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The Environmental Footprint of Television and Radio in France: A Media Management and Public Policy Perspective

ABSTRACT

The article examines the environmental footprint of television and radio in France from media studies, regulatory, and managerial perspectives. The aim of the study was to identify which elements of media infrastructure and patterns of media use generate the greatest environmental burdens and to assess the role of public policy in this area. The research was based on a qualitative analysis of secondary data and document analysis. The empirical material included reports and institutional documents produced by Arcom, Arcep, and ADEME, supplemented by literature on the sustainability of the audiovisual sector, media governance, climate communication, and research on personalised television. The findings indicate that the greatest environmental impact is associated with end-user devices, particularly television sets, followed by transmission networks and data centres. The analysis also showed that higher image quality, the growth of streaming services, programmatic advertising, and service personalisation increase environmental pressure within the media sector. The findings suggest that reducing this impact requires a combination of technological, regulatory, and educational measures, including eco-design of devices and services, extending equipment lifecycles, improving energy efficiency, and raising user awareness. The analysis also revealed differences between audio and video consumption patterns and showed that terrestrial radio constitutes an important reference point for assessing the environmental efficiency of distribution models. The article argues

that the environmental dimension of television and radio should be treated as an important element of contemporary media policy.

SŁOWA KLUCZE: television, radio, environmental footprint, media governance, media management

STRESZCZENIE

Ślad środowiskowy telewizji i radia we Francji. Perspektywa zarządzania mediami i polityki publicznej

Artykuł analizuje ślad środowiskowy telewizji i radia we Francji, ujmując go jako zagadnienie z zakresu badań nad mediami, regulacji oraz zarządzania. Celem badania było zidentyfikowanie, które elementy infrastruktury oraz praktyk korzystania z mediów generują największe obciążenia dla środowiska, a także ocena roli polityki publicznej w tym obszarze. Badanie oparto na jakościowej analizie danych wtórnych oraz analizie dokumentów. Materiał empiryczny obejmował raporty i dokumenty instytucjonalne opracowane przez Arcom, Arcep oraz ADEME, uzupełnione literaturą dotyczącą zrównoważonego rozwoju sektora audiowizualnego, zarządzania mediami, komunikacji klimatycznej oraz badań nad telewizją spersonalizowaną. Wyniki wskazują, że największy wpływ na środowisko mają urządzenia końcowe użytkowników, zwłaszcza odbiorniki telewizyjne, następnie sieci transmisyjne oraz centra danych. Analiza wykazała również, że wyższa jakość obrazu, rozwój usług streamingowych, reklama programatyczna oraz personalizacja usług zwiększają presję środowiskową w sektorze mediów. Wnioski sugerują, że ograniczenie tego wpływu wymaga połączenia działań technologicznych, regulacyjnych i edukacyjnych, w tym ekoprojektowania urządzeń i usług, wydłużania cyklu życia sprzętu, poprawy efektywności energetycznej oraz wzmacniania świadomości użytkowników. Raport ujawnił także różnice między praktykami audio i wideo oraz wskazał, że radio naziemne stanowi istotny punkt odniesienia przy ocenie efektywności środowiskowej modeli dystrybucji. Artykuł argumentuje, że wymiar środowiskowy telewizji i radia powinien być traktowany jako ważny element współczesnej polityki medialnej.

SŁOWA KLUCZE: telewizja, radio, ślad środowiskowy, zarządzanie mediami, polityka medialna

Introduction

The digital transformation of the media has so far been described primarily through the lenses of platformisation, streaming, personalisation, and the attention economy. Much less attention has been paid to its environmental dimension. Meanwhile, contemporary television and radio rely on extensive technical infrastructure comprising end-user devices, transmission networks,

data centres, and digital services. Their operation is associated with energy consumption, resource extraction, and environmental emissions. The literature has increasingly emphasised that the audiovisual sector should be analysed not only in technological and economic terms but also from the perspective of sustainability (Lopera-Mármol & Jiménez-Morales, 2021; Lupu et al., 2023).

For the purposes of this article, television and radio are approached not only as broadcasting institutions and forms of communication but also as elements of a broader technical and service system. This perspective makes it possible to analyse not only content but also the material conditions of its production, distribution, and reception. The environmental footprint is understood here as the measurable impact of greenhouse gas emissions, energy consumption, and resource use throughout the media service lifecycle. This perspective brings media studies closer to questions of infrastructural, regulatory, and social responsibility within the media sector.

