

## The effectiveness of the application of international environmental conventions in Rwanda

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### ABSTRACT

Environmental protection remains a major concern. It concerns developing countries as well as industrialized countries, because environmental damage knows no borders and spares no country. In this perspective, the state of Rwanda has ratified several important treaties, such as the Convention on Biological Diversity, climate change, desertification, and several protocols, which demonstrates its commitment to the effective protection of the environment. Still, the effectiveness of the implementation of the international environmental law (IEL) continues to be criticized. This research paper assesses the effectiveness of environmental law and regulation vis-a-vis Rwandan international engagement in the area of environmental protection. This study utilizes an analytical research design, principally a qualitative technique grounded in doctrinal legal research. Hence, main legislations, which are closely related to the field of environmental law, were qualitatively analyzed. Data was gathered through the collection of national legislation, orders, and regulations passed by Rwanda and ratified international treaties in the area of environment protection; policy documents and official reports from prominent government organizations; academic texts; and peer-reviewed publications. Overall, the study illustrates that the international community has adopted a series of legislative measures to combat the threat of environmental degradation. In this context, Rwanda has ratified the relevant international legal frameworks and, in order to implement these conventions, has enacted laws and regulations and created institutions dedicated to environmental protection. The study concludes that, in order for the application of environmental conventions in Rwanda to be effective, an adaptation of environmental laws as well as the adoption and adjustment of administrative and legislative measures are necessary in order to better meet current challenges.

**Keywords:** Biodiversity, Climate Change, Desertification, Environment, Effectiveness, Rwanda

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### I. INTRODUCTION

The protection of environmental value has become a key concern that our contemporary societies cannot ignore. It is of interest to both developing and industrialized countries because environmental damage knows no borders and spares no country; that is why international conventions concluded for the protection of the environment should be implemented in good faith by all countries as stressed at article 26 of the Vienna Convention on the Law of Treaties (1969). International environmental laws are designed to promote environmental sustainability and mitigate the effects of climate change caused by environmental degradation, which remains a serious global problem (Dewi et al., 2025). Rwanda, as well as several countries, has signed several important treaties, such as the convention on Biological Diversity, climate change, desertification and several protocols which demonstrates its commitment to the effective protection of the environment.

Notwithstanding the international, regional and national instruments put in place to protect the environment, it is important to emphasize that many of the world's states in general and those in the process of development, including Rwanda in particular, are faced with a real problem of effective implementation of environmental law. Still, the effectiveness of the implementation of the international environmental law (IEL) continues to be criticized. For instance, in Rwanda, disasters continue to occur day by day and the number of victims who lose their lives is rising, not to mention the damaged heritage, both personal and common. For example, in May 2023, in Rwanda, around 130 people lost their lives in a single night due to rain and the damaged heritage is equivalent to 300 billion Rwandan francs, neighboring countries and especially the DRC are not spared either. Moreover, according to the 2023 Park Summary Annual Report published by the Rwanda Development Board and African Parks (2023), the Nyungwe National Forest which is the largest forest in Rwanda with covers an area of 1019 km<sup>2</sup>, contains 1068 plants, 13 species of monkeys and 275 species of birds (Nyungwe Forest National Park Organization, 2025), were burned.

This study, therefore, seeks to assess the effectiveness of environmental law and regulation vis-a-vis Rwandan international engagement in the area of environmental protection. Nevertheless, the desire to make our modest contribution to the development of environmental law, and in particular environmental law in Rwanda, a scientific discipline that is still nascent, is at the origin of our inspiration to explore this theme that appears to us to be of great interest.

The article opens with the introduction. It proceeds to examine the domestication of International legal frameworks regarding to environment, domestic legislation, Analysis of the Enforcement Provisions of specific international conventions and domestic laws will be made as each convention and law discussed as well as observations made in the process, Legal analysis of obstacles to the development of environmental law in Rwanda will also be the concern of this paper. The paper will conclude and recommendations made.

