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**LLM Dissertation in Marine and Environmental Law**

**TOWARDS THE DEVELOPMENT OF LEGAL PROTECTION OF  
BIODIVERSITY IN RWANDA: AN APPRAISAL**

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Research dissertation presented for the approval of Senate in fulfillment of part of the requirements for the degree of Master of Laws in approved courses and a minor dissertation. The other part of the requirement for the degree was the completion of a programme of courses.

I do hereby declare that I have read and understood the regulations governing submission of the Master of laws dissertations, including those relating to length and plagiarism, as contained in the rules of this University, and that this dissertation conforms to those regulations.

**13<sup>th</sup> February 2008**

**Declaration**

I, Marie Rose Turamwishimiye, do hereby declare that this minor dissertation submitted for the degree of Master of Laws at the University of Cape Town has not been previously submitted by me at this or any other University, that it is my own work and that all referenced material in it have been duly acknowledged.

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Marie Rose Turamwishimiye

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## **Abstract**

This study examines the Convention on Biological Diversity (CBD) in the context of its implementation in Rwanda. It firstly examines the relevant rights and obligations which country parties have under the CBD; it then examines the current law in Rwanda relevant and applicable to conservation, use and equitable sharing of benefits derived from utilization of biological diversity.

The main findings of the study are that certain gaps exist in Rwandan law with the result that it does not give full effect to the convention. In conclusion, some recommendations are made to rectify those deficiencies in particular by recommending a Biodiversity Act for Rwanda and setting out its suggested essential elements.

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## List of abbreviations

AIA	: Advanced Informed Agreement
ANP	: Akagera National Park
B.O	: Bulletin Officiel (Official Bulletin)
CBD	: Convention on Biological Diversity
CITES	: Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	: Convention on the Conservation of Migratory Species
COPs	: Conference of the Parties
EC	: European Community
Ed.	: Edition
EIA	: Environmental Impact Assessment
GMOs	: Genetically Modified Organisms
IRST	: Institute of Science and Technological Research
IUCN	: World Conservation Union (formerly the International Union for the Conservation of Nature and Natural Resources)
LMOs	: Living Modified Organisms
MINITERE	: Ministry of Lands, Environment, Forestry, Water and Mines
NBC	: National Biosafety Committee
NCA	: National Competent Authority
NGOs	: Non-Governmental Organizations
NNP	: Nyungwe National Park
NUR	: National University of Rwanda
NVP	: National Volcano Park
ORTPN	: Rwandan Office of Tourism and National Parks (Office Rwandais du Tourisme et des Parcs Nationaux)
PIC	: Prior Informed Consent
RECIEL	: Review of European Community and International Environmental Law
REMA	: Rwanda Environment Management Authority
RNBSAP	: Rwandan National Biodiversity Strategy and Action Plan

UNCCD	: United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa
UNCED	: United Nations Conference on Environment and Development
UNEP	: United Nations Environment Programme
UNESCO	: United Nations Educational, Scientific and Cultural Organization
UNFCCC	: United Nations Framework Convention on Climate Change
WCN	: World Charter for Nature
WCS	: World Conservation Strategy
WSSD	: World Summit on Sustainable Development

## Chapter One: Introduction to the study

### 1.1 Introduction

Protection of biological diversity raises the fundamental issue of conflict of interest between conservation and use of biological resources. Interaction of humans and other living organisms has been the subject of discussion, debate and regulation. Historically, some people believed that man had dominion over other living resources, which led to the conclusion that they are of utilitarian value.<sup>1</sup> This led to over-utilization of those resources without awareness of human future needs and respect to other living resources. Hence, quite a number of those resources have disappeared completely, and others are disappearing.

Today, there seems to be an agreement among scientists that species are still disappearing at an alarming and accelerating rate and some of them are disappearing without being known to science.<sup>2</sup> No precise estimate of the loss can be made for even the number of species originally present is not exactly known.<sup>3</sup> According to World Conservation Monitoring Centre, it is estimated that continued loss at the current rate would destroy up to 15 percent of the earth's species over the next twenty years, with twenty to seventy five species per day being condemned by 2040.<sup>4</sup> The loss may be natural, but a great extinction is caused by human activities. It is therefore the responsibility of human beings to protect the remaining part of biological diversity.<sup>5</sup> They are the only ones who are aware of the implications of their activities and actions, and who can take measures of controlling what they do in order to minimize the risks of species' extinction.

