

Environmental Media in the Era of Artificial Intelligence

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Abstract

This article addresses recent developments in environmental media, focusing on the growing role of artificial intelligence in advancing the production of environmental media content. The article highlights how environmental media benefits from AI tools and techniques in monitoring and analyzing data and crafting media messages in a more precise and interactive manner. It also emphasizes the potential AI offers to enhance the effectiveness of environmental media, including content personalization for audiences, increasing digital engagement, alongside the challenges associated with the technology. The article concludes that the integration of artificial intelligence and environmental media paves the way for smart environmental media capable of delivering impactful, effective media content that meets the demands of environmental sustainability and societal requirements.

Keywords: Environmental media ; Artificial Intelligence ; Media Content Production ; Environmental Sustainability.

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I- Introduction :

The contemporary world is witnessing an unprecedented technological boom, led by artificial intelligence as one of the outcomes of the digital revolution in the twenty-first century. Artificial intelligence has surpassed the boundaries of purely technical use to become an active element in various fields of life, including media practice, which itself is undergoing profound transformations in its structure, functions, and societal roles. Artificial intelligence has provided media professionals with new tools that enable them to collect and analyse information quickly and accurately, and to produce customized content that responds to the needs and interests of the audience. It has also enabled media institutions to enhance their efficiency in processing big data and interacting with the audience in smart and innovative ways. Amid this rapid technological transformation, the issue of environmental media emerges as one of the sensitive fields requiring attention, especially in media practice, due to its stakes related to environmental protection, achieving sustainable development, and spreading environmental awareness in societies. Today, environmental media is considered a strategic means to guide sound environmental behaviour and influence both decision-makers and the public alike, through providing awareness content that aligns with the environmental challenges facing the world. However, this type of media still lacks modern technologies and sufficient resources that enable it to perform its role more effectively and with greater impact.

From this standpoint, artificial intelligence presents itself as a qualitative opportunity to develop environmental media in terms of content production, analysis, and guidance. AI technologies such as algorithms, machine learning, image and video analysis, etc., can contribute to improving the quality and accuracy of environmental content, as well as expanding its reach and appeal to the audience. However, the use of these technologies also raises questions about ethical aspects, content credibility, and the excessive reliance on intelligent systems at the expense of the human dimension in the media message.

Based on this reality, the main issue of this research emerges in the following key question:

To what extent can artificial intelligence technologies contribute to the production of environmental media content?

This question includes the following sub-questions:

- What is meant by artificial intelligence?
- What is meant by environmental media?

- What is the nature of the relationship between artificial intelligence and environmental media in the context of media practice?
- How can artificial intelligence technologies contribute to the formulation and development of environmental media content?
- What are the main challenges facing the employment of artificial intelligence technologies in producing environmental media content, and what mechanisms can ensure the development, sustainability, and effectiveness of this employment?

I.1 Topic Importance:

The importance of this topic stems from the profound transformation that artificial intelligence has brought to the structure of media work. The use of intelligent technologies in content production, editing, and publishing has become an unavoidable reality in the current digital revolution. While this transformation has affected various fields of media, the need appears to be even more urgent in. The field of environmental media, which represents a key tool in addressing climate challenges and enhancing environmental awareness and sustainable development.

The importance of the research also lies in its pursuit to discover ways through which artificial intelligence technologies can contribute to enriching environmental media with advanced analytical and creative tools, enabling it to produce content that is deeper, more attractive, and more effective in influencing public opinion. Since it addresses current trends in the media landscape, the world today is witnessing significant progress in the use of artificial intelligence technologies and the resulting radical changes in methods of producing and disseminating media content. Additionally, environmental issues have become a global priority due to the challenges they pose to individuals' daily lives and the future of coming generations.

Environmental media emerges here as a fundamental means to spread environmental awareness and encourage responsible behaviours towards the environment we live in. However, its success is linked to its ability to utilize modern technological innovations, foremost among them artificial intelligence in all its applications, which opens new horizons for developing environmental media content and increasing its interaction. This enhances its role in building sustainable environ

mental awareness that contributes to protecting the planet we live on and improving the quality of our lives.

I.2. Defining the Basic Concepts of the Study:

Definition of Artificial Intelligence Concept:

-Definition of Artificial Intelligence Terminologically:

Artificial intelligence is defined as a broad framework for employing machine learning and data analysis with the aim of developing the machine's capabilities to respond and adapt in various contexts (Abdellah Salwa, 2021, p. 34).

