. *Politico*. https://www.politico.eu/article/italy-giorgia-meloni-climate-change-right-wing/

Disi, A., & Gisotti, M. (2016). *Rapporto "Cinema in classe A" - Primo rapporto su efficienza ambientale e cinema in Italia, anno 2016* [Summary]. Enea, Tempesta, Icea, & Green Factor. Retrieved from https://www.greendropaward.org/wp-content/uploads/2017/01/Rapporto_Cinema-in-classe-A-sintesi.pdf

Di Stefano, G. (2020, November 27). *Ciak, si gira ma senza plastica*. *la Repubblica*. https://www.repubblica.it/green-and-blue/2020/11/27/news/ciak_si_gira_ma_senza_plastica-275949681/

Di Veroli, V., Di Buduo, G. M., Margottini, C., Bigiotti, F., & Pojana, G. (2018). Tourism as a tool for natural hazard protection and territory development: Civita di Bagnoregio (Viterbo, Italy) as a case study. *Cultural Management and Governance for European Pilgrimage Routes, Religious Tourism and Thermal Tourism: Books of Abstracts*, 155–173. Retrieved from https://iris.unive.it/retrieve/e4239ddc-e6c7-7180-e053-3705fe0a3322/CultManag_article.pdf

Douvartzides, S. L., Charisiou, N. D., Papageridis, K. N., & Goula, M. A. (2019). Green diesel: Biomass feedstocks, production technologies, catalytic research, fuel properties and performance in compression ignition internal combustion engines. *Energies, 12*(5), 809. https://doi.org/10.3390/en12050809

Dubravská, M., Marchevská, M., Vašaničová, P., & Kotulič, R. (2020). Corporate Social Responsibility and Environmental Management Linkage: An Empirical Analysis of the Slovak Republic. *Sustainability*, *12*(13), 5431. https://doi.org/10.3390/su12135431

Duesse Media Network. (2021). *Lazio, land of cinema*. *Italian Cinema*, (17). https://www.e-duesse.it/wp-content/uploads/2022/02/IC_17_2021-compressed.pdf

D'Urso, F. (2022). Green Policies and New Green Protocols for the Audiovisual Industry Promoted in Italy by State and Regions. *Comunicazioni Sociali*, *2*, 164–179. https://doi.org/10.26350/001200_000155

Earth Angel. (n.d.). *Our team*. Earth Angel Sustainable Production Services. https://www.earthangelsets.com/our-team

ECCO. (2022). *Plastics in Italy: A vice or a virtue?* Technical Report. Retrieved from https://eccoclimate.org/wp-content/uploads/2022/04/Plastics-in-Italy.pdf

Ecomove International. (n.d.). *Festival network*. Retrieved from https://www.ecomove.de/festival-network.html

EcoMuvi. (n.d.). *Progetti*. https://www.ecomuvi.eu/progetti/

EcoMuvi. (2023a). *Sustainable development protocol for audiovisual productions* (July 2023 Revision, unpublished internal document). EcoMuvi S.r.l.

EcoMuvi. (2023b). *EcoMuvi in una pagina* [One-page overview of the EcoMuvi protocol]. EcoMuvi S.r.l.

EcoMuvi. (2023c). *International standard for sustainable development and certification of audiovisual productions*. Internal document. EcoMuvi S.r.l.

EcoMuvi. (2023d). *Flusso di lavoro per l'adozione e certificazione del protocollo di sviluppo sostenibile per le produzioni audiovisive* (Rev. Sett 2023). EcoMuvi S.r.l.

Ecoprod. (2017). *Eco-production guide for sustainable film and TV production* (2nd ed.). Ecoprod Collective. Retrieved from https://ecoprod.com/wp-content/uploads/2025/02/ECOPROD_GREEN-PRODUCTION-GUIDE.pdf

EECEA. (2024). *Sustainability tips for international partners and residency hosts*. Creative Europe. Available at: https://culture.ec.europa.eu/creative-europe/creative-europe-culture-strand/culture-moves-europe.

Edison Spa. (n.d.). *Protocollo Edison Green Movie: Linee guida per la sostenibilità ambientale del cinema*. https://www.italyformovies.it/res/documents/public/PROTOCOLLO_%20EDISON%20GREEEN%20MOVIE.pdf

Edison S.p.A.. (2014). *Con Edison Green Movie "Il Capitale Umano" di Paolo Virzì è il primo film ecosostenibile in Italia*. https://www.edison.it/it/con-edison-green-movie-il-capitale-umano-di-paolo-virzi-e-il-primo-film-ecosostenibile-italia

Edison S.p.A. (2022). *Relazione Finanziaria 2022 – Relazione sulla gestione, di sostenibilità e governance*.

https://www.edison.it/sites/default/files/documents/Edison_1_Relazione_ITA22_OK_indici_0.pdf

Edison S.p.A. (2022). *Edison launches "Edison Next" for the decarbonisation of businesses and territories in Italy and Spain*. https://www.edison.it/en/edison-launches-edison-next-decarbonisation-businesses-and-territories-italy-and-spain

Elsaesser, T. (2005). Film festival networks: The new topographies of cinema in Europe. In *European cinema: Face to face with Hollywood* (pp. 82–107). Amsterdam University Press. https://doi.org/10.1515/9789048505173-005

Encyclopaedia Britannica. (n.d.). *Hydrogen*. Encyclopaedia Britannica. *Retrieved November 11, 2024*, from https://www.britannica.com/science/hydrogen

Enterprise Europe Network. (2023). *HORIZON-CL2-2024-HERITAGE-01-02: Cultural and creative industries for a sustainable climate transition*. Available at: https://een.ec.europa.eu/nexteen/network-directory/user-info/8e62df55-b99d-4a9b-9bfa-0181288db9a7

Entertainment and Culture for Climate Action. (2023). *Entertainment and Culture for Climate Action (ECCA) Accord: Assembly version – 8th draft (Part 1, June 28, 2023)* [Internal document].

Entertainment Net Zero Accord. (2023) (ECCA). *ENZA governance structure and decision-making procedures: Draft for Assembly, 4 May 2023* [Internal document].

Environmental Media Association. (n.d.a). *EMA Green Seal for Production*. Retrieved from https://www.green4ema.org/ema-green-seal-production

Environmental Media Association. (n.d.). *EMA Green Seal recipients*. Retrieved from https://www.green4ema.org/ema-green-seal-recipients

Epple Druckfarben AG. (n.d.). *Overview of the array of ecolabels*. https://www.epple-druckfarben.com/en/magazin/responsibility-creates-the-future/overview-of-the-array-of-ecolabels/

Eurimages (2023) *Green production: Update of the submission platform for applying producers*. Retrieved from https://www.coe.int/en/web/eurimages/-/green-production-update-of-the-submission-platform-for-applying-producers

European Accreditation. (n.d.a). *EA FAQs*. Retrieved from https://european-accreditation.org/information-center/ea-faq/

European Accreditation. (n.d.b). *Directory of EA members and MLA signatories*. Retrieved from https://european-accreditation.org/ea-members/directory-of-ea-members-and-mla-signatories/

European Audiovisual Observatory. (EAO) (2019). *Mapping of Film and Audiovisual Public Funding Criteria in the EU*. Strasbourg: European Audiovisual Observatory. Retrieved from: https://rm.coe.int/mapping-of-film-and-audiovisual-public-funding-criteria-in-the-eu/1680947b6c

European Broadcasting Union. (2023). *EU sustainability rulebook: The Corporate Sustainability Reporting Directive*. European Broadcasting Union. https://www.ebu.ch/case-studies/open/legal-policy/eu-sustainability-rulebook-the-corporate-sustainability-reporting-directive

European Commission. (n.d.). *Single-use plastics*. Retrieved from https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en

European Commission. (n.d.a). *European Climate Law*. Retrieved from https://climate.ec.europa.eu/eu-action/european-climate-law_en

European Commission. (2008). *Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008: Setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93*. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008R0765.

European Commission. (2010). *Europe 2020: A strategy for smart, sustainable and inclusive growth*. European Commission. Retrieved May 20, 2024, from https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf

European Commission. (2011). *Hamburg: European Green Capital 2011*. Publications Office of the European Union. Retrieved April 20, 2024, from https://climate-adapt.eea.europa.eu/en/metadata/case-studies/four-pillars-to-hamburg2019s-green-roof-strategy-financial-incentive-dialogue-regulation-and-science/hamburg_doc3_green_capital.pdf/@@download/file

European Commission. (2023, July 31). *Commission adopts European Sustainability Reporting Standards*. https://finance.ec.europa.eu/news/commission-adopts-european-sustainability-reporting-standards-2023-07-31_en

European Commission. (2024a). *European co-development (CREA-MEDIA-2024-CODEV)*. Retrieved November 25, 2024, from https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/crea-media-2024-codev

European Commission. (2024b). *Corporate sustainability reporting*. Retrieved from https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

European Food Safety Authority. (n.d.). *Animal welfare*. Retrieved October 5, 2024, from https://www.efsa.europa.eu/en/topics/topic/animal-welfare#:~:text=In%20addition%2C%20the%20Lisbon%20Treaty,prevent%20maltreatment%2C%20pain%20and%20suffering.

European Food Safety Authority (EFSA). (2023). *Annual report of the EFSA Networks on Animal Welfare 2023*. EFSA Supporting Publication 2023:EN-8475. https://doi.org/10.2903/sp.efsa.2023.EN-8475

European Parliament. (2024, January 17). *Greenwashing: MEPs approve new rules to ban misleading ads and improve product labelling*. Retrieved from https://www.europarl.europa.eu/pdfs/news/expert/2024/1/story/20240111STO16722/20240111STO16722_en.pdf

European Parliament and Council of the European Union. (2006). Directive 2006/42/EC of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast). *Official Journal of the European Union*, L 157, 24–86. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0042

European Parliament and Council. (2019). *Directive (EU) 2019/904 of 5 June 2019 on the reduction of the impact of certain plastic products on the environment*. Official Journal of the European Union, L 155, 1–19. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904

European Parliamentary Research Service. (2014). *Film financing and the digital single market: Its future, the role of territoriality and new models of financing* (EPRS Briefing No. 545705/REV1). European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2014/545705/EPRS_BRI(2014)545705_REV1_EN.pdf

European Parliament and Council of the European Union. (2008, July 9). *Regulation (EC) No 765/2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93*. Official Journal of the European Union, L218, 30–47. Retrieved from *https://eur-lex.europa.eu/eli/reg/2008/765/oj/eng*

European Union. (2008). *Consolidated version of the Treaty on the Functioning of the European Union - Article 167*. Official Journal of the European Union, C 115, 120–121.

Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A12008E167.

European Union. (2014). *Policy handbook on artists' residencies*. Open Method of Coordination (OMC) Working Group of EU Member States Experts on Artists' Residencies. Retrieved from https://ec.europa.eu/assets/eac/culture/policy/cultural-creative-industries/documents/artists-residencies_en.pdf

European Women's Audiovisual Network. (2019). *Where Are the Women Directors? Report on Gender Equality for Directors in the European Film Industry (2006-2013)*. European Women's Audiovisual Network. Retrieved from: https://www.ewawomen.com/wp-content/uploads/2018/09/Complete-report_compressed.pdf

Evans, C., Issa, J., & Forrest, S. (2020). *The sustainable future of video entertainment: From creation to consumption*. Futuresource Consulting Ltd. Retrieved from https://www.interdigital.com/white_papers/the-sustainable-future-of-video-entertainment

Evans, P., & Dicks, M. (2014). *Sustainability in vision: Emerging film and TV practices & methodologies in Europe's regions*. Cine-Regio. Retrieved from https://www.cineregio.org/dyn/files/pdf_download/7-file/V12%20+Sustainability%20In%20Vision%20FINAL%20020614.pdf

Fabbrini, F. (2022). *Italy's national recovery and resilience plan: Context, content, and challenges*. *Journal of Modern Italian Studies*, 1-19. https://doi.org/10.1080/1354571X.2022.2124672

Fankhauser, S., Smith, S. M., Allen, M., Axelsson, K., Hale, T., Hepburn, C., Kendall, J. M., Khosla, R., Lezaun, J., Mitchell-Larson, E., Obersteiner, M., Rajamani, L., Rickaby, R., Seddon, N., & Wetzer, T. (2022). The meaning of net zero and how to get it right. *Nature Climate Change, 12*(1), 15–21. https://doi.org/10.1038/s41558-021-01245-w

Fast Company. (2018, June 4). *Climate positive, carbon neutral, carbon negative: What do they mean?* https://www.fastcompany.com/40583176/climate-positive-carbon-neutral-carbon-negative-what-do-they-mean

Fasulo, A. (Director). (2018). *Menocchio* [Film]. Nefertiti Film; Rai Cinema.

Ferlito, G. (Director). (2015). *Infernet* [Film]. Esperia Film.

Ferlito, R., & Faraci, R. (2022). Sustainable hybrid business model of benefit corporation: The case of an Italian film production company. *Sustainability, 14*(10), 5836. https://doi.org/10.3390/su14105836

Fessenden, L. (Director). (1991). *No Telling* [Film]. Glass Eye Pix.

Fessenden, L. (Director). (2006). *The Last Winter* [Film]. Antidote Films; Glass Eye Pix; Belladonna Productions.

Fessenden, L., & Ellenbogen, J. (1993). *Low impact filmmaking*. Retrieved from https://www.glasseyepix.com/lowimpact/

Film Italia. (n.d.). *Italian Film Commissions Association*. https://filmitalia.org/en/filmcommission/40174/

Film London. (2022). *Location filming in London: Code of practice* (updated July 2022). Film London. Retrieved from https://film-london.files.svdcdn.com/production/Film-London-Code-of-Practice_2022-updated-July.pdf

Financial Times. (2021, November 1). *A dress rehearsal for disruption: Why COVID-19 has been a sustainability wake-up call*. Financial Times. https://www.ft.com/partnercontent/reckitt/a-dress-rehearsal-for-disruption-why-covid-19-has-been-a-sustainability-wake-up-call.html

Finnveden, G., Hauschild, M. Z., Ekvall, T., Guinée, J., Heijungs, R., Hellweg, S., Koehler, A., Pennington, D., & Suh, S. (2009). Recent developments in Life Cycle Assessment. *Journal of Environmental Management, 91*(1), 1–21. https://doi.org/10.1016/j.jenvman.2009.06.018

Finos, A. (2021, April 21). Green cinema: Battaglie bio e trucchi etici il futuro sono i set a impatto zero. *La Repubblica*, p. 40.

Fioroni, M., Fontaine, G., & Kanzler, M. (2023). *Towards green production indicators: Pilot project* [Internal document]. European Audiovisual Observatory.

FISA – Film Industry Support Austria. (2024, May 8). *FISA+ guidelines for the promotion of the Austrian film industry*. Retrieved from https://api.fisaplus.com/fileadmin/user_upload/MediaLibrary_ABAFISA/DWTEST/FISA_Richtlinien_EN_final_mit_Ergaenzungen_080524.pdf

Flanigan, P. (2002). *The environmental cost of filmmaking*. UCLA Entertainment Law Review, 10(1). https://doi.org/10.5070/LR8101027044

Formenti, C. (2022). *The classical animated documentary and its contemporary evolution*. Bloomsbury Academic.

Formenti, C. (2022). Beyond greenwashed protocols: The reconversion of existing modes of representation as a new possible approach to the cutback of the documentary film's environmental footprint. *Vita e Pensiero*. https://doi.org/10.26350/001200_000156

Fort, T. (Director). (2011). *2012: Ice Age* [Film]. The Asylum.

Freedman Doyle, B. (2012). *Make your movie: What you need to know about the business and politics of filmmaking*. Focal Press.

Freer, S. (2024). *American disaster movies of the 1970s: Crisis, spectacle and modernity*. Bloomsbury Academic

de Freitas Netto, S. V., Sobral, M. F. F., Bezerra Ribeiro, A. R., & da Luz Soares, G. R. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe, 32*(19). https://doi.org/10.1186/s12302-020-0300-3

Fritsche, R., Dessle, F., & Lindesvärd, C. (2020). *A study in green: The detective, the film industry & the eco-villains*. Film i Väst. Available at https://filmivast.se/2020-2/

Fuller-Love, N. (2009). Formal and informal networks in small businesses in the media industry. *International Entrepreneurship and Management Journal, 5*(3), 271–284. https://doi.org/10.1007/s11365-008-0102-3

Fung, A., Graham, M., & Weil, D. (2007). *Full disclosure: The perils and promise of transparency*. Cambridge University Press. https://doi.org/10.1017/9780521699617

Funk, C. (2021, May 26). *Key findings: How Americans' attitudes about climate change differ by generation, party and other factors*. Pew Research Center. https://www.pewresearch.org/short-reads/2021/05/26/key-findings-how-americans-attitudes-about-climate-change-differ-by-generation-party-and-other-factors/

Funnell, W., & Wade, M. (2012). Negotiating the credibility of performance auditing. *Critical Perspectives on Accounting, 23*(6), 434–450. https://doi.org/10.1016/j.cpa.2012.04.005

Gabrys, J. (2011). *Digital rubbish: A natural history of electronics*. University of Michigan Press. https://doi.org/10.2307/j.ctv65swcp

Gaburro, B. (Director). (2013). *Un angelo all'inferno* [Film]. FG Pictures.

