



## The Environment: Between Challenge and Sustainability of Resources

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### Abstract:

Talking about the environment is not a coincidence or a passing event, but rather the result of current developments and issues that require deep and accurate analysis. Alongside the reality of climate change and its fluctuations, we also encounter the issue of biodiversity and its associated challenges, particularly with regard to the impact on species diversity, including plants, animals and others. Not to mention the problem of pollution in its various forms and its transboundary effects.

We must also consider the phenomenon of desertification and its spread across arable land, which significantly impacts its quality and yield. This has affected water levels and scarcity in some areas, as well as deteriorating water quality, which has a direct impact on various development projects. The challenge today is to make good use of these programmes and projects in a way that benefits the environment and individuals as an inevitable result of sustainable development policy, especially with regard to waste management. We must also search for ways to finance and diversify sources of wealth as an alternative to the traditional economy and intensify efforts with various stakeholders, including individuals, associations, civil society organisations, companies and others.

**Keywords:** Environment, sustainable development, climate change, quality of life, field actors.

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### Introduction

The article's introduction should include an appropriate opening to the topic, followed by the formulation of the research problem and the development of suitable research hypotheses. It should also specify the objectives of the study and outline its methodology.

The environment is the living space and vital ecosystem in which we live. It comprises essential elements such as water, soil and air, as well as plants, animals and natural resources. It is within this setting that we breathe its air, drink its water and consume its plants and animals, making use of the diversity of its natural and industrial resources. In order to protect this environment against climate change and environmental degradation, all actors — whether individuals, communities, institutions or governments — must intensify their efforts to maintain environmental stability, guarantee a healthy environment and safeguard human health, in accordance with Article 64 of the Algerian Constitution of 2020.

In this paper, we will address the following research question: To what extent can a healthy, secure and sustainable environment, as well as the sustainable use of resources, be achieved in light of future challenges and risks?

Suitable hypotheses: Given that this research requires hypotheses to reach analysable results from which appropriate solutions can be derived, the study proposes the following hypotheses:

First hypothesis: the specificity of the environment and its vulnerability to threats and risks.

Second hypothesis: How can environmental considerations be integrated into modern settings according to an up-to-date vision?

Third hypothesis: The possible solutions that can be identified and translated into environmental action in response to the challenges of sustainable development.

Fourth hypothesis: The most significant challenges and issues facing environmental policy in the management of sustainable development.

### **Significance of the study and its objectives**

This research paper aims to identify the most important principles and foundations for achieving a healthy and safe environment, as well as restoring environmental conditions to their previous state. It also addresses the most significant environmental threats, including climate change, biodiversity loss, waste management issues, and water scarcity and degradation. Additionally, it examines the issues of desertification and the degradation of arable land. This requires efforts to be mobilised at various levels and across economic, social, health and environmental dimensions. This should be done in line with the principle of equal opportunity and with the aim of creating a healthy and safe environmental setting, while taking into account the specific characteristics of each environmental context and drawing on experiences that can enable sustainable development.

### **Methodology used**

The descriptive-analytical approach was adopted for this study as it is the most suitable for topics of this kind, which require information to be collected and analysed in order to determine advantages, characteristics and objectives. The methodology also involves providing a precise description of the most significant environmental threats and challenges facing individuals and society, based on field evidence and substantiated references.

Due to the nature of the subject and the methodology employed, the research has been divided into two sections. The first section addresses the environment in its various dimensions, the threats it faces, and the mechanisms for encouraging environmental participation. The second section examines the most important challenges, prospects, and stakes for achieving sustainable development under environmental management, taking environmental management as a model for environmental reform.

-First Section: The Environment between Threats and the Activation of Participation

First requirement: The environment: its features and characteristics

Second requirement: Environmental risks and the need for effective participation

-Second section: Environmental Challenges and Their Impact on Achieving Sustainable Development

First Requirement: Environmental Challenges and Stakes

Second requirement: Environmental Management as a Model for Environmental Reform

### **Section 1: The environment: between threats and the activation of participation.**

The environment is rich in vital elements, making it vulnerable to numerous risks and crises. Therefore, as legal scholars, it is our responsibility to understand these threats, raise awareness of them, and make this information accessible to everyone. We must then analyse them and determine the most appropriate legal methods for addressing them, taking into account the significance of each element and the context in which it exists, affects and is affected. Consequently, it has become necessary to mobilise all stakeholders

and raise awareness of the importance of these issues and of the impact of environmental risks on individual and societal health<sup>1</sup>.

