

Forms and Tools of Online Environmental Communication and Their Role in Promoting Environmental Awareness

اشكال وادوات الاعلام البيئي الالكتروني ودورها في نشر الوعي البيئي

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Abstract:

The emergence of digital environments has profoundly transformed media functions, particularly in raising environmental awareness. Through blogs, social networks, and specialized websites, electronic media seeks to inform audiences, mobilize opinion, and foster supportive attitudes toward environmental issues.

This paper examines the role of electronic environmental media as a form of specialized communication, emphasizing its contribution to education and advocacy in the digital sphere. It explores how its tools and formats help disseminate knowledge, stimulate engagement, and shape public awareness of ecological challenges.

Findings indicate that electronic environmental media plays a vital role in spreading information and reinforcing environmental awareness by offering news, updates, and analyses. However, its influence remains constrained by the absence of coherent communication strategies and a reliance on event-driven coverage, particularly during crises. A shortage of trained environmental media professionals further limits its effectiveness.

The study concludes with a call for stronger integration between traditional and electronic media to foster lasting shifts in individual awareness and behavior toward the environment.

Key-words: Environmental Media, Electronic Media, Digital Environmental Media, Environmental Awareness

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ملخص:

لقد أحدثت البيئات الرقمية تحوُّلاً عميقاً في وظائف الإعلام، ولا سيما في مجال تعزيز الوعي البيئي. فمن خلال المدوّنات، وشبكات التواصل الاجتماعي، والمواقع الإلكترونية المتخصصة، يسعى الإعلام الإلكتروني إلى إبلاغ الجماهير، وحشد الرأي العام، وتعزيز المواقف الداعمة للقضايا البيئية. تتناول هذه الورقة البحثية دور الإعلام البيئي الإلكتروني بوصفه شكلاً من أشكال الاتصال المتخصص، مع التركيز على إسهامه في التعليم والدعوة داخل الفضاء الرقمي. كما تستكشف كيف تساهم أدواته وصيغ عرضه في نشر المعرفة، وتحفيز التفاعل، وتشكيل وعي الجمهور بالتحديات البيئية. تشير النتائج إلى أن الإعلام البيئي الإلكتروني يلعب دوراً حيوياً في نشر المعلومات وتعزيز الوعي البيئي من خلال تقديم الأخبار والتحديثات والتحليلات. غير أن تأثيره يبقى محدوداً بفعل غياب استراتيجيات اتصال واضحة، واعتماده الكبير على التغطيات الظرفية المرتبطة بالأحداث، خاصة أثناء الأزمات. كما يحدّ من فعاليته النقص في الكوادر الإعلامية المتخصصة في الشأن البيئي. وتخلص الدراسة إلى الدعوة لتعزيز التكامل بين الإعلام التقليدي والإعلام الإلكتروني من أجل إحداث تحولات مستدامة في وعي الأفراد وسلوكياتهم تجاه البيئة.

الكلمات المفتاحية: الإعلام البيئي، الإعلام الإلكتروني، الإعلام البيئي الرقمي، الوعي البيئي.

Introduction:

As a result of the Industrial Revolution, humankind caused significant disruption to the environment, its systems, and its elements, leading to their degradation. Numerous problems surfaced, which prompted experts to focus greater attention on environmental issues and to attempt to confront these escalating damages through international conferences, symposia, meetings, and the enactment of laws and regulations. With the increasing emergence of environmental problems, their expansion, and their impact on ecosystems and living organisms including humans' societies have become in greater need of intensifying efforts to confront these challenges. In this context, the contribution and role of the media in general, and environmental media in particular, become evident in raising awareness of these

problems and emphasizing the importance of preserving the environment, ecosystems, and their components.

These media efforts can foster environmental awareness by placing greater emphasis on environmental issues, thereby educating individuals about the importance of adopting conscious behaviors that help reduce and mitigate environmental problems particularly pollution, waste management, rational water use, and the promotion of renewable energy sources. The emergence of what is termed *environmental media* as a distinct field of media, and as a form of specialized journalism, came in response to the growing threat of environmental problems, particularly those crossing borders and continents, such as global warming, ozone depletion, and ocean pollution. Environmental media has since evolved in definition, usage, and function. Once limited to reporting environmental news, it now encompasses policies, strategies, and diverse functions, serving as a tool to clarify environmental concepts by providing audiences with comprehensive facts and information, thereby contributing to environmental awareness.