Gaghan, S. (Director). (2006). *Syriana* [Film]. Warner Bros. Pictures; Participant Productions; 4M; Section Eight Productions.

Gagnon Thompson, S. C., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology, 14*(2), 149–157. https://doi.org/10.1016/S0272-4944(05)80168-9

Galvao Ferreira, P. (2016). Did the Paris Agreement fail to incorporate human rights in operative provisions? Not if you consider the 2016 SDGs. *CIGI Paper, 113*. Retrieved from https://ssrn.com/abstract=4148213

Galvin, D. (2018, July 9). Six business benefits of setting science-based targets. *Science Based Targets Initiative*. https://sciencebasedtargets.org/blog/six-business-benefits-of-setting-science-based-targets

Gamberini, F. (2022). *Le PR del prodotto cinematografico: Creatività, complessità e attivismo* (Tesi di laurea, Università di Bologna). Available at https://amslaurea.unibo.it/id/eprint/27191/

Gardner, E. (2007). *Developing an environmental strategy for UK film* (Version 1.3). UK Film Council. Retrieved from https://core-cms.bfi.org.uk/media/839/download

Gardner, R. (2001). *When listeners talk: Response tokens and listener stance* (Vol. 92). John Benjamins Publishing Company.

Garon, J. M. (2012, September 20). *Nonprofit film financing*. Cinema Research Institute. https://www.cri.nyu.edu/cri-blog-archive/1905

Garst, J., Maas, K., & Suijs, J. (2022). Materiality assessment is an art, not a science: Selecting ESG topics for sustainability reports. *California Management Review, 65*(1), 64–90. https://doi.org/10.1177/00081256221120692

Gassmann, P., & Gouttefarde, M. (2021). *Greening the European audiovisual industry: The best strategies and their costs*. European Audiovisual Observatory. Available at: https://digital-strategy.ec.europa.eu/en/library/greening-european-audiovisual-industry

Gelisio, T., & Gisotti, M. (2019). *100 green jobs per trovare lavoro: Guida alle professioni sicure, circolari e sostenibili*. Edizioni Ambiente. https://www.edizioniambiente.it/catalogo/100-green-jobs-per-trovare-lavoro

Ghedini, O. P. (2007). *Le Film Commission: esperienze e prospettive*. Le Istituzioni del Federalismo, Supplemento 4/2006, 29–37. Retrieved from https://www.regione.emilia-romagna.it/idf/numeri/2006/supplemento4_2006/ghedini.pdf/@@download/file

Giaccardi, S., Rogers, A., & Rosenthal, E. L. (2022). *A glaring absence: The climate crisis is virtually nonexistent in scripted entertainment*. USC Norman Lear Center Media Impact Project. Retrieved from https://learcenter.s3.us-west-1.amazonaws.com/GlaringAbsence_NormanLearCenter.pdf

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*.

SAGE Publications. Retrieved from *https://ia801409.us.archive.org/30/items/mode1_2/mode1_2.pdf*

Giesekam, J., Norman, J., Garvey, A., & Betts-Davies, S. (2021). Science-based targets: On target? *Sustainability, 13*(4), 1657. https://doi.org/10.3390/su13041657

Giordano, E., & Mathiesen, K. (2023). Giorgia Meloni's Italy faces climate challenges amid heatwaves and wildfires. *Politico*. Retrieved from https://www.politico.eu/article/bgiorgia-meloni-italy-heat-summer-wildfires-climate-change-climate-denial/

Giovenco, M. (2024, May 5). *VGML di Verona. Ciak, si gira… green*. Mete d'Italia e del mondo. https://www.metemag.com/lifestyle/vgml-di-verona-ciak-si-gira-green-5987/

Global Alliance for Public Relations and Communication Management. (2010). *The Stockholm Accords: A call to action for public relations and communication in a global society*. Retrieved from http://web.archive.org/web/20100714103439/http://www.wprf2010.se/wp-content/uploads/2010/05/Stockholm-Accords-final-version.pdf

Global Production Awards. (n.d.). *Award categories*. https://www.globalproductionawards.com/categories

Global Production Awards. (2024a). *About*. Retrieved May 31, 2024, from https://www.globalproductionawards.com/about

Global Production Awards. (2024b). *Judges*. Retrieved May 31, 2024, from https://www.globalproductionawards.com/judges

Global Production Awards. (2024c). *Shortlist 2024*. Retrieved May 31, 2024, from https://www.globalproductionawards.com/shortlist-2024

Global Reporting Initiative (GRI). (2012). *Media sector supplement: G3.1 sustainability reporting guidelines*. Version 3.1. Global Reporting Initiative. Retrieved from https://moverse.org/wp-content/uploads/2017/05/gri_para_medios-_completo-ingls.pdf

Global Reporting Initiative (2021). *The double-materiality concept: Application and issues*. Global Reporting Initiative. Retrieved from https://www.globalreporting.org/media/jrbntbyv/griwhitepaper-publications.pdf

Global Reporting Initiative. (2022). *GRI: 25 years of impact – A history of GRI*. https://www.globalreporting.org/media/b15hggfc/gri-25-years-history.pdf

Godet, R., van Hoytema, N., Russell, J., Losada Rivas, S., & Bersuder, P. (2022). *Review of expanded polystyrene (EPS) and extruded polystyrene (XPS) as a raw material: General*

characteristics, implementations, and suppliers (Deliverable 5.1, WP5 Knowledge Hub, Version 8). SEABIRD; CEFAS. Available at: https://www.searica.eu/images/WP-5.1-Report-Review-of-EPS-as-raw-material_final.pdf

Goetze, T. (2019). The concept of a university: Theory, practice, and society. *Danish Yearbook of Philosophy, 52*, 1–XX. https://doi.org/10.1163/24689300-05201001

Goldsmith, B., & O'Regan, T. (2005). *The film studio: Film production in the global economy*. Rowman & Littlefield. Retrieved from *https://www.academia.edu/260759/The_Film_Studio_Film_Production_In_the_Global_Economy*

Gonzalez Monserrate, S. (2022). The cloud is material: On the environmental impacts of computation and data storage. *MIT Case Studies in Social and Ethical Responsibilities of Computing*, Winter 2022. https://doi.org/10.21428/2c646de5.031d4553

Good Energy. (n.d.). *Good Energy: A nonprofit story consultancy for the age of climate change*. Retrieved January 28, 2024, from https://www.goodenergystories.com/

Goodfellow, M. (2022). *Italian execs on the challenges and opportunities facing Italy's industry*. Deadline. https://deadline.com/2022/08/italian-execs-challenges-opportunities-italy-1235102024/

Gorgi, S. (2013.). *Con un angelo all'inferno: Il cinema sposa il sociale. Il Mattino di Padova*. https://www.mattinopadova.it/cronaca/con-un-angelo-allinferno-il-cinema-sposa-il-sociale-wz8o6hjf

Gorobets, A. (2014). Eco-centric policy for sustainable development. *Journal of Cleaner Production, 64*, 654–655. https://doi.org/10.1016/j.jclepro.2013.09.022

Graves, C., & Morris, L. (2022). *The impact of climate content on audiences' pro-environmental behaviours*. Albert. Retrieved from https://wearealbert.org/wp-content/uploads/2023/05/Albert-Pres-Doc-Impact-Report-v3-MSW20.pdf

Greater London Authority. (2008). *Green theatre: Taking action on climate change*. Greater London Authority. Retrieved from https://www.london.gov.uk/sites/default/files/green_theatre_summary.pdf

Greater London Authority. (2009). *Green screen: Helping London's film and TV industry take action on climate change*. Greater London Authority Retrieved from: https://www.london.gov.uk/sites/default/files/green_screen.pdf

Greenberg Traurig Germany, LLP. (2017). *Guide to German film subsidies*. https://www.gtlaw.com/-/media/files/insights/alerts/alerts-prior-to-march-27-2017/greenberg-traurig_german-film-subsidies_2017.pdf

Green Drop Award. (n.d.). *Da Venezia 70 parte la green economy del cinema italiano*. https://www.greendropaward.org/da-venezia-70-parte-green-economy-del-cinema/

Green Film. (2021, October 13). La settima edizione del MIA si conferma green. *Green Film*. Retrieved from https://www.green.film/it/news/la-settima-edizione-del-mia-si-conferma-green/

Green Film. (2022). *Rating system for sustainable film production: Edition 02 - 2022*. Retrieved from https://www.green.film/wp-content/uploads/2023/02/Green-Film-Rating-System-2022.pdf

Green Film. (2022). *Rating system for sustainable film production: Green Film for documentaries*. Retrieved from https://www.green.film/wp-content/uploads/2022/07/GREEN-FILM-DOC_Rating-system-2022_EN.pdf

Green Film. (2023a). *Certification*. Retrieved May 31, 2024, from https://www.green.film/certification/

Green Film. (2023b). *La settima edizione del MIA si conferma green*. Retrieved May 31, 2024, from https://www.green.film/it/news/la-settima-edizione-del-mia-si-conferma-green/

Green Film. (2023c). *Green Film Research Lab*. Retrieved May 31, 2024, from https://www.green.film/greenfilm-research-lab/

Green Film. (2023e). *Green Film at the European Film Market in Berlin*. Retrieved May 31, 2024, from https://www.green.film/news/green-film-at-the-european-film-market-in-berlin/

Green Film. (2023f). *Green Film Research Lab*. Retrieved May 31, 2024, from https://www.green.film/greenfilm-research-lab/

Green Film. (2023g). *Download*. Retrieved May 31, 2024, from https://www.green.film/download/

Green Film. (2023h). *Upgrade of the Green Film rating system*. Retrieved May 31, 2024, from https://www.green.film/news/upgrade-of-the-green-film-rating-system/

Green Film. (2023i). *Verification*. Retrieved May 31, 2024, from https://www.green.film/verification/

Green Film. (2024). Green Film shortlisted for Global Production Awards 2024 in Cannes. Retrieved from https://www.green.film/news/green-film-shortlisted-global-production-awards-2024-in-cannes/

Green Film Making. (n.d.). *Who's Who: Michael Geidel*. https://greenfilmmaking.com/whos-who-michael-geidel/

Green Film Making. (2014, November 28). *Siebe Dumon (Flanders/Belgium)*. Retrieved April 20, 2024, from https://greenfilmmaking.com/2014/11/siebe-dumon-flandersbelgium/

Green Film School Alliance. (n.d.a). *Green Film School Alliance*. Green Production Guide. Retrieved April 11, 2025, from https://greenproductionguide.com/gfsa/

Green Film School Alliance. (2021, August 13). *Green Film School Alliance launches to foster sustainable practices across film and TV education*. Green Production Guide. Retrieved from https://greenproductionguide.com/wp-content/uploads/2021/08/GFSA_PR_Final_081321.pdf

Green Film Shooting. (2015b). *Going green is a matter of survival*. https://greenfilmshooting.net/blog/en/2015/10/19/going-green-is-a-matter-of-survival/

Green Film Shooting. (2023, April 19). *Green incentives in Austria*. https://greenfilmshooting.net/blog/en/2023/04/19/green-incentives-in-austria/

Green Movie Festival. (2021). *Edizione 2021*. https://www.greenmoviefestival.it/edizione-2020-a/

Green Seal. (n.d.). *Frequently asked questions*. Retrieved December 6, 2024, from https://greenseal.org/about/faq/

Green Shoot. (n.d.). *Training*. Green Shoot. Retrieved from https://www.greenshoot.com/training

Green Toolkit Film & TV (2023). *European booklet for green productions: Strengthening capacities of social partners to meet the challenges of environmental sustainability in film and TV productions*. Retrieved from https://www.greentoolkit-filmtv.eu/wp-content/uploads/2023/04/GreenToolkit-FilmandTV_Booklet_EN.pdf

Greenwood, M. (2006). *Questioning the ethical in social and ethical auditing* (Working Paper No. 20/06). Department of Management, Monash University. Retrieved from https://www.academia.edu/107328137/Questioning_the_ethical_in_social_and_ethical_auditing

Griggs, D., Stafford Smith, M., Rockström, J., Öhman, M. C., Gaffney, O., Glaser, G., Kanie, N., Noble, I., Steffen, W., & Shyamsundar, P. (2014). An integrated framework for sustainable development goals. *Ecology and Society, 19*(4), Article 49. https://doi.org/10.5751/ES-07082-190449

Groenlandia Group. (n.d.). *About us*. https://groenlandiagroup.com/about-us/

Guggenheim, D. (Director). (2006). *An inconvenient truth* [Film]. Paramount Classics.

Gulyás, A. (2011). Demons into angels? Corporate social responsibility and media organisations. *Critical Survey, 23*(2), 84-101. https://doi.org/10.3167/cs.2011.230205

Gundle, S., Schoonover, K., & Baschiera, S. (2020). Practices and contexts of the Italian film industry: An introduction. *Historical Journal of Film, Radio and Television*, *40*(1), 1–5. https://doi.org/10.1080/01439685.2020.1715588

Gündüz Özdemirci, E. (2016). Greening the Screen: An Environmental Challenge. *Humanities*, *5*(2), 35. https://doi.org/10.3390/h5020035

Gutterman, A. (2024). *Sustainability reporting frameworks, standards, instruments, and regulations*. SSRN. http://dx.doi.org/10.2139/ssrn.3809288

Guzmán, N. D. R. (2022). Ecological cinema with best practices and reducing environmental impact. *AVANCA | CINEMA, 13*, 2022. Tec de Monterrey, México. Retrieved from https://www.researchgate.net/publication/363902389_Ecological_Cinema_with_best_practices_and_reducing_environmental_impact/fulltext/633488b4769781354ea1b542/Ecological-Cinema-with-best-practices-and-reducing-environmental-impact.pdf?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19

Habiba, M. (2006). Is there a role for audit in continuous professional development? *European Clinics in Obstetrics and Gynaecology, 1*(4), 241–244. https://doi.org/10.1007/s11296-006-0019-8

Hadas, L. (2024). *Supporting professionalisation of the sustainability department in UK screen production: Expertise for a sustainable industry*. Institute for Screen Industries Research, University of Nottingham. Retrieved from https://www.nottingham.ac.uk/research/groups/isir/documents/supporting-professionalisation-of-the-sustainability-department-in-uk-screen-production-sept-2024.pdf

Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research. *Journal of Cleaner Production, 59*, 5–21. https://doi.org/10.1016/j.jclepro.2013.07.005

Hakovirta, M. (2023). *Carbon neutrality: Follow the money*. Springer. https://doi.org/10.1007/978-3-031-45202-4

Haraszti, M. (2005, June 7). *Visit to Italy: The Gasparri Law – Observations and recommendations*. Organization for Security and Co-operation in Europe, Representative on Freedom of the Media. https://www.osce.org/fom/15241

Hagener, M., & Zimmermann, Y. (Eds.). (2024). *How film histories were made: Materials, methods, discourses*. Amsterdam University Press. https://doi.org/10.5117/9789463724067

Hammer, N., & Plugor, R. (2019). Disconnecting labour? The labour process in the UK fast fashion value chain. *Work, Employment and Society*, *33*(6), 913–928. https://doi.org/10.1177/0950017019847942

Hargreaves McIntyre, M. (2021, September). *On location filming: Strategies & fees — Guidance for local authorities*. Creative England. Retrieved from https://www.filminginengland.co.uk/wp-content/uploads/2021/09/FIE_2021_Filming-Fees_Guide_FINAL.pdf

Hawken, P. (2008). *Blessed unrest: How the largest social movement in history is restoring grace, justice, and beauty to the world*. Penguin Books.