### **First requirement: The environment — its features and characteristics**

As a living milieu, the environment contains many important elements, such as soil, water and air, as well as the interaction relationships between them, including patterns of influence and impact. This makes it a highly complex system. However, it is also highly sensitive owing to its relationships with other environments, including social, economic and related dimensions.

The availability of natural resources, and their contribution to improving quality of life, as well as their impact on the climate through the ways in which they are exploited, can have negative effects. Therefore, it is essential to understand the interplay between development and the environment and keep pace with dynamic changes in the exploitation of these resources to prevent degradation caused by overexploitation. This, in turn, first harms the environment and undermines the principles of sustainable development, as well as the needs of future generations for these resources<sup>2</sup>.

These features and characteristics make environmental protection an unavoidable necessity. It constitutes a human right that must be respected in accordance with international instruments and treaties. The relationship between the environment and human beings has become evident through violations affecting both. Consequently, the environment is now associated with concepts such as sustainability, governance, participatory democracy and environmental security, to name a few of the repercussions arising from this interrelationship. Enjoying a clean and healthy environment means exercising one's environmental rights alongside the human rights guaranteed by most constitutions and affirmed by the UN Human Rights Council through its instruments and international declarations<sup>3</sup>.

The environment establishes a relationship of rights between present and future generations by determining the value of resources and how they are managed, particularly in relation to balanced living conditions and a healthy environment. The priority given to the environment over development is defined here as a criterion for understanding sustainable development and as a legal field requiring regulation to avoid infringing individuals' fundamental rights and meet their needs. In this regard, the 1987 Brundtland Report was the first framework to address sustainable development in relation to the rights of future generations, particularly with regard to the fair distribution of resources. It did not separate the concepts of 'development' and 'sustainability'<sup>4</sup>.

In order to focus attention on the environment and understand its changes, it is necessary to identify the fundamental elements that influence it and distinguish the mechanisms for addressing it, most notably by raising awareness as an effective educational tool within each community and incorporating environmental programmes into school curricula. Furthermore, encouraging community participation in clearly defined environmental policies can help to change individuals' everyday behaviours, particularly with regard to saving energy and recycling different types of waste. Specialists describe this as environmental security and its repercussions for the global economy, which is linked to climate change. For these reasons, shifting towards environmental governance as an effective economic system that is fundamentally connected to environmental problems and increasing daily economic activities has

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<sup>1</sup>- Beate Jessel, 'Elements, characteristics and character—information functions of landscapes in terms of indicators', *Ecological Indicators*, Vol. 6, Issue 1, January 2006, pp. 158–159. *Ecological Indicators*, Vol. 6, Issue 1, January 2006, pp. 158–159.

<sup>2</sup>- Boussalem, Zina. 'The Environment and Its Problems: A Sociological Reading of the Concept and Causes'. *Journal of Human and Social Sciences*, Issue 17, 2014, pp. 247–249.

<sup>3</sup>- Hamzawi, Jouida and Sami Hasheed, 'The Environment and Human Rights: Towards the Need for Other Approaches to Ensure Environmental Protection and Enshrine Human Rights'. *Al-Bahith Journal for Academic Studies*, Vol. 5, Issue 2, 2018, pp. 501–503.

<sup>4</sup>- Beat Burgenmeier, *Economie de développement durable (Economy of Sustainable Development)*, 2nd ed., Brussels, 2005, pp. 38, 40.

become essential. This development threatens global environmental security and cannot be ignored or postponed<sup>5</sup>.

### **Second requirement: Environmental risks and the need for effective participation**

The various crises and fluctuations witnessed around the world today require us to identify the causes of these conflicts and develop solutions to mitigate the associated risks, particularly to the environment and individuals. Specialists generally agree that the consequences of environmental problems persist over time, as they affect life in general and pose dangers that may be difficult to easily resolve, owing to their sensitivity. This therefore necessitates immediate intervention when such problems occur and concerted efforts to address them within legal frameworks. This includes the formulation of coordinated approaches among states, given that environmental harm is a transboundary phenomenon. Such action also contributes to achieving intergenerational justice and protecting the environmental legacy<sup>6</sup>.