Environmental awareness is considered a cornerstone of this type of media. Creating and disseminating environmental awareness through various media channels has become an urgent necessity, given that environmental media is a key instrument in spreading and generalizing environmental culture, awareness, and sustainable development. To elevate levels of environmental awareness, it is necessary to mobilize suitable media outlets print, visual, and audio; traditional as well as modern to effect the desired change in society. This involves disseminating information, opinions, and facts about the environment and its problems in order to influence individuals toward adopting lasting behaviors that preserve the environment. This is especially critical since environmental issues affect all countries

both developed and developing as well as diverse communities in urban and rural settings, on land, at sea, and even in the air.

Mass communication media gained tremendous importance in the twentieth century as essential channels for information, news, and entertainment. The second half of the century, however, witnessed the emergence of what is now called the digital system, representing the fifth communication revolution. Today, the world is undergoing profound transformations, particularly in communication and media, driven by the massive evolution of media technologies. This has given rise to new media phenomena that established themselves and attracted a wide and engaged audience.

These technological developments in communication and media produced a multitude of terminologies, such as new media, alternative media, digital media, interactive media, social media, social networking sites, citizen journalism, and electronic media. Electronic media, in particular, results from the use of digital technologies and is characterized by interactivity, immediacy, and diversity of forms and platforms (text, audio, image). Among the domains that have flourished in this virtual world are those related to environmental awareness, facilitated through websites, applications, and tools such as blogs, electronic portals, and social networking platforms. These outlets have assumed the role of educating digital audiences by publishing information and news about environmental issues, adopting communicative activities aimed at promoting environmental preservation as a shared global culture for safeguarding the planet.

There is no doubt that Arab countries, including Algeria, are not immune to environmental damage and violations. Consequently, various efforts have been mobilized to confront these problems, foremost among them the use of different media outlets, including electronic media applications and tools.

Building on the above, this study addresses a highly significant topic: the role and contribution of electronic media specialized in environmental affairs in disseminating environmental awareness and fostering a culture of environmental protection against various damages and violations. It explores how such media outputs raise audience awareness and influence behavior toward the environment, particularly since environmental media in general and electronic environmental media in particular remain emergent and relatively underdeveloped in Arab and Algerian media landscapes. Accordingly, the study problem was formulated to investigate the most significant forms and tools of electronic environmental media and their role in disseminating environmental awareness, while also identifying selected models dedicated to environmental issues through the Internet. Statistics confirm the existence of a vast base of Internet users who can be engaged in environmental issues. From this arises the central question: **What is the role and contribution of electronic environmental media, through its various forms and tools, in disseminating environmental awareness?**

To answer this main question, the following sub-questions were formulated:

- What is the concept of environmental awareness, its drivers, and components?
- What is the concept of electronic environmental media, and what are its importance and objectives?
- What are the forms of environmental media provided by cyberspace?
- What role does electronic environmental media play, through its forms and tools, in introducing environmental issues and contributing to environmental awareness?
- What are the main challenges facing electronic environmental media, in all its forms, in disseminating environmental awareness?

- What are the key recommendations and suggestions to activate the role of electronic environmental media?

1. The Importance of the Study

New media has proven its influential role in shaping social awareness in general and environmental awareness in particular. It is also an essential means of social communication and a tool for positive change through environmental awareness campaigns, aiming to spread environmental culture not only as a theoretical framework but also as a practical reality. In this context, environmental media represents a significant channel and an effective tool for achieving environmental awareness, through its various functions starting with awareness-raising and leading to the adoption of positive environmental behavior, which contributes to active environmental citizenship.

The importance of this study lies in its focus on digital electronic media as a specialized field, using the Internet as a new platform for disseminating and exchanging environmental news and information, and in revealing its role in promoting environmental awareness as both an idea and a practice.