It is also defined as a branch of computer science concerned with designing systems capable of performing tasks that require human intelligence, such as learning, thinking, and planning. (Russell, S.J. & Norvig, P. ,2021, p.4)

-Operational Definition of Artificial Intelligence

In this context, it refers to all software that employs machine learning techniques in the production and direction of environmental media content and decision-making.

Definition of Environmental Media:

-Definition of Environmental Media Terminologically:

_ Mohamed Abdel Hamid defines it as: "A type of specialized media branch aimed at spreading environmental knowledge and raising awareness about the problems threatening nature in order to motivate individuals to take positive stances towards the environment" (Abdelhamid, Mohamed, 2005, p. 145)

Environmental media is also a tool that works to clarify environmental concepts by surrounding the receiving and targeted audience of the environmental media message with all the facts and objective information, contributing to the establishment of sustainable environmental development and enlightening the targeted individuals with sound opinions on the raised and presented environmental topics and issues. (Nacerddine ,Abdelkader Osman, 2013, p. 101)

-Defining the Concept of Environmental Media Procedurally

In this intervention, it refers to the various media messages produced and directed by employing artificial intelligence techniques with the aim of raising awareness about environmental issues and encouraging the adoption of sustainable behaviours.

The Importance of Environmental Media in Raising Awareness and Protecting the Environment:

Environmental media is considered a fundamental tool in spreading environmental knowledge and developing community awareness of various environmental issues. It plays a key role in guiding individual and collective behaviours towards environmentally friendly practices. With the increasing environmental challenges worldwide, such as climate change, water and air pollution, and loss of biodiversity, environmental media has become an indispensable element in linking information with community awareness and individuals' daily practices. Its role is not limited to conveying

environmental news or facts only, but extends to include motivating Community participation and support for public policies aimed at protecting natural resources, and promoting a culture of sustainability among various age and social groups.

The importance of environmental media is most evident in its influence on shaping public opinion and guiding environmental policies. Various media outlets, whether visual, auditory, or digital, can contribute to creating public pressure that pushes governments and institutions to take effective environmental actions. Environmental media is also considered an important educational tool, as it enables new generations to understand contemporary environmental challenges and instills in them a sense of responsibility towards natural resources. Studies have indicated that effective environmental media contributes to modifying individual and collective behaviours and encourages the adoption of environmentally friendly practices such as recycling, reducing energy consumption, and participating in green initiatives (Al-cheikh, 2018, pp. 45-52).

With technological advancements and the integration of artificial intelligence in the field of media, it has become possible to produce more accurate and effective content. Data analysis and artificial intelligence can be used to predict environmental risks, monitor pollution levels, and disseminate reliable information to the public. This enhances the ability of environmental media to achieve its awareness and educational goals and contributes to building an environmentally conscious society capable of making informed decisions to preserve the environment. Thus, environmental media emerges as a fundamental pillar of any successful environmental effort; it is not limited to conveying information but also contributes to forming a sustainable culture that combines science and daily practice, forming a solid foundation for a new generation of responsible citizens capable of protecting the environment and preserving natural resources.

The Role of Artificial Intelligence in Enhancing the Effectiveness of Environmental Media:

Today, artificial intelligence has become one of the tools that can be employed in the field of environmental media to enhance its ability to convey information more accurately and effectively. It enables media entities to analyse vast amounts of environmental data at high speed, such as pollution levels, climate changes, and natural resource consumption rates, allowing them to provide reliable and updated content to the public. Additionally, artificial intelligence allows the creation of digital platforms that interact with users personally by offering customized health and

medical guidance for each age group and geographic area, ensuring that appropriate information reaches the targeted audience at the right time, thereby raising their environmental and health awareness.

In addition, artificial intelligence techniques, such as image and video analysis and environmental pattern recognition, can be used to monitor nature accurately and detect pollution or environmental degradation. This enables the media to quickly convey this information to the public. AI can also be relied upon to design interactive media campaigns on social media, so that environmental messages reach the largest number of people while directly measuring the impact of these campaigns on individuals' behaviour. Perhaps the most important advantage that AI provides to environmental media is the ability to predict future environmental risks, such as heatwaves, floods, desertification, etc., allowing governments to take measures Early prevention. This creates a stronger role for environmental media as a strategic tool for planning and awareness, making artificial intelligence a true partner in building an environmentally conscious and sustainable society.