Heidsiek, B. (2013). *Green Film Shooting: Berlinale special edition*. Green Film Shooting. Retrieved from https://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2014/12/greenfilmshooting-brochure-web.pdf

Heidsiek, B. (2014). *Green Film Shooting 2014: Sustainability in film and media production*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2014/12/greenfilmshooting-brochure-web-2014.pdf

Heidsiek, B. (2015a). *Green Film Shooting 2015: Sustainability in film and media production*. Green Film Shooting. http://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2015/01/greenfilmshooting-brochure-web-2015.pdf

Heidsiek, B. (Ed.). (2015b). *Green film shooting: COP21 special edition – In cooperation with Film4Climate*. Green Film Shooting. https://www.greenfilmshooting.net/wp-content/uploads/2015/11/ECO-COP-web-2015-English.pdf

Heidsiek, B. (2016). *Green Film Shooting 2016: Sustainability in film and media production*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2016/02/greenfilmshooting-brochure-web-2016.pdf

Heidsiek, B. (Ed.). (2017). *Green Film Shooting: The magazine for sustainability in the media world* (No. 5). Green Film Shooting. https://greenfilmshooting.net/blog/en/2017/02/05/green-film-shooting-no-5/

Heidsiek, B. (2018). *Green Film Shooting 2018: Sustainability in film and media production*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2018/03/greenfilmshooting-brochure-web-2018.pdf

Heidsiek, B. (2019). *Green Film Shooting #7: Sustainability in the media world*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/de/wp-content/uploads/sites/2/2019/04/greenfilmshooting-brochure-web-2019.pdf

Heidsiek, B. (2020). *Green Film Shooting #8: Sustainability in film and media production*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/de/wp-content/uploads/sites/2/2020/09/greenfilmshooting-brochure-web-2020.pdf

Heidsiek, B. (2021a). *Green Film Shooting #9: Sustainability in the media industry*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/de/wp-content/uploads/sites/2/2021/07/greenfilmshooting-brochure-web-2021.pdf

Heidsiek, B. (2021b). *Recycle, restore, reuse*. Green Film Shooting. Retrieved from https://greenfilmshooting.net/blog/en/2021/07/10/recycle-restore-reuse/

Heidsiek, B. (2022). *Green Film Shooting #10: A decade of sustainable film practices*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/de/wp-content/uploads/sites/2/2022/10/greenfilmshooting-brochure-web-2022.pdf

Heidsiek, B. (2023). *Green Film Shooting #11: Innovations in sustainable film production*. Green Film Shooting. Retrieved from http://greenfilmshooting.net/blog/de/wp-content/uploads/sites/2/2023/12/greenfilmshooting-brochure-web-2023.pdf

Heimann, B. (2012). *Sustainability vs. media production: A status quo analysis* (Master's thesis). Lund University, Centre for Languages and Literature, Division of Film Studies. Retrieved from https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=2799033&fileOId=2799063

Helzle, V., Spielmann, S., & Trottnow, J. (2022). *Green screens, green pixels, and green shooting: A report on virtual production and its opportunities for sustainable film productions*. Filmakademie Baden-Württemberg GmbH, Animationsinstitut. Retrieved from https://animationsinstitut.de/files/public/images/04-forschung/Publications/siggraph22talks-10.pdf

Henninger, C. E., Alevizou, P. J., & Oates, C. J. (2016). What is sustainable fashion? *Journal of Fashion Marketing and Management, 20*(4), 400–416. https://doi.org/10.1108/JFMM-07-2015-0052

Hermansen, E. A. T., Boasson, E. L., & Peters, G. P. (2023). Climate action post-Paris: How can the IPCC stay relevant? *npj Climate Action, 2*(30). https://doi.org/10.1038/s44168-023-00058-1

Hietala, J. (2024, November 26). *Comment: To race to reduce emissions, we need to be playing by the same rules*. Reuters. Retrieved from https://www.reuters.com/sustainability/sustainable-finance-reporting/comment-race-reduce-emissions-we-need-be-playing-by-same-rules-2024-11-26/

Hitchens, P. L., Franklin, A., & Watt, Y. (2021). The welfare of animals in Australian filmed media: A policy study. *Animals, 11*(7), 1986. Retrieved from https://doi.org/10.3390/ani11071986

Hjort, M., & Nannicelli, T. (Eds.). (2022). *A companion to motion pictures and public value*. Wiley Blackwell.

Hibberd, M. (2007). Conflicts of interest and media pluralism in Italian broadcasting. *West European Politics, 30*(4), 881–902. https://doi.org/10.1080/01402380701500363

Hietala, J. (2024, November 26). *Comment: In the race to reduce emissions we need to be playing by the same rules*. Reuters. https://www.reuters.com/sustainability/sustainable-finance-reporting/comment-race-reduce-emissions-we-need-be-playing-by-same-rules-2024-11-26/

Hirsch, K. (2007, March). *Documentaries on a mission: How nonprofits are making movies for public engagement*. Center for Media & Social Impact. https://cmsimpact.org/resource/documentaries-on-a-mission-how-nonprofits-are-making-movies-for-public-engagement/

Hochman, J. (1998). *Green cultural studies: Nature in film, novel, and theory*. University of Idaho Press.

Hochschule der Medien. (n.d.). *Zertifikat Green Consulting: Nachhaltigkeit in der Film- und Medienbranche*. Retrieved from https://www.zertifikat-green-consulting.de/#!/inhalte

Hodgson, S., Toennesen, C., & Mimmack, F. (2013). *Does it matter? An analysis of sustainability issues in the media sector*. Media CSR Forum and Carnstone Partners LLP. Retrieved from https://cdn.sanity.io/files/b0ecix6u/production/eeefcb557c55fbd88fa442dfb74e87f112a1daf7.pdf

Holland, T., Smith, J., & Jordan, T. (Creators). (1985–present). *EastEnders* [TV series]. BBC One.

Holmes, K., Hughes, M., Mair, J., & Carlsen, J. (2015). *Events and sustainability* (1st ed.). Routledge. https://doi.org/10.9774/gleaf.9781315813011

Honeyman, R., & Jana, T. (2019). *The B Corp handbook: How you can use business as a force for good* (2nd ed.). Berrett-Koehler Publishers.

Hooper, J. (2022). Italians will soon discover who the real Giorgia Meloni is. *The Economist*. https://www.economist.com/the-world-ahead/2022/11/18/italians-will-soon-discover-who-the-real-giorgia-meloni-is

Horn, D. A. (2016). The international development of RoHS. In *2016 IEEE Conference on Technologies for Sustainability (SusTech)* (pp. 34–38). IEEE. https://doi.org/10.1109/SusTech.2016.7897139

Hou, J., & Reber, B. H. (2011). Dimensions of disclosures: Corporate social responsibility (CSR) reporting by media companies. *Public Relations Review, 37*(2), 166–168. https://doi.org/10.1016/j.pubrev.2011.01.005

Iacona, J. (2016). Behind closed curtains: The exploitation of animals in the film industry. *Journal of Animal & Natural Resource Law, 12*, 25–51. Retrieved from https://www.animallaw.info/sites/default/files/jouranimallawvol12.pdf

ICMQ S.p.A. (2023). *Dichiarazione di verifica: Carbon footprint della mini-serie televisiva "Una Storia Nera"*. Conformità ISO 14064-1:2019 e compensazione al 100% tramite crediti di carbonio. Available at: https://www.icmq.it/aziende/zen-2030-srl/644

ICMQ S.p.A. (2024a). *Dichiarazione di verifica: Carbon footprint della serie televisiva "Antonia"*. Conformità ISO 14064-1:2018 e compensazione al 100% tramite crediti di carbonio dal progetto "MRMPL Wind Power Project" in Rajasthan, India. Retrieved from: https://www.icmq.it/aziende/scb-srl-/393

ICMQ S.p.A. (2024b). *Opinione di verifica: Carbon footprint della produzione pubblicitaria Trenitalia "Regionale"*. Conformità ISO 14064-1:2018. ICQM S.p.A. Available at: https://www.icmq.it/aziende/zen-2030-srl/644

IDM Südtirol – Alto Adige. (n.d.a). *Film funding and support*. Retrieved May 31, 2024, from https://www.idm-suedtirol.com/en/what-we-offer/film

IDM Südtirol – Alto Adige. (n.d.b). *Green shooting*. Retrieved May 31, 2024, from https://www.film.idm-suedtirol.com/de/film-commission/green-shooting

IDM Südtirol - Alto Adige. (n.d.c). *Green Shooting*. IDM Südtirol - Alto Adige. Retrieved April 8, 2025, from https://idm.greenshooting.eu/en_GB/

Ikram, M., Zhou, P., Shah, S. A. A., & Liu, G. Q. (2019). Do environmental management systems help improve corporate sustainable development? Evidence from manufacturing companies in Pakistan. *Journal of Cleaner Production*. https://doi.org/10.1016/j.jclepro.2019.03.265

Ingram, D. (2000). *Green screen: Environmentalism and Hollywood cinema*. University of Exeter Press.

Inno, G. (2012, November 26). *"Un angelo all'inferno", la nuova miniserie Rai con Giancarlo Giannini. Teleblog*. https://www.teleblog.it/2012/11/26/un-angelo-allinferno-la-nuova-miniserie-rai-con-giancarlo-giannini/. Accessed June 18, 2024.

Innocenti, E. (2012, September 8). *«Un angelo all'inferno» Ciak contro le droghe. L'Arena*. https://www.larena.it/argomenti/un-angelo-all-39-inferno-ciak-contro-le-droghe-1.2913667

Inter-American Commission on Human Rights. (2015, November 5). *IACHR expresses concern regarding effects of climate change on human rights*. Organization of American States. https://oas.org/en/iachr/media_center/PReleases/2015/140.asp

Intergovernmental Panel on Climate Change (IPCC). (n.d.). *IPCC Factsheet: What is the IPCC?* Retrieved from https://www.ipcc.ch/site/assets/uploads/2024/04/IPCCFactSheet_WhatisIPCC.pdf

Intergovernmental Panel on Climate Change (IPCC). (2013). *Principles Governing IPCC Work*. Approved at the Fourteenth Session (Vienna, 1-3 October 1998) and amended at subsequent sessions. Retrieved from https://www.ipcc.ch/site/assets/uploads/2018/09/ipcc-principles.pdf

Intergovernmental Panel on Climate Change (IPCC) (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Summary for Policymakers*. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. Retrieved from https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgII_spm_en.pdf

Intergovernmental Panel on Climate Change (IPCC). (2018). *Frequently Asked Questions: IPCC Special Report on Global Warming of 1.5°C*. Retrieved from https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FAQs_Compiled.pdf

Intergovernmental Panel on Climate Change (IPCC).(2022). *Climate change 2022: Mitigation of climate change. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change: Frequently asked questions*. https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FAQs_Compiled.pdf

Intergovernmental Panel on Climate Change (IPCC).(2023) AR6 Synthesis Report https://doi.org/10.59327/IPCC/AR6-9789291691647.001

Intergovernmental Panel on Climate Change (IPCC).(2023). *Summary for Policymakers*. In *Climate Change 2023: Synthesis Report* (Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change). IPCC. Retrieved April 20, 2024, from https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

International Energy Agency. (2019). *The future of hydrogen: Seizing today's opportunities*. Report prepared for the G20, Japan. International Energy Agency. *Retrieved from* https://iea.blob.core.windows.net/assets/9e3a3493-b9a6-4b7d-b499-7ca48e357561/The_Future_of_Hydrogen.pdf

International Energy Agency. (2023). *Renewables 2023: Analysis and forecast to 2028*. International Energy Agency. *Retrieved from* https://www.iea.org/reports/renewables-2023

International Organization for Standardization. (n.d.). *ISO 14000 family – Environmental management*. Retrieved December 3, 2024, from https://www.iso.org/standards/popular/iso-14000-family

International Organization for Standardization. (2005). *ISO 9000:2005: Quality management systems — Fundamentals and vocabulary*. ISO. Retrieved from https://www.iso.org/standard/42180.html

International Organization for Standardization. (2006). *ISO 14040:2006 Environmental management – Life cycle assessment – Principles and framework*. Retrieved from https://www.iso.org/obp/ui/en/#iso:std:iso:14040:ed-2:v1:en

International Organization for Standardization. (2012). *ISO 20121:2012: Event sustainability management systems — Requirements with guidance for use*. ISO. Retrieved from https://www.iso.org/obp/ui/en/#iso:std:iso:20121:ed-2:v1:en

International Organization for Standardization (ISO). (2012). *Sustainable event management with ISO 20121*. ISO Central Secretariat. Retrieved from https://www.iso.org/publication/PUB100372.html

International Organization for Standardization. (2015). *ISO 14001:2015 – Environmental management systems – Requirements with guidance for use*. https://www.iso.org/standard/60857.html ISO

International Organization for Standardization. (2018). *ISO 14067:2018: Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification and*

communication. ISO. Retrieved from https://www.iso.org/obp/ui/en/#iso:std:iso:14067:ed-1:v1:en

Interreg Europe. (n.d.). *Sustainable Development Goals*. Retrieved April 20, 2024, from https://www.interregeurope.eu/good-practices/sustainable-development-goals

Interreg Europe. (2018). *Baseline Study Executive Summary: Greening the Audiovisual Industry*. Green Screen Project. Retrieved from http://www.interregeurope.eu/greenscreen

Istituto Luce Cinecittà. (2013). *Studio sulle Film Commission italiane – Volume 2*. Italy for Movies. Retrieved May 24, 2024, from https://www.italyformovies.it/res/documents/public/frxlucecinecitta_studio_fc_vol-2.pdf

Italia Domani. (n.d.). *Film Industry Development: Cinecittà project*. https://www.italiadomani.gov.it/en/Interventi/investimenti/sviluppo-industria-cinematografica-progetto-cinecitta.html

Italian Film Commissions. (n.d.). *Edison e Film Commission Piemonte firmano un accordo per la promozione della cultura della sostenibilità nel cinema*. https://www.italianfilmcommissions.it/news/detail/edison-e-film-commission-piemonte-firmano-un-accordo-per-la-promozione-della-cultura-della-sostenibilita-nel-cinema/

Italia Film Service. (n.d.). *Regional & Film Commission Fund*. Italia Film Service. Retrieved January 7, 2023, from https://www.italiafilmservice.com/subsidies-et-finance/regional.html

Italcert. (n.d.). *Certificazioni settoriali*. Retrieved from https://www.italcert.it/altre-certificazioni.html

ITV plc. (2006). *Corporate responsibility report 2006: Airing the issues*. ITV plc. Retrieved from https://www.itvplc.com/~/media/Files/I/ITV-PLC-V2/downloads/corporate-responsibility-report-2006.pdf

IUCN, UNEP, & WWF. (1980). *World Conservation Strategy: Living resource conservation for sustainable development*. International Union for Conservation of Nature and Natural Resources. Retrieved from https://portals.iucn.org/library/efiles/documents/wcs-004.pdf

Iuculano, G., & Orsini, D. (Directors). (2023). *The Law According to Lidia Poët (La legge di Lidia Poët)* [TV series]. Groenlandia, Netflix.

Ivakhiv, A. (2008). Green Film Criticism and Its Futures. *Interdisciplinary Studies in Literature and Environment*, *15*(2), 1–28. https://doi.org/10.1093/isle/15.2.1

Jäckel, A. (2003). Dual nationality film productions in Europe after 1945. *Historical Journal of Film, Radio and Television, 23*(3), 231–243. https://doi.org/10.1080/0143968032000095569

Jetter, M. (2020). *Opportunities and limitations of carbon calculators on the road to sustainable film and television productions* (Bachelor's thesis, Hochschule der Medien Stuttgart). Retrieved from https://greenfilmshooting.net/blog/en/wp-content/uploads/sites/3/2020/11/EN_Jetter_Thesis-on-carbon-calculators-for-film-and-TV_2020-10-27_v1.4.pdf

Jin, R. (2022). Case study on fast fashion labor market in Cambodia. *BCP Business & Management, 21*, 433–436. https://doi.org/10.54691/bcpbm.v21i.1269

Jones, E., & Tomsett, E. (2024). *Unmuted: Experiences of deaf film and TV professionals in the UK media industry*. Birmingham City University & Creative Diversity Network. Retrieved fromfrom:https://bcuassets.blob.core.windows.net/docs/unmuted-experiences-of-deaf-film-and-tv-professionals-in-the-uk-media-industrya-w--133765744272723244.pdf

Joni, K. (2021, April 14). Focus on hair and make-up: Introduction. *BAFTA albert*. https://wearealbert.org/2021/04/14/focus-on-hair-and-make-up-introduction/

Julie's Bicycle. (2022). *Creative industries and the climate emergency: The path to net zero*. Creative Industries Policy & Evidence Centre. https://juliesbicycle.com/wp-content/uploads/2024/11/JB-PEC-Creative-Industries-and-the-Climate-Emergency-The-Path-to-Net-Zero-PEC-Research-Report.pdf

Jung, D., & Park, S. J. (2022, September 15). *The effects of competition between fair trade organizations*. SSRN. https://doi.org/10.2139/ssrn.4219361

Jung, S., & Jin, B. (2014). A theoretical investigation of slow fashion: Sustainable future of the apparel industry. *International Journal of Consumer Studies, 38*(5), 510–519. https://doi.org/10.1111/ijcs.12127

Kääpä, P. (2018). *Environmental Management of the Media: Policy, Industry, Practice* (1st ed.). Routledge.