### 1.1 Statement of the Problem

The effectiveness of the implementation of the IEL continues to be criticized. Today, we cannot count the number of ecological disasters attributable to human activities that have occurred in recent decades on a global scale (Keirsbilck, 2020). Rwanda is not spared. For instance, the disasters continue to occur day by day and the number of victims who lose their lives is rising, not to mention the damaged heritage, both personal and common. According to the Ministry of Emergency Management (MINEMA) reports, since 2020 up to 2024, each year, more than 240 injured and 110 deaths occur in disasters (Ministry in Charge of Emergency Management [MINEMA] report of 2024. As for the loss of primary forest is concerned, between 2002 and 2024, Rwanda lost 550 hectares of primary rainforest, representing 1% of its total forest cover loss over the same period; moreover, the total area of primary rainforest experienced a decrease of 1% during this period (Global Forest Watch, 2024).

In addition, the environmental legislative arsenal still has a problem of enforcement measures, especially the Ministerial decrees provided for in different laws in force for their implementation are lacking to this day. For instance, the ministerial order provided at Article 19 of the law N°48/2018 of 13/08/2018 Law on environment pertaining to the disposal, management and trans-boundary movements of hazardous or toxic waste is not yet established. This ineffectiveness in implementation of IEL shows that the environmental legislative arsenal may have a problem of legal enforcement measures, which motivate this research paper in assessing the effectiveness of environmental law and regulation *vis-a-vis* Rwandan international engagement in the area of environmental protection.

### 1.2 Research Objectives

- i. To assess the obstacles that hinder the effective application of international environmental protection conventions in Rwanda.
- ii. To find out the constraints of implementing environmental regulations in Rwanda

## II. LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.1.1 Notion of Environment

Legally speaking, the environment is understood as a set of components of a specific environment that the protection legislation designates *a contrario* by reference to the convenience of the neighborhood, to public health, safety and sanitation, to agriculture and nature, and finally to the conservation of sites and monuments (Comu, 2000). Although positive law does not currently offer a proper definition of the environment, reading certain texts seems to support the most extensive conception. Thus, in terms of impact studies, the environment includes, “in particular, fauna and flora, cities and landscapes, soil, water, air, climate, natural environments and biological balances” but the analysis of direct and indirect effects also concerns the protection of property and cultural heritage, and, where appropriate, the convenience of the neighborhood (noise, vibrations, odors, light emissions) or hygiene, health, safety, and public health (Van Lang, 2021, p.14).

Thus, based on the above, the environment is a balanced set of biotic and abiotic elements that surround a body and can interact with one another. The concept of “environment” includes (but is not limited to) spaces, resources, terrestrial and marine natural environments, sites, daytime and nighttime landscapes, air quality, living organisms and biodiversity, biological processes, soils, and geodiversity (Jaffré et al., 1997, p.1); abusive exploitation of resources and poaching.

#### 2.1.2 Concepts related to the environment

##### *The Biosphere*

This is a thin layer that surrounds the earth and penetrates a few hundred meters below the surface of the earth and of course under the oceans. Lavieille (2004, p.7) describes it as including parts of the atmosphere (gaseous layer constituting the outer envelope of the Earth), the hydrosphere (all the waters of the planet) and the lithosphere (outer layer of the Earth consisting of the crust and the upper mantle).

## **Ecology**

This is the part of science that concerns the economy of nature, the study of all the relationships of organisms with their physical and biological environment. Christian (2003) considered ecology as "*a method for understanding society, transversally to our usual systems of interpretation, in order to ensure the quality of the relationships between man and his environment*". He distinguished three ways of considering ecology in society, namely ecology applied to the environment, social ecology which deals with the relationships between man and his environment (couple, city, work) in order to rebuild denser social relationships, and mental ecology which deals with the subjective relationships between man and his body, time, in order to fight against standardization and depersonalization. (Christian, 2003).

## **The Ecosystem**

This is a fundamental unit of study of ecology formed by the association of a community of living species and a physical environment in constant interaction. Chang (2010) pointed out that every ecological system or ecosystem comprises all the organisms (i.e., the "community") in a given area interacting with the physical environment in such a way that an energy flow generates a clearly defined trophic structure, biotic diversity, and cycles of matter (i.e., exchanges of matter between living and non-living parts) within the system (Odum, 1971, as cited in Christian, 2003, p.2). Christian (2003, p.2) highlighted that in the ecosystem possesses three common properties: the presence of (1) biotic and (2) abiotic components, and (3) their interactions. He explained that the biotic component is described as encompassing the communities of organisms, while the abiotic component includes their chemical and physical environments. These interactions can include those related to (1) food webs and trophic dynamics, and (2) the cycling of matter, particularly nutrients.