Although perspectives on the relationship between the environment and development differ, there is broad agreement on the right of individuals to a safe environment within a framework of sustainable development that ensures the fair distribution of resources and protects the environment.

The most significant environmental risks threatening humanity's future include transboundary pollution and climate change, which has an impact on other sectors due to its fluctuations. Other key risks include reduced rainfall, rising global temperatures, water scarcity and shrinking areas of land suitable for agriculture due to desertification and drought. Furthermore, waste generation is increasing, making waste management particularly challenging, especially in weak states. Meanwhile, new actors have entered the environmental arena, including non-governmental organisations, associations, civil society organisations, political parties and more<sup>7</sup>.

Given the seriousness of the situation, dealing with these risks requires flexibility and the implementation of modern environmental policies. It also requires the involvement of various stakeholders operating in the field and the diversification of approaches to different anticipated environmental threats<sup>8</sup>.

In addition, the occurrence of these environmental risks requires the activation of an environmental awareness policy and the mobilisation of various modern technologies and available media tools in the service of environmental safety and security. It also requires the unification of efforts among all partners and their intensification in order to produce a shared vision aimed at limiting the spread of environmental danger and its impact on the environmental system and biodiversity<sup>9</sup>.

At the same time, pressure must be applied to industrial and economic institutions to implement effective environmental management tools across different economic hubs. This will give effect to the environmental dimension and address the gap between development requirements and environmental protection imperatives. States and governments must also adapt environmental policies and use them in ways that serve the interests of both present and future generations.

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<sup>5</sup>- Masaoudi, Rachid. 'The importance of the right to environmental information in enhancing the participation of associations in environmental protection'. *Afaq for Science*, Vol. 6, Issue 4, 2021, pp. 409–410.

<sup>6</sup>- Hocine Shakrani, 'The Rights of Future Generations with Reference to Arab Contexts', In: *The Arab Center for Research and Policy Studies*, 2018, pp. 53–55.

<sup>7</sup>- Ann M. Major and L. Erwin Atwood, 'Environmental Risks in the News: Issues, Sources, Problems and Values'. *Public Understanding of Science*, Vol. 13, Issue 3, 2004, pp. 241–243, <https://doi.org/10.1177/0963662504044557>.

<sup>8</sup>- David B. McCallum, Sharon Lee Hammond and Vincent T. Covello, 'Communicating about Environmental Risks: How the Public Uses and Perceives Information Sources'. Sage Publications, 1990, pp. 76, 78. <https://doi.org/10.1177/109019819101800307>.

<sup>9</sup>- Chaker Abd al-Karim Fadel, 'Global Environmental Citizenship: A Social-Political Approach to Confront Climate Change and Environmental Pollution'. *Journal of Legal and Political Sciences*, Fourth International Conference, University of Diyala, Iraq, 2022, pp. 254–255.

Environmental citizenship is also one way of understanding the fluctuations associated with climate change and pollution, which affect everyone — individuals and institutions alike — because it is a shared responsibility. In light of these challenges, the concept of global environmental citizenship has emerged as a slogan and lofty human goal, resulting from environmental damage that includes both direct and indirect forms of wrongdoing against nature. This is all the result of an overt contradiction and an irrational imbalance in economic activity systems and comprehensive development projects that do not adequately recognise the risks they pose to the ‘mother environment’. Pollution is a cause and consequence of climate change, arising from increased carbon dioxide emissions and excessive energy use in everyday life. Consequently, the Earth is under threat due to regional and international conflicts over energy resources, disruption to ecological systems and the need for clean, safe alternative energy sources.

Environmental issues have therefore imposed themselves on the agenda of various conferences and meetings, to give effect to principles aimed at protecting the environment. Among the most prominent are the principle of international cooperation or solidarity, which calls for coordination in taking the necessary measures to preserve natural resources and to establish a close link between the environment and development. There is also the principle of non-discrimination, intended to unify and align environmental policies and measures—particularly in the areas of climate change, pollution, and various environmental disputes—in order to achieve environmental security<sup>10</sup>.

In addition, there is the principle requiring States to avoid causing environmental harm in another State, as stated in Principle 17 of the Stockholm Declaration on the Human Environment (1972). Alongside this is the principle of prevention or prohibition, which seeks to prevent damage before it occurs—since prevention is preferable to compensation—through the adoption of procedures and measures known as early-warning mechanisms.