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<sup>1</sup> Kiss A and Shelton D *International Environmental Law* 3<sup>rd</sup> ed (2003) Transnational Publishers New York at 351.

<sup>2</sup> Ibid.

<sup>3</sup> Brown Weiss E et al. *International Environmental Law and Policy* (1998) Aspen Law & Business at 930.

<sup>4</sup> World Conservation Monitoring Center *Global biodiversity: Earth's Living Resources in the 21<sup>st</sup> Century* (2000) p. 91-5 and 117-25 in P Sands *Principles of International Environmental Law* 2<sup>nd</sup> edition (2003) Cambridge University Press at 500.

<sup>5</sup> Brown Weiss et al. *supra* note 3 at 931.

Protection of biological diversity is increasingly becoming one of the current greatest challenges as it raises the fundamental issue of conflicts of interests between conservation and use of biological resources. Environmental, economic, social and developmental interests largely account for the dilemma. Invariably, biodiversity is ignored in favour of economic, social and developmental interests, due to lack of its evaluation in economic and monetary terms. However, the conservation of biodiversity is of high and long-lasting benefit, even though justifying this is not that simple.

Despite these conflicts of interests, the international community has recognised the value of biodiversity. In attempting to protect it, it acknowledges that the law is a powerful tool. Legal mechanisms play an important role in achieving fixed goals in terms of biodiversity protection, either on an international level or a national one.<sup>6</sup> Internationally, adopted instruments provide for international obligations, which prescribe common commitments and measures to achieve the targeted objectives. Nationally, legislation enacted in each country provides for a framework regulating certain behaviour, providing incentives to achieve certain results and setting appropriate responsible institutions in place.<sup>7</sup>

The Convention on Biological Diversity (CBD) was adopted in 1992 and it was preceded by other international and regional conventions such as the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Migratory Species (CMS), etc., which contribute indirectly to the protection of biodiversity. At the heart of all these conventions (with much emphasis on the CBD), it is acknowledged that biodiversity conservation is greatly dependent on national measures. It is the country that should regulate activities and processes that lead to the deterioration of the natural environment.<sup>8</sup> Although the CBD states its objectives and clarifies the obligations of state parties including Rwanda, its domestic implementation seems to be problematic as it depends on the will of member parties.

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<sup>6</sup> C de Klemm in collaboration with C Shine *Biological Conservation and the Law : Legal Mechanisms for Conserving Species and Ecosystems* (1993) Environmental Policy and Law Paper No. 29 IUNC Environmental Law Centre IUNC at xvi.

<sup>7</sup> Ibid.

<sup>8</sup> Id. at xv.

## 1.2 Biodiversity in Rwanda

Rwanda has a very rich biodiversity, despite its small territorial size. It belongs to a zone of global ecological importance called ‘the Albertine Rift Eco-region’, which is an area of exceptional endemism, and contains many species threatened with global extinction, particularly within the mountain forest habitats.<sup>9</sup> It is located between the forest ecosystems of the Congo basin and the great rift valleys of the east. Thus, it shares in the biological riches of both worlds, offering a high concentration of biodiversity.<sup>10</sup>

Rwanda is covered by diversified ecosystems: natural ecosystems consisting of mountain rainforests, gallery forests, savannas, wetlands, aquatic areas and ecosystems that have been altered by man’s activities consisting of afforestation and cultivated areas.<sup>11</sup> All these ecosystems accommodate a rich flora and fauna. The flora comprises hundreds of higher and lower plant species. Concerning the fauna, the dense mountain forests of the Volcanoes National Park are home to an important population of mountain gorillas.<sup>12</sup> The Nyungwe National Park hosts 13 species of primates and 275 bird species.<sup>13</sup> The Akagera National Park is home to a great diversity of wild species, such as zebras, baboons, elephants, etc.<sup>14</sup> The majority of Rwanda’s wetlands are also home to species such as crocodiles, hippopotamus, turtles, wild ducks, and snakes. In addition, the Rugezi ecosystem has been declared a Ramsar site.<sup>15</sup> All these different ecosystems and species form the Rwandan rich biodiversity. This raises the question of what biodiversity is.

## 1.3 Definitions

Biodiversity or biological diversity is a comprehensive term encompassing the entire variety of nature. It comprises all species of plants, trees, animals, and micro-organisms

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<sup>9</sup> A J Plumtre et al. *The Biodiversity of the Albertine* (2003) Technical Report N°3.

<sup>10</sup> Ibid.