2. Objectives of the Study

The study seeks to achieve the following scientific objectives:

- To highlight electronic environmental media as a new concept within the field of specialized media.
- To identify the types, forms, and tools of environmental media available on the Internet.
- To explore the role of electronic environmental media in raising environmental awareness amid the technological revolution, as audiences increasingly rely on this type of media to stay informed about environmental developments.

- To clarify the main challenges that electronic environmental media faces in delivering its messages aimed at enhancing public awareness of environmental issues.

3. Type and Methodology of the Study

Every study requires an appropriate methodology, and the nature of the subject defines the course of research. Similarly, the type of study determines both the methodology and the appropriate tools for data collection. This research belongs to the category of **descriptive** studies.

In this context, description focuses on understanding the phenomenon as it exists in reality, by diagnosing and analyzing it through accurate and comprehensive description. Such an approach uncovers all its dimensions, identifies the relationships between them, and provides a precise definition, allowing for a better understanding of the current state of the phenomenon and the ability to predict its future development. Since the field of electronic environmental media is itself a phenomenon that demands study, description, and analysis, the descriptive-analytical method is the most appropriate approach for addressing this topic.

➤ Conceptual and Theoretical Framework of the Study

1. Environmental Awareness (Concept and Context of Emergence and Development):

1.1 The Concept of Environmental Awareness

Environmental awareness refers to the individual's recognition of the requirements of the environment through knowledge of its components, the identification of environmental problems, and the ability to engage with them effectively. "William Illtson" defines it as "the individual's recognition of his role in addressing environmental issues.". (Rosenthal & Boden, 1992, p.586) It has also been described as "a systematic process by which humans confront environmental

challenges through their cognitive and perceptual capacities.” (Abdel Latif, 2007, p. 101)

Iyad Shawqi Al-Banna further defines environmental awareness as “the individual’s comprehension of environmental knowledge, which shapes his or her relationship with the surrounding ecosystem, enabling the protection of the environment, self-protection against related risks, and safeguarding of future generations.” (Al-Banna, 2011, P.23) From this perspective, environmental awareness encompasses not only knowledge but also a sense of responsibility for contributing solutions to environmental problems, alongside the rational use and conservation of natural resources.

1.2 Factors Behind the Emergence of Environmental Awareness

The rise of environmental awareness is driven by multiple factors. Civil associations and NGOs play a key role in mobilizing communities, advocating for sustainability, and pressuring decision-makers. Scientific communities contribute by providing research, evidence, and innovative solutions that highlight environmental challenges and their impacts. At the same time, shifts in public opinion and the growing prioritization of environmental issues have amplified demand for policies and practices that protect ecosystems and promote sustainable development.

1.3 Types of Environmental Awareness

Environmental awareness encompasses two complementary forms:

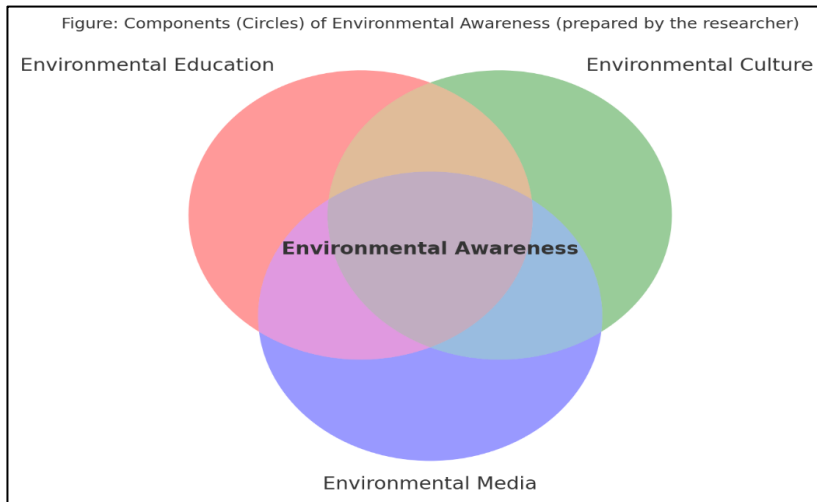
- a) **Preventive Awareness:** This type seeks to prevent problems from occurring in the first place.
- b) **Remedial Awareness:** This type equips individuals to address actual problems that arise from misuse and mismanagement of resources.