According to the ‘polluter pays’ principle, anyone who causes environmental damage or pollution is obliged to pay compensation to the affected party, as determined by the relevant environmental protection authorities. This is known as the ‘green tax’ (ecotax). Finally, the principle of individual interest in environmental protection means granting individuals the right to seek justice and file claims to defend the environment within the framework of environmental governance, transparency and anti-corruption measures to ensure good governance of institutions<sup>11</sup>.

## **Second Section: Environmental Challenges and Their Impact on Sustainable Development**

Our environment faces many challenges today, the most significant of which are climate change, biodiversity loss, shrinking green spaces, pollution, and its causes. Therefore, it is necessary to move towards achieving an environmental balance that ensures a sustainable economy, improves quality of life and protects the environment and all its resources, in accordance with the principles of sustainable development.

### **First requirement: Environmental challenges and stakes**

The environmental challenges we face today, such as the depletion of energy resources and surface and subsurface wealth, require us all to act in order to protect the environment. This has led to the prioritisation of alternative and clean energy sources as a means of reducing pollution levels and preserving the rights of future generations. Examples of alternative energies include solar, wind, hydropower and bioenergy, which is produced from various types of organic waste. This approach provides substantial amounts of clean, renewable energy that does not get used up, reduces costs,

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<sup>10</sup>- Mustafa djeddar, 'Environmental Security and International Conflicts: An Analytical Study of the Dialectical Relationship'. *The Academic Journal for Social and Human Studies*, Vol. 14, Issue 1, 2022, pp. 326–327.

<sup>11</sup>- Youb Amal, “The Level of Application of Governance Principles in Algerian Institutions: A Field Study on a Sample of Algerian Institutions”, *Afaq Journal for Administrative and Economic Sciences*, Issue 1, 2017, pp. 90–92. *Afaq Journal for Administrative and Economic Sciences*, Issue 1, 2017, pp. 90–92.

enhances the efficiency of resource use and strengthens environmental awareness — objectives that align with those of sustainable and environmental resource development, as these are interdependent<sup>12</sup>.

One of the most important environmental challenges is disseminating information about the causes and mechanisms that may affect the environment to all concerned stakeholders and actors. Specialists refer to this as 'environmental communication' or 'environmental awareness', regarded as the most effective means of raising global public awareness of the seriousness of environmental harm and the necessity of taking preventive measures to contain it. It is therefore essential to move beyond traditional awareness-raising and foster interaction between various partners to enable rapid intervention and greater involvement in shaping environmental awareness, particularly through social media platforms and other networks and websites. This diversification has given environmental communication an important and effective role in conveying and circulating information and placing relevant actors within regionally and internationally prominent issues<sup>13</sup>.

Today, air and water pollution are among the most significant challenges to public health and the environment. This is particularly significant given the changes the world is undergoing with respect to climate change and the deterioration of ecological systems, which are the result of excessive energy use and rising demand driven by population growth and the diversification of the requirements of economic and human development. Furthermore, the large-scale expansion of human activities and the pursuit of alternative energy sources have impacted vegetative cover, particularly forests and arable agricultural land. This necessitates proactive steps to protect biodiversity, such as encouraging the implementation of modern systems like sustainable urban construction, renewable energy and the green economy, as well as other contemporary environmental policies. These approaches are based on coherence and harmonisation policies<sup>14</sup>.

Climate change is now manifesting through consequences that affect all vital sectors unevenly, both locally and internationally, particularly due to global warming and carbon dioxide emissions generated by economic activity and the use of fossil fuels. This impacts the promotion of economic growth, the sustainability of resources and the achievement of food and environmental security. These issues are fundamentally linked to the sustainability of all types of natural resources. Therefore, shifting towards an alternative, pollution-free economy is becoming increasingly essential as it helps to reduce the climate-warming gap, the visible impacts of which now require urgent intervention, such as rising water levels, flooding, fires, drought, desertification and water scarcity<sup>15</sup>.

One of the most prominent challenges facing the environment today is the need to evaluate the impact of environmental policies in practice. This requires identifying environmental problems, studying their causes and underlying roots, and developing remediation plans—along with the strict implementation of globally adopted measures, especially during field response and prompt intervention. Given the sensitivity of environmental harm, there is no room for delay. In order to restore and manage the ecological system, environmental balance must be achieved across different environmental media and living conditions and public health must be improved at both the individual and societal levels<sup>16</sup>.