Kääpä, P., & Vaughn, M. (Eds.). (2022). *Film and television production in the age of climate crisis: Towards a greener screen*. Palgrave Macmillan.

Kabour, R. (2021). What effect does the enlightened shareholder value principle in the Companies Act 2006 have on the corporate objective of UK companies. *IALS Student Law Review, 8*(2), 13–29. https://doi.org/10.14296/islr.v8i2.5334

Kallis, G., Paulson, S., D'Alisa, G., & Demaria, F. (2020). *The case for degrowth*. Polity Press.

Karakhan, A. A. (2016). LEED-certified projects: Green or sustainable? *Journal of Management in Engineering, 32*(5), 02516001. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000451

Karmasin, M., & Voci, D. (2021). The role of sustainability in media and communication studies' curricula throughout Europe. *International Journal of Sustainability in Higher Education, 22*(8), 42–68. https://doi.org/10.1108/IJSHE-10-2020-0380

Kay, C. (2024, November 11). *India's hunger for fossil fuels drags on its push towards net zero*. *Financial Times*. Retrieved November 21, 2024, from https://www.ft.com/content/0b494df4-db57-4d0e-b1e5-ce1a05c98034

Keane, S. (2006). *Disaster movies: The cinema of catastrophe* (2nd ed.). Columbia University Press. https://www.jstor.org/stable/10.7312/kean567403

Keeling, L., Tunón, H., Olmos Antillón, G., Berg, C., Jones, M., Stuardo, L., Swanson, J., Wallenbeck, A., Winckler, C., & Blokhuis, H. (2019). Animal welfare and the United Nations Sustainable Development Goals. *Frontiers in Veterinary Science, 6*, Article 336. https://doi.org/10.3389/fvets.2019.00336

Kennedy, B., & Johnson, C. (2020, February 28). *More Americans see climate change as a priority, but Democrats are much more concerned than Republicans*. Pew Research Center. https://www.pewresearch.org/short-reads/2020/02/28/more-americans-see-climate-change-as-a-priority-but-democrats-are-much-more-concerned-than-republicans/

Kennedy, C., & Lindsey, R. (2015). *What's the difference between global warming and climate change?* NOAA Climate.gov. https://www.climate.gov/news-features/climate-qa/whats-difference-between-global-warming-and-climate-change

Keping, Y. (2018). Governance and good governance: A new framework for political analysis. *Fudan Journal of the Humanities and Social Sciences, 11*(1), 1–8. https://doi.org/10.1007/s40647-017-0197-4

KFTV. (2021). *KFTV Sustainability Report | November 2021*. KFTV. https://edition.pagesuite.com/html5/reader/production/default.aspx?pubname=&edid=a3e5e17a-0e28-4c62-8ba5-ff107fe419c6

Khan, M. (2015). Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change. *Laws*, *4*(3), 638–653. https://doi.org/10.3390/laws4030638

Kharabsheh, B., Al-Shammari, H., & Bataineh, K. (2023). Research on corporate social responsibility: Insights and future directions. *Administrative Sciences, 13*(2), 64. https://doi.org/10.3390/admsci13020064

Kilday, G. (2011, October 4). Producers Guild of America to be honored for environmental efforts. *The Hollywood Reporter*. Retrieved from https://www.hollywoodreporter.com/movies/movie-news/producers-guild-america-be-honored-241686/

Kim, R. E. (2016). The nexus between international law and the sustainable development goals. *Review of European, Comparative & International Environmental Law, 25*(1), 15–26. https://doi.org/10.1111/reel.12148

Kim, S., Karlesky, M. J., Myers, C. G., & Schifeling, T. (2016, June 17). *Why companies are becoming B corporations*. Harvard Business Review. https://hbr.org/2016/06/why-companies-are-becoming-b-corporations

Klapper, L., & Beinker, N. (2017, November 8). *Smaller businesses lack the financing to be sustainable. Here's how we can help*. World Economic Forum. https://www.weforum.org/stories/2017/11/smes-need-financing-to-improve-their-sustainability-practices-here-s-how-we-can-help/

Knott, A. (2020). *Research into the labour rights of ancillary workers in UK TV production*. TV Industry Human Rights Forum. Romanac Consulting Ltd. Retrieved from https://www.tvhumanrights.org/_files/ugd/917104_376f7f71f9dd42e98c83f96f0c7ad13b.pdf

Kofler, U. (Director). (2020). *What We Wanted (Was wir wollten)* [Film]. Film AG; Netflix.

Koster, R. (2004). *The Budget Book for Film and Television* (2nd ed.). Focal Press.

van Kooten, G. C., & de Vries, F. P. (2013). Carbon offsets. In J. F. Shogren (Ed.), *Encyclopedia of Energy, Natural Resource, and Environmental Economics* (Vol. 1, pp. 6–8). Elsevier. https://doi.org/10.1016/B978-0-12-375067-9.00165-0

Kopfmüller, J. (2011). From the cultural dimension of sustainable development to the culture of sustainable development. In O. Parodi, I. Ayestaran, & G. Banse (Eds.), *Sustainable development: Relationships to culture, knowledge and ethics* (pp. 93–103). KIT Scientific Publishing. Retrieved from https://books.openedition.org/ksp/4266

Koundouri, P., Devves, S., & Plataniotis, A. (2021). Alignment of the European Green Deal, the Sustainable Development Goals and the European Semester Process: Method and Application. *Theoretical Economics Letters*, *11*(04), 743–770. https://doi.org/10.4236/tel.2021.114049

Kozar, Ł. J., & Sulich, A. (2023). Green jobs: Bibliometric review. *International Journal of Environmental Research and Public Health, 20*(4), 2886. https://doi.org/10.3390/ijerph20042886

KPMG. (2020). *The time has come: The KPMG survey of sustainability reporting 2020*. KPMG International. Retrieved from https://assets.kpmg.com/content/dam/kpmg/be/pdf/2020/12/The_Time_Has_Come_KPMG_Survey_of_Sustainability_Reporting_2020.pdf

Kreft, J. (2015). Critical comments on CSR of media organisations – Between marketing and mission. *Zeszyty Naukowe Uniwersytetu Szczecińskiego Problemy Zarządzania Finansów i Marketingu, 41*, 1-26. https://doi.org/10.18276/pzfm.2015.41/1-26

Kreisel, W., & Reeh, T. (2011). *Tourism and landscape in South Tyrol*. Central European Journal of Geosciences, 3(4), 410–423. https://doi.org/10.2478/s13533-011-0040-4

Kruger, T., Mohamedaly, A., Muller, V., Rodriguez, A., Feifs, T., & Buiskool, B.-J. (2023). *Greening the Creative Europe Programme* (NC-04-22-043-EN-N). European Commission. https://op.europa.eu/en/publication-detail/-/publication/e20ac9a0-f52b-11ed-a05c-01aa75ed71a1/language-en

Księżak, P. (2017). The benefits from CSR for a company and society. *Journal of Corporate Responsibility and Leadership, 3*(4), 53. https://doi.org/10.12775/JCRL.2016.023

Kumar, A., Connell, J., & Bhattacharyya, A. (2020). Co-opetition for corporate social responsibility and sustainability: Drivers and success factors. *Sustainability Accounting, Management and Policy Journal, 11*(5), 856–885. https://doi.org/10.1108/SAMPJ-03-2020-0063

Kuyper, J. W., Linnér, B.-O., & Schroeder, H. (2017). Non-state actors in hybrid global climate governance: Justice, legitimacy, and effectiveness in a post-Paris era. *Wiley Interdisciplinary Reviews: Climate Change, 8*(4), e497. https://doi.org/10.1002/wcc.497

LAFC – Lower Austrian Film Commission. (2024). *Spotlight: CO2 calculator for film and TV productions*. Green Guide. https://www.lafc.at/greenguide/spotlight.php?ggid=3&aid=1697&cp=8&jahr=2024&region=0

Lai, O. (2022). Italy makes protecting the environment part of its constitution. *Earth.Org*. Retrieved from https://earth.org/italy-makes-protecting-the-environment-part-of-its-constitution/

La Nazione. (2016, July 10). *Premio Apoxiomeno, sfilata di star (e non solo) alle Terme di San Giuliano*. https://www.lanazione.it/pisa/cronaca/oscar-terme-apoxiomeno-giuliano-a8a67e1d

Lang, J. (2021, April 21). *'Romulus' season two confirmed, set to be Sky Italia's most sustainable production to date – Global Bulletin. Variety*.

https://variety.com/2021/tv/news/romulus-sky-italia-sustainable-death-nightengales-1234956652/

Larrinaga, C., & Bebbington, J. (2021). The pre-history of sustainability reporting: A constructivist reading. *Accounting, Auditing & Accountability Journal, 34*(9), 162–181. https://doi.org/10.1108/AAAJ-03-2017-2872

Latapí Agudelo, M. A., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility, 4*(1), 1–23. https://doi.org/10.1186/s40991-018-0039-y

Lee, M. (2011). *How bad are bananas? The carbon footprint of everything*. Greystone Books.

Legambiente. (n.d.). *Chi siamo*. https://www.legambiente.it/chi-siamo/

Liao, R., & Wan, J. (2022). *Introduction and comparisons of renewable energy*. In *Proceedings of the IEEE 6th International Conference on Universal Village (UV2022)* (pp. 1–8). IEEE. *Retrieved from* https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10185506

Little, H. (2022). The science communication of *Don't Look Up*. *Journal of Science Communication, 21*(05), C01. https://doi.org/10.22323/2.21050301

Lobato, R. (2012). *Shadow economies of cinema: Mapping informal film distribution*. BFI Publishing / Bloomsbury.

Lopera-Mármol, M., & Jiménez-Morales, M. (2021). Green shooting: Media sustainability, a new trend. *Sustainability, 13*(6), 3001. https://doi.org/10.3390/su13063001

Lozano, R. (2013). Are companies planning their organisational changes for corporate sustainability? An analysis of three case studies on resistance to change and their strategies to overcome it. *Corporate Social Responsibility and Environmental Management, 20*(5), 275–295. https://doi.org/10.1002/csr.1290

Lyon, T. P., & Maxwell, J. W. (2011). Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy, 20*(1), 3–41. https://doi.org/10.1111/j.1530-9134.2010.00282.x

Malcolm, J., Hodkinson, P., & Colley, H. (2003). The interrelationships between informal and formal learning. *Journal of Workplace Learning, 15*(7/8), 313–318. https://doi.org/10.1108/13665620310504783

Manieri, F. (Creator). (2024). *Supersex* [TV series]. Groenlandia, Netflix.

Manetti, G., & Becatti, L. (2008). Assurance services for sustainability reports: Standards and empirical evidence. *Journal of Business Ethics, 87*(1), 289–298. Retrieved from https://www.jstor.org/stable/40294969

Marks, L.U., Przedpełski, R. (2022). The Carbon Footprint of Streaming Media: Problems, Calculations, Solutions. In: Kääpä, P., Vaughan, H. (eds) Film and Television Production in the Age of Climate Crisis. Palgrave Studies in Media and Environmental Communication. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-98120-4_10

Margottini, C. (2013). Low environmental impact consolidation works in the rock cliff of Civita di Bagnoregio (Central Italy). In C. Margottini et al. (Eds.), *Landslide Science and Practice, Vol. 6* (pp. 647–655). Springer-Verlag Berlin Heidelberg. https://doi.org/10.1007/978-3-642-31319-6_82

Marceddu, F. (2023). *Nevina Satta: "Il cinema sostenibile è un'opportunità, non un vincolo"* [Interview]. Tiscali Cultura. Retrieved May 31, 2024, from https://cultura.tiscali.it/arte/articoli/Nevina-Satta-intervista/

Marshall, R. (Director). (2023). *The Little Mermaid* [Film]. Walt Disney Pictures; Marc Platt Productions; 5000 Broadway Productions; Lucamar Productions.

Marazziti, C. (Director). (2018). *Sconnessi* [Film]. Camaleo Film; Italian Dreams Factory; RAI Cinema.

Marino, F. (Director). (2021). *Blackout Love* [Film]. Groenlandia, Rai Cinema, Amazon Prime Video.

Martinic, R. (1997). *Overview of the ISO 14000 series of international environmental management standards.* University of Pittsburgh. https://www.sis.pitt.edu/mbsclass/standards/martincic/14000ovr.htm

Maxwell, R., & Miller, T. (2012). *Greening the media* (1st ed.). Oxford University Press.

Mayer, V., Banks, M. J., & Caldwell, J. T. (Eds.). (2009). *Production studies: Cultural studies of media industries* (1st ed.). Routledge. https://doi.org/10.4324/9780203879597

Mazé, A., Aït-Aïssa, M., Mayer, S., & Verjux, N. (2016). Third-party certifications and the role of auditing policies in sustainability: The time and space of materiality within combined audits. *Organization & Environment, 29*(4), 1–24. https://doi.org/10.1177/1086026615628034

McGillivray, M. (Ed.). (2008). *Achieving the Millennium Development Goals.* UNU-WIDER Studies in Development Economics and Policy. Palgrave Macmillan.

McKay, A. (Director). (2021). *Don't Look Up* [Film]. Hyperobject Industries; Bluegrass Films; Netflix.

Media CSR Forum & KPMG LLP. (2005). *Key CSR issues for the media industry*. KPMG. Retrieved from https://responsiblemediaforum.org/downloadDocumentFile?document=89

Media CSR Forum. (2008). *Mapping the landscape: CSR issues for the media sector 2008*. The Media CSR Forum. Retrieved from https://responsiblemediaforum.org/downloadDocumentFile?document=68

Media Freedom Rapid Response (MFRR). (2024). *Silencing the fourth estate: Italy's democratic drift* (Mission Report, July 2024). Osservatorio Balcani e Caucaso Transeuropa (OBCT), European Federation of Journalists (EFJ), European Centre for Press and Media Freedom (ECPMF), ARTICLE 19 Europe, International Press Institute (IPI). Retrieved from https://www.mfrr.eu/wp-content/uploads/2024/07/Italy-Report-Draft-5.pdf

Media Key. (n.d.). *ENGIE e Lux Vide insieme: La serie TV L'isola di Pietro 3 diventa più green*. Retrieved May 30, 2024, from https://www.mediakey.tv/news/archivio-news/leggi-news/engie-e-lux-vide-insieme-la-serie-tv-lisola-di-pietro-3-diventa-piu-green

Mejia, C. R. (2021, October 11). *Out in the world: The vital role of the social impact producer*. Filmmaker Magazine. Retrieved from https://filmmakermagazine.com/112431-out-in-the-world/

Mendes, S. (Director). (2009). *Away We Go* [Film]. Focus Features.

Mezzapesa, P. (Director). (2022). *This is Not Hollywood (Avetrana – Qui non è Hollywood)* [Television miniseries]. Groenlandia, Amazon Prime Video, Disney+ Italia.

Meyer, I. (2016). *Green production – The time has come: Environmental awareness in the film industry* (Bachelor's thesis, Hochschule Mittweida, University of Applied Sciences, Faculty of Media). Hochschule Mittweida. Retrieved from https://monami.hs-mittweida.de/frontdoor/index/index/year/2017/docId/7897

MIA Market. (n.d.). *Sustainability*. Retrieved May 31, 2024, from https://www.miamarket.it/en/sustainability-3/

Miller, G. (Director). (1979). *Mad Max* [Film]. Kennedy Miller Productions.

Miller, G. (Director). (1981). *Mad Max 2: The Road Warrior* [Film]. Kennedy Miller Productions.

Miller, G. (Director). (1985). *Mad Max Beyond Thunderdome* [Film]. Kennedy Miller Productions; Warner Bros. Pictures.

Miller, G. (Director). (2015). *Mad Max: Fury Road* [Film]. Kennedy Miller Mitchell; Warner Bros. Pictures.