<sup>11</sup> MINITERE *Environmental framework policy* (2002) Kigali.

<sup>12</sup> MINITERE *Second National Report on the Implementation of the Convention on Biological Diversity (CBD)* (2005) at 34.

<sup>13</sup> A J Plumtre et al. *Biodiversity survey of the Nyungwe forest reserve in South West of Rwanda* WCS (2002) Working Paper n°19.

<sup>14</sup> MINITERE supra note 11 at 34.

<sup>15</sup> Ibid.

as well as the ecosystems of which they are part and which provide their habitat.<sup>16</sup> The CBD broadly defines the term biodiversity to include wild and domesticated animals and wild and cultivated plants found on land and seas in the following terms:

*“Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”.*<sup>17</sup>

The Rwandan environment framework law defines biodiversity as: *“the variability of the living organisms of all types including man, animals of all species, plants of all types, be it on land or underground, in water as well as in the atmosphere and the interactions among them. It means all things that breathe.”*<sup>18</sup>

Biological diversity is then the frequency and variety of life in all its forms, levels and combinations. It describes the differences within and between ecosystems, species and genes.<sup>19</sup> Biological diversity is mostly but not exclusively described in terms of three conceptual levels defined below.

### **1.3.1 Genetic diversity**

Genes are biochemical packages that are passed on by parents to their offspring, and which determine the physical and biochemical characteristics of offspring.<sup>20</sup> Genetic diversity is diversity of genes within a species enabling organisms to evolve and adapt to new conditions.<sup>21</sup>

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<sup>16</sup> P Birnie and A Boyle *International Law & the Environment* 2<sup>nd</sup> ed (2002) Oxford University Press at 599.

<sup>17</sup> Article 2 CBD.

<sup>18</sup> Article 4 (4) Environmental Framework Law.

<sup>19</sup> L Glowka et al. *A guide to the Undertaking Biodiversity Legal and Institutional Profiles* (1998) Environmental Policy and Law Paper No. 35 IUNC Environmental Law Centre at 3.

<sup>20</sup> J Glazewski *Environmental Law in South Africa* 2<sup>nd</sup> ed (2005) Lexis Nexis Butterworths Durban at 257.

<sup>21</sup> N Cunningham and M Young *Redesigning Environmental Regulation: The case of Biodiversity Conservation* Australian Centre for Environmental Law (2001) Available at [www.elaw.org/resources/text.asp,2001](http://www.elaw.org/resources/text.asp,2001) [Accessed 29 September 2007].

### **1.3.2 Species diversity**

Species are populations within which gene flows occur under natural conditions, meaning that within a species, individuals are able to interbreed freely.<sup>22</sup> Species diversity is the variety and abundance of different types of organisms within a specific habitat or ecosystem.<sup>23</sup>

### **1.3.3 Ecosystem diversity**

Ecosystem refers to communities of plants, animals and micro-organisms, and the soil, water and air on which they depend.<sup>24</sup> It contains a complex interrelationship of species and functions leading towards equilibrium, governed by natural rules. Ecosystem diversity is a range of natural habitats, biotic communities and ecological processes within which species variety has evolved and to which they are uniquely adapted.<sup>25</sup> All these elements of biodiversity have been decreasing in Rwanda like in other countries of the world, due to threats examined in the following section.

## **1.4 Major threats to biodiversity**

Although the loss may be natural, a great extinction is caused by human activities generally and in Rwanda. They include over-exploitation of biological resources, industrialization, urbanization, desertification, destruction of habitats, pollution and agriculture, and human population explosion.

Generally and in Rwanda, over-exploitation of biological resources is the major problem. Some ecosystems and quite a number of species have been disappearing dramatically over decades as human population and resource consumption have been increasing. For instance in Rwanda, the ecosystem of Gishwati natural forest has disappeared on the country's map and animal species such as elephants and hyenas have become rare today.

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<sup>22</sup> D Hunter et al. *International Environmental Law and Policy* (1998) New York Foundation Press at 936.

<sup>23</sup> Cunningham and M Young *supra* note 21.

<sup>24</sup> Glazewski *supra* note 20 at 258.

<sup>25</sup> Kiss and Shelton *supra* note 1 at 353.