France constitutes a particularly interesting case study. In 2024, Arcom and Arcep, in cooperation with ADEME, published one of the most comprehensive European studies on the environmental impact of audio and audiovisual services. The study found that the practices under analysis accounted for 2.9% of electricity consumption in France, or approximately 13 TWh, and 0.9% of the national carbon footprint, amounting to 5.6 million tonnes of CO₂ equivalent (Arcom, Arcep, & ADEME, 2024, p. 34). The French case, therefore, provides not only quantitative data but also an important example of the institutionalisation of environmental concerns within media policy.

In the existing literature, analyses of the environmental footprint of media are still relatively rarely combined with a media studies perspective and with considerations of media governance and public policy. The research gap, therefore, concerns not only the scarcity of emissions data but also the ways in which such data are interpreted in relation to the functioning of the media sector. The aim of this article was to identify the main sources of the environmental footprint of television and radio in France and to indicate what conclusions can be drawn from this case for regulators and media managers.

The article's contribution is both analytical and interpretative. First, it organises the environmental footprint of television and radio into five interrelated layers: end-user devices, transmission networks, data centres, the service model, and audience practices. Second, it situates this issue within the field of media studies, showing that media should be understood not only as spaces of representation, but also as infrastructures with measurable environmental consequences. Third, the article translates the findings of the French case into a set of recommendations for regulators and managers in the media sector.

State of Research and Research Gap

For a long time, the relationship between media and the environment was approached primarily at the level of representation. Researchers focused on how the media depict the climate crisis, ecological lifestyles, or sustainable development. Much less attention was paid to the media sector itself as a material, technological, and infrastructural system. Yet it is precisely this dimension that has now become crucial. Contemporary television and radio function not only as communication institutions but also as technical systems with measurable environmental consequences. This perspective is increasingly visible in recent literature on the sustainability of the audiovisual sector (Lopera-Mármol & Jiménez-Morales, 2021; Lupu et al., 2023).

Two main strands can be identified in international research. The first concerns the sustainability of audiovisual production. Of particular importance is the concept of *green shooting*, which refers to practices aimed at reducing environmental harm at successive stages of the production process (Lopera-Mármol & Jiménez-Morales, 2021). The second strand focuses on the environmental costs of the distribution and consumption of digital content. From this perspective, media are understood as part of a complex system that includes end-user devices, transmission networks, data centres, and models of content access. These studies have shown that the environmental dimension of media cannot be reduced to production or streaming alone. It requires an analysis of the entire technological and institutional chain (Lupu et al., 2023; Arora & McClenaghan, 2024, pp. 873–878).

From the perspective of Polish media studies and research on France, the work of Katarzyna Gajlewicz-Korab is particularly useful. She has described transformations of the French media landscape in the context of the Fourth Industrial Revolution, as well as earlier changes in the French public media sector in the era of digitisation and TNT (Gajlewicz-Korab, 2014; 2020). Although her analyses do not directly address the environmental footprint, they provide a valuable framework for understanding the French systemic, technological, and institutional context. This is important for the present article, since the French case cannot be understood solely as a set of environmental data but also as the outcome of a specific regulatory culture and model of media development.

In Polish scholarship, research on climate communication has so far been more developed than research on the material environmental footprint of media. Katarzyna Molek-Kozakowska (2018, pp. 73–81) analysed the ways in which climate messages are constructed and the rhetoric of environmental discourse. Piotr Żuk and Kacper Szulecki (2020) examined the political and media frameworks of debates on energy and climate in Poland. Katarzyna Kopeć and Marta Materska-Samek (2023) described the development of green practices in Polish film production. These studies are important because they show how

environmental issues function as subjects of public debate and industry practice. However, they do not directly address the environmental cost of television and radio as media services that rely on a specific technical infrastructure.

Against this background, the French case is particularly significant. The study prepared by Arcom, Arcep, and ADEME is one of the most comprehensive European attempts to estimate the environmental impact of audio and audiovisual services. Its importance lies not only in measuring emissions and energy consumption but also in combining the environmental dimension with a regulatory perspective, that is, with questions concerning the responsibility of public institutions and market actors for shaping media infrastructure (Arcom, Arcep, & ADEME, 2024, p. 34).

