Legal protection of the environment: A comparative law study

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Article History
Received: 14 January 2025
Revised: 31 March 2025
Accepted: 20 April 2025
Published: 30 June 2025

Keywords
Artificial intelligence
Environment
Legislation
Protection
Responsibility

Abstract
The environment is one of the values that the legislator seeks to protect and preserve, as it has granted it protection that is one of the most striking manifestations of the legal protection of the environment. This is due to the injunctive effect of sanctions through the extension of the rule of law via the judiciary. Each country, within the framework of its territorial sovereignty, has enacted laws and regulations to protect the environment and combat pollution, while accompanying this legislation with sanctions that force offenders to comply, because there is no point in enacting legislation designed to protect the environment if it is not accompanied by a sanction that deters the offender and restores the situation to what it was before. The results achieved include the strengthening of legal frameworks, progress in international law, varying degrees of effectiveness in the application of laws and the involvement of citizens in environmental justice.

How to cite: Hamouti, N., & El bakouhi, S. (2025). Legal protection of the environment: A comparative law study. *Journal of Environment and Sustainability Education*, *3*(2). 173–179. doi: 10.62672/joease.v3i2.49

1. Introduction

Environmental protection has become a major concern in order to preserve the planet from multiple risks due to various factors: water and air pollution, as well as the effects of economic, industrial and technological development. The environment is everything that surrounds human beings, including animals, plants and various other forms (Schumacher, 1973).

However, existing legal and political structures are often inadequate for the scale of the environmental challenges. Despite the existence of a large number of laws and international treaties, their implementation is irregular due to legislative deficits, institutional inadequacies and a lack of political determination. In addition, differences between the legal regimes of individual countries hamper the effectiveness of environmental protection measures. In this context, comparative analysis of the methods employed worldwide is of paramount importance. Not only does it enable us to identify the best practices and most effective mechanisms, but it also highlights the shortcomings that need to be corrected if environmental governance is to become more coherent and effective (Prieur, 2001).

Human rights have evolved over time, from the declaration of individual rights to the declaration of collective rights, then to the declaration of common rights, including the right to development, the right to live in a healthy environment, the right to food and other common rights (Prieur, 2001). For its part, the Moroccan constitution of 2011 refers to the right to a healthy environment. It is therefore necessary to study the various laws relating to protection at both national and international level. It is also necessary to study the overriding objectives, in order to preserve a healthy quality of life.

In order to guarantee legal protection of the environment, Moroccan law, in parallel with other laws, has adopted a repressive regime against any natural or legal person responsible for damage or activities destroying natural resources (Gouilloud, 1983). So, the question is how to guarantee environmental justice and protection, while ensuring the effectiveness of national and international standards. This leads us to ask a number of questions:

a. Are laws effective at national and international level?

b. How can the penal liability of a natural or legal person be determined?

doi: 10.62672/joease.v3i2.49
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ISSN: 3025-0714

c. Are the penalties flexible or rigid?

To answer this question, we will first examine the legal framework of environmental protection and the manifestations of legal protection of the environment

2. Method

2.1. Legal protection of the environment at national level

Given the importance of the environment, the moroccan legislator has adopted an integrated legal approach based on state intervention to manage environmental risks and ensure respect for the protection and preservation of the environmental space, for which it has adopted a set of legal texts relating to the protection of nature against harm and the protection of the health and safety of citizens (Gourari, 2009). Among these main laws are:

Water Law 10.95 repealed by law 36-15 (bulletin official, 2016, p.1482) was passed unanimously by the chamber of representatives; Law no. 13.03 on air pollution control (bulletin official, 2003, p.511); Framework law no. 12.99 on the national charter for the environment and sustainable development (bulletin official, 2014, p.2496); Law 12.03 on environmental impact assessments (bulletin official, 5118, p.507); Law 13.27 on quarrying (bulletin official, 2015, p.4424); Law 81.12 on the coast (bulletin official, 2015, p.3746); Law 22.07 on protected areas (bulletin official, 2010, p.1581); Law 28.00 on waste management and disposal (bulletin official, 2015, p.914).

It should be noted that in Morocco, environmental law was not elevated to constitutional status, as is the case in some countries such as France, until after the adoption of the Constitution of July 1, 2011, in Article 31, Article 71 and Article 151, while including the royal speech by His Majesty King Mohammed VI which insists on updating legislative and regulatory texts relating to environmental protection and the management of natural resources.