## **2.2. Empirical Review**

### **2.2.1 International Conventions Relating to Environment**

Over the past decades, multilateral agreements have multiplied, at the global and regional levels, to resolve global environmental problems. The development of this type of agreement is a complex and continuous process. After the Genocide against Tutsi in 1994, Rwanda has taken an important step by ratifying international conventions relating to the protection and promotion of the environment. In the period of more than nine years about ten international conventions in that area was ratified. These conventions include convention on Biological Diversity ratified in 1995 (Presidential Decree No. 021/01, 1995); United Nations Convention on Desertification (Presidential Order No. 17/01, 1995) and United Nations Framework Convention on Climatic Changes (UNFCCC) ratified in 1998 (Presidential Decree No. 021/01, 1995); the Vienna Convention for the Protection of the Ozone Layer accessed in 2000 (Rwanda Environment Management Authority, 2022); the Stockholm Convention on Persistent Organic Polluting Agents ratified in 2002. In 2003 more than three conventions have been ratified includes the Convention on the Conservation of Migratory Species of Wild Animals (Law N° 35/2003, 2003), the Ramsar Convention on Wetlands (Law n° 37/2003, 2003), the Convention on the Prior Informed Procedure for certain hazardous chemicals and pesticides in international trade (Presidential Order n° 28/01, 2003), the Kyoto Protocol to the United Nations Convention on Climate Change (Law n° 36/2003, 2003), and Basel Convention on control of transboundary movements of hazardous wastes and their disposal (Rwanda Environment Management Authority, 2023).

Therefore, since Rwanda is a State Party to the aforementioned conventions, they have the force of law in Rwanda, considering that they have been incorporated into its national law. In the same perspective, at domestic level, in reaction different problems associated with issues of environment, several initiatives and pieces of legislation have been enacted, to address the challenges that flow there from. Since a brief presentation of all the international instruments cited above would lead us to exceed the editorial limitations established for this article, we will only dwell on the most important ones, including those related to climate change, biodiversity, and desertification, focus only on the obligation of states provided in environmental treaties.

In fact, the states party to the United Nations Framework Convention on Climate Change (United Nations Framework Convention on Climate Change [UNFCCC], 1992), have three kinds of obligations namely mitigations obligations, adaptation obligations and obligations of co-operation. In this perspective, as provided at its Article 4, states parties commit to safeguard the climate system for the benefit of present and future generations; to take into account the specific needs and special circumstances of developing countries, particularly those that are particularly vulnerable to the adverse effects of the response to climate change; to take precautionary measures to avoid, prevent or mitigate the causes of climate change and to limit its adverse effects; to work for sustainable development and take measures to protect the climate system against human-induced changes that are adapted to the specific circumstances of each party, and integrated into national development programs such as education and public awareness, and to prevent measures taken to combat climate change from constituting a means of imposing arbitrary or unjustifiable discrimination on international trade, or disguised obstacles to such trade.

The Convention on Biological Diversity (CBD, 1992), which is often considered the key document for sustainable development, has three main objectives (CBD, 1992, Art.1) namely the conservation of biodiversity (or

biological diversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources. As stressed by Birnie and Boyle (2002, p.571). The objectives of this convention are reflected in substantial commitments of a binding nature under Articles 6 to 20. By ratifying this Convention, the Parties have committed themselves to develop national strategies and action plans, cooperate with other contracting parties for the conservation and sustainable use of biological diversity, integrate the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programs and policies, as well as into national decision-making processes, use impact assessments to reduce adverse effects on biological diversity; adopt measures concerning research and training as well as education and public awareness on the conservation and sustainable use of the constituent elements of biological diversity.

The United Nations Convention to Combat Desertification (UNCCD, 1994) deals specifically with arid zones and promotes sustainable land management in all climatic zones. As provided at its article 4 and 5, this convention encourages Parties to establish strategies and priorities as well as relevant legislation by developing emergency plans; tackling the causes and socio-economic factors that promote desertification, to promote international cooperation on technology transfer, scientific research and development, collection and dissemination of information, strengthen capacities, education and public awareness, especially women and youth, for the fight against desertification, establish action programs, scientific and technical cooperation in the field of combating desertification (UNCCD, 1994, art.4-5).