A review of the literature, therefore, shows that the field remains fragmented. Research on climate communication, sustainability in audiovisual production, and the technological costs of streaming and digital infrastructure have largely developed in parallel. These perspectives are still too rarely combined within a single media studies framework. Even less frequently is the environmental footprint of media interpreted in terms of media governance and public policy. The research gap concerns not only the shortage of data but also the lack of a coherent conceptual framework that would enable understanding of television and radio simultaneously as communication institutions, technological systems, and objects of regulatory responsibility.

Conceptual Framework and Definitions

The starting point of this article is the assumption that the environmental issue does not constitute an external context for the functioning of the media but is part of the very logic of their contemporary operation. Media should therefore be understood not only as a communication system but also as a complex chain of infrastructure, technologies, and devices encompassing activities from production to content reception (Arora & McClenaghan, 2024, pp. 3–4). In this sense, the environment is understood here as the natural environment, that is, a system of resources, processes, and constraints in relation to which technological and communicative activity produces measurable effects (Environmental Protection Law, 2024, Art. 3, point 39). The environmental footprint, in turn, refers to the totality of impacts associated with the operation of media services, particularly greenhouse gas emissions, final energy consumption, and the use of mineral and metal resources. This understanding corresponds to the approach adopted in the French study conducted by Arcom, Arcep, and ADEME, which analysed audiovisual services not only in terms of emissions but also in terms of the entire life cycle of infrastructure and devices (Arcom, Arcep, & ADEME, 2024, p. 34; Lupu et al., 2023).

In this article, television and radio are not understood solely as forms of communication or broadcasting institutions. Instead, they are treated as elements of a broader technical and service system that includes end-user devices, transmission networks, data centres, access interfaces, and audience practices. This shift is of fundamental importance because it makes it possible to move from analysing media as a sphere of representation to analysing them as infrastructure. At the same time, it helps avoid a conceptual inaccuracy: radio is not a visual medium, but together with television, it now forms part of a common system of audio and audiovisual embedded in similar distribution and regulatory frameworks (Jędrzejewski, 2023, pp. 172–173; Chmielewska, 2025, pp. 68–69; Robak, 2025, pp. 90–95; Arcom, Arcep, & ADEME, 2024, p. 34).

At this point, reflection on personalised television proves particularly useful. Aleksandra Chmielewska (2025, pp. 68–69) argues that television is becoming a service environment rather than merely a linear transmission medium. This means that the analysis of television must encompass not only content but also service architecture, data logic, and the monetisation of reception. Marek Robak (2025, pp. 90–95), in turn, shows that television personalisation systems are based on profiling, segmentation, and distributed systems architecture. Consequently, contemporary television is increasingly dependent on continuous data processing, user identifiers, and computing infrastructure. From the perspective of this article, this is significant because it strengthens the argument that the environmental footprint of media results not only from devices and transmission networks, but also from the very logic of the service itself.

Another concept that helps structure the analysis is media governance. It does not refer solely to formal state regulation. Rather, it encompasses a broader network of relationships among public institutions, regulators, broadcasters, technology operators, platforms, and users. From this perspective, the environmental footprint of media is neither merely the result of consumer decisions nor solely an effect of technological progress. It is the outcome of a particular model of managing the media market, service architectures, and standards of responsibility. This perspective is especially useful when analysing the French case, because the environmental cost of television and radio has been explicitly incorporated into the activities of regulatory institutions there (Głowacki, 2015, pp. 26–27, 33–34).

The article also adopts two operational concepts: eco-design and digital sobriety. Eco-design refers to the design of devices and services in ways that reduce their resource and energy intensity throughout their life cycles. It includes, among other things, durability, reparability, compatibility with older devices, reducing data volumes, and rationalising service functions (European Commission, 2024, paras. 62–64; Arcep, Arcom, & ADEME, 2024, pp. 1–2). Digital sobriety does not mean giving up media altogether; rather, it means limiting those practices and settings that increase environmental costs without

generating a proportionate increase in user value. This includes, for example, extending device lifespans, reducing the number of devices, and adopting more moderate patterns of media use, especially for video consumption (ADEME & Arcep, 2023, pp. 1, 6).

For the purposes of this article, the environmental footprint of television and radio is therefore defined as the cumulative effect of five interdependent layers: end-user devices, transmission networks, data centres, the service model, and audience practices. This definition is operational in character. It makes it possible not only to describe the scale of environmental burdens but also to identify their sources and assign responsibility to particular actors within the media market.