By relying on these technologies, environmental media can achieve its educational and awareness goals more accurately and effectively, creating an integrated information environment that supports individual and collective decisions toward protecting natural resources, thereby promoting a culture of sustainability. From this, it becomes clear that employing artificial intelligence as a fundamental element makes environmental media smarter and more interactive, increasing its impact on changing the environmental behaviours of individuals and society as a whole.

-The Role of Artificial Intelligence in the Production of Environmental Media Content

Artificial intelligence has brought about a radical transformation in the methods of producing media content, such that journalists no longer rely on traditional means of gathering and processing information. Instead, they now depend on advanced technologies such as machine learning algorithms, natural language processing, and others, which enable them to access multiple sources and analyse them with high precision. Regarding environmental media, these technologies provide journalists with the ability to handle environmental data produced by satellites and research centers , transforming it into understandable and valuable media content for the audience.

Artificial intelligence enables environmental media to provide real-time reports on climate changes, pollution levels in cities, or even potential natural disasters, thanks to prediction systems based on the analysis of

continuously streaming data. This type of content not only raises public awareness but also enhances the audience's trust in environmental media as a source of accurate scientific information. (Abdellah ,Salwa ,2021, p 87)

In addition, artificial intelligence has helped develop environmental imaging technologies by improving the quality of aerial photos and videos captured of various environmental conditions. Intelligent programs are now capable of detecting fine details such as oil spills in seas or the shrinking of green spaces and forests.

These capabilities enhance the ability of media institutions to produce impactful visual content that emotionally touches the recipient and motivates them to adopt positive environmental behaviours. Additionally, AI-based systems have helped digital platforms customize environmental messages to align with audience interests.

Artificial intelligence is considered one of the most prominent technological tools capable of bringing about the desired change. (Abderezak Azza, 2024, p. 35)

The Relationship Between Artificial Intelligence and Environmental Media:

The presence of artificial intelligence in the media field is no longer a technical option that can be dispensed with; rather, it has become an inevitable necessity imposed by the rapid digital transformations experienced by the contemporary world. It is a fundamental component in the structure of modern communication, contributing to reshaping the methods of producing and disseminating media messages, especially those related to environmental issues with human and societal dimensions. The employment of artificial intelligence technologies such as big data analysis, machine learning, and natural language processing has provided environmental media with unprecedented capabilities in monitoring, interpretation, prediction, and crafting awareness messages with greater accuracy and effectiveness (Al-Khalidi Mohamed, 2012, p. 45).

On the other hand, environmental media has contributed to adding a value-based and human dimension to artificial intelligence applications by directing them towards serving environmental and developmental issues and enhancing collective awareness of the importance of protecting ecosystems and addressing the challenges of climate change. Additionally, AI-supported media content has become more capable of analysing audience trends and environmental behaviours and redirecting media discourse to align with their needs and positions. Environmental media and digital transformation in contemporary environmental awareness.

The relationship between artificial intelligence and environmental media is one of integration and interaction, where AI provides environmental media with tools for analysis, processing, and prediction, while environmental media adds an ethical and human dimension, guiding its use towards serving society and protecting the environment. Through this interactive integration, AI can play an active role in improving the effectiveness of environmental media, not only by analysing data and delivering information accurately and swiftly but also by enabling media to direct environmental messages in accordance with the ethical and human values established by traditional media. As a result, the concept of smart environmental media emerges, combining the power of technical analysis with social commitment, becoming a strategic tool to enhance environmental awareness and sustainable decision-making.

Legal Dimensions of Using Artificial Intelligence in Environmental Media:

The legal dimension plays a fundamental role in regulating the use of artificial intelligence in environmental media, as it sets the legal boundaries for media practices, defines responsibilities regarding data collection and analysis, and ensures the credibility of published environmental information, thereby protecting the rights of individuals and institutions. With the tremendous development of artificial intelligence and its applications in large-scale processing of environmental data and automatic production of media content, adherence to legal texts and legislative frameworks becomes essential to ensure that this use complies with applicable legal standards and serves the public interest. (Al-Abed, Sami, 2023, p. 114)

This legal dimension includes the protection of sensitive environmental data and individuals' digital privacy, in addition to defining the legal responsibilities of media institutions when publishing or analysing information using intelligent systems. Studies indicate that the absence of clear laws or weak enforcement may lead to professional errors or the dissemination of misleading information, which reduces the credibility of environmental media and weakens public trust in the information provided (Benaissa, Leila, 2022, p. 89).