Miller, G. (Director). (2024). *Furiosa: A Mad Max Saga* [Film]. Kennedy Miller Mitchell; Warner Bros. Pictures.

Mingant, N., Tirtaine, C., & Augros, J. (Eds.). (2015). *Film marketing into the twenty-first century*. British Film Institute / Bloomsbury Academic.

Ministero della Cultura. (2016). *Interesse culturale in sala: "Fräulein" di Caterina Carone*. Retrieved June 6, 2024, from https://cinema.cultura.gov.it/notizie/interesse-culturale-in-sala-fraulein-di-caterina-carone/

Ministero della Cultura. (2023). *Bando relativo alla concessione di contributi ad attività e iniziative di promozione cinematografica e audiovisiva* (Decreto Direttoriale 21 aprile 2023, n. 1595). Direzione Generale Cinema e Audiovisivo. Retrieved from: https://cinema.cultura.gov.it/wp-content/uploads/dlm_uploads/2023/04/BANDO-PROMOZIONE-2023-DD-21.4.23-decr.1595.pdf

Ministero per i beni e le attività culturali e per il turismo. (2020). *Contributi selettivi: Bando per la concessione di contributi selettivi anno 2020*. Retrieved from https://www.apaonline.it/website/wp-content/uploads/2019/12/apa-associazione-produttori-audiovisivi-contributi-selettivi-bando-per-la-concessione-di-contributi-selettivi-anno-2020.pdf

Mitchell, T. (Director). (2007). *The Flood* [Film]. Powercorp, Talkback Thames, ITV.

Mitchell, W. (2008, February 5). *London starts green initiative for film and TV producers*. Screen Daily. https://www.screendaily.com/london-starts-green-initiative-for-film-and-tv-producers/4037005.article

Moghaddam, F. F., & Cheriet, M. (2017). Sustainability-aware cloud computing using virtual carbon tax. *Cluster Computing*. Advance online publication. https://doi.org/10.48550/arXiv.1510.05182

Mohebi, A. (2022). *Duurzaam filmen: Hoe de milieu-impact van een televisieproductie reduceren - De case studie van Buck* (Master's thesis). KU Leuven. https://kuleuven-my.sharepoint.com/personal/abbas_mohebi_student_kuleuven_be/Documents/thesis/Master%20thesis%20Abbas.docx#_Toc105667518

Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. *Ecological Indicators, 17*, 4–13. https://doi.org/10.1016/j.ecolind.2011.04.033

Moore, C., & O'Meara, R. (2021). How government institutions shape script development: Comparative case studies of Screen Australia and the Danish Film Institute. In C. Batty & S. Taylor (Eds.), *Script development: Critical approaches, creative practices, international perspectives* (pp. 29–49). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-48713-3_3

Mordini, S. (Director). (2018). *Il testimone invisibile* [Film]. Warner Bros. Entertainment Italia; Picomedia; La Casa Rossa.

Moretti, A. (2022, June 4). *Romulus, la prima serie Tv carbon neutral. Rovere: «Oscar alla sostenibilità? Speriamo». Il Messaggero*. https://www.ilmessaggero.it/economia/giornata_mondiale_dell_ambiente/romulus_serie_tv_ecologica_oscar_green-6730503.html

Morgan, J. (2020). Electric vehicles: The future we made and the problem of unmaking it. *Cambridge Journal of Economics, 44*(4), 953–977. https://doi.org/10.1093/cje/beaa022

Morgan, M., Anable, J., & Lucas, K. (2021, February 15). *A place-based carbon calculator for England*. GISRUK 2021 Conference Proceedings. Institute for Transport Studies, University of Leeds; School of Environment, Education and Development, University of Manchester. Retrieved from https://eprints.whiterose.ac.uk/id/eprint/181887/1/GISRUK2021_paper_54.pdf

Mori Junior, R., Franks, D. M., & Ali, S. H. (2016). Sustainability certification schemes: Evaluating their effectiveness and adaptability. *Corporate Governance: The International Journal of Business in Society, 16*(3), 579–592. https://doi.org/10.1108/CG-03-2016-0066

Morrissey, J., & Heidkamp, P. (2022). Sustainability after COVID-19: Pillars for a just transition. *Environmental Sustainability, 5*(3), 261–269. https://doi.org/10.1007/s42398-022-00231-y

Motion Picture Association. (2020, December 16). *The Sustainable Production Alliance: Celebrating the Green Production Guide's 10-year anniversary*. Retrieved from https://www.motionpictures.org/2020/12/the-sustainable-production-alliance-celebrating-the-green-production-guides-10-year-anniversary/

Munch, E. (2024). *Green transition in the audiovisual sector*. European Audiovisual Observatory.Retrieved from https://www.oficinamediaespana.eu/images/media_europa/OEAGreentransitionAV.pdf

Murphy, D. F., & Yates, M. (2009). *ISO, the International Organization for Standardization: Global governance through voluntary consensus*. Routledge.

Murray, J., & Dey, C. (2009). The carbon neutral free for all. *International Journal of Greenhouse Gas Control, 3*(2), 237–248. https://doi.org/10.1016/j.ijggc.2008.07.004

Murry, I., & Öman, I. (2024). *Risk management in pre-production of film projects: A study on key risk management factors during the pre-production phase in film projects* (Bachelor's thesis, Linköping University). Linköping University. Retrieved from https://liu.diva-portal.org/smash/get/diva2:1864035/FULLTEXT02.pdf

Murschetz, P. C., Teichmann, R., & Karmasin, M. (Eds.). (2018). *Handbook of state aid for film: Finance, industries and regulation*. Springer. https://doi.org/10.1007/978-3-319-71716-6

Museo Nazionale del Cinema. (n.d.). *TorinoFilmLab*. Retrieved May 31, 2024, from https://www.museocinema.it/it/torino-film-lab-e-progetti-speciali/torinofilmlab

Naciti, V., Cesaroni, F., & Pulejo, L. (2022). Corporate governance and sustainability: A review of the existing literature. *Journal of Management and Governance, 26*(1), 55–74. https://doi.org/10.1007/s10997-020-09554-6

National Grid. (2022, June 6). *Carbon neutral vs net zero – understanding the difference*. https://www.nationalgrid.com/stories/energy-explained/carbon-neutral-vs-net-zero-understanding-difference

Natura Italia. (n.d.). *Cartografia delle praterie di Posidonia oceanica*. Retrieved May 31, 2024, from https://www.naturaitalia.it/cartografiaPrateriePosidonia.do?d-5697378-p=21

Nausicä Cinéma Durable. (2023b). *Sustainable filming in Italy*. Retrieved May 31, 2024, from https://nausicacinemadurable.fr/2023/08/04/sustainable-filming-in-italy/

NBCUniversal Media. (2023, March 9). *Universal Filmed Entertainment Group to launch GreenerLight program*. NBCUniversal Media. Retrieved August 18, 2024, from https://www.nbcuniversal.com/article/universal-filmed-entertainment-group-launch-greenerlight-program

NBI S.p.A. (n.d.). *Cinecittà 2*. https://www.nbispa.com/en/Progetti/cinecitta-2/?portfolioCats=164

Neagu, A.-C. (2017). Post-apocalypse now: Globalism, posthumanism, and the 'imagination of disaster'. *Transylvanian Review, 26*(Supplement 2), 237–246. Retrieved from https://www.academia.edu/66076703/Post_Apocalypse_Now_Globalism_Posthumanism_and_the_Imagination_of_Disaster

Nenni, M. E., Di Pasquale, V., & Boyer, J. (2024). The complicated relationship between innovation and sustainability: Opportunities, threats, challenges, and trends. *Sustainability, 16*(9), 3524. https://doi.org/10.3390/su16093524

Netflix, Inc. (2023). *Environmental, social, and governance report*. Retrieved from https://s22.q4cdn.com/959853165/files/doc_downloads/2024/6/2023-Netflix-Environmental-Social-Governance-Report.pdf

New Zealand Ministry for the Environment. (2005). *Greening the screen: A practical environmental toolkit for the screen production industry*. Ministry for the Environment. Retrieved from https://environment.govt.nz/assets/Publications/Files/greening-the-screen-nov05.pdf

Niblo, F. (Director). (1925). *Ben-Hur* [Film]. Metro-Goldwyn-Mayer.

Nicoli, M. (2018). *The rise and fall of the Italian film industry*. Routledge.

Nicosia, E. (2015). *The Marche Film Commission: A tool for promoting territorial development and regional tourism*. AlmaTourism: Journal of Tourism, Culture and Territorial Development, Special Issue 4. ttps://doi.org/10.6092/issn.2036-5195/4959

Nie, M. A. (1997). "It's the environment, stupid!" Clinton and the environment. *Presidential Studies Quarterly, 27*(1), 39–51. Wiley. https://www.jstor.org/stable/27551699

Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment, 1*(4), 189–200. https://doi.org/10.1038/s43017-020-0039-9

Niola, G. (2022, May 15). *The Euro 75: Tempesta (Italy)*. Screen Daily. https://www.screendaily.com/features/the-euro-75-tempesta-italy/5170419.article

Nordic Council of Ministers. (2019). *A good life in a sustainable Nordic region: Nordic strategy for sustainable development 2013–2025* (PolitikNord 2019:705). http://dx.doi.org/10.6027/PN2019-705

Nordic Film & TV Fund. (n.d.). *Sustainability beyond the camera lens*. https://www.nkk.org/en/sustainability-beyond-the-camera-lens/

Nygaard, A. (2022). From linear to circular economy: A transaction cost approach to the ecological transformation of the firm. *Circular Economy and Sustainability, 2*(1127–1142). https://doi.org/10.1007/s43615-022-00158-w

Nygaard, A., & Silkoset, R. (2023). Sustainable development and greenwashing: How blockchain technology information can empower green consumers. *Business Strategy and the Environment, 32*, 3801–3813. https://doi.org/10.1002/bse.3338

Oakley, K., & Banks, M. (Eds.). (2020). *Cultural industries and the environmental crisis: New approaches for policy*. Springer Nature. https://doi.org/10.1007/978-3-030-49384-4

Obergassel, W., Arens, C., Hermwille, L., Mersmann, F., Ott, H., Wang-Helmreich, H., & Kreibich, N. (2016). Phoenix from the ashes—An analysis of the Paris Agreement to the United Nations Framework Convention on Climate Change. Wuppertal Institute for Climate, Environment and Energy. Retrieved from https://epub.wupperinst.org/files/6373/6373_Obergassel.pdf

Oberthür, S., & Ott, H. E. (1999). *The Kyoto Protocol: International climate policy for the 21st century*. Springer-Verlag Berlin Heidelberg. https://doi.org/10.1007/978-3-662-03925-0

O'Brien, E. (2014). *Going green & saving green: A cost-benefit analysis of sustainable filmmaking*. PGA Green. Retrieved from https://greenproductionguide.com/wp-content/uploads/2020/06/Going_Green_Saving_Green.pdf

Österreichisches Filminstitut. (ÖFI) (n.d.). *Green Filming*. Retrieved from https://filminstitut.at/foerderung/green-filming

Oliver, M. (2013). The social model of disability: Thirty years on. *Disability & Society*. Advance online publication. https://doi.org/10.1080/09687599.2013.818773

Olmi, E. (Director). (2014). *Torneranno i prati* [Greenery Will Bloom Again] [Film]. Cinema Undici; Ipotesi Cinema; Rai Cinema.

OLMEC. (2024). *Green Ciak©: From green screen to green living* [PowerPoint presentation]. Unpublished internal document.

Oltolini, C. (2020, August 7). *Il nuovo cinema sostenibile è già qui. Dopo Lazzaro Felice, anche il set di Dall'Interno è green*. Wired Italia. https://www.wired.it/play/cinema/2020/08/07/nuovo-cinema-sostenibile-from-the-inside-set-green/

Orankiewicz, A., & Bartosiewicz, A. (2023). The COVID-19 pandemic and the adoption factors of film distribution business models in the context of sustainability. *Sustainability, 15*(15), 11721. https://doi.org/10.3390/su151511721

O'Riordan, T., & Voisey, H. (Eds.). (1998). *The transition to sustainability: The politics of Agenda 21 in Europe*. Earthscan.

Orr, S. (2014). *Toxic release inventory shows pollutants in New York*. Democrat and Chronicle. Retrieved from https://eu.democratandchronicle.com/story/environment/2014/02/05/toxic-release-inventory/5224481/

Oxford Economics. (2012). *The economic impact of the UK film industry* (4th ed.). Supported by the British Film Institute, Pinewood Shepperton plc, British Film Commission, and Creative England. Retrieved April 20, 2024, from https://www.hertsmere.gov.uk/Documents/02-Business/Economic-Development/BFI-Impact-on-the-Economy.pdf

Padgett, J. P., Steinemann, A. C., Clarke, J. H., & Vandenbergh, M. P. (2008). A comparison of carbon calculators. *Environmental Impact Assessment Review, 28*(2–3), 106–115. https://doi.org/10.1016/j.eiar.2007.08.001

Paleari, S., & Günther, J. (2023). *Policy framework analysis: Technical supporting material to the report "Circular Economy and Biodiversity"*. ETC-CE Report 2023/7bis. European Topic Centre on Circular Economy and Resource Use. Retrieved from https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2023-7-circular-economy-and-biodiversity/etc-supporting-material-to-report-ce_biodiversity.pdf

Palermo, F., Valdesalici, A. (2014). Italy: Autonomism, Decentralization, Federalism, or What Else?. In: Lluch, J. (eds) Constitutionalism and the Politics of Accommodation in Multinational Democracies. St Antony's Series. Palgrave Macmillan, London. https://doi.org/10.1057/9781137288998_9

Palia, D., Ravid, S. A., & Reisel, N. (2008). Choosing to cofinance: Analysis of project-specific alliances in the movie industry. *The Review of Financial Studies, 21*(2), 483–511. https://doi.org/10.1093/rfs/hhm064

Pantouvaki, Sofia & Fossheim, Ingvill & Suurla, Susanna. (2022). Costume and Sustainability: From Past Practice to Future Strategies for an Ecological Costume Praxis. Retrieved from https://www.researchgate.net/profile/Sofia-Pantouvaki/publication/367023750_Costume_and_Sustainability_From_Past_Practice_to_Future_Strategies_for_an_Ecological_Costume_Praxis/links/63be9d8b56d41566df59a019/Costume-and-Sustainability-From-Past-Practice-to-Future-Strategies-for-an-Ecological-Costume-Praxis.pdf?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19

Parc, J. (2020). Between state-led and corporation-led co-productions: How has film co-production been exploited by states in Europe. *Innovation: The European Journal of Social Science Research, 33*(4), 472–489. https://doi.org/10.1080/13511610.2020.1801390

Parco Naturale Adamello Brenta. (n.d.). *Marchio Qualità Parco: Vantaggi*. Retrieved May 31, 2024, from https://www.pnab.it/marchio-qualita-parco-vantaggi-news/

Pardo, A. (2007). *The Europe-Hollywood coopetition: Cooperation and competition in the global film industry*. Ediciones Universidad de Navarra. Retrieved from

https://dadun.unav.edu/server/api/core/bitstreams/4c68773e-7f6c-4737-aaff-13737740f6cb/content

Paternò, C. (2016). *Accordo green tra Edison e FCTP*. Cinecittà News. https://cinecittanews.it/accordo-green-tra-edison-e-fctp/

Paternò, C. (2022, February 24). *AFIC: le linee guida green per i festival*. Cinecittà News. https://cinecittanews.it/afic-le-linee-guida-green-per-i-festival/

Patz, D. (2010). *Film production management 101: Management & coordination in a digital age* (2nd ed.). Michael Wiese Productions.

Pachauri, A., Muñoz Sevilla, N. P., Kedia, S., Pathak, D., Mittal, K., & Magdalene, P. A. (2021). COVID-19: A wake-up call to protect planetary health. In A. W. Hakeem, R. Bhat, & H. El-Enshasy (Eds.), *Environmental resilience and transformation in times of COVID-19* (pp. 1–14). Elsevier. https://doi.org/10.1016/C2020-0-02703-9

Pechlaner, H., & Tschurtschenthaler, P. (2003). *Tourism policy, tourism organisations and change management in Alpine regions and destinations: A European perspective*. *Current Issues in Tourism, 6*(6), 508–539. https://doi.org/10.1080/13683500308667967

Peradze, E. (n.d.). *The Little Mermaid: A tale of ocean conservation and sustainable values*. *Impakter*. Retrieved May 31, 2024, from https://impakter.com/the-little-mermaid-a-tale-of-ocean-conservation-and-sustainable-values/#:~:text=Sustainable%20Resource%20Use%20and%20King%20Triton's%20Kingdom&text=The%20film%20advocates%20for%20sustainable,prompts%20introspection%20about%20our%20choices.