Research Method

The study was qualitative in nature. It employed secondary data analysis and document analysis. The choice of these methods was driven by the nature of the research problem. The focus was not on audience declarations or the practices of a single organisation but on the institutional ways in which the environmental footprint of television and radio is described and measured. In a field that remains relatively underexplored, the analysis of documents and existing studies constitutes a useful research procedure because it makes it possible to capture the empirical, definitional, and regulatory dimensions of the problem simultaneously (Lupu et al., 2023; Arora & McClenaghan, 2024, pp. 873–878).

The French case was selected deliberately. The decisive factor in this choice was that French public institutions had prepared one of the most comprehensive European studies on the environmental impact of using audio and audiovisual services. The study conducted by Arcom, Arcep, and ADEME covered the main modes of television and radio reception, as well as all the key infrastructural layers, including end-user devices, transmission networks, and data centres. This made the French case particularly suitable for examining the institutionalisation of environmental concerns within media policy (Arcom, Arcep, & ADEME, 2024, p. 34).

The research material consisted primarily of the 2024 reports and summaries prepared by Arcom, Arcep, and ADEME, which served as the primary sources. Supplementary material included selected academic publications on the sustainability of the audiovisual sector, green innovation, media decarbonisation, climate communication, the French media system, and personalised television. This literature served a dual purpose. First, it made it possible to situate the French case within a broader research field. Second, it enabled the interpretation of the collected data from a media studies and regulatory perspective.

The research proceeded in three stages. In the first stage, key data concerning the scale of the environmental impact of the analysed services were identified. In the second stage, the material was organised according to five analytical layers: end-user devices, transmission networks, data centres, the service model, and audience practices. In the third stage, the findings were interpreted from a media studies perspective, with particular emphasis on the categories of media infrastructure, media governance, service personalisation, and public policy.

The unit of analysis was neither a single media institution nor a single technology. Rather, it was the environmental footprint of television and radio, understood as elements of a single technical service system. This approach moves beyond a narrow understanding of media as content or broadcasting institutions. It makes it possible to examine media as infrastructure whose operation has energy-related, material, and regulatory consequences.

The study also had several limitations. First, it relied on secondary data, that is, material already collected and processed by external institutions. Second, it focused on a single national case. Third, its aim was not to compare France with other countries, but rather to reconstruct and interpret one particularly well-documented case. These limitations should be taken into account when interpreting the findings. Nevertheless, this approach makes it possible to maintain a clear definition of the research object and to examine the relationship between environmental measurement and the regulatory mechanisms of the media sector in greater detail.

The French Case: Main Sources of the Environmental Footprint of Television and Radio

The French case is important not only because it provides quantitative data. Its significance lies primarily in the fact that it makes it possible to understand media as a material infrastructure. The study conducted by Arcom, Arcep, and ADEME covered the main modes of using audio and audiovisual services, including live and catch-up television, radio, video-on-demand, and audio streaming. The report found that the uses analysed accounted for 2.9% of electricity consumption in France, or approximately 13 TWh, and for 0.9% of the national carbon footprint. The total footprint was estimated at 5.6 million tonnes of CO₂ equivalent (Arcom, Arcep, & ADEME, 2024, p. 34). These figures alone show that television and radio can no longer be understood solely in terms of content circulation, but also as infrastructures that generate measurable environmental burdens.

The French analysis clearly differentiates between audio and video practices, which is highly significant for the present article. Video remains considerably

more environmentally burdensome, primarily due to the role of television sets, higher image quality, and greater data transfer intensity. Audio, including linear radio and audio streaming, operates under different infrastructural and reception patterns. This means that radio should not be treated merely as an extension to television, but as a distinct field of analysis that makes it possible to better capture the relationship between content distribution models and the scale of environmental impact.

Radio requires particular attention within the analysis. The French report does not treat it as a marginal supplement to television, but as a distinct category of audio practices. It distinguishes between terrestrial radio, internet radio, and audio streaming and podcasts, while also showing that live radio listening—via terrestrial broadcasting or the internet—accounts for more than half of total audio use, measured in terms of listening time. This means that radio remains a mass medium not only in cultural terms, but also in infrastructural terms. From a media studies perspective, this is important because it encourages us to see radio not as a declining medium, but as a durable element of the contemporary ecosystem of audio services, operating simultaneously through broadcast and networked models (Arcom, Arcep, & ADEME, 2024, pp. 60, 273).