Analysis of the provisions of international environmental conventions reveals that some important articles are not sufficiently binding and that their provisions remain inadequate. For example, Article 4 (2) of the UNFCCC does not provide effective methods for reducing greenhouse gas emissions in industrialized countries, which are nevertheless major sources of emissions. Furthermore, the Convention does not propose adequate methods for preserving the climate system and stabilizing greenhouse gas concentrations in the atmosphere, since it only mentions forests as a means of mitigating climate change.

### III. METHODOLOGY

#### 3.1 Research Design

This study utilizes an analytical research design, principally adopting a qualitative technique grounded in doctrinal legal research. This research is exploratory, aiming to evaluate the efficacy of international environmental conventions in Rwanda through a comprehensive review of legal texts, policy papers, and scholarly literature. It also used to review the existing institutional frameworks in Rwanda.

#### 3.2 Data collection

The data collection involved an extensive desk review of primary and secondary sources. This process entailed the collection of national legislation, orders and regulations passed by Rwanda and ratified international treaties in the area of environment protection. Furthermore, policy documents and official reports from prominent government organizations, including the Rwanda Environment Management Authority (REMA), the Ministry of Emergency Management (MINEMA), and the Rwanda Green Fund (FONERWA), were examined. Academic texts, peer-reviewed publications, and doctrinal examinations acknowledged in the domain of environmental law were used to enhance depth and perspective.

During the data collection process, meticulous attention was devoted to the relevance, credibility, and timeliness of each source. Only documents pertinent to Rwanda's legal and institutional framework for environmental protection were incorporated. All chosen materials were mandated to be official and verified, prioritizing the most recent and relevant texts and reports. To uphold scientific rigor and reliability, non-official, non-academic, or unverifiable sources were removed.

#### 3.3. Data Analysis and Presentation

The gathered resources underwent qualitative analysis, entailing a thorough examination and comparison of legal texts, international treaties, and policy documents. The research analyzed the integration and application of international treaties on biodiversity, climate change, and desertification within Rwandan legislation, highlighting both strengths and deficiencies in the current frameworks. Emphasis was made on legal and practical impediments that may obstruct effective implementation.

The findings are presented thematically, first with an overview of the domestication of international legal frameworks, followed by an analysis of national laws, enforcement mechanisms, and institutional difficulties. The discourse thereafter assesses the alignment of Rwanda's legal and regulatory frameworks with its international obligations, emphasizing both accomplishments and persistent issues.

## IV. FINDINGS & DISCUSSION

### 4.1 Findings

#### 4.1.1 Legal Analysis of Obstacles to the Development of Environmental Law in Rwanda

The Rwandan constitution: in Rwanda, environmental protection has been recognized as a constitutionally valued objective since 2003. The Constitution of Rwanda (2003, revised up date) affirms it as an individual right. In terms of article 22, everyone has the right to live in a clean and healthy environment, it also places the burden to ensure the protection of the environment on the state, establish the legal system determining the modalities for the protection, conservation and promoting the environment (Republic of Rwanda, 2003, revised up date, Art.53). In addition, it prohibits to the state to make international agreements permitting the transit or dumping, on national territory, of toxic waste and other hazardous materials likely to cause serious damage to public health and the environment (Republic of Rwanda, 2003, Art.170). Most importantly, it imposes on everyone the obligation to protect the environment (Republic of Rwanda, 2003, revised up date, Art.22).

Analytically, the Rwandan constitutions recognize the importance of inserting provisions of protection of environment, as it bears obligation on state as well as to the people or individual person which is on Rwandan territory. This situation demonstrates how the state of Rwanda elevates an environmental concern among the basic human rights and the society' norms protected in all level of law. However, it smees that some elements such as the protection of the ecosystems and biodiversity in the interest of future generations are missing in the text; furthermore, simply incorporating the environment into the Constitution as an object of individual rights is not enough to guarantee its effective protection, given that the law that will be promulgated under this constitution does not provide for provisions enabling the exercise of these rights, which make it a constitutional provision lacking judicial enforcement. Thus, incorporate into the Constitution that the Republic or the state must protects the environment, ecosystems and biodiversity, also in the interest of future generations and provide for legislative implementation of individual right to the environment, can make it more effective in protecting environmental rights.