Periola, A. A., Alonge, A. A., & Ogudo, K. A. (2024). Green intelligent content rendering paradigm. In *2024 International Conference on Artificial Intelligence, Big Data, Computing and Data Communication Systems (icABCD)* (pp. 1–8). IEEE. https://doi.org/10.1109/ICABCD62167.2024.10645257

PETA Asia. (2022). *No monkey is safe in the Thai coconut industry*. PETA Investigations. https://investigations.peta.org/thai-coconut-milk-cruelty/

Peter, H., Vargas Vasserot, C., & Alcalde Silva, J. (Eds.). (2023). *The international handbook of social enterprise law: Benefit corporations and other purpose-driven companies* (Corrected ed.). Springer. https://doi.org/10.1007/978-3-031-14216-1

Peters, A. (Ed.). (2020). *Studies in global animal law* (Vol. 290). Springer. https://doi.org/10.1007/978-3-662-60756-5

Pfadenhauer, M. (2009). At eye level: The expert interview—A talk between expert and quasi-expert. In A. Bogner, B. Littig, & W. Menz (Eds.), *Interviewing experts* (pp. 81–97). Palgrave Macmillan.

Pianta, M., & Lucchese, M. (2020). Rethinking the European Green Deal: An industrial policy for a just transition in Europe. *Review of Radical Political Economics*. https://doi.org/10.1177/0486613420938207

Pianura24. (2022, November 29). *Cala il sipario sulla prima edizione del Verona Green Movie Land*. Pianura24. https://www.pianura24.it/2022/11/29/cala-il-sipario-sulla-prima-edizione-del-verona-green-movie-land/

Pinewood Group. (n.d.). *Sustainability*. Retrieved July 7, 2024, from https://pinewoodgroup.com/sustainability/

Pitre, M., & Chauviré, H. (2022, November 2). Cloud carbon footprint: Do Amazon, Microsoft and Google have their head in the clouds? Carbone 4. https://www.carbone4.com/en/analysis-carbon-footprint-cloud

Pizzimenti, E. (2024). The Meloni government and the challenge of ecological transition. *Contemporary Italian Politics, 16*(2), 183–197. https://doi.org/10.1080/23248823.2024.2327685

Pizzo, B. (2023). Ecological transition without change: A paradox, a misinterpretation, or a renounce? *Sustainability, 15*(11), 8770. https://doi.org/10.3390/su15118770

Poland, B. D. (1995). Transcription quality as an aspect of rigor in qualitative research. *Qualitative Inquiry, 1*(3), 290–310. https://doi.org/10.1177/107780049500100302

Poort, J., & van Til, G. (2020). The role of territorial licenses and public support schemes in financing European films. *International Journal of Cultural Policy, 26*(5), 597–616. https://doi.org/10.1080/10286632.2019.1690475

Powers, W. R. (2005). *Transcription techniques for the spoken word*. Rowman & Altamira.

Prakash, A., & Potoski, M. (2006). *The Voluntary Environmentalists: Green Clubs, ISO 14001, and Voluntary Environmental Regulations*. Cambridge University Press. DOI:10.1057/crr.2008.7

Presidenza della Repubblica Italiana. (n.d.). *La Costituzione della Repubblica Italiana*. Retrieved May 27, 2024, from https://www.quirinale.it/allegati_statici/costituzione/costituzione.pdf

Prigge, J., & Wilke, D. (2020, July 7). *Corporate Sustainability Reporting Frameworks and Standards Explained*. Sustridge Sustainability Consulting. https://www.sustridge.com/blog-content/corporate-sustainability-reporting-frameworks-standards

Punto 3. (2023). *Eventi sostenibili*. Retrieved May 31, 2024, from https://punto3.it/strategie-sviluppo-sostenibile-per-le-imprese/eventi-sostenibili/

Purvis, B., Mao, Y., & Robinson, D. (2018). Three pillars of sustainability: In search of conceptual origins. *Sustainability Science*. https://doi.org/10.1007/s11625-018-0627-5

Pyrgioti, S. (2023, April 13). *Sustainability standards explained: ISO 14000 family*. CarbonCloud. https://carboncloud.com/blog/iso-14000/

Quale, S. (Director). (2014). *Into the Storm* [Film]. New Line Cinema; Village Roadshow Pictures; Warner Bros.

RadioCinema. (2012). *Per un cinema verde*. https://www.radiocinema.it/news/per-un-cinema-verde

Raj, R., & Griffin, K. (Eds.). (2024). *Sustainable events management*. CAB International.

Ramsay, I., & Upadhyaya, M. (2021). *The failed attempt to enact benefit company legislation in Australia and the rise of B Corps*. University of Melbourne. https://ssrn.com/abstract=3795039

Rapid Transition Alliance. (n.d.). From oil crisis to energy revolution: How nations once before planned to kick the oil habit. Retrieved from https://www.rapidtransition.org/stories/from-oil-crisis-to-energy-revolution-how-nations-once-before-planned-to-kick-the-oil-habit/

Rauland, V., & Newman, P. (2015). *Decarbonising cities: Mainstreaming low carbon urban development*. Springer. https://doi.org/10.1007/978-3-319-15506-7

Reckitt. (2024). *A dress rehearsal for disruption: Why COVID-19 has been a sustainability wake-up call*. Retrieved March 5, 2024, from https://www.ft.com/partnercontent/reckitt/a-dress-rehearsal-for-disruption-why-covid-19-has-been-a-sustainability-wake-up-call.html

Redattore Sociale. (n.d.). *Cinema sostenibile: con Ecomuvi si tutela l'ambiente verso le linee guida*. Redattore Sociale. Retrieved April 8, 2025, from https://www.redattoresociale.it/article/notiziario/cinema_sostenibile_con_ecomuvi_si_tutela_l_ambiente_verso_le_linee_guida

Regione Autonoma della Sardegna. (n.d.). *La Caretta caretta*. Sardegna SIRA. Retrieved May 31, 2024, from https://portal.sardegnasira.it/la-caretta-caretta

Regione Autonoma della Sardegna. (2020). *Piano strategico per lo sviluppo del sistema culturale e creativo della Sardegna*. Retrieved May 31, 2024, from https://www.regione.sardegna.it/documenti/1_38_20201231095346.pdf

Regione Autonoma della Sardegna. (2022b). *Legge regionale 20 settembre 2006, n. 15 – Norme per la disciplina, la programmazione, la promozione e lo sviluppo delle attività cinematografiche in Sardegna*. Retrieved May 31, 2024, from https://www.regione.sardegna.it/j/v/2644?s=1&v=9&c=161&c1=13678&id=101882

Regione Piemonte. (2023). *Avviso pubblico per la concessione di contributi per attività e iniziative di promozione cinematografica e audiovisiva* [Internal communication]. Regione Piemonte.

Rehman, M. (2021). Dream bigger, Disney: Exploring the Walt Disney Company's future role in planetary politics. *Sustinere: Journal of Environment and Sustainability*. Retrieved from https://jps.library.utoronto.ca/index.php/sustinere/article/download/36821/27990/95488

Reinecke, J., Little, L. M., Simons, T., Bliese, P., Dencker, J., Roberson, Q., von Krogh, G., & Gruber, M. (2024). Advancing management theory through interdisciplinary research: Challenges and opportunities. *Academy of Management Journal, 67*(6), 1421–1427. https://doi.org/10.5465/amj.2024.4006

Res Artis. (2020). *Annual report 2020*. Res Artis: Worldwide Network of Arts Residencies. Retrieved from https://resartis.org/wp-content/uploads/2021/06/2020-Res-Artis-Annual-Report-1.pdf

Resina Film. (2017). *Resina: Press kit*. OneArt; Rai Cinema. Supported by Trentino Film Commission.

Responsible Business Alliance. (2024). *RBA Code of Conduct (Version 8.0)*. Retrieved from https://www.responsiblebusiness.org/media/docs/RBACodeofConduct8.0_English.pdf

Rete Clima. (n.d.a). *CINECITTÀ: Dalla misura al piano di decarbonizzazione secondo SBT*. https://www.reteclima.it/progetti/cinecitta-dalla-misura-al-piano-di-decarbonizzazione-secondo-sbt/

Rete Clima. (n.d.b). *Science Based Target initiative (SBTi): Aziende protagoniste della decarbonizzazione*. Retrieved April 9, 2025, from https://www.reteclima.it/science-based-target-initiative-sbti-aziende-protagoniste-della-decarbonizzazione/

Reynolds, K. (Director). (1995). *Waterworld* [Film]. Universal Pictures.

Rhimes, S. (Creator). (2005–present). *Grey's Anatomy* [TV series]. Shondaland; ABC Studios.

Riach, B. (2020, August 4). *How much e-waste does the UK audio visual industry produce annually?* Vision for Sustainable Events. Retrieved November 20, 2024, from

https://visionsustainableevents.org/how-much-e-waste-does-the-uk-audio-visual-industry-produce-annually/

RICEC. (2024, January 16). *Italy ranks third globally for UNI EN ISO 14001 environmental management systems: The crucial role of auditors in the green economy*. RICEC International. https://www.ricec.it/en/italy-ranks-third-globally-for-uni-en-iso-14001-environmental-management-systems-the-crucial-role-of-auditors-in-the-green-economy/

Richeri, G., & Prario, B. (2016). Italy. In E. M. Noam (Ed.), *Who owns the world's media? Media concentration and ownership around the world* (pp. 183–205). Oxford University Press.

Ricketts, G. M. (2010). The roots of sustainability. *Academic Questions, 23*(1), 20–53. Retrieved from https://www.nas.org/academic-questions/23/1/the_roots_of_sustainability/pdf

Ridell, L. (2023). *The state of sustainability in Finnish feature film productions*. LUT University. https://urn.fi/URN:NBN:fi-fe2023052447452

Rizzo, V. (2021). *Detailed discussion of the legal protections of animals in filmed media*. Animal Legal & Historical Center, Michigan State University College of Law. Retrieved from https://www.animallaw.info/article/detailed-discussion-legal-protections-animals-filmed-media

RMI. (2023). *Introducing the Clean Mobile Power Initiative*. https://rmi.org/introducing-the-clean-mobile-power-initiative/

Roberts, S. (2018, May 8). *Ermanno Olmi, whose films captured humble lives, dies at 86. The New York Times*. https://www.nytimes.com/2018/05/08/obituaries/ermanno-olmi-whose-films-captured-humble-lives-dies-at-86.html

Roberts-Powers, W. (2005). *Transcription techniques for the spoken word*. AltaMira Press.

Robinson, J. (2004). Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics, 48*(4), 369–384. https://doi.org/10.1016/j.ecolecon.2003.10.017

Roger, G. (2021). *The Franco-Italian cinematographic co-production* [Master's thesis, LUISS Guido Carli University]. Department of Business and Management, Master in International Management. Retrieved from https://tesi.luiss.it/32254/1/723811_ROGER_GUILLAUME.pdf

Rohrwacher, A. (Director). (2014). *Le meraviglie (The Wonders)* [Film]. Tempesta S.r.l.

Rohrwacher, A. (Director). (2018). *Lazzaro felice (Happy as Lazzaro)* [Film]. Tempesta S.r.l.

Rohrwacher, A. (Director). (2023). *La chimera (Chimera)* [Film]. Tempesta S.r.l.; Rai Cinema; Ad Vitam; Arte France Cinéma.

Rohrwacher, A. (Director). (2014). *Le meraviglie* [The Wonders] [Film]. Tempesta; Rai Cinema.

Rome, A. (2003). "Give Earth a Chance": The Environmental Movement and the Sixties. *The Journal of American History, 90*(2), 525–554. https://www.jstor.org/stable/3659443

Rondinelli, J. (Director). (2018). *Ride* [Film]. Lucky Red; Mercurious; Tim Vision.

Rosa, S. C. F. da, Kipper, L. M., Moraes, J. A. R., & Silva, A. L. E. (2022). Aluminum recycling, innovations and future perspectives: A systematic literature review. *International Journal of Development Research, 12*(2), 54035–54039. Retrieved from https://www.journalijdr.com/aluminum-recycling-innovations-and-future-perspectives-systematic-literature-review

Rosen, M. A., & Koohi-Fayegh, S. (2016). The prospects for hydrogen as an energy carrier: An overview of hydrogen energy and hydrogen energy systems. *Energy, Ecology and Environment, 1*(1), 10–29. https://doi.org/10.1007/s40974-016-0005-z

Rosenberg, T. (2011, April 14). Ethical businesses with a better bottom line. *The New York Times*. https://archive.nytimes.com/opinionator.blogs.nytimes.com/2011/04/14/ethical-businesses-with-a-better-bottom-line/

Rovere, M. (Director). (2019). *Romulus and Remus: The First King* [Film]. Groenlandia, Gapbusters, Rai Cinema.

Rovere, M. (Creator). (2020–2022). *Romulus* [TV series]. Cattleya, Groenlandia, Sky Studios, ITV Studios.

Roxborough, S. (2021, September 16). *Germany's film and TV industry, streamers launch green production initiative*. The Hollywood Reporter. https://www.hollywoodreporter.com/business/business-news/germany-film-tv-streaming-netflix-green-production-initiative-1235035276/

Rüdenauer, I., López H., V., & Gensch, C.-O. (2022). *100 Grüne Produktionen – Evaluation der Nachhaltigkeitsinitiative des Arbeitskreises „Green Shooting" (1. Update)*. Freiburg: Öko-Institut e.V. Retrieved from https://www.oeko.de/fileadmin/oekodoc/Evaluation_100_Produktionen.pdf

RTI & Lux Vide. (2017–2019). *L'isola di Pietro* [Television series]. Directed by A. Sweet & L. Lucini. Mediaset – Canale 5.

Sabato, S., & Fronteddu, B. (2020). *A socially just transition through the European Green Deal?* European Trade Union Institute. Working Paper 2020.08. Retrieved from https://www.etui.org/sites/default/files/2020-09/A%20socially%20just%20transition%20through%20the%20European%20Green%20Deal-2020-web.pdf

Sabri, N. A., & Nadarajah, G. (2016). Green supply chain: Challenges and practical issues. *International Journal of Supply Chain Management, 5*(4), 38–42. *Retrieved from* https://ojs.excelingtech.co.uk/index.php/IJSCM/article/download/1334/781

Sacco, P. L. (2012). *Culture and the Structural Funds in Italy* (EENC Paper). European Expert Network on Culture. https://www.interarts.net/descargas/interarts2554.pdf

Sachs, J. D. (2012). From Millennium Development Goals to Sustainable Development Goals. *The Lancet, 379*(9832), 2206–2211. https://doi.org/10.1016/S0140-6736(12)60685-0

Safdie, S. (2023). *What does it mean to be carbon positive?* Greenly. https://greenly.earth/en-us/blog/company-guide/what-does-it-mean-to-be-carbon-positive

Sahota, A. (Ed.). (2014). *Sustainability: How the cosmetics industry is greening up*. John Wiley & Sons.

Sancton, J. (2023, June 21). *Nonprofit Hollywood: Stars' charities under scrutiny amid industry shifts*. *The Hollywood Reporter*. https://www.hollywoodreporter.com/business/business-news/nonprofit-hollywood-stars-charities-1235567052/

Sandoval, M. (2014). *From corporate to social media: Critical perspectives on corporate social responsibility in media and communication industries* (1st ed.). Routledge

Sapienza, D. (2008). As if 1918 never happened. *Mānoa: A Pacific Journal of International Writing*, *20*(1), 101–107. https://doi.org/10.1353/man.0.0013

Sardegna Film Commission. (2015.). *Racconti di buone pratiche green in Sardegna al Festival del Fumetto Nues con la partecipazione della Sardegna Film Commission*. Retrieved April 8, 2025, from https://www.sardegnafilmcommission.it/racconti-di-buone-pratiche-green-in-sardegna-al-festival-del-fumetto-nues-con-la-partecipazione-della-sardegna-film-commission

Sardegna Film Commission. (2016). *Sardegna Green Film Shooting: Guida a una produzione audiovisiva sostenibile – Declinazione territoriale del protocollo T-Green Film*. Retrieved May 20, 2024, from https://www.sardegnafilmcommission.it/docs/SARDEGNA_Green_Film_Shooting.pdf

Sardegna Film Commission. (2022). *Bando Green Manager ASPAL*. Retrieved May 31, 2024, from https://www.sardegnafilmcommission.it/bando-green-manager-aspal

Sarfatti, M. (2020). Toni Servillo and Silvio Orlando: With the first take together, the protocol for a green cinema. *Corriere della Sera*, pp. 24–25.