Agriculture is another major source of biodiversity loss worldwide and in Rwanda. It causes the depletion of genetic heritage, as cultivation of one product over large areas replaces the genetic richness of natural prairies. Forests of a single type of tree displace natural wood.<sup>26</sup> In addition, agricultural techniques create varieties of plants or domestic animals that are particularly productive, to the detriment of varieties whose productivity is lower, which are more primitive and closer to the wild origin.<sup>27</sup> Moreover, fertilizers and pesticides used to treat crops harm land and drive animals away.

Introduction of new species has also been recorded to be responsible for species' extinction generally and in Rwanda.<sup>28</sup> To introduce alien species in a new habitat greatly affects the natural environment as many ecosystems have little immunity to new species, especially when the intruder has different traits than the original species.<sup>29</sup>

Pollution and climate change are other great threats to biodiversity both in Rwanda and worldwide. Pollutants introduced in soil, water and atmosphere destroy ecosystems and may reduce or eliminate populations of sensitive species.<sup>30</sup> Global climate change constitutes a major threat as natural changes in weather affect biodiversity and ecological systems, and many species cannot redistribute themselves fast enough to keep up with changes and alterations in ecosystem structure and function.<sup>31</sup>

In Rwanda, biodiversity has been decreasing as a result of different threats as discussed above. There is the problem of over-exploitation of biological resources due to population pressure. Agriculture, pollution, uncontrolled introduction of exotic species, poaching and bush fires threaten Rwanda's biodiversity. Consequently, some

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<sup>26</sup> Hunter supra note 22 at 946.

<sup>27</sup> Kiss and Shelton supra note 1 at 354.

<sup>28</sup> Hunter et al. supra note 22 at 945.

<sup>29</sup> Ibid.

<sup>30</sup> Hunter supra note 22 at 945.

<sup>31</sup> J Towbridge *The significance of biodiversity: Why We Should Protect the Natural Environment* Available at <http://serendip.bryncŕawr.edu/biology/b103/f01/web/towbridge.html> [Accessed 15 September 2007].

plant and animal species became extinct all together, others have decreased significantly. For example, leopards became extinct since 1971, the hyena, the elephant, the buffalos have become rare today and current research has shown that 115 plant species are threatened with extinction in Rwanda.<sup>32</sup> Habitats including protected areas have been destroyed and reduced in their territorial sizes. Those problems have existed in Rwanda for many years, but recently they have been aggravated by civil war of 1990-1994 in which 15 000 hectares of forests have been destroyed, 35 000 hectares of forests severely damaged, 90% of animals killed and consumed.<sup>33</sup> The loss of such biodiversity has huge negative impacts. We turn now to a discussion of the reasons behind legal protection of biodiversity.

### **1.5 Rationale for biodiversity law**

Biological diversity is valuable for many reasons, which are often grouped into three categories: ecological values, economic values and non-scientific reasons.

With regard to ecological reasons, all living creatures are supported by the interactions among organisms and ecosystems. Biodiversity provides services to the earth which make it habitable. They include water purification, flood control, pest control, pollination, soil maintenance and climate control, regulation of air quality, and decomposition and waste disposal.<sup>34</sup> The loss of biodiversity makes ecosystems less stable, more vulnerable to extreme events, and weakens their natural cycles.<sup>35</sup>

As far as economic reasons are concerned, nature provides the raw material needed for human survival, and forms the basis for the global economy. Economic benefits of biodiversity come in the form of goods which include everything from all the domesticated agricultural crops that form the basis of the world's supply, to medicines that protect and cure humans, and fibres which make up the clothes we wear.<sup>36</sup> In

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<sup>32</sup> MINITERE supra note 11 at 13.

<sup>33</sup> Ibid.

<sup>34</sup> Hunter supra note 22 at 941.

<sup>35</sup> Ibid.

<sup>36</sup> Cunningham and M Young supra note 21.

addition, biodiversity is recognised to be the storehouse for biotechnology developments.<sup>37</sup>

The conservation of biodiversity is also important for moral reasons.<sup>38</sup> Species have an intrinsic value, regardless of their value to humankind.<sup>39</sup> This argument is based on the idea that humans are part of nature, not separate from it. They did not create the nature; therefore, they should not destroy it. Every species has a right not to be eliminated by humans.<sup>40</sup> Human beings have a moral responsibility to safeguard and wisely manage the heritage of wildlife and its habitat for future generations.<sup>41</sup> Some people believe that nature is God's creation, with beauty to be enjoyed and appreciated.<sup>42</sup> Hence, it must be respected for its own sake.