#### 4.1.2 Implementation of the Convention on Biological Diversity

Prior to 2005, laws on environmental protection lacked strong environmental frameworks that led to increasing degradation. In the implementing the CBD, the legislation on Environmental which determines the modalities of protection, conservation and promotion of environment in Rwanda was promulgated in 2005. It was the first major legal instrument on protection of the environment.

The 2005 environmental organic law established an Agency known as the Rwanda Environment Management Authority, which can be sue and be sued in its corporate name. It was created by law N° 16/2006 of 03/04/2006 with the aim of managing all problems related to the environment, including the management of biological diversity, is an achievement of environmental protection; a National Environmental Fund (FONERWA) was also created by law N° 39/2017 of 16/08/2017, whose mission is to mobilize and manage funds for the financing of activities aimed at the protection and preservation of the environment, natural resources and in the fight against climate change and its effects.

More importantly, policies and Strategies to protect the country's natural and cultural resources and the conservation and management of biodiversity have been adopted. First, since September 2011, a biodiversity policy, known as the "Rwanda Biodiversity Policy", has been adopted in Rwanda (Rwanda Environment Management Authority [REMA], 2016, p.7). The policy intended to provide a comprehensive and coherent policy framework to strengthen the government's capacity to conserve and protect the country's natural and cultural resources; to provide a legal and institutional framework for biodiversity conservation and management throughout the country; to promote partnerships, incentives and benefit sharing to improve biodiversity conservation and management; to promote the generation, management of conservation knowledge, including traditional knowledge, and its application in biodiversity conservation, to provide a framework for access to genetic resources and sharing of benefits arising from these resources and to promote positive attitudes towards biodiversity conservation and management.

Furthermore, the Rwanda National Biodiversity Strategy and Action Plan (Rwanda Environment Management Authority [REMA], 2020) was adopted, which reflects a framework for the conservation, sustainable use and equitable sharing of benefits arising from the use of the country's biodiversity and ecosystem services. It also provides a framework to maintain the environmental conditions necessary to reduce poverty, ensure sustainable development and food security of the country (REMA, 2023, p.72). In the same vein, in the year 2020 REMA put in place a national strategy for the implementation of the biosafety framework (REMA, 2020), with the objective of ensuring and guaranteeing public and environmental safety with regard to accident prevention, containment and waste disposal when genetically modified organisms (GMOs) are used in research and development (R&D) as well as in the industrial production process and promoting biosafety in the application and exploitation of innovative technologies of biotechnology products for the general well-being of humanity. Certainly, modern biotechnology can help genetically fingerprint plant and animal species in order to preserve endangered species through biochemical control of pests and

diseases, cloning of species and exploitation of plants to produce biofuel, a more energy source respectful of the environment.

Importantly in view of implementing the international convention on biological diversity the 2005 legislation on environment has been repealed in order to address new environmental challenges like land degradation, electronic waste, climate change and strengthening enforcement mechanisms among others. In the same objective, Rwanda had promulgated a special law, namely Law No 064/2021 of 14/10/2021 governing biological diversity, the purpose of which is to determine the modalities for the conservation, management, protection and promotion of biological diversity in Rwanda.

#### **4.1.3 Implementing the Convention to Combat Desertification**

The United Nations Convention to Combat Desertification (UNCCD, 1992) is the only legally binding multilateral environmental agreement that addresses the challenges of desertification, drought and land degradation, from both an environmental and a development perspective.

In Rwanda, the state started addressing the problem of desertification with the adoption of the national policies and legal strategies on the Environment. Since 2006, a National Strategy and Action Plan (Republic of Rwanda, 2023) to combat desertification has been put in place. Among the targeted initiatives there are actions for the fight against erosion and management of natural resources, reforestation activities and rehabilitation of damaged forest areas, integrated management of watersheds, rainwater retention for agro-pastoral activities, the fight against the reduction of natural water reservoirs. In February 2018, a National Forest Policy was presented, with the overall objective of defining, in concise statements, the government's medium and long-term intentions for the development and management of national forest resources. Forest resources will be managed to play a vital role in supporting Rwanda's development goals for sustainable, low-carbon and climate-resilient development in order to improve the livelihoods of present and future generations.

Other efforts made by the Rwanda authorities with a view to prevent and control desertification include the establishment in 2008 of the National Forestry Authority (NAFA) (Law no. 17/2008, 2008) which was replaced in 2019 by a new institution called Rwanda Forestry Authority (RFA) (Law no. 72/2019, 2020) whose mission is to ensure the increase of forest resources, their management and their protection for the purposes of sustainable development (Law no. 72/2019, 2020, Art.5).