Sato, I., Elliott, B., & Schumer, C. (2024, March 15). What is carbon lock-in? World Resources Institute. https://www.wri.org/insights/carbon-lock-in-definition

Searoutes. (2023, January 11). *What is the EU Corporate Sustainability Reporting Directive (CSRD)?* Searoutes. https://searoutes.com/2023/01/11/what-is-the-eu-corporate-sustainability-reporting-directive-csrd/

Serrien, J. (2022). *Kwantificatie en analyse van de milieu-impact van (textiel-) keuzes in de theaterindustrie aan de hand van een case-study* (Master's thesis, KU Leuven, Belgium). Retrieved from https://idp.kuleuven.be/idp/profile/SAML2/POST/SSO?execution=e2s1

Schmieg, G., Meyer, E., Schrickel, I., Herberg, J., Caniglia, G., Vilsmaier, U., Laubichler, M., Hörl, E., & Lang, D. (2018). Modeling normativity in sustainability: A comparison of the sustainable development goals, the Paris agreement, and the papal encyclical. *Sustainability Science, 13*(5), 785–796. https://doi.org/10.1007/s11625-017-0504-7

Schoonover, K., & Corsi, B. (2020). Primed real estate: Film producers and land development. *Historical Journal of Film, Radio and Television, 40*(1), 129–139. https://doi.org/10.1080/01439685.2020.1715600

Schoors, P. (2023). *Analyzing the environmental impact of film distribution: Case study of film distributor MOOOV* (Master's thesis, KU Leuven, Belgium).

Schurmans, A. (2023). *Kwantificatie en reductie van broeikasgasemissies van filmvertoningen: Casestudy op Sphinx Cinema* (Master's thesis, KU Leuven, Belgium).

Schweitzer, V., Bach, V., Holzapfel, P. K. R., & Finkbeiner, M. (2023). Differences in science-based target approaches and implications for carbon emission reductions at a sectoral level in Germany. *Sustainable Production and Consumption, 38*, 199–209. https://doi.org/10.1016/j.spc.2023.04.009

Science Based Targets initiative. (2022, April). *Getting started guide for the SBTi's Net-Zero Standard* (Version 3.1). https://sciencebasedtargets.org/resources/files/Net-Zero-Getting-Started-Guide-3.1-april.pdf

Science Based Targets initiative. (2024). *SBTi Corporate Net-Zero Standard* (Version 1.2). https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf

Screen Daily. (2021, December 19). *In profile: Five emerging roles in UK film and TV production*. Screen Daily. https://www.screendaily.com/uk-in-focus/in-profile-five-emerging-roles-in-uk-film-and-tv-production/5166217.article

Screen Daily. (2023, May 23). *Celebrating the winners of Screen's inaugural 2023 Global Production Awards*. https://www.screendaily.com/features/celebrating-the-winners-of-screens-inaugural-2023-global-production-awards/5182651.article

Screen Ireland. (2017). *Green production toolkit: Making Ireland the greenest film industry option*. https://www.screenireland.ie/images/uploads/general/Green_Production_Toolkit..pdf

Scuri, M. (2017). *Certified B Corps in Italy: Organization, motivations and change after the certification* (Master's thesis). Retrieved from https://www.societabenefit.net/client-assets/files/allegati/Certified-B-Corps-in-Italy.pdf

Seemla. (n.d.). *Legambiente Onlus*. https://www.seemla.eu/legambiente-onlus/

Segal, M. (2020, November 25). SASB merges with IIRC to form the Value Reporting Foundation. *ESG Today*. https://www.esgtoday.com/sasb-merges-with-iirc-to-form-the-value-reporting-foundation/

Shao, Z., & Dallmann, T. (2016). *European Stage V non-road emission standards* (Policy Update, November 2016). International Council on Clean Transportation. *Retrieved from* https://theicct.org/wp-content/uploads/2021/06/EU-Stage-V_policy_update_ICCT_nov2016.pdf

Sheffield, S. L. (2001). Streetwise: Rethinking motion picture arts education. *Journal of Film and Video*, 53(1), 20–24. https://www.jstor.org/stable/20688346

Shepeleva, I. (Director). (2024). *The White Ship / Белый пароход* [Film]. Mimesis.

Sibilia, S. (Director). (2024). *Around the Blue* [Film]. Groenlandia, Rai Cinema.

Sibilia, S. (Director). (2024). *Il diario di bordo* [Documentary film]. QMI, Groenlandia, Medusa Film.

Simonton, D. K. (2004). Film awards as indicators of cinematic creativity and achievement: A quantitative comparison of the Oscars and six alternatives. *Creativity Research Journal, 16*(2–3), 163–172. Retrieved from https://escholarship.org/content/qt6kp6d661/qt6kp6d661.pdf?t=lnqyoa

simpleQuE. (2024, November 22). *ISO Survey 2022 – ISO 9001 and ISO 14001 Certifications Around the World*. simpleQuE. https://www.simpleque.com/iso-survey-2022-iso-9001-and-iso-14001-certifications-around-the-world/

Sky Group. (2021, May 13). *Sky's 2030 net zero targets approved by the Science Based Targets initiative*. https://www.skygroup.sky/article/sky-s-2030-net-zero-targets-approved-by-the-science-based-targets-initiative

Smith, W. L. (2006). *Experiential tourism around the world and at home: Definitions and standards*. Prepared for the *International Journal of Services and Standards*, Emporia State University. Retrieved from https://www.academia.edu/15475878/Experiential_Tourism_around_the_World_and_at_Home_Definitions_and_Standards

Smoot, K. (2022). How effective are carbon offsets? Retrieved from https://impactful.ninja/how-effective-are-carbon-offsets/

Società Benefit. (n.d.). *Cosa sono le Società Benefit?* Retrieved June 29, 2024, from https://www.societabenefit.net/cosa-sono-le-societa-benefit/

Solari, I. (2021, May 6). *EcoMuvi: Il protocollo per un cinema sostenibile*. *Elle Magazine*, p. 46.

Soen, H.-C. (2014). *Comparative analysis of a network of regional film funds within a European context* [Master's thesis, University of Ghent]. Retrieved from https://libstore.ugent.be/fulltxt/RUG01/002/167/102/RUG01-002167102_2014_0001_AC.pdf

Sorlin, P. (1996). *Italian national cinema: 1896–1996*. Routledge.

Song, Z., & Wang, X. (2018). Study on the internationalization of standards bodies: Based on the strategy evolution of BSI. In *2018 9th International Conference on Information Technology in Medicine and Education (ITME)* (pp. 1037–1043). IEEE. https://doi.org/10.1109/ITME.2018.00229

Sony Corporation. (2001). *Responsibility report 2001*. Retrieved from https://www.responsibilityreports.com/HostedData/ResponsibilityReportArchive/s/NYSE_SNE_2001.pdf

Sony Corporation. (2002). *Sony Group CSR report 2002*. Sony Corporation. Retrieved from https://www.sony.com/en/SonyInfo/csr/library/reports/sis4ug000000jyws-att/e_2002_all.pdf

Sony Corporation. (2010). *Responsibility report 2010*. Retrieved from https://www.responsibilityreports.com/HostedData/ResponsibilityReportArchive/s/NYSE_SNE_2010.pdf

Sony Corporation. (2022). *Sony group sustainability report 2022*. Sony Corporation. Retrieved from https://www.sony.com/en/SonyInfo/csr/library/reports/SustainabilityReport2022_E.pdf

Sony Pictures Entertainment. (2022). *ISO 14001: Environmental Management System*. Sony Pictures A Greener World. https://www.sonypicturesgreenerworld.com/en/operations/iso-14001

Sørensen, I. E., & Noonan, C. (2022). Production, policy and power: The screen industry's response to the environmental crisis. *Media, Culture & Society*, *44*(1), 172–184. https://doi.org/10.1177/01634437211065697

SPD, DIE LINKE, & Bündnis 90/Die Grünen. (2016). *Koalitionsvereinbarung für die Legislaturperiode 2016–2021: Berlin gemeinsam gestalten. Solidarisch. Nachhaltig. Weltoffen.* https://www.berlin.de/rbmskzl/politik/koalitionsvertraege/koalitionsvertrag-2016-2021-543530.php

Spohr, S. J., Clark, B., Higginbotham, D., & Bakhru, K. (2019). *The guide to managing postproduction for film, TV and digital distribution* (3rd ed.). Routledge.

Starosielski, N., & Walker, J. (Eds.). (2016). *Sustainable media: Critical approaches to media and environment*. Routledge.

Statista. (2023). *Poland: Distribution of electricity production by source*. Retrieved from https://www.statista.com/statistics/1236356/poland-distribution-of-electricity-production-by-source/

Statista. (2024a). *Number of BREEAM certified assessments worldwide in 2023, by country*. Retrieved April 10, 2025, from https://www.statista.com/statistics/1462523/breeam-projects-worldwide-by-country/

Statista. (2024b). *Distribution of electricity production in Poland in 2022, by source*. Retrieved April 10, 2025, from https://www.statista.com/statistics/1236356/poland-distribution-of-electricity-production-by-source/

Statista. (2024c). *Number of operational coal power plants worldwide as of 2023, by country*. Retrieved November 21, 2024, from https://www.statista.com/statistics/859266/number-of-coal-power-plants-by-country/

Stevens, F. (Director). (2016). *Before the flood* [Film]. National Geographic Documentary Films.

Strauss, W. (2019). *The Creative Energy Project: Making the use of renewable energy affordable for UK-based sports production companies*. SVG Europe. Retrieved from

https://www.svgeurope.org/blog/headlines/the-creative-energy-project-making-the-use-of-renewable-energy-affordable-for-uk-based-sports-production-companies/

Stone, T. (Producer). (2015). *Patagonia: Earth's Secret Paradise* [TV series]. BBC Natural History Unit.

Svoboda, M. (2016). Cli-fi on the screen(s): Patterns in the representations of climate change in fictional films. *WIREs Climate Change, 7*(1), 43–64. https://doi.org/10.1002/wcc.381

Sung, K. (2023). Understanding upcycling and circular economy and their interrelationships through literature review for design education. In *Proceedings of the International Conference on Engineering Design (ICED23), Bordeaux, France, 24–28 July 2023*. Cambridge University Press. https://doi.org/10.1017/pds.2023.373

SustainAbility & United Nations Environment Programme. (2002). *Good news & bad: The media, corporate social responsibility and sustainable development*. SustainAbility. Retrieved from https://www.grainesdechangement.com/docs/medias/Good-News-and-Bad.pdf

Sustainable Production Alliance. (2021, August 16). Leading film schools form the Green Film School Alliance to create sustainable production practices. *Green Production Guide*. Retrieved December 12, 2024, from https://greenproductionguide.com/wp-content/uploads/2021/08/GFSA_PR_Final_081321.pdf

Sustainable Production Alliance. (2022). *Soundstage facility survey: Key takeaways*. Sustainable Production Alliance. Retrieved from https://greenproductionguide.com/wp-content/uploads/2022/08/SPA-Report_05.25_FINAL_with_infographic.pdf

Taberham, J. (2022). *Global environmental careers: The worldwide green jobs resource*. John Wiley & Sons.

Tajvidi, M. (2023). PFAS (per- and polyfluoroalkyl substance)-free molded fiber: The future is already here. *Biointerphases, 18*(4), 048501. https://doi.org/10.1116/6.0002756

Tamburini, E., Costa, S., Summa, D., Battistella, L., Fano, E. A., & Castaldelli, G. (2021). Plastic (PET) vs bioplastic (PLA) or refillable aluminium bottles – What is the most sustainable choice for drinking water? A life-cycle (LCA) analysis. *Environmental Research, 196*, 110974. https://doi.org/10.1016/j.envres.2021.110974

Tang, S., & Higgins, C. (2022). Do not forget the "how" along with the "what": Improving the transparency of sustainability reports. *California Management Review, 65*(1), 44–63. https://doi.org/10.1177/00081256221094876

Tasciotti, M. (2019). *Sardinia: A very animated region*. *Cinema & Video International*. Retrieved May 31, 2024, from https://www.cinemaevideo.it/sardinia-a-very-animated-region

Teichmann, R., & Murschetz, P. C. (2018). Exploring the ecosystem and principles of Austria's film subsidy schemes: Is Austria a "best-practice" model for a successful film policy? In P. C. Murschetz, R. Teichmann, & M. Karmasin (Eds.), *Handbook of State Aid for Film: Finance, Industries and Regulation* (pp. 251–272). Springer. https://doi.org/10.1007/978-3-319-71716-6

Teti, E., Tomasi, G., & Barchitta, F. (2019). Public tax credits and the film industry: An analysis of the Italian system. *Creative Industries Journal, 12*(1), 48–65. https://doi.org/10.1080/17510694.2018.1553479

Tempesta Film. (n.d.). *Fräulein*. Retrieved June 6, 2024, from https://www.tempestafilm.it/en/portfolio/cinema/fraulein/

Tempesta S.r.l. (2014). *Le meraviglie (The Wonders): Pressbook*. [Promotional brochure].

Tempesta S.r.l. (2018). *Happy as Lazzaro (Lazzaro Felice): Press kit*. Tempesta.

The Film and TV Charity. (2020). *The Whole Picture Programme: A pioneering, industry-led movement for better mental health in film, TV, and cinema*. The Film and TV Charity. Retrieved from https://wholepicturetoolkit.org.uk/?__hstc=50941110.91e196858132a5b064e6fa5571c15f74.1744617283643.1744617283643.1744617283643.1&__hssc=50941110.6.1744617283643&__hsfp=1657342513#

The Greenshot. (n.d.a). *Our story*. Retrieved from: https://www.thegreenshot.io/our-story/

The Greenshot. (n.d.b). *Budget*. Retrieved from: https://www.thegreenshot.io/production-suite/budget/

The Greenshot. (n.d.c). *Ooviiz*. Retrieved from: https://www.thegreenshot.io/production-suite/ooviiz/

The Greenshot. (n.d.d). *Green Pro*. Retrieved from: https://www.thegreenshot.io/production-suite/green-pro/

The Greenshot. (n.d.e). *Carbon Calculator*. Retrieved from: https://www.thegreenshot.io/integrations/?e-filter-1f75125-category_integration_en=carbon-calculator

The Greenshot. (n.d.f). *Green management*. Retrieved from: https://www.thegreenshot.io/services/green-management/

Theodoropoulou, S., Akgüç, M., & Wall, J. (2022). *Balancing objectives: Just transition in national recovery and resilience plans*. European Trade Union Institute. Working Paper 2022.11. Retrieved from https://www.etui.org/sites/default/files/2022-06/Balancing%20objectives-Just%20transition%20in%20national%20recovery%20and%20resilience%20plans-2022.pdf

The Shift Project. (2019). *Lean ICT: Towards Digital Sobriety*. The Shift Project. Retrieved from: https://theshiftproject.org/wp-content/uploads/2019/03/Lean-ICT-Report_The-Shift-Project_2019.pdf

The Walt Disney Company. (2005). *Enviroport: Disney's annual environmental report*. Retrieved from https://ddd.uab.cat/pub/infsos/47109/isDISNEYa2005ieng.pdf

Tidball, M., & Bunting, C. (2021). *Employing the change-makers: Full report on Doubling Disability in TV broadcasting*. Creative Diversity Network. Retrieved from https://creativediversitynetwork.com/wp-content/uploads/2021/06/Interim-Briefing-Report-on-Doubling-Disability.pdf

Third Derivative. (2023). *Announcing the Clean Mobile Power Cohort*. https://www.third-derivative.org/blog/announcing-the-clean-mobile-power-cohort

Toennesen, C., Hodgson, S., & Mimmack, F. (2013). *Mirrors or movers? Framing the debate about the impact of media content*. Media CSR Forum & Carnstone Partners LLP. Retrieved from https://responsiblemediaforum.org/downloadDocumentFile?document=142

Todorov, V., & Marinova, D. (2009). Models of sustainability. *18th World IMACS/MODSIM Congress, Cairns, Australia, 13-17 July 2009*. Retrieved from https://www.mssanz.org.au/modsim09/D2/todorov_D2a.pdf

Torchin, L. (2022, November 16). *Who cares? The media industry's culture of carelessness. Film Quarterly*. Retrieved from: https://filmquarterly.org/2022/11/16/who-cares-the-media-industrys-culture-of-carelessness/

Toti, A. (2014). *Why nonprofits are the future of indie film*. IndieWire. https://www.indiewire.com/features/craft/why-nonprofits-are-the-future-of-indie-film-68119/

TorinoFilmLab. (n.d.). *Green Film Lab*. Retrieved May 31, 2024, from https://www.torinofilmlab.it/labs/green-film-lab

Trabattoni, A. (2022). Italy's audiovisual sector grows significantly in the five years between 2017-2021. *Screen Daily*. https://www.screendaily.com/news/italys-audiovisual-sector-grows-significantly-in-the-five-years-between-2017-2021/5175487.article

Trentino Sviluppo. (n.d.). *Dove conviene investire*. Retrieved from: https://content.investintrentino.it/wp-dove-conviene-investire

Trentino Film Commission. (2017). *Disciplinare per una produzione cinematografica ecosostenibile: T-Green Film*. Trentino Film Commission. Retrieved from https://www.trentinofilmcommission.it/wp-content/uploads/2017/05/Disciplinare_T-green_ITA__DEF_web.pdf

Trentino Film Commission. (2023). *Criteri per la ripartizione del Fondo dedicato al settore cinematografico e audiovisivo previsto dall'art. 21 co. 4 della L.P. 3 ottobre 2007, n. 15*. Retrieved from https://www.trentinofilmcommission.it/wp-content/uploads/2023/06/Criteri-Fondo-Audiovisivo-TFC.pdf

Trento Film Festival. (n.d.). *Archive*. Retrieved May 31, 2024, from https://trentofestival.it/en/archive/

Truenorth. (2023, February 7). *Sustainable production: Implementing immediate change with Mari Jo Winkler*. Little Black Book. Retrieved from https://lbbonline.com/news/sustainable-production-implementing-immediate-change-with-mari-jo-winkler

TV Access Project. (2023). *Access coordinator job description* [Unpublished internal document].