Because of the above-mentioned reasons, biodiversity needs to be protected. The law is an important tool for the protection of biodiversity, as it reflects the needs and demands of society. It regulates certain human behaviours, which may be detrimental to biodiversity. As a result, when there are gaps and shortfalls in biodiversity-related laws, legal protection of biodiversity is inadequate. This is the problem in the case of the Rwandan legal regime.

### **1.6 Statement of the problem**

Conservation of biodiversity presents greater regulatory problems to both international law and national laws than any other environmental law area.<sup>43</sup> The area of biodiversity is very broad and threats to it come from many different types of sources, requiring a comprehensive approach to regulate a broad range of human activities. It requires regulation of agriculture, forestry activities, harvesting and trade of biological resources,

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<sup>37</sup> Brown et al. *supra* note 3 at 932.

<sup>38</sup> de Klemm *supra* note 6 at xvii.

<sup>39</sup> M Laverty and E Sterling *Introduction to the importance of biodiversity* Available at <http://cnx.org/content/m12160/latest/> [Accessed 18 October 2007].

<sup>40</sup> Towbridge *supra* note 31.

<sup>41</sup> A Gillespie *International Environmental Law Policy and Ethics* (1997) New York Oxford University Press at 127.

<sup>42</sup> J Elder *Why Should We Talk about Ethics, Values, and Biodiversity?* Available at <http://www.biodiversityproject.org/EFSP%20section%201.pdf> [Accessed 18 October 2007].

<sup>43</sup> P Sands *Principles of International Environmental Law* 2<sup>nd</sup> ed (2003) Cambridge University Press at 615.

urban development, introduction of new species in certain areas, the usage of genetically modified organisms (GMOs), tourism and other general activities.

Regulation of biodiversity conservation is difficult in an attempt to establish and maintain a balance between the utilisation of much needed biological resources on the one hand, and the need to conserve them on the other hand. Reconciliation of these two contradictory paradigms is problematic. At the time of writing, some developments leading to the conciliation of these paradigms are provided by international and some national laws. The most effective international legal instrument for biodiversity protection is the CBD, adopted in 1992 and which entered into force the following year (1993). The CBD aims at the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the use of genetic resources as described in paragraph 2.3.3. However, it sets goals rather than fixed targets and gives guidance on the policies to achieve these goals. It leaves details on its implementation almost entirely to national laws.

Rwanda has been a party to the CBD since 29 May 1996 and a party to its protocol since 20 October 2004. In addition, it has ratified quite a number of global and regional conventions (discussed in chapter two) that contribute indirectly to the protection of biodiversity. Rwanda has adopted some form of environmental legislation, within which biodiversity protection measures are found. Some of these laws were adopted before the ratification of the CBD and its protocol, and others were adopted after the entry into force of the CBD and its protocol. However, despite a multitude of such laws, the status of biodiversity in Rwanda is not improving; rather its components continue to disappear. The key question that needs an answer is whether and to what extent existing biodiversity-related laws are protective of biological diversity in Rwanda. In an attempt to answer this question, an examination of the extent to which those laws reflect the aspirations of the CBD form an integral part of this study.

This study discusses the existing laws that are relevant to biodiversity conservation in Rwanda with the aim of assessing whether they are legally adequate in

protecting Rwanda's biodiversity and meeting its obligations under the CBD. Consequently, it is an opportunity to provide basic and effective inspiration for the development of adequate biodiversity law in Rwanda.

### **1.7 Rationale of the study**

The choice of this topic was motivated by the need to contribute to the development and evolution of environmental law in Rwanda generally, but particularly to the development of a solid and advanced legal protection of biodiversity. It also presents a practical interest as it will help us to identify practical legal problems related to biodiversity protection and contribute to their solution by providing alternative legal measures that can be adopted. It will consequently assist legal researchers to contribute to the improvement of biodiversity protection.

It is suggested that the findings and recommendations of this study may contribute to the improvement and efficient application of the existing biodiversity-related legislation. They may enlighten the effective legal approaches that may be adopted in new laws and regulations intending to implement the CBD in Rwanda. In addition, the findings and recommendations may also assist other African countries which are in the process of adopting biodiversity laws or those that have ineffective biodiversity-related legal instruments. They may identify measures and mechanisms that are effective for biodiversity protection, and which may be tenable right from the beginning.