Environmental protection law has developed considerably at all levels. This development is similar to that of international law, and has taken place in all countries despite any political aspects, as it protects a common interest. Environmental protection law, because of its apparent similarity between countries, is the result of evolution against the various forms of pollution. After highlighting the main laws, it is essential in this context to emphasize that Morocco has put in place concrete and anticipatory measures to cope with the impacts of climate change, aimed at preserving natural resources such as seawater desalination, for example

2.2. Environmental protection in comparative law

French Legislation, France is actively involved in environmental protection, seeking to meet the challenges of global warming, pollution and biodiversity loss (Neyret, 2015). Within this framework, the most important law adopted to reinforce environmental protection in France is Law n°95-101 (journal official, 1995, p. 1840) on the reinforcement of environmental protection, known as the BARNIER Law, named after the then minister of the environment, Michel BARNIER, which was promulgated in 1995. The most important aspects of this law include pollution prevention, waste management and natural risks (Chilstein, 2010).

In short, the legislative evolution of french environmental protection law can be summed up in three phases (Rence, 1962): The first phase: From the promulgation of the hunting law in 1829 to 1951. The second phase: from circular n° 51/110 to the enactment of the planning and reconstruction act. The third phase: the one in which the French legislator adopted the principles of the Stockholm Conference until the promulgation of Law 108/95, reinforced by the principles of the Earth Summit held in Rio de Janeiro, Brazil, in 1992. An analysis of Moroccan and French legislation reveals that both are effective in terms of our theme, given the importance they attach to environmental preservation

Jordanian legislation, the Jordanian legislature enacted the environmental protection act n° 52 (Environmental protection code, 1995) of 2006, which entrusted the ministry of the environment of the kingdom of Jordan with the environmental mission, so that official and private authorities must implement the instructions and decisions issued under this law and the regulations derived from it, on pain of legal liability stipulated in this law or in any other legislative text. In the field of marine environment protection, Jordanian law n° 56-2006 devotes articles 8 to 10 to the protection of the marine environment against the dangers of pollution in all its forms. The law ensures this protection by prohibiting the discharge of any pollutant or material harmful to the marine environment in the territorial waters of the Kingdom of Jordan or on the beach area within the limits and distances determined by the Minister in accordance with the instructions issued in this respect.

The law stipulates that violation of the provisions of Article 9 is punishable by a sentence of not less than one year and not more than three years, or a fine of not less than 10,000 dinars, or both, for the captain of the ship, boat, tanker or craft from which any polluting material is discharged, poured, discharged or dumped into the Kingdom's territorial waters or coastal zone. Comparing the Jordanian law with the others above, it should be said that Jordan has nonetheless put in place initiatives to preserve its natural resources in the face of several challenges, such as water scarcity, waste management and desertification

Egyptian legislation, a directorate of environmental affairs was created in Egypt by presidential decree n° 631 of 1982, replaced by the directorate of environmental affairs by Law n° 4 of 1994, amended by Law n° 09 of 2009. The law conferred on this directorate numerous powers to protect the environment against pollution, which is a key objective of the directorate, as well as to combat pollution in all its forms, rapidly eliminate all waste, and its authority to issue administrative control regulations and achieve the desired result, which is the protection of the environment against pollution, and deal with environmental crimes. This law gave employees of the environmental affairs department the judicial authority to determine environmental offences (الباز, 2005).

From the diversity of the laws examined, it is clear that a common reality of environmental degradation, induced by pollution, affects all states, revealing unanimity in facing up to this global challenge. From these laws, we can see that many efforts have been made to ensure effective protection of the environment, through manifestations of legal protection of the environment, and this will be the objective of our study in part of results.

3. Results and Discussion

It is important to study the manifestations of environmental legal protection, with an emphasis on environmental criminal liability and, of course, the new technology adopted in this respect, namely artificial intelligence.

3.1. Penal liability of natural and legal persons

Penal liability is the obligation to bear the legal consequences resulting from the realization of the elements of an offence, and the object of this obligation is the penal sanction that the law imposes on the person responsible for the offence. Responsibility is therefore not an element of the offence, but arises when all the elements of the latter are present, for the term responsibility is synonymous with accountability, which means asking the offender why he or she has adopted a course of conduct contrary to the systems and interests of society, and then expressing social reproach for this conduct and giving concrete expression to this expression in the form of a penalty or precautionary measure (سليمان, 1992). Therefore, for a person to be held penally liable for an offence he or she has committed, he or she must be capable of incurring penal liability under two conditions: Capacity and will or desire, which can only be found in a physical person, in other words, a human being (أحمد, 2006). Similarly, environmental penal liability is divided as follows:

3.2. Penal liability of natural persons

The penal liability of a natural person does not pose a problem because it is one of the traditional forms of penal liability, but the nature of the situation makes this assertion unnecessary in view of the difficulties encountered in environmental pollution offences, particularly in terms of determining the material element and the consequent difficulty in determining liability for the environmental offence (Deharbe, 2002) , given that a number of people may be involved in the commission of an environmental offence, whether or not there is an agreement or understanding between them, the liability of each person is determined on the basis of their acts and deeds as long as the offence prohibited by law exists, and if it is not possible to know the responsibility of each person in the commission of this offence, all persons are considered liable. On this basis, the french courts have incriminated four factories for discharging noxious substances into the course of a river, irrespective of whether the pollution was caused by one of these factories or not (Lamarque, 1973).