Based on this, it becomes clear that the success of environmental media in the era of artificial intelligence does not depend solely on the availability of technology but is linked to the existence of a legal framework that ensures institutions' compliance with laws, data protection, and accountability regulation, thereby enhancing integrity and credibility in the production and distribution of environmental information.

Challenges Facing the Employment of Artificial Intelligence in Environmental Media:

Despite the advantages that artificial intelligence offers to environmental media, in terms of accelerating the processing of environmental data and producing attractive and effective content, there are challenges facing this, the most important of which is the clear shortage in digital infrastructure within many media institutions.

This hinders the optimal utilization of advanced algorithms and intelligent analysis tools. Additionally, the limited availability of qualified human competencies, capable of combining technical knowledge of artificial intelligence with expertise in the environmental field, represents a significant problem and obstacle that prevents the production of accurate media messages with a strategic dimension. Added to this is the issue of funding, as the cost of investing in these technologies is high, which leads media institutions to be cautious about incorporating them into their editorial policies. Moreover, there are ethical challenges related to data credibility, as reliance on artificial intelligence systems may result in the dissemination of inaccurate or misleading information if the input data is incomplete or biased, posing a threat to the principle of transparency in addressing environmental issues.

In addition, media institutions face a cognitive challenge, as producing intelligent environmental media content requires integrating accurate environmental knowledge with the ability to handle complex artificial intelligence tools. The absence of this specialized training may lead to superficial media messages that focus solely on the technical aspect, without providing deep and comprehensive analysis. Technical challenges do not stop at the level of hardware and software but extend to the difficulty of maintaining and periodically updating intelligent systems, which may result in processing errors and consequently negatively affect content quality.

On the other hand, ethical and administrative dimensions pose an additional challenge, as clear regulations for the use of artificial intelligence must be established to ensure that data is not manipulated or exploited to spread misleading messages. Protecting the privacy of individuals and institutions when collecting environmental data is also a priority that must be considered to avoid any legal or social harm. At the same time, the absence of clear legislation regulating the use of artificial intelligence in environmental media compels institutions to adopt temporary internal policies, which may not be effective enough to reduce risks associated with bias or misuse. However, despite these challenges, artificial intelligence remains an important tool if invested in an organized and systematic

manner, by enhancing the digital environment, establishing specialized frameworks, and setting clear ethical guidelines that ensure data is collected and processed accurately and objectively. Maintains the credibility of environmental media, thereby supporting effectiveness in raising public awareness and guiding it towards sustainable behaviours, and enhances its role in protecting the environment and ensuring the sustainability of resources for future generations. (Abdelkrim Mohamed, 2022, p. 104)

II- Conclusion:

In light of what has been presented, it is clear that environmental media has become a fundamental element in enhancing community health awareness regarding various environmental issues, including pollution in all its forms, natural resource management, and more. Environmental media has proven its position as an effective tool for social and behavioural change through its ability to guide public opinion and influence individual and institutional decisions related to the environment. It has surpassed its traditional role as a news medium to become an active tool in building collective environmental awareness, shifting from a news role to a more impactful educational role in society. Artificial intelligence has significantly contributed to the development of environmental media by enabling the processing and analysis of large-scale environmental data, detecting emerging trends, and providing media content based on intelligent interaction with the audience. This integration between media and artificial intelligence has opened new opportunities to improve the quality of environmental content and increase the effectiveness of awareness messages, thereby enhancing media's ability to influence environmental policies and decision-making. However, this development is not without challenges, as issues related to the ethics of use, ensuring credibility and neutrality of AI systems, and protecting sensitive environmental data remain fundamental challenges hindering the proper application of this technology.

Accordingly, it can be said that success in the era of artificial intelligence depends on achieving a balance between technological innovation and adherence to professional and human values. The future of environmental media will not be realized without the integration of knowledge, technology, and social awareness, ensuring that environmental media remains an effective force in protecting the environment and building sustainable communities aware of current and future environmental challenges.

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