Additionally, local economic resources must be diversified and the traditional extractive economic model must be replaced with a sustainable and safe economy. Furthermore, this transition must extend beyond

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<sup>12</sup>- Hocine Wahid Aziz Al-Kaabi, 'Development and Pollution'. *Journal of the College of Basic Education for Educational and Human Sciences*, Issue 19, 2015, University of Babylon, pp. 110–111.

<sup>13</sup>- Warda Khilaf, 'The Role of Electronic Media in Spreading Environmental Awareness and Achieving Sustainable Development: Facebook as a Model'. *Comparative Legal Studies Journal*, Vol. 7, Issue 1, 2021, pp. 893–894.

<sup>14</sup>- Montassar Elouardi, *Emirati Administrative Law in Confronting the Impacts of Climate Change*, Imam Malik College for Sharia and Law, 2025, pp. 115–117, <https://aldhakheerah.imc.gov.ae/faculty-peer-reviewed/76>

<sup>15</sup>- Mahmoud Abd al-Monaim al-Ruhayfiya, 'Climate Change and Its Impacts on Sustainable Development in Municipalities'. *Journal of Human and Natural Sciences*, Vol. 4, Issue 12, 2023, pp. 485–487.

<sup>16</sup>- Wael Ibrahim al-Faouri, *Environmental Problems*, 1st ed., Academic Book Centre, Amman, 2011, pp. 31–32.

mere rhetoric and aspirations to the implementation of tangible actions, particularly with regard to climate change, necessitating the establishment of robust legal frameworks. This framework should include clear and explicit rules and obligations for all countries, particularly industrialised ones, to achieve food, health and environmental security simultaneously. This also requires environmental education and nurturing a form of social upbringing that fosters participation and embraces a development-oriented approach<sup>17</sup>.

### **The second requirement: Environmental Management as a Model for Environmental Reform**

The environmental violations and damage witnessed today necessitate the adoption of multiple measures and processes. These include assessing the environmental impact of risks and examining the effect of activities on the surrounding environment. Additionally, a clear environmental policy is needed that relies on direct and indirect plans for implementation at local and regional levels within legal and administrative procedures that monitor performance and the effects of these measures on field conditions.

These policies also aim to preserve biodiversity, ensure the efficient use of natural resources, reduce environmental impact, raise awareness of the environmental and social constraints associated with day-to-day activities (particularly industrial and economic ones) and affirm their commitment to environmental responsibility. Furthermore, they aim to deliver balanced performance by integrating environmental considerations into the state's economic and strategic policies across all sectors and by implementing effective environmental management systems and indicators<sup>18</sup>.

The 1992 Rio de Janeiro Conference, attended by representatives from 178 countries, produced the well-known Rio Declaration on Environment and Development and set out Agenda 21 for the 21<sup>st</sup> century. It also led to the adoption of the Convention on Biological Diversity (1992), the United Nations Convention to Combat Desertification, the Framework Convention on Climate Change and the Convention on Fishing in the High Seas. The conference also catalysed the adoption of environmental management systems and their incorporation into international agreements, most notably the 2000 Paris Agreement on Climate Change.

At that time, the participating states agreed to implement these plans and programmes in stages, beginning with raising environmental awareness to encourage participation and spread awareness across the five continents. This was accompanied by the codification of environmental legislation, which was implemented according to predetermined frameworks. The aim was to achieve sustainable environmental development by 2030 and establish a balance between the economy, society and the environment as fundamental principles of sustainable development<sup>19</sup>.

These developments also made it clear that the environment is in continuous decline. Furthermore, the Kyoto Protocol on climate change was adopted. Environmental management has emerged as a model and tool for modern governance, with the aim of reducing and correcting damage through assessment, standardisation and remediation systems and instruments. This approach is supported by international cooperation and participation among states and governments, as well as coordination among various local partners, organisations and associations.

In this context, environmental management plays a key role in identifying environmental problems, determining the type of damage and developing plans to repair it, with the ultimate goal of restoring the ecosystem to its natural state. This is achieved by implementing measures such as reducing pollution, waste management and sorting, afforestation, and transitioning to clean energy, among other modern

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<sup>17</sup>- Mohamed Boumkhloof, *Urbanization*, Dar al-Oma for Printing, Algeria, 2001, pp. 52–54.