The most significant source of environmental impact was end-user devices. The production and use of these devices account for the largest share of the overall environmental footprint. The report places particular emphasis on the high material and energy footprint of television sets. This does not mean that television content itself is “more emissive” in any symbolic sense. Rather, it indicates that the mode of its reception, particularly the use of large screens that remain permanently connected, is a key factor contributing to the environmental footprint of television services (Arcom, Arcep, & ADEME, 2024, p. 34).

The second layer consists of transmission networks. Their contribution was smaller than that of end-user devices, but it remained significant. From a media studies perspective, this has a double significance. First, it reveals that contemporary media consumption is inseparable from telecommunications infrastructure. Second, it reveals that the environmental cost of media also depends on the model of content distribution. Broadcast transmission places different environmental demands on infrastructure than services delivered through fixed and mobile networks, while IP-based services rely on continuous data transfer and may involve such processes as programmatic advertising. Particularly important here is the status of terrestrial radio as a relatively environmentally efficient medium at the distribution level. The report indicates that broadcast networks, including TNT, FM, and DAB+, account for only a small share of the overall network footprint, despite their considerable contribution to the time spent using audio and visual services. This means that, from an environmental perspective, the transition from broadcast to digital distribution does not necessarily produce equivalent benefits across all media services. The case of radio

shows that broadcast transmission can still remain an efficient solution, especially where mass, simultaneous access to audio content is concerned. In this sense, terrestrial radio serves in the French analysis as an important counterpoint to the more resource-intensive forms of video consumption and IP-based distribution (Arcom, Arcep, & ADEME, 2024, p. 185).

The third level consists of data centres. In the French study, their contribution was smaller than that of terminals and networks, but it was by no means marginal. Importantly, the report challenges the popular simplification that the environmental impact of digital media is mainly a matter of “the cloud.” Data centres are, of course, an important element of the infrastructure, but their significance needs to be considered in relation to the other layers of the system. This multi-layered approach is one of the most important analytical contributions of the French study.

Particularly significant, however, are the findings concerning the service model itself. The report showed that the greatest environmental burdens are associated with video consumption, especially linear television viewed on television sets. Advertising, particularly in the programmatic model, was also of considerable importance. The French analysis demonstrated that video viewing can substantially increase the carbon footprint because it adds additional network, computational, and measurement processes. From a media studies perspective, this is a highly important finding. It means that the environmental cost of media does not result solely from “content,” but also from the economic model of its monetisation and from the mechanisms of capturing audience attention.

This dimension is particularly well illustrated by the literature on television personalisation. Chmielewska (2025, pp. 68–69) argues that television is ceasing to be a predefined medium and becoming a dynamic, adaptive digital service. Robak (2025, pp. 90–95) shows, in turn, that personalisation relies on user profiling and distributed-systems architecture, which must process large volumes of data while maintaining high availability and scalability. This means that contemporary television is becoming increasingly dependent on data, user identifiers, and computational infrastructure. The environmental footprint of media should therefore be analysed not only at the level of hardware and transmission, but also at the level of service design and its underlying logic.

The difference between radio and audio streaming is also analytically significant. Whereas linear radio preserves the logic of simultaneous reception and relatively stable distribution infrastructure, audio streaming and podcasts fit into a model of personalised data services dependent on IP networks, mobile terminals, and individual patterns of use. Thus, within the audio sphere, too, a tension emerges between traditional broadcasting logic and platform-based service logic. For the purposes of this article, this means that radio should not be analysed collectively with other audio practices, but rather in terms of differences in

distribution modes and content-use models (Arcom, Arcep, & ADEME, 2024, p. 273; Robak, 2025, pp. 90–95).

The French report also has a prognostic dimension. Under the trend scenario, greenhouse gas emissions associated with audiovisual uses were expected to increase by approximately 30% by 2030. At the same time, it was indicated that a combination of eco-design and digital sobriety measures could reverse this trend and even lead to a significant reduction in environmental impact (Arcom, Arcep, & ADEME, 2024, p. 34). The French report also shows that radio does not play a marginal role in the study in relation to television, but rather constitutes an important comparative case that helps clarify the relationship between the content distribution model, the type of terminal, and the scale of environmental impact.