In Morocco, legal qualification is the way in which the environmental legislator determines the nature of the perpetrator or designates one or more persons as perpetrators of the offence, irrespective of the causal link between the personality of the perpetrator and the fact damaging to the environment, in other words, irrespective of whether or not this person is the perpetrator of the facts constituting the offence. For example, article 61 of law n° 13.27 relating to quarries punishes with a fine of 5,000 dirhams to 20,000 dirhams any person who does not declare the exploitation of a quarry to the administration in accordance with the requirements of article 33 of the said law, and article 11 of law n° 11.03 on the protection and enhancement of the environment makes any owner or operator of a classified facility responsible for taking all necessary measures to prevent and combat environmental pollution and degradation of the natural environment, in accordance with legislative and regulatory requirements.

For example, we find french law n° 76-599 of June 7, 1976 relating to the prevention and repression of marine pollution by dumping operations in application of the 1972 Oslo Convention on the Prevention of Marine

Pollution by Dumping from Ships and Aircraft. The owner or operator of the vessel is punished as an accomplice to the offence of dumping committed without his order.

3.3. Penal liability of legal persons

The emergence of new types of offence has prompted legislators to adopt a new penal policy in line with the complexity of these offences (1997 ,كامل). What is perhaps new in this environmental criminal policy is the recognition of the institution (company, factory, ship, laboratory) as a legal personality , and therefore its responsibility for the consequences of its activities outside environmental criminal law, which has broadened the concept of penal liability, to include more than ever the legal entity, which has become particularly responsible for the commission of environmental offences , which has given rise to much controversy in the legal and judicial spheres between opponents and supporters, until these debates led to the determination of the conditions under which the legal entity can be held penally liable (1997, كامل).

The Moroccan legislator has dealt with the penal liability of legal persons with a certain ambiguity in article 127 of the penal code, although some jurisprudence (1989 ,الخمليشي) affirms that the legislator has established a general rule for the penal liability of legal persons with an explicit text that leaves no opportunity for discussion, since article 127 of the penal code, by its appearance in Book II on the perpetrator of the offence, explicitly places such persons on the same footing as natural persons with regard to the offences committed. However, the legislator should have been firmer with regard to companies that pollute the environment, as they always have an unbridled desire to achieve greater profit and production, even to the detriment of the environment, given their full awareness of the difficulty of proving their acts and the late appearance of the harmful results that ensue. We also note that the moroccan legislator has provided for respect for the environment in law n° 13.03 on combating air pollution, whose article 16 provides for the responsibility of everyone in the occurrence of pollution, in other words, it does not precisely define the person criminally responsible, which means that the environmental legislator recognizes the penal responsibility of legal entities, but in an imprecise manner. Moroccan courts have treated one environmental case, such as the Salé cork factory, with a certain degree of flexibility, in the knowledge that this enterprise caused serious damage to the health and illness of a large part of the population living near this factory. Also, within this framework is a review of specific cases where sanctions have been applied to environmental violations (Figure 1):

Judgement n°. 7/2	• dated 08/01/2015 • Administrative file n°393/4/2/2013
Judgment n°. 359	• dated 11/4/2007 • Administrative file/ second section n°1185/4/2/2006
Judgement n°512	• dated 23/05/2007 • Administrative file n°1226/4/2/2006
Judgment n° 772	• Dated 27/10/2011 • Administrative file n°677/4/1/2010
Judgement n°202	• Dated 27/02/2014 • Administrative file n°1273/4/2/2012
Judgement n°119/5	• Dated 26/02/2013 • Civil file n°3291/1/5/2012

Figure 1. Case Framework for Sanctions Applied to Environmental Violations (https://juriscassation.cspj.ma)

As for the US legislature, it has recognized the criminal liability of a corporate entity (Vinuales, 2018) under provisions relating to the protection of air and water and the fight against substances hazardous to human health, following the Ford case, in which the US justice system ruled that the company was liable for the crime of involuntary manslaughter after it was proven that it had failed to warn consumers of the results of preliminary experiments that led to a fuel leak and the deaths of three people (Jaber, 2011) .