<sup>18</sup>- Amal Hafnaoui and Djemaa Mahmoud, 'Activating Environmental Administration in Economic Institutions to Achieve Sustainable Development Through an Attempt to Integrate It into a Balanced Scorecard', *Dirasat Journal*, Issue 55, June 2017, pp. 123–124. *Dirasat Journal*, Issue 55, June 2017, pp. 123–124.

<sup>19</sup>- Mohamed Abu al-Qasim Mohamed, 'Environmental Administration Systems'. *Assiut Journal of Environmental Studies*, Issue 29, July 2005, pp. 27–30.

approaches. These measures strengthen a sustainable economy and support diverse initiatives aimed at achieving sustainable development<sup>20</sup>.

In this regard, the 2002 Johannesburg Summit on Sustainable Development in South Africa issued several key decisions that established numerous environmental principles. These include the principle of environmental prevention and the shared responsibility of all parties to combat environmental imbalances, despite their differing levels of responsibility. The principle of compensation for pollution, in accordance with the 'polluter pays' principle, was also established.

Furthermore, in 2007, the United Nations published the Bali Report, which examined the effects of climate change on global environmental security. The report noted that a failure to control climate change would lead to flooding and other consequences driven by violence, conflict and war, as well as the spread of environmental refugees, for some countries and cities. However, private interests and international divisions — particularly at the Copenhagen Conference in 2009 — prevented an agreement being reached on reducing greenhouse gas emissions and endorsing the Kyoto Protocol. The Kyoto Protocol specified each country's emissions quota based on their pollution levels<sup>21</sup>.

In order to provide successful models of environmental management and adopt them as a path towards effective environmental development, we found that Japan, South Korea, Singapore and Denmark were among the early pioneers in the application of modern environmental policy. This included advanced waste management methods, such as recycling using highly sophisticated technologies and benefiting from the process. They also implemented modern systems to protect forests, develop ecotourism, manage and treat water, reduce pollution, and utilise various types and sources of renewable energy. Furthermore, these countries sought to protect ecological systems by committing to implement effective environmental policies together with various partners, based on shared responsibility. This approach is based on the understanding that environmental stewardship is a human legacy that must be preserved.

A significant set of tools and mechanisms was developed in the form of agreements, recommendations and decisions. These decisions produced a body of environmental protection principles while emphasising environmental management as a fundamental mechanism for reforming the ecological system. The green economy is a clear example of this approach<sup>22</sup>.

Without ensuring the optimal use of natural resources across the different fields of development — efficiently and effectively — while involving civil society in formulating various environmental policies, it is not possible to address the sustainability

of natural resources, preserve the environment, and meet the needs of the present and future generations. Civil society is an important and effective collective partner. Alongside this, core principles must be established to sustain resources, improve efficiency, and transition from the traditional economy to a modern economy based on reducing pollution, diversifying economic resources, creating jobs, and reducing environmental risks that harm individuals' health and the environment.

### **Conclusion:**

Many research studies have demonstrated that environmental issues have become a central concern in light of the risks and crises affecting local and international levels across all spheres. In practice, many states increasingly use the environment as a tool to implement their development policies at the expense of natural resources, both on the surface and underground. In order to strike a balance between

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<sup>20</sup>- Barbara Crespo et al. 'The Sustainable Development Goals: An Experience in Higher Education'. *Sustainability*, 2017, 9(8), 1353. doi:10.3390/su9081353

<sup>21</sup>- M. K. Watson, C. Noyes and M. O. Rodgers, 'Student perceptions of sustainability education in civil and environmental engineering at the Georgia Institute of Technology', *Journal of Professional Issues in Engineering Education and Practice* 2013, pp. 238–240. *Journal of Professional Issues in Engineering Education and Practice*, 2013, pp. 238–240.

<sup>22</sup>- Sahar Guedouri Abbas, 'Environmental Administration Systems in Economic Institutions: An Analytical Study'. *Al-Mustansiriyah Journal for Arab and International Studies*, Vol. 14, Issue 61, pp. 78–80.

development and environmental protection, many countries have signed agreements and treaties to safeguard the environment from damage and address disparities in economic policies, ensuring that such policies do not harm the ecological system.