TV Access Project. (2023). *One year on: The TV Access Project announces milestone achievements and crucial future workstreams* [Unpublished internal document]. Edinburgh TV Festival.

TV Access Project. (2023). *A consistent industry protocol for funding access & inclusion on productions: Summary* [Unpublished internal document].

TV Access Project. (2023). *Key access roles overview* [Unpublished internal document].

TV Access Project. (2023). *Roadmap to full inclusion by 2030* [Unpublished internal document].

Twohy, D. (Director). (1996). *The Arrival* [Film]. Orion Pictures.

Uhlin, G. (2016). Sustainable filmmaking: Understanding image as resource. *Teaching Media Quarterly, 4*(3), Article 4. Retrieved from https://pubs.lib.umn.edu/index.php/tmq/article/download/638/632/807

UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000379707

UNESCO. (2022). *RelShaping policies for creativity: Addressing culture as a global public good*. UNESCO Publishing. https://www.unesco.org/creativity/sites/default/files/medias/fichiers/2023/01/380474eng.pdf

United Nations. (1972). *Report on the United Nations Conference on the Human Environment: Stockholm, 5–16 June 1972*. New York: United Nations Publications. Retrieved from https://digitallibrary.un.org/record/523249?ln=en&v=pdf

United Nations. (1992). *United Nations Framework Convention on Climate Change*. Retrieved from https://unfccc.int/resource/docs/convkp/conveng.pdf

United Nations. (1992). *Agenda 21: Programme of Action for Sustainable Development*. United Nations Conference on Environment and Development, Rio de Janeiro, Brazil. Retrieved from https://digitallibrary.un.org/record/170126?ln=en

United Nations. (2006). *Convention on the Rights of Persons with Disabilities and Optional Protocol*. https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf

United Nations. (2015). *The Millennium Development Goals Report 2015*. United Nations Publications. Retrieved from https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf

United Nations Alliance of Civilizations (UNAOC). (n.d.). *Media CSR Forum*. Media and Information Literacy Clearinghouse. Retrieved from https://milunesco.unaoc.org/mil-organizations/media-csr-forum/

United Nations Department of Economic and Social Affairs. (2003). *International expert meeting on the 10-year framework of programmes for sustainable consumption and production: Marrakech process*. United Nations. Retrieved from https://www.un.org/esa/sustdev/sdissues/consumption/MarrakechReport.pdf

United Nations Environmental Programme. (2024). *Emissions Gap Report 2024*. Retrieved from: https://wedocs.unep.org/bitstream/handle/20.500.11822/46404/EGR2024.pdf?sequence=3&isAllowed=y

United Nations Framework Convention on Climate Change (UNFCCC). (n.d.a). *Fashion Industry Charter for Climate Action*. Retrieved from https://unfccc.int/climate-action/sectoral-engagement-for-climate-action/fashion-charter

United Nations Framework Convention on Climate Change (UNFCCC). (n.d.b). *Sports for Climate Action*. Retrieved from https://unfccc.int/climate-action/sectoral-engagement/sports-for-climate-action

United Nations General Assembly. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development* (A/RES/70/1). Retrieved from https://docs.un.org/en/A/RES/70/1

United Nations Global Compact. (2004). *The Global Compact Leaders Summit 2004: Final report*. United Nations. Retrieved from http://www.unglobalcompact.org/docs/news_events/8.1/summit_rep_fin.pdf

UNESCO (1977). *The Tbilisi Declaration*. Presented at the UNESCO Intergovernmental Conference on Environmental Education, Tbilisi, Georgia, USSR. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000032763

U.S. Energy Information Administration. (2024, June 18). When was the last refinery built in the United States? https://www.eia.gov/tools/faqs/faq.php?id=29&t=6

U.S. National Environmental Policy Act of 1969. (1969). *Public Law 91–190, as amended through P.L. 118–5, enacted June 3, 2023.* U.S. Government Publishing Office. Retrieved from https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf

U.S. Environmental Protection Agency (EPA). (n.d.). *EPA compliance with the National Environmental Policy Act (NEPA)*. Retrieved from https://www.epa.gov/nepa/epa-compliance-national-environmental-policy-act#:~:text=EPA%20is%20required%20to%20comply,of%20the%20Clean%20Water%20Act

Variety Staff. (2016, August 1). *10 entertainment leaders in corporate philanthropy*. *Variety*. https://variety.com/2016/biz/spotlight/10-entertainment-corporate-philanthropy-wme-caa-1201828893/

Vasileiadou, E., Heimeriks, G., & Petersen, A. C. (2011). Exploring the impact of the IPCC assessment reports on science. *Environmental Science & Policy, 14*(8), 1052–1061. https://doi.org/10.1016/j.envsci.2011.07.002

Vaughan, H. (2019). *Hollywood's dirtiest secret: The hidden environmental costs of the movies*. Columbia university press.

Vaughan, H. (2022). *Policy Approaches to Green Film Practices: Local Solutions for a Planetary Problem*. Palgrave Macmillan. https://doi.org/10.17863/CAM.88688

Venn, R., Perez, P., & Vandenbussche, V. (2022). Competencies of sustainability professionals: An empirical study on key competencies for sustainability. *Sustainability, 14*(9), 4916. https://doi.org/10.3390/su14094916

Verona Green Movie Land. (n.d.). *I Festival*. https://vgml.it/i-festival/

Verdi–Grüne–Vërc. (2020). *Umbau der IDM*. Retrieved May 31, 2024, from https://www.verdi.bz.it/umbau-der-idm/

Victory, J. (2014). *Green shoots: The role of the eco-manager in sustainable film production* [Master's thesis, Staffordshire University]. Retrieved from: https://www.screengreening.com/uploads/7/9/0/8/79084908/jonathan_thesis.pdf

Vienna Shorts. (2023, May 30). *Für die Ewigkeit: Austrian Eco-Label awarded*. https://www.viennashorts.com/en/news/fuer-die-ewigkeit-austrian-eco-label-awarded

Vigneau, L., Humphreys, M., & Moon, J. (2015). How do firms comply with international sustainability standards? Processes and consequences of adopting the Global Reporting Initiative. *Journal of Business Ethics, 131*(3), 469–486. https://doi.org/10.1007/s10551-014-2278-5

Villela, M., Bulgacov, S., & Morgan, G. (2021). B Corp certification and its impact on organizations over time. *Journal of Business Ethics, 170*(2), 343–357. https://doi.org/10.1007/s10551-019-04372-9

de Valck, M., & Damiens, A. (Eds.). (2023). *Rethinking film festivals in the pandemic era and after*. Palgrave Macmillan. https://doi.org/10.1007/978-3-031-14171-3

de Vinck, S., & Pauwels, C. (2017). Beyond borders in the digital era: Future-proofing European-level film-support schemes. In I. Bondebjerg, E. N. Redvall, & A. Higson (Eds.), *European cinema and television: Cultural policy and everyday life* (pp. 102–123). Palgrave Macmillan.

Virzì, P. (Director). (2014). *Il capitale umano* [Human Capital] [Film]. Indiana Production / Rai Cinema.

Vivarelli, N. (2017, August 7). Italy's Alice Rohrwacher shooting 'Lazzaro Felice,' Match Factory takes world sales (EXCLUSIVE). *Variety*. https://variety.com/2017/film/news/italy-alice-rohrwacher-lazzaro-felice-match-factory-world-sales-1202516900/

Vivarelli, N. (2022, September 27). *Giorgia Meloni's win stokes fears of far-right influence on Italy's media*. Variety. Retrieved from https://variety.com/2022/film/global/giorgia-meloni-silvio-berlusconi-italy-right-wing-media-1235383584/

Volker Fitzpatrick. (n.d.). *Eastbrook Studios film and TV production centre*. https://www.volkerfitzpatrick.co.uk/en/projects/eastbrook-studios-film-and-tv-production-centre

Vlaams Audiovisueel Fonds (VAF). (n.d.). *Duurzaamheid*. Retrieved from https://www.vaf.be/voor-de-sector/duurzaamheid

Waldfogel, J. (2017). *How digitization has created a golden age of music, movies, books, and television*. Journal of Economic Perspectives, 31(3), 195–214. https://doi.org/10.1257/jep.31.3.195

Wales, L. M. (2017). *The complete guide to film and digital production: The people and the process* (3rd ed.). Routledge

Waldrop, M. E., McCluskey, J. J., & Mittelhammer, R. C. (2017). Products with multiple certifications: Insights from the US wine market. *European Review of Agricultural Economics*, *44*(4), 658–682. https://doi.org/10.1093/erae/jbx010

Walker, K., & Wan, F. (2012). The harm of symbolic actions and greenwashing: Corporate actions and communications on environmental performance and their financial implications. *Journal of Business Ethics, 109*(2), 227–242. https://doi.org/10.1007/s10551-011-1122-4

Wang, H., Tong, L., Takeuchi, R., & George, G. (2016). Corporate social responsibility: An overview and new research directions. *Academy of Management Journal*, *59*(2), 534–544. https://doi.org/10.5465/amj.2016.5001

Warner Bros. (2016). *"Syriana" fights pollution with renewable energy*. Retrieved May 31, 2024, from https://www.warnerbros.com/news/press-releases/%E2%80%9Csyriana%E2%80%9D-fights-pollution-renewable-energy

Warner Bros. Studios Leavesden. (2024). *Sustainability*. https://www.wbsl.com/studios/about/sustainability/

Wasko, J. (2003). The political economy of film. In T. Miller & R. Stam (Eds.), *A companion to film theory* (pp. 221-233). Blackwell Publishing.

Watts, J. (2020, April 9). *Climate crisis: In coronavirus lockdown, nature bounces back – but for how long?* The Guardian. https://www.theguardian.com/world/2020/apr/09/climate-crisis-amid-coronavirus-lockdown-nature-bounces-back-but-for-how-long

Wheeler, B. (2005). Reality is what you can get away with: Constructed realities in *Brazil*. *Critical Survey, 17*(1), 3–5. DOI: 10.3167/001115705781002084

Whiteman, D. (2003). Reel impact: How nonprofits harness the power of documentary film. *Stanford Social Innovation Review*, 1(1), 60–63. https://ssir.org/articles/entry/reel_impact

Whetten, D. A. (1989). What constitutes a theoretical contribution? *The Academy of Management Review, 14*(4), 490-495. Retrieved from https://www.jstor.org/stable/258554

Wijninga, P., Oosterveld, W. T., Galdiga, J. H., & Marten, P. (2014). State and non-state actors: Beyond the dichotomy. In E. Chivot et al. (Eds.), *Strategic Monitor 2014: Four Strategic Challenges*. Hague Centre for Strategic Studies.

Wilkes, M., Carey, H., & Florisson, R. (2020). *The Looking Glass: Mental health in the UK film, TV and cinema industry*. The Work Foundation. Commissioned by the Film and TV Charity. Retrieved from *https://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/lums/work-foundation/TheLookingGlassFinalReport-13Feb19.pdf*

Willoquet-Maricondi, P. (Ed.). (2010). *Framing the world: Explorations in ecocriticism and film*. University of Virginia Press.

Windegger, F., Scuttari, A., Walder, M., Erschbamer, G., de Rachewiltz, M., Corradini, P., Weisel, Z. K., Habicher, D., Ghirardello, L., Wallnöfer, V., Garzon, G., & Moroder, P. (2022). *The Sustainable Tourism Observatory of South Tyrol (STOST): Annual progress report – 2022 edition*. Eurac Research. Retrieved May 31, 2024, from https://webassets.eurac.edu/31538/1678895987-stost-2022_full-report.pdf

Woelk, J. (2013). *South Tyrol is (not) Italy: A special case in a (de)federalizing system*. *L'Europe en formation, 369*(3), 126–137. https://doi.org/10.3917/eufor.369.0126

Wood, M. (2017). Italy. In M. Hjort & S. Nannicelli (Eds.), *A companion to motion pictures and public value* (pp. 302–318). Wiley-Blackwell.

World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press. https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

World Health Organization. (2024, October 1). *Electronic waste (e-waste)*. Retrieved April 10, 2025, from https://www.who.int/news-room/fact-sheets/detail/electronic-waste-(e-waste)

World Resources Institute. (n.d.). *NDC opportunities in the industry sector*. Retrieved January 1, 2025, from https://www.wri.org/ndcs/resources/industry-sector

Woszczyńska, A. (Director). (2021). *Silent Land* [Film]. Lava Films; Iota Production; Kino Świat.

Wu, P., Xia, B., Pienaar, J., & Zhao, X. (2014). The past, present and future of carbon labelling for construction materials: A review. *Building and Environment, 77*, 160–168. https://doi.org/10.1016/j.buildenv.2014.03.023

WWF-UK & SustainAbility. (2004). *Through the looking glass: Corporate responsibility in the media and entertainment sector*. SustainAbility. Retrieved from https://www.grainesdechangement.com/docs/medias/Through%20the%20Looking%20Glass.pdf

Yale, C. K. (2010). *Runaway film production: A critical history of Hollywood's outsourcing discourse* (Doctoral dissertation). University of Illinois at Urbana-Champaign. https://core.ac.uk/display/4826916

Yang, T. (2019). The evolution of Environmental Impact Assessment in the United States. *Hastings Law Journal, 70*(2), 525–576. Retrieved from https://www.hastingslawjournal.org/wp-content/uploads/70.2-Yang.pdf

Yin, F. (2023). Analysis of the role of costume design in shaping the characters of film and television. *Frontiers in Art Research, 5*(6), 58–63. https://doi.org/10.25236/FAR.2023.050611

Young, O. R. (2017). *Governing complex systems: Social capital for the Anthropocene*. The MIT Press.

ZEN2030. (2021). *Relazione d'impatto 2021*. https://www.zen2030.com/wp-content/uploads/2022/09/Relazione-dimpatto-2021.pdf

ZEN2030. (2022). *Relazione d'impatto 2022*. https://www.zen2030.com/wp-content/uploads/2023/09/Relazione-dimpatto-2022.pdf

ZEN2030. (2023, January 5). *V edizione a ridotto impatto e carbon neutral: Report finale Rome Video Game Lab 2022*. Retrieved from https://romevideogamelab.it/images/yootheme/news/Report_Finale_RVGL22_Zen2030.pdf

Zilahy, G. (2017). Environmental Management Systems: History and New Tendencies. In M. A. Abraham (Ed.), *Encyclopedia of Sustainable Technologies*. Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.10529-9

Zoppi, L. (Director). (2018). *Twin Flower (Fiore gemello)* [Film]. Palomar; Rai Cinema.

Zürcher, C. (Director). (2022). *Fräulein – Una fiaba d'inverno (Fräulein)* [Film]. Tempesta Film.