#### **4.1.4 The Implementing of the UN Framework Convention on Climate Change**

The fight against climate change is one of the priorities of our century. The risks that climate change poses to humanity are so great that the world's governing bodies are compelled to take action to avert the danger. To this end, the principles established for environmental protection in general are being applied; this is the case with the principle of common but differentiated responsibilities, proclaimed in the Rio Declaration (1992, Principle 7). According to this principle, all states and all people are obligated, each according to their capabilities, to protect the environment. In the fight against climate change, this principle plays an important role, especially since developing countries have emphasized the responsibility of industrialized countries in the face of the current disastrous state of the climate (Rio Declaration, 1992, Principle 7). However, under the aforementioned principle of common but differentiated responsibilities, a country like Rwanda is also obligated to apply international legal instruments to combat climate change.

In fact, as also pointed out by Chang (2010), the binding nature of legal obligations arising from international legal instruments in environmental matters, as well as in other matters, is not sufficient to make a legal document effective; it is their implementation at the national level and compliance with these obligations that make them effective. The country of Rwanda, following the effects of the war and the genocide perpetrated against the Tutsi, had a problem of lack of information relating to climatic phenomena. To overcome these shortcomings, a project to install and rehabilitate hydro-meteorological stations was initiated (Republic of Rwanda, Ministry of Environment, 2015). As part of the implementation of the Climate Change Convention, Rwanda had prepared the national action plan (NAPA) since 2005. The report made on the NAPA has guided policy makers and national planners on the priorities of vulnerable economic sectors as well as the priority strategies and actions for adaptation to climate change that have been identified (Republique du Rwanda, 2006). Since then, the climate change management policy has been initiated. This policy aims to put in place the systems, structures, programs, resources and capacities necessary to reduce disaster risks and consequently react against and find solutions to disaster threats in Rwanda in order to save human lives, limit losses of property, the economy and the environment to a minimum and finally ensure the continuity and sustainability of development.

On the institutional level, apart from the institutions in charge of the environment in Rwanda, in particular, the Ministry of Environment; Rwanda Environment Management Authority (REMA), Rwanda Forestry Authority (NAFA) and Rwanda Green Fund (FONERWA) for the forestry sector, a Ministry in charge of disasters "MINEMA" has been set up, including those related to climate change.

At the strategic level, since 2019, the National Policy on Environment and Climate Change has been established. This reaffirms the commitment to combat climate change and the determination to mitigate the potential challenges that climate change may pose to the sustainable development of Rwanda. The proposed project must recognize the National Policy on Environment and Climate Change and ensure that the improvement of the development and well-being of Rwandan citizens are taken into account, while including environmental aspects in the decision-making process. Rwanda must be a nation with a clean and healthy environment, resilient to climate variability and change, which promotes a high quality of life for its society (Rwanda Environment Management Authority, [REMA], 2023, p. 72). Moreover, as a party to the UNFCCC, Rwanda seeks to contribute to the ambitious goal of limiting temperature increase to 2°C with efforts to reach 1.5°C agreed under the Paris Agreement. In this respect, the 2020 Rwanda's enhanced Nationally Determined Contributions (NDC) document presents the government's update of its first NDCs for mitigation and adaptation for the period up to 2030. In the same vein, the Rwandan authority had adopted a Strategic Environmental Management Plan (2022-2026), which sets out the main priorities for the next five years. The overall objective of this strategic plan is to achieve better environmental management and increased resilience to climate change for sustainable development and livelihoods (REMA, 2022).

#### **4.1.5 Implementation constraints on environmental regulations in Rwanda**

Although numerous regulations, policies and strategies exist to support environmental conservation, the efficacy of the regulations has been limited due to several key factors, including non-adapted legislation, abundance of legal texts that may sabotage their implementation and their enforcement by institutions in charge of prosecution and adjudication the environment crimes, challenges associated with demographic growth and pressure, insufficient information and human and lack of awareness on environmental issues.