The three main contexts of environmental awareness can be observed at different societal levels: **government and its agencies; society through its**

institutions and organizations; and individuals. Individuals, in particular, may act as protectors of the environment when equipped with knowledge, understanding, and accurate awareness, or conversely, as contributors to pollution in the absence of environmental awareness, clarity, and responsibility (Hassan, 2004, p. 176).

1.4 Components of Environmental Awareness

Developing effective and purposeful programs to promote environmental awareness requires the integration of three interrelated yet distinct components, as outlined by Gamal al-Din Saleh (Saleh, 2003, p. 93)



Source: prepared by the researcher

1.5 Stages of Developing Environmental Awareness

Since awareness is fundamentally an educational and pedagogical process, the procedures for building environmental awareness have been outlined in five key stages, as presented by Somaya Zafar: (Somaya, 2010, pp. 71–72).

- **Preparatory Stage:** This stage requires a precise assessment of the individual's existing knowledge and behaviors related to the environment.

- **Formation Stage:** At this stage, appropriate approaches are identified for developing environmental awareness among individuals by stimulating their motivation.
- **Application Stage:** In this stage, individuals are provided with appropriate situations in which they can apply the concepts they have learned and the awareness they have developed, ensuring the retention of learning outcomes.
- **Consolidation Stage:** This stage involves reinforcing what the individual has previously learned, ensuring that the acquired knowledge has a lasting impact on their thinking and behavior.
- **Follow-up Stage:** At this stage, new activities referred to as follow-up activities are planned in which individuals participate. These activities are designed to create situations that allow individuals to practice what they have learned, thereby reinforcing and consolidating their prior experiences.

1.6 Dimensions of Environmental Awareness

Nabiha El-Sayed Nail notes that several studies and research works have identified a set of dimensions through which individuals' awareness of their environment can be measured: (Nail, 2009, p.212)

Dimensions of Environmental Awareness



Figure prepared by the researcher illustrating the dimensions of environmental awareness based on Nabihah El-Sayed Nail

Source: prepared by the researcher

2. Electronic Environmental Media: Concept and Context of Emergence and Development

2.1 Concept of Electronic Environmental Media

The concept of electronic environmental media is a composite term consisting of several elements: media, environment, and their interrelation.

a) The Concept of Environmental Media

Environmental Media: This is a relatively new specialization within the field of media, first promoted in the early 1970s as a compound expression of “media” and “environment.” It represents a branch of specialized media concerned specifically with environmental issues. Specialized media seeks to convey information to the public about a specific field of knowledge, enlightening public opinion and keeping it informed about developments in that area. Specialized media emerged in response to the diverse interests and aspirations of audiences, segmenting mass interests into fields such as sports media, political media, tourism media, health media, cultural media, and environmental media.

Thus, environmental media is a form of specialized communication dedicated to environmental issues, aiming to spread environmental awareness and contribute to sustainable development. The concept was formally introduced in the 1987 report of Norwegian Prime Minister *Gro Harlem Brundtland*. Since the 1970s, the notion of environmental media has evolved significantly: once limited to reporting environmental news and using sensationalism to boost sales, it has grown into a discipline guided by policies, strategies, and functions with diverse objectives.

The term *environmental media* broadly refers to “media content in communication channels that addresses environmental issues, their causes, dimensions, and solutions, with the aim of influencing the public, raising awareness, and modifying behavior toward protecting the environment” (Salamen, 2012, P15).

From the above, it can be concluded that environmental media is the process of producing and transmitting environmental knowledge and information to different segments of society in a simplified manner, with the aim of building positive attitudes, correcting human behavior toward the environment, and recruiting new supporters for its protection. By refining negative human practices toward the environment, environmental media helps cultivate environmentally conscious citizens, thereby enabling their active participation in mitigating environmental problems.

b) The Concept of Electronic Environmental Media

To better understand the concept of electronic environmental media, it is necessary to first define *electronic media* before proceeding to *electronic environmental media*.