At this point, the French case goes beyond mere diagnosis. It becomes an example of the transition from measurement to policy.

Table 1. Main Layers of the Environmental Footprint of Television and Radio in France

Analytical Layer	Findings from the French Case	Media Studies Significance
End-user devices	Television sets and other user terminals accounted for the largest share of the environmental footprint.	Highlights the materiality of media reception and the importance of equipment life cycles.
Transmission networks	Networks constituted the second key layer of environmental impact.	Reveals the dependence of media on telecommunications infrastructure.
Data centres	Their share was lower than that of terminals and networks, but still remained significant.	Challenges the simplification that the environmental problem of digital media can be reduced solely to “the cloud.”
Service model	Streaming, high image quality, and programmatic advertising increased environmental pressure.	Links the environmental footprint to media economics and the logic of monetisation.
Audience practices	Quality, modes of use, and consumption intensity affected the scale of the environmental burden.	Indicates the importance of audience education and digital sobriety.

Source: Authors’ own elaboration based on Arcom, Arcep, and ADEME (2024, p. 34) and Robak (2025, pp. 90–95).

The table organises the empirical material into five interdependent layers and shows that the environmental footprint of television and radio is systemic. It is not the result of a single infrastructural element, but rather of the interconnection between end-user devices, transmission networks, data centres, service

logic, and audience practices. For this reason, analysing this phenomenon requires moving beyond a reductive understanding of media either as mere content transmission or solely in terms of their carbon footprint. The French case demonstrates that the environmental cost of media should be examined simultaneously from technological, economic, regulatory, and cultural perspectives.

Against this background, the relevant question concerns not only where the media's environmental footprint is generated, but also which actors should be responsible for reducing it and how.

Discussion and Implications for Media Policy

The French case leads to a fundamental conclusion. The environmental footprint of television and radio cannot be understood merely as a side effect of digitisation. It is layered and systemic. It emerges at the intersection of end-user devices, transmission networks, data centres, service models, and audience practices. This means that the environmental problem does not concern a single segment of the media market, but rather the entire technological system within which media currently operate. In this sense, the French study reinforces the call for a systemic approach found in the most recent literature (Lupu et al., 2023; Arora & McClenaghan, 2024, pp. 873–878).

From a media studies perspective, it is particularly significant that the French analysis shifts attention from content itself to the material conditions of its accessibility. Television and radio are not merely carriers of meaning. They are also technical systems whose operation generates measurable energy-related and environmental consequences. This shift is important not only cognitively but also conceptually. It also changes the way responsibility within the media sector is understood. Such responsibility no longer concerns only the quality of content, pluralism, or public service obligations, but also includes the material cost of content distribution and reception.

The French study also challenges several simplifications present in public debate. First, it does not support the claim that the main environmental problem of digital media can be reduced to data centres. Their share remains significant but is lower than that of terminals and networks. Second, the report shows that technological efficiency gains alone do not solve the problem. Higher image resolution, autoplay, intensive advertising, and the logic of permanent content availability can offset some of the benefits of efficiency improvements. Third, the study reveals that the media's monetisation model also has an environmental dimension. In this way, the ecological issue ceases to be a purely technical matter. It becomes an element of the analysis of media economics and platform logic.

At this point, the category of media governance becomes particularly important. The French experience shows that the environmental footprint of

media should not be left solely to voluntary industry declarations. It requires institutionalised measurement, comparable assessment methods, and mechanisms for coordination among the media market regulator, the telecommunications infrastructure regulator, and institutions responsible for environmental policy. It is precisely the cooperation between Arcom, Arcep, and ADEME that constitutes one of the most interesting aspects of the case under analysis. It indicates that media governance in the digital age should encompass not only pluralism, competition, and audience protection, but also the environmental conditions under which communication infrastructure operates (Głowacki, 2015, pp. 26–27, 33–34).

From the regulator's point of view, three lines of action appear justified. First, environmental reporting standards should be introduced for entities operating in the audiovisual sector, covering not only emissions, but also the energy intensity of services, device durability, and content distribution models. Second, co-regulatory instruments should be developed to promote the eco-design of devices and services, including measures to limit default high-resolution settings and autoplay functions. Third, information systems should be developed for users to help them recognise the environmental consequences of particular ways of using media.