In principle, if legislation has gaps or deficiencies, it cannot adequately ensure effective protection. The absence of implementing texts and the antagonism between certain laws (particularly land and forestry laws) poses a major problem of interpretation, which is added to that of their understanding, linked to the use of technical language, complicating their understanding by the majority of the local population. In fact, this is the case, for example, of Law N° 064/2021 of 14/10/2021 governing biological diversity, all the terms used in the three annexes of this law, namely critically endangered (Law No. 064/2021, Annex n° 1, p.86), endangered species (Law No. 064/2021, Annex n° 2, p.121) and vulnerable species (Law No. 064/2021, Annex n° 3, p.154) species are purely scientific and written in English and which make them incomprehensible to the population.

Furthermore, the abundance of legal texts generates conflicts and contradictions, which can also complicate their effective implementation. In Rwandan legal system, the legal provisions that protect the environment are scattered in the various sectoral and other legal texts. Thus, these provisions are found in laws regulating forestry (Law no. 46/2024, 2024), in land laws (Law no. 27/2021, 2021), in urban planning codes (N° 04/Cab.M/015, 2015), in the law determining offenses and penalties in general among others; this leads to contradictions in the penal provisions, and even a conflict of laws, especially with regard to the penalties provided for by these various provisions for the same offenses and complicates the task of those responsible for solving environmental problems. For example, ecological offenses are provided in two different legal instruments and provided penalties are very different. The Article 57 of the law on environmental protection provides for ecological offenses and their penalties and the same ecological offenses are also provided for and punished by the law on the use and management of water resources in Rwanda at its Article 38 (Law no. 49/2018). The penalties are totally different, in the law on the environment, the immersion of waste in a humid place is punishable with a penalty of imprisonment of at least three (3) years but not exceeding five (5) years and a fine of at least 5,000,000 Frw but not exceeding 10,000,000 Frw, while in law on the use and management of water resources in Rwanda the provided sentence is an imprisonment of at least one (1) month but not exceeding three (3) months and a fine of at least 2,000,000 Frw but not exceeding 5,000,000 Frw or one of these penalties only.

A part for legal other challenges including demographic growth and pressure, insufficient information and human material are also to be highlighted in Rwanda as well as some other countries. Firstly, the strong demographic growth of an agricultural population leads to strong pressure on the land and therefore differential degradation. This is the case of Rwanda, a country with a very small area with very high population growth rates where the population number is 14,173,629 on the area of 26,388 km<sup>2</sup>, i.e. 571 populations per square kilometer (Worldometer. (n.d.). As land becomes increasingly scarce, the search for new arable land becomes inevitable, while the old ones are overexploited without restoring fertility due to fragmentation, relief and low purchasing power to obtain agricultural inputs. Soil degradation is then inevitable for these soils of low natural fertility that do not allow agriculture on all soils. Additionally, there is the problem of mass awareness of environmental problems among the public, and for that some abuses of environment can be committed because ignorance.

Furthermore, the ignorance can also be a major obstacle to the enforcement of environmental legislation and access to legal remedies. Therefore, it is important to emphasize that everyone must be aware of the consequences of

their own omissions or actions, as well as those of others or institutions, on the environment and their impact on their own lives.

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusions

Issues such as deforestation, climate change, biodiversity loss and global warming, are all concerns for the international community. Similarly, any initiative or development project must be guided by the principle of common concern for humanity. Rwanda, which is among the countries endowed with significant natural resources, is heavily dependent on this natural capital for its development.

An analysis of laws relating to the environment, biodiversity and forests and their effectiveness was carried out. The study demonstrates that despite the existence of more or less well-constructed legislative and regulatory frameworks, the adaptation of environmental laws is needed and the legislative efforts require some adjustments in order to meet the challenges they currently pose. Additionally, the lack of awareness of environmental issues in Rwanda also hinders effective environmental regulation and management.

### 5.2 Recommendations

Drawing from the findings of this study, for enhancing the success of the effective application of international environmental treaties in Rwanda, the research recommends that the Government of Rwanda should ensure incorporate the protection of the ecosystems and biodiversity in the interest of future generations in the Rwandan constitution. It should also harmonize the environmental laws and ensure that technical language and terms used in environmental laws that complicate understanding, for example those relating to critically endangered species, threatened species and vulnerable species, are translated into language understandable by the majority of the population. Lastly, the public authority should advocate environmental education for all in order to arouse in the population, the ecological awareness that is still often not sufficient in our country today.

### Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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