▪ Electronic Environmental Media

Electronic environmental media is a new form of environmental communication that shares with traditional media its concepts, principles, and objectives, but differs in its reliance on the internet as its main communication channel. The internet enables the integration of all traditional communication tools to deliver environmental content to target audiences more rapidly, persuasively, and interactively qualities often absent in traditional one-way environmental communication models.

As a platform of new media, the internet facilitates the dissemination of environmental messages and content digitally, without the need for broadcast stations or print outlets. These messages combine text, images, and sound, breaking down barriers between sender and receiver. Recipients can react immediately and interact with environmental messages, either with the website administrators or with other users who share similar interests. In this sense, electronic environmental

communication is specifically centered on the use of the internet (Mehri, 2016, p. 203).

The primary mission of electronic environmental media is to clarify and simplify environmental concepts, build public awareness, highlight existing environmental problems, and propose methods of addressing them. It also serves to direct media discourse toward stakeholders and policymakers, urging them to adopt measures that protect the environment, reduce resource depletion, and mitigate the harmful consequences of ecological degradation (Hashem, 2019, p. 220).

Moreover, electronic environmental media provides digital readers with multiple forms and channels to access environmental information, while enabling them to express opinions, generate their own content, and circulate it across digital spaces. Its interactive nature opens the door for audiences to participate in discussions and analysis, bringing them closer to content producers and even allowing them to compete in the production and dissemination of information. This takes place within a borderless digital environment whose users and participants continue to grow rapidly across the world.

2.2 Forms of Electronic Environmental Media

Electronic media takes multiple forms, all directly linked to internet outputs, which represent the most significant source of these formats. From this, we can identify a set of media types that emerge from the electronic integration of journalistic forms with multimedia tools. This integration has contributed to the development of electronic media activities, diversified its forms, and opened space for interactive participation that has reshaped the traditional structure of message delivery and media content. Among these forms are:

- **Electronic Environmental Newspapers and Magazines:**
Environmental journalism first emerged in 1972, when a group of British scientists

published a document titled “*A Blueprint for Survival*” in *The Ecologist* newspaper. This document aimed to awaken global awareness of the need for change, analyze the consequences of ecosystem destruction, and propose a plan to reduce environmental degradation. It also provided the public with an opportunity to recognize environmental problems such as pollution and the continuous deterioration of ecosystems.

Researcher *Essam Al-Hanawi* observes that associations specializing in wildlife and its preservation used newspapers and magazines to inform audiences about the importance of wildlife and the necessity of its conservation. Some of these associations launched general scientific journals that gave special attention to the natural environment, such as *National Geographic*, first published in the United States, which was later followed by numerous issues (Al-Hanawi, 2004, p. 24). With the technological revolution in media and communication, environmental journalism benefited from the digital transition and turned toward electronic publishing in two forms: re-publishing print journals electronically or producing purely digital editions. As a result, environmental e-journalism gained a readership interested in accessing environmental news online. Several electronic environmental newspapers and magazines emerged, including:

- The international scientific journal *Scientist Magazine*, available at www.newssciantist.com, which publishes scientific news, much of it related to the environment, along with the latest research on effective techniques and methods for environmental protection.
- *Australian Geographic* magazine, which through its website www.Australiangeographic.com.au addresses numerous environmental topics such as biodiversity, forests, volcanoes, and geological phenomena. It also markets media products such as books, magazines, and documentaries.

- *Environment Magazine*, a rich digital platform recognized internationally for providing the latest environmental news and updates through its website www.environment-magazine.fr. It offers readers access to its issues in French via a paid subscription.

Arab media also benefited from technological advancements, particularly the internet, which created the foundation for electronic media. Arab media institutions embraced this to meet the curiosity of digital readers, and specialized media emerged online, most notably electronic environmental media. Several Arabic electronic environmental magazines appeared, including:

- *Environment & Development Magazine*: the first Arabic environmental website, launched in 1996 at www.afedmag.om alongside the magazine. It features reports on the state of the Arab environment, photo essays, analytical articles, and an electronic archive of issues. It serves as a key reference for Arab researchers and a reliable source for the media.