### **1.8 Objective and scope of the study**

The main aim of this study is to provide an overview of Rwandan laws related to biodiversity in the context of examining their compliance to the CBD. It will show whether the existing national laws are effective and consistent with the goals and objectives of the CBD. In order to achieve this aim, specific objectives are fixed:

- a) To provide an overview of international and African regional approaches to regulation of biodiversity, with particular emphasis on the CBD;
- b) To provide an overview of existing biodiversity-related laws in Rwanda and examine

the extent to which they are consistent with the CBD;

c) To examine the relevance and effectiveness of such laws in Rwanda.

On scope, this study lays emphasis on the CBD due to the holistic approach that it adopts in the protection of biodiversity. In addition, Rwandan laws that contribute to the protection of biodiversity are subject to this study. Moreover, other international and regional biodiversity-related conventions are briefly discussed. Further, some soft-law instruments such as resolutions and declarations, which reflect commitments of states to promote biodiversity protection, are also briefly mentioned.

### **1.9 Structure of the study**

This study is divided into five chapters. Chapter one is the introduction. It introduces the concept of biodiversity, briefly describing Rwandan biodiversity, giving some definitions, showing major threats to biodiversity, explaining the reasons behind biodiversity legislation and stating the problem analyzed in this study. It also explains the importance of the study, its objectives and scope, its structure and the applied methodology. Chapter Two is an overview of the international and regional approaches to regulation of biodiversity. Much emphasis is put on the CBD, and details concerning its innovative and significant characteristics, objectives and obligations that it imposes on parties are provided. Few details on other international and regional biodiversity-related conventions are also given. Chapter Three consists of an overview of Rwandan legislation in relation to biodiversity. Their provisions which are relevant to the protection of biodiversity are described. Chapter Four examines the level of compliance of these Rwandan laws and regulations with the CBD. The fifth and last chapter consists of overall conclusion and recommendations.

### **1.10 Methodology of the study**

This is a desktop-based study which includes an analysis of the relevant international and national literature. The primary sources of data include relevant international legal instruments, existing national laws and regulations and guidelines. Secondary sources include textbooks, journal articles and other relevant materials. Internet resources and other reports are used where they provide helpful information. In addition, documents

published by international organizations and Non-Governmental Organizations are considered.

After introducing the study, the following chapter briefly talks about soft-law instruments and international and regional conventions that contribute to the protection of biodiversity.

## **Chapter Two: International and regional approaches to biodiversity protection**

### **2.1 Introduction**

International biodiversity conservation policy has emerged from a variety of sources.<sup>44</sup> Before the adoption of the CBD, a number of global and regional treaties dealing with individual species or particular areas of special interest were enacted. Those treaties were inspired by some soft-law instruments and contributed to the protection of biodiversity. They continue to do so, but in a fragmentary fashion.<sup>45</sup> It is the adoption of the CBD that has shown a shift from a fragmented way towards a holistic approach to biodiversity protection. Soft-law instruments are discussed in paragraph 2.2, more attention is paid to the CBD in paragraph 2.3, and its protocol is discussed in paragraph 2.4. Finally this chapter describes briefly other global and regional biodiversity-related conventions in paragraph 2.5.

### **2.2 Soft-law instruments relevant to biodiversity**

Rules of soft-law are not binding *per se* but they have played an important role in the field of international environmental law, where they point to the likely future direction of formally binding obligations.<sup>46</sup> They can also be considered as the manifestation of a broad consensus of the world community.<sup>47</sup> There are four soft-law instruments which inspire biodiversity legislation.

Firstly, there is the Stockholm Declaration which was adopted in 1972 at Stockholm United Nations Conference on the Human Environment.<sup>48</sup> It is a set of 26 principles which inspired to a great extent the development of international environmental law. In relation to biological diversity, Stockholm Declaration calls for the safeguarding of the natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems for the benefit of present and future generations through careful and appropriate planning or

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<sup>44</sup> P Sands *International Law & the Environment* 2<sup>nd</sup> ed (2003) Cambridge University Press at 501.

<sup>45</sup> Kiss and Shelton *supra* note 1 at 355.

<sup>46</sup> Sands *supra* note 43 at 124.

<sup>47</sup> de Klemm *supra* note 6 at 5.