Accordingly, many countries have developed strategies and deployed modern technologies, indicators and measurement tools designed to enhance environmental performance and the effectiveness of environmental management systems, with the aim of achieving sustainable development goals in the medium and long term. This also helps to bridge the gap between development and the various environmental issues, while addressing the effects of climate change, such as drought, desertification, flooding, fires, storms and disputes over natural resources. These phenomena contribute to the fragility of the ecological system and to crises involving the mass displacement of people due to a lack of water and food security, as well as an increase in the Earth's temperature. This represents a major environmental and climate shock, particularly for countries that rely on agriculture, as it is a sensitive sector highly vulnerable to climate crises and their fluctuations.

All of these challenges have contributed to raising environmental awareness, strengthening sustainable development objectives and highlighting the importance of environmental and social balance. They have also helped shape a new roadmap in which protecting the planet, ensuring the fair distribution of wealth, guaranteeing well-being for all and combatting and addressing poverty become key goals. These goals include using alternative energy sources and strengthening infrastructure to sustain essential resources, with the aim of repairing the ecological system as much as possible. Additionally, achieving sustainability requires the sustainable planning and management of events to provide essential services, as well as the promotion of cooperation and partnerships among various stakeholders to embody environmental awareness and clarify the relationship between sustainable development and climate change, particularly with regard to the impact of climate change on mitigation approaches and implementation tools related to global warming and greenhouse gas emissions.

In light of the sensitivity of environmental issues and the risks they face, it has become necessary to introduce context-specific mechanisms. Environmental management is one such solution, providing an effective means of raising environmental awareness, identifying and monitoring climate change indicators, and regulating them. This is accompanied by active participation from the media, various associations, and civil society organisations, with the aim of investing in renewable energy, shifting mindsets and behaviours towards environmental matters, and treating the environment as a human legacy that must be preserved. Effective governance of various sectors is also required, together with the implementation of all development approaches. Preventive measures must also be taken to limit the impact of climate change and enshrine the right to a healthy and safe environment<sup>23</sup>.

The most prominent fields addressed by environmental management include environmental impact assessment, the measurement of ecological system and biodiversity performance across vital environments, and the secondary effects resulting from development activities. This includes developing plans and programmes, coordinating intervention and remediation measures in the event of environmental damage, avoiding harm to strategic ecological settings, ensuring resource sustainability, and activating the environmental management system in a manner consistent with modern requirements. This involves reviewing environmental policies, assessing their compatibility with modern technologies and development programmes, and integrating the environmental dimension into economic strategies to strengthen environmental management and achieve sustainable development.

It is also possible to emphasise the most significant outcomes, namely:

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<sup>23</sup>- M. K. Watson, C. Noyes and M. O. Rodgers, 'Student Perceptions of Sustainability Education in Civil and Environmental Engineering at the Georgia Institute of Technology', *Journal of Professional Issues in Engineering Education and Practice*, 2013, pp. 238–240. *Journal of Professional Issues in Engineering Education and Practice*, 2013, pp. 238–239.

- The importance of the environment and how to preserve it, avoid harm and enable immediate intervention when damage occurs, given the sensitivity of the environment and its effect on individuals' and society's health.
- The importance of biodiversity and the necessity of protecting it as a vital setting that helps to regulate environmental life and achieve sustainable development.
- The importance of coordination and follow-up among different institutions and agencies in order to raise environmental awareness and disseminate it widely across all segments and categories of society.
- The role of environmental management as an effective coordinator and communication tool that ensures the environmental dimension is actually integrated into the assessment of various projects and programmes, thereby improving environmental performance.
- Achieving food and water security as a means of achieving environmental security, given the cause-and-effect relationship between food/water security and the surrounding environment.

Environmental management systems and their role in linking economic institutions to the environment and the extent to which they adopt an environmental reform path.

The following proposals can be identified:

1. Intensifying efforts with the participation of all stakeholders, without exception, to reduce pressure and ensure shared environmental responsibility for those who violate environmental standards.
2. Activating mechanisms and approaches to combat all forms of pollution, considering pollution to be a transboundary phenomenon.
3. Moving towards the use of modern technologies to preserve the sustainability of resources and safeguard the rights of future generations to them.
4. Strengthening environmental media and encouraging initiatives that raise environmental awareness and address the challenges involved in reducing environmental damage affecting individual and community health.
5. Adopting a regional planning approach, using environmentally friendly materials and fulfilling established commitments to preserving biodiversity through realistic programmes that achieve food security and enhance environmental performance.

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