- Two magazines issued by the *Arab Cities Environmental Center* in Dubai: the first, *Green Window Magazine* (2015), published at www.env-news.com, serves as a platform for Arab and global environmental news, environmental terminology, profiles of environmental leaders, and coverage of awards and competitions. The second, *My Environment* magazine, issued in Arabic and English, targets children with simplified environmental awareness content. Its website www.ecat.ae hosts all issues of the magazine.

- *Palestinian Horizons for Environment and Development Magazine*, issued by the Development Action Center, available at www.maan.ctr.org. It aims to serve as an effective media outlet for disseminating scientific knowledge in the field of environment and development, addressing contemporary Palestinian, Arab, and global environmental problems.

With regard to Arab news agencies that dedicate space to environmental topics, they are few in number, and their coverage is often limited to official activities. For example, the Syrian News Agency (SANA) allocates a section on its front page titled “*Environment*,” which is usually updated weekly. Similarly, the Kuwait News Agency (KUNA) has a section called “*Health and Environment*” that contains new items, though most are official activities and receptions. Other Arab news agencies generally restrict environmental reporting to specific occasions such as international or regional conferences, or during environmental crises and disasters, where the news is conveyed immediately but primarily for sensational purposes that quickly fade away (Afifi, 2010, p. 97).

3. Electronic Environmental Audiovisual Media (Green Media): Various radio stations and television channels have increasingly adopted the internet as a platform to present their content. This presence in the digital space has enhanced their significance and role by providing news, information, and updates related to the environment and its problems. Among the pioneering online initiatives is the Palestinian radio station *Eco for Green Media and Marketing*, which seeks to develop electronic environmental media to raise citizens’ environmental awareness, foster positive environmental behavior, and instill green values. Its aim is to contribute to environmental preservation in general, encourage the sustainable use of resources, and create a spirit of active participation.

4. Electronic Environmental Blogs (Green Blogs): Different types of blogs subsequently appeared, including environmental or “green blogs,” which emerged as a result of increasing activity by environmental movements and the rise of environmental awareness among civil society, researchers, and media professionals. Blogging became a tool in their environmental advocacy, used to publish topics, debate environmental issues, exchange opinions, and seek solutions and alternatives

for environmental protection. Some of the most prominent green blogs include the **OECD blog**,

which serves as an important database of environmental information, covering topics such as air pollution, climate change, waste, biodiversity, and more. Topics are categorized under browsing options, and by selecting one, all related articles are displayed. The **BBC Earth Blog** provides environmental content prepared by specialists and academics, alongside videos on wildlife, volcanoes, and biodiversity. **Ecowatch** is another notable blog, which publishes diverse scientific content on environmental news such as climate change, biodiversity, energy, and health, and is distinctive for its constant updates. **Grist**, established in 1999, focuses on climate and environmental issues, offering numerous articles on topics such as renewable energy, environmental justice, and sustainable food. **InsideClimate**, created in 2007, aims to influence public opinion and decision-makers in favor of environmental protection, and serves as a rich source of information on climate change, renewable energy, and related issues.

In the Arab world, notable examples of green blogs include *Green Papers*, which publishes environmental topics and raises issues for interactive discussion, and *Afaq for Science and Environment*, which provides updates on environmental developments. However, Arab environmental blogs generally suffer from weak interaction with their content, lack of continuity, and insufficient updates of news and information.

From the above, it can be concluded that green blogging on the internet has experienced significant development in response to increasing environmental problems and risks, through its efforts to evolve its discourse on environmental protection and diversify its approaches. However, at the Arab level, it remains

limited, especially as entertainment content continues to dominate the interests of digital readers.

4. Social Media Platforms: According to a 2018 study, Facebook ranked first among social media platforms in terms of usage, confirming its pivotal role in spreading and following environmental news, reports, and updates, as well as facilitating interaction with others' posts: (Knight Foundation, 2019, p. 44).

- Among the most notable Facebook pages addressing environmental concerns is the **Greenpeace International** page, which includes more than 15,000 volunteers worldwide, 2,400 employees, and offices in over 40 countries. Greenpeace is considered one of the most active organizations in the field of environmental protection, and its page highlights its activities and campaigns.