As for the French legislator, it has adopted the principle of the criminal liability of legal entities, within the framework of the 1994 Penal Code, article 121.2 of which states that legal entities, with the exception of the State, are criminally liable, according to the rules set out in articles 121.4 to 121.7 and in the cases provided for by law or regulation, for offences committed on their behalf, through their members or representatives (French penal code, article 121). Table 1 shows the main differences between legal systems in terms of efficiency:

Table 1. The Main Difference Between Legal Systems in Terms of Efficiency

Country	Legal Systems
Morocco	Effective
France	Effective
Jordan	Ineffective
Egypt	Ineffective
U.S	Effective

3.4. New environmental technologies

At the dawn of the fourth industrial revolution, the use of artificial intelligence has become one of the most important technologies contributing to solving environmental challenges and climate change issues.

It is for this reason that the United Nations Environment Programme (UNEP) is working with world leaders to develop an ambitious new post-2020 global framework for biodiversity to realize the 2050 vision of living in harmony with nature, which requires the international community to halt the negative impact of biodiversity loss and implement the 2030 Agenda for Sustainable Development, while including the use of artificial intelligence (United Nation, 2018).

Many researchers and scientists have attempted to apply recent developments in artificial intelligence (AI) to various environmental issues. Scientists in this field have pointed out that AI represents a transformative opportunity to address certain environmental issues such as climate change, biodiversity and disaster management. There are also other applications of AI where it is used to monitor water and its pollution levels, as well as energy consumption, minimize the amount of waste, control air pollution and locate solar energy concentrations. AI also helps monitor environmental systems, as this technology has the potential to accelerate the development process towards a decent, safe and prosperous human life (Dinh-Xuan, 2019).

Artificial intelligence (AI) offers us the means to combat air pollution and determine its causes more quickly and accurately than traditional methods. In the case of a gas leak, for example, intelligent sensors equipped with a machine learning system enable us to act quickly, thanks to the precision and speed achieved by artificial intelligence (Peng, 2016). On the other hand, AI can be used to reduce air pollution in a variety of ways, such as autonomous cars which, when used, can reduce the toxic gas emissions that are typically produced by conventional vehicle fuels.

In this context, it's worth mentioning that Japan remains the world leader in this field, as it is making massive advances, especially in the robotics sector, integrating the application of artificial intelligence.

4. Conclusion

With regard to the comparative study, environmental protection law has developed at all levels. This development is similar to that of international law, and has taken place in all countries, since it protects a common interest. Environmental protection law, because of its apparent similarity between countries, is the result of evolution against the various forms of pollution.

In conclusion, in the light of all these reflections on legal protection in environmental matters, and bearing in mind that the lesson to be learned is not the large number of laws enacted by the legislator, but rather the fact that this legislative protection is based on awareness-raising that reaches human consciousness, positive attitudes and values, and behavioral control in order to preserve the environment. As a result, the formation of such principles can only be achieved through the appropriate preparation and training of individuals in environmental matters, and thus the integration of legislative, scientific and educational aspects to preserve and protect the environment as part of the prevention policy in this field. Thus, to ensure the achievement of economic development and the preservation of the environment, certain recommendations should apply and the legal and political implications that might apply:

Achieving economic and technological equilibrium, and benefiting from external environmental experience. Strengthen the government authority in charge of the environment by improving its status, placing it on an equal footing with other ministries, and endowing it with the necessary powers and sufficient financial and human resources to give it a mandate for institutional coordination, supervision and control of the action of other ministries in environmental protection. Strengthening environmental protection services by providing them with qualified human resources and the necessary logistical resources to enable them to carry out their tasks properly and in the best possible conditions.

Adapting institutions to new technologies. Developing the role of civil society representatives in the field of environmental protection and natural resource management, by creating and developing genuine associative initiatives and practices within a framework of respect for democratic working conditions and the assumption

of responsibilities within their organizations. Improving environmental legislation by reviewing and updating legislative and regulatory texts relating to environmental protection and natural resource management, and by covering certain priority environmental areas not yet covered by environmental legislation. Accelerate the compilation of legal texts relating to the environment in the form of an environmental code to facilitate access to environmental law.

Revising environmental penalties to balance the number of fines with the degree of seriousness of the offences, and distinguishing between natural and legal persons in their application, as the latter always have an interest in paying a fine rather than complying with the obligations imposed by environmental law, especially as the payment of fines has no impact on the capital of companies such as public limited company. Stricter enforcement of international agreements and treaties, such as the Paris climate agreement. Creation of independent bodies to monitor and enforce ecological commitments.

Author Contributions

All authors have equal contributions to the paper. All the authors have read and approved the final manuscript.

Funding

No funding support was received.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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