<sup>48</sup> Sands *supra* note 43 at 36.

management.<sup>49</sup> It declares that man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperiled by a combination of adverse factors. Stockholm Declaration calls for the consideration of nature conservation, including wildlife in planning for economic development.<sup>50</sup> It therefore emphasizes on the need to protect both species and their habitats.<sup>51</sup>

Secondly, the World Charter for Nature (WCN) adopted by United Nations General Assembly Resolution 37/7 in 1982<sup>52</sup> recognizes the uniqueness of every form of life and calls for respect for nature and its essential processes.<sup>53</sup> It declares that genetic viability on the earth shall not be compromised; that there has to be a sufficiency of population levels of all life forms, wild and domesticated, for their survival, and to this end the necessary habitat shall be safeguarded.<sup>54</sup> The WCN affirmed that special protection shall be given to unique areas, to representative samples of all the different types of ecosystems, and to the habitat of rare or endangered species.<sup>55</sup> It also called for the sustainable management and utilization of ecosystems, organisms, the land, marine and atmospheric resources.<sup>56</sup>

The third soft-law instrument is Rio Declaration adopted at the Rio Conference on Environment and Development in 1992.<sup>57</sup> It is a set of 27 Principles mostly dedicated to sustainable development. It is important as concerns biodiversity conservation for sustainable development requires restraint in the use of natural resources, which need to be wisely used.<sup>58</sup> More precisely, Rio Declaration inspired biological conservation instruments with its principle 15, which adopts the precautionary approach. In addition, principle 17 considers the conduct of an environmental impact assessment as a national instrument to be undertaken for proposed activities likely to

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<sup>49</sup> Principle 2 Stockholm Declaration.

<sup>50</sup> Principle 4 Stockholm Declaration.

<sup>51</sup> de Klemm *supra* note 6 at 5.

<sup>52</sup> Sands *supra* note 43 at 45.

<sup>53</sup> This is recognized in the preamble of the World Charter for Nature.

<sup>54</sup> Principle 2 WCN.

<sup>55</sup> Principle 3 WCN.

<sup>56</sup> Principle 4 WCN.

<sup>57</sup> Sands *supra* note 43 at 54.

<sup>58</sup> Birnie and Boyle *supra* note 16 at 565.

have a significant adverse impact on the environment. These principles have been adopted by the CBD in order to ensure the fullest possible protection of biological diversity.

The fourth soft-law instrument is Agenda 21 promulgated in 1992 at Rio de Janeiro. It is a programme of action consisting of forty chapters covering many issues. It contains a number of chapters relevant to biodiversity. They include a chapter on combating deforestation, a chapter on managing fragile ecosystems, a chapter on sustainable mountain development and a chapter on protection of the oceans, including enclosed and semi-enclosed seas, and coastal areas, and protection together with rational use of their living resources. Specifically, it contains a chapter whose objectives and activities are intended to improve the conservation of biological diversity and the sustainable use of biological resources, as well as to support the CBD. In addition, it endorses a chapter on environmentally sound management of biotechnology.<sup>59</sup> Having discussed briefly these soft-law instruments, more attention is now paid to the CBD.

## **2.3 The Convention on Biological Diversity**

### **2.3.1 Background of the Convention**

The idea of the Convention on Biological Diversity was initially proposed by the World Conservation Union (IUCN) at its 15<sup>th</sup> General Assembly in Christchurch in 1981. The next IUCN General Assembly, held in Madrid in 1984, requested the IUCN Secretariat to develop a number of principles to serve as a basis for a preliminary draft of a global instrument on the conservation of the world's genetic resources. The final draft of these principles was completed in 1989.<sup>60</sup> It concentrated on global action needed to conserve biodiversity, including a focus on *in situ* conservation and details of financial instruments and mechanisms to achieve these objectives. However, this draft was rejected by governments as a basis for negotiating a biodiversity convention.<sup>61</sup>

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<sup>59</sup> Chapter 15 and 16 Agenda 21.

<sup>60</sup> Ibid.

<sup>61</sup> Hunter *supra* note 22 at 957.

At the beginning of 1987, the United Nations Environment Programme (UNEP) had also established a working group to consider the desirability and possible form of a convention with the purpose of providing a coherent framework for the various international wildlife and habitat conventions. In this working group, it became manifest that many States, particularly in the South, were not going to accept a convention focused only on biodiversity conservation. Rather, it would have to be wide enough to address the issues of sustainable use of biodiversity and biotechnology, and sharing the benefits therefrom.<sup>62</sup>

Formal negotiations of the convention began in 1991. They were characterized by substantive disagreement due to conflicts of economic interests between developing and developed countries (for instance, with regard to the use of genetic resources, intellectual property rights, and compensation of those countries providing material for use and access to technology).<sup>63</sup> Finally, after hard bargaining and discussions, the text of the convention was adopted on the 22<sup>nd</sup> May 1995 and opened for signature on the 5<sup>th</sup> of June 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro. It has currently 190 country parties including Rwanda.<sup>64</sup>

Unlike previous wildlife treaties, the CBD was not aimed at migratory wildlife nor was it aimed at the international trade of wildlife. It has its novel features, which are outlined below.