From a managerial perspective, the following appear crucial: extending device lifecycles, limiting redundant technical features, reducing the data footprint of audiovisual services, designing personalisation architectures more responsibly, and revising monetisation models that increase environmental costs without a proportionate increase in user value.

In this context, Polish research on personalised television is also helpful. Chmielewska (2025, pp. 68–69) showed that audiences today co-create the value of media services through their choices, interactions, and real-time data. Robak (2025, pp. 90–95), in turn, emphasised the importance of profiling, identifiers, and distributed systems. This means that the environmental footprint of media is not solely the result of the energy consumed by receiving devices, but also the outcome of how contemporary media services are designed and scaled. As a result, the development of personalised television should be analysed alongside questions concerning the environmental cost of data processing, recommendations, and service architectures.

From a public policy perspective, the case of radio leads to one additional important conclusion. Digital transformation should not be automatically equated with the full migration of all audio services to the IP model. The French data suggest that, from an environmental perspective, it is necessary to distinguish between broadcast distribution and network-based distribution. This means that rational media and telecommunications policy should take into account not only innovation and user convenience but also the environmental efficiency of different models of content access. In relation to radio, this may imply the need to

protect and modernise less environmentally intensive forms of distribution rather than replacing them exclusively with network-based services.

The French case also has broader significance. It shows that media studies should now take the materiality of media more seriously. This means that traditional reflection on communication must be combined with the analysis of infrastructure, regulation, and environmental costs. Only such an approach makes it possible to adequately describe the contemporary media sector. Television and radio have not disappeared in the digital age. What has changed is their technical, economic, and environmental context.

It is also worth noting that media are not only the objects of environmental regulation. They remain discursive actors that co-create interpretative frameworks for ESG issues, increase the visibility of particular problems, and influence the direction of public debate. Gulczyński, Królikowska-Tomczak, and Kuźmich (2025, pp. 176–177) have shown that media participate in constructing the social meaning of ESG, shaping the public agenda, and legitimising specific narratives. In this sense, the environmental dimension of the functioning of television and radio should be analysed not only at the infrastructural level, but also at the communicative and normative levels.

Conclusions

The analysis conducted leads to the conclusion that the environmental footprint of television and radio should be treated as an important dimension of the contemporary functioning of the media. It is not a problem external to the media sector, nor merely a side effect of digitisation. On the contrary, it is an element of the operating logic of contemporary audio and audiovisual services, which rely on technical infrastructure, data transfer, end-user devices, and specific models of content access.

The French case has shown that the environmental impact of media is systemic. It arises at the intersection of end-user devices, transmission networks, data centres, service models, and audience practices. End-user devices, especially television sets, are of particular importance in this regard. This means that the analysis of television and radio can no longer be limited to content and broadcasting institutions. It must also include the material conditions of the production, distribution, and reception of media content.

The article has also demonstrated that the environmental cost of media is closely linked to the logic of market organisation. What matters are not only technological solutions, but also business models, service architectures, and the ways in which content is monetised. In this sense, the environmental footprint of television and radio should also be understood as a regulatory and managerial issue. It cannot be reduced to either user decisions or voluntary industry

declarations. It requires coherent measurement tools, greater transparency in media services, institutional coordination, and the incorporation of environmental criteria into media policy.

A particularly important finding is that radio does not merely serve as a supplementary category to television, but constitutes a distinct environmental case that enables a more accurate assessment of the significance of broadcast and network-based distribution models for audio content.

The contribution of the article, therefore, lies in combining a media studies perspective with infrastructural and regulatory analysis. The French case has been treated not only as a source of data, but also as an example of a new way of thinking about the responsibility of the media sector. This responsibility now encompasses not only the quality of content, pluralism, or the public interest, but also the material cost of operating media services.

At the same time, the study has its limitations. It was based on secondary data and focused on a single national case. It was not comparative in character. This opens up space for further analyses, especially studies concerning other media systems, international comparisons, and attempts to relate the French experience to the Polish media market. It also seems justified to conduct further research into the environmental dimensions of media platformisation, digital advertising, and audience practices associated with the growing intensity of content consumption.

Ultimately, it must be stated that the environmental footprint of television and radio is becoming an important subject of research in media studies. It requires a new language of description that combines reflection on media, technology, public policy, and sustainability. Only such an approach makes it possible to adequately understand the place of media within the social, technological, and ecological order of the twenty-first century.

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