- The **Nature Conservancy** page oversees more than 100 projects aimed at protecting marine environments and restoring deforested areas. Through its efforts, the organization has planted one billion trees, and its page documents these initiatives.

- The **Ocean Conservancy** page organizes volunteer campaigns for ocean protection and clean-up, most notably a campaign that has removed 144 million pounds of trash over the past 25 years (Bchiche, 2024, pp. 397–416).

At the Arab level, numerous Facebook pages are devoted to environmental topics. These include the **Environment & Development Magazine** page (www.facebook.com/Afedmag), which continuously publishes content on global and Arab environmental issues and enjoys strong interaction, reflecting its serious and distinguished role in Arab electronic environmental media. The **Environment News** page (www.facebook.com/env.news) publishes updates from the Arab Cities Environmental Center, as well as the latest studies and developments in the field, including issues of the **Green Window** magazine. The Tunisian page of the

Future Association for the Protection of the Environment and Mahdia Nature (www.facebook.com/almo) also covers environmental news and activities such as clean-up and tree-planting campaigns, alongside the page of the UAE **Friends of the Environment Association**.

At the local Algerian level, numerous pages exist, such as the page of the **Friends of Tebessa Association for Environmental Protection**, among others. These pages disseminate environmental news and encourage different segments of society to participate in campaigns that contribute to environmental conservation. In addition, many researchers, environmental activists, and associations maintain pages such as **Environment and Wildlife Protection** and **Renewable Environment**, which share environmental content and encourage public engagement.

However, while environmental communication in traditional media is handled by professional journalists capable of crafting and delivering environmental messages effectively in forms suitable for the public, these standards are often lacking on social media platforms. For the digital user, the primary concern is the message content and its attractive style, which encourages them to share it with others. This emphasis on style over substance has led to the disappearance of essential elements of communication, such as slogans and persuasive arguments something particularly noticeable in many Facebook pages run by environmental activists.

- **Environmental Websites (Green Websites)**

As for environmental websites, they vary widely across the internet and can be classified into several categories:

○ **Official government websites of ministries concerned with the environment:** These focus on covering official environmental activities at the local level, publishing news and reports from research institutions, highlighting

environmental legislation and policies, and showcasing projects and initiatives. An example is www.climate.nasa.gov, which offers a variety of browsing options for articles, guides, and environmental news. It serves as a distinguished destination for researchers seeking knowledge about climate change and features a dedicated blog called *Ask NASA Climate*, which publishes diverse articles on climate change and environmental topics.

○ **Websites of non-governmental organizations (local, regional, or international):** These concentrate on volunteer activities, programs, and environmental initiatives, as well as publishing news about their affiliated organizations. Examples include:

- www.c2es.org, the official site of the *Center for Climate and Energy Solutions (C2ES)*, an independent, non-profit international organization that aims to protect the environment, provide solutions to address climate change, reduce greenhouse gas emissions, and promote the use of clean energy.

www.medwet.org, the website of the *Mediterranean Wetlands Initiative (MedWet)*, a non-profit organization established in 1991, whose mission is to support the effective protection of the functions and values of wetlands and to encourage the sustainable use of the resources and services they provide.

- **Environmental media platforms and news websites:** These focus on providing up-to-date information and environmental news, raising awareness through newsletters, photos, and films, and monitoring the latest global developments. They also highlight modern technologies and eco-friendly products, in addition to addressing issues related to human health and the threats posed by diseases and environmental disasters (Hashem, 2019, p. 32).

The internet also hosts many websites belonging to environmental associations, ministries of the environment in various countries, and regional environmental organizations. Examples include:

- www.moe.gov.lb, the website of the Lebanese Ministry of Environment, which provides environmental reports, awareness pages, and various publications and books related to environmental issues.
- www.ausde.org, the website of the *Arab Union for Sustainable Development and the Environment*, a non-governmental organization focusing on environmental and sustainable development issues in the Arab world.
- www.mree.gov.dz, the website of the Algerian Ministry of Water Resources, which contains information on water as a vital resource for life and human activities, along with content related to environmental and sustainable development issues.

b. Electronic Applications or Mobile Applications

Mobile applications have become widespread among individuals due to their ease of use. In line with the era of digitization which has become both a reality and a necessity the Algerian Ministry of Environment and Renewable Energies announced in 2018 the launch of a digital application called “*My Environment*” (*Tathbiq Biyati*). This application functions as an alert system to monitor environmental violations. It allows citizens to notify the authorities about any action or incident that could harm the environment. This initiative is part of a participatory approach designed to encourage citizens to contribute to environmental protection and improve living conditions (Brique, p. 154).

3. The Role of Electronic Environmental Media Through Its Various Forms in Promoting Environmental Awareness

Discussion of environmental issues is no longer regarded as a social luxury or a marginal concern for citizens or authorities. Media today gives substantial importance to environmental topics, as environmental media contributes to preserving the environment by introducing environmental issues and encouraging the adoption of measures and policies that compel citizens, companies, and industries to protect it. Studies conducted in both developed and developing countries to assess the prevailing levels of environmental awareness confirm that media plays an active role in shaping public understanding, whether by providing information or by influencing attitudes toward environmental concerns. It is clear that protecting the environment and addressing its challenges cannot be achieved without proper education and culture, and instilling environmental awareness in individuals tasks that can only be accomplished through media.

Media coverage of environmental issues has generally been marked by two main features. The first is the focus on specialized messages with limited circulation, aimed primarily at scientists and experts who study environmental issues in detail. The second is the interest of mass media in providing news coverage of conferences and research on environmental matters, as well as reporting major incidents that cause damage to the environment.

Electronic environmental media derives its importance from its fundamental mission: employing various digital forms and methods to protect the environment and preserve its resources by providing audiences with comprehensive news, knowledge, and information. Its significance is heightened by its role in early warning and monitoring of environmental disturbances, mobilizing digital public opinion, contributing to environmental legislation, and fostering positive behaviors aimed at environmental protection.

Its importance is also evident in several key dimensions. First, it plays a role in **activating green advocacy** and gaining new supporters for environmental causes by reporting on environmental movements and amplifying their voices to governments, decision-makers, and institutions. Second, it helps **create a global green mindset** in cyberspace, opposing violations against the environment by encouraging green blogging, increasing green pages and websites on social media, and fostering dialogue among environmental thinkers worldwide.

Third, electronic environmental media **strengthens the role of media education with environmental dimensions** by fostering positive behavioral change toward the environment and promoting the concept of ecological citizenship. Fourth, it **disseminates environmental knowledge** by providing facts and information in a simplified manner for the public. Fifth, it **raises awareness of escalating environmental risks** and their implications for human and food security.

In addition, electronic environmental media contributes to **educating, guiding, and motivating audiences** by highlighting environmental initiatives such as campaigns to clean neighborhoods, villages, forests, and beaches, which not only enhance aesthetic value but also encourage eco-tourism. Finally, it promotes the **participation of all societal groups**, made possible by the interactive nature of digital media, which enables rapid circulation and wide dissemination of environmental news across the digital space.

Conclusion:

In conclusion, it can be affirmed that environmental media plays a profound role in disseminating and consolidating environmental awareness despite the difficulties, challenges, and obstacles it encounters. It serves as a crucial channel for conveying environmental issues and problems to all segments of society, as well as to decision-

makers, whose cooperation is indispensable for protecting the environment and safeguarding its resources from waste and depletion.

Electronic environmental media, in particular, represents the broadest and fastest means of raising awareness about environmental issues and challenges. Preserving the environment, however, remains a collective responsibility, since the consequences of environmental harm are shared collectively.

Nevertheless, this study has revealed a noticeable lack of attention to environmental media in general and electronic environmental media in particular both in the Arab world and in Algeria. Programming broadcast by public and private media outlets is rarely based on prior audience research, especially regarding online recipients. These media products often aim more at informing and supplying individuals with data on environmental matters than persuading them to adopt behavioral change. As a result, environmental communication messages especially those disseminated through digital platforms fall short of achieving the necessary level of environmental awareness.

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