### **2.3.2 Significant characteristics of the CBD**

The CBD applies to a wide area. It is the first instrument to take a holistic and integrated approach, rather than a species or area-based approach, to the conservation and sustainable utilization of natural resources both internationally and nationally.<sup>65</sup>

Unlike previous wildlife treaties, the CBD is neither limited to migratory wildlife nor to the international trade of wildlife. It includes migratory species but it also includes

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<sup>62</sup> Ibid.

<sup>63</sup> Birnie and Boyle supra note 16 at 570.

<sup>64</sup> The list of country parties to the CBD is available at <http://www.cbd.int/information/parties/shtml>.

<sup>65</sup> Glazewski supra note 20 at 259.

trees, plants, ants, snails and other animals that do not migrate and are located in one country.<sup>66</sup>

The CBD is a comprehensive rather than a sectoral convention in relation to conservation. This makes it a landmark treaty in the environmental field as it goes beyond the conservation of biodiversity *per se* to encompass other issues like sustainable use of biological resources, access to genetic resources, the sharing of benefits from the use of genetic material, and access to technology including biotechnology.<sup>67</sup>

The CBD is a framework and a complex agreement. Its provisions are mostly expressed as overall goals, rather than precisely defined obligations.<sup>68</sup> It does not set targets or include lists of species or areas to be protected, but sets out general and flexible obligations to be applied by parties through national laws and policies. It also allows for its further development by negotiating annexes and protocols.<sup>69</sup> The CBD is complex for it is problematic to comprehend the web of life from microscopic organisms to entire ecosystem, and there is lack of information regarding the various values of biodiversity.<sup>70</sup>

### **2.3.3 Objectives of the CBD**

Three objectives of the CBD are found in its first article. They are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. In fixing these objectives, the CBD aims to achieve an equitable balancing of the interests between the North and the South.<sup>71</sup> The North has pursued the objective of conservation, while the South has emphasized on the sustainable use of biological resources, benefit-sharing

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<sup>66</sup> Hunter *supra* note 22 at 958.

<sup>67</sup> D M McGraw 'The CBD's Characteristics and Implications for Implementation' (2002) *11 Review of European Community & Environmental Law* 1 at 23.

<sup>68</sup> Birnie and Boyle *supra* note 16 at 571.

<sup>69</sup> McGraw *supra* note 67 at 19.

<sup>70</sup> *Id.* at 25.

<sup>71</sup> Birnie and Boyle *supra* note 16 at 571.

with respect to biotechnologies, and new financial support.<sup>72</sup> The further articles of the CBD give details on how these objectives can be achieved through the fulfillment of the obligations detailed below.

### **2.3.4 Obligations of state parties to the CBD**

The CBD establishes, in articles 6 to 20, a number of obligations that have to be fulfilled by state parties in order to protect biodiversity in a holistic way. Each and every one of these obligations is detailed in the following discussion.

#### **2.3.4.1 Establishment of national strategies, plans and programs**

The establishment of national strategies, plans and programmes is required by article 6 (a) of the CBD. The CBD does not define strategies, plans or programmes. Generally, a strategy intends to propose the action and investment needed to achieve certain objectives and assigns priorities to different tasks. As far as the plan usually called the Plan of Action is concerned, it clearly illustrates steps to be followed in putting into practice the strategy, saying who would do each task, when and where it would be done, and how it would be funded. The programme is then the actual implementation of the plan of action.<sup>73</sup>

A national biodiversity plan must set clear objectives and priorities for biodiversity conservation in the country. It has to reflect how the conservation measures identified in the convention are or will be applied. For example, it should show how *in situ* and *ex situ* conservation measures together with the measure of sustainable use are applied.<sup>74</sup>

The CBD does not only envisage the creation of new plans, but existing strategies, plans or programmes are also permitted to be adapted to the purpose of biodiversity conservation. In addition, country parties are allowed to undertake separate strategies for different parts of their territories.<sup>75</sup> This constitutes a good approach by

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<sup>72</sup> Hunter supra note 22 at 961.

<sup>73</sup> Ibid

<sup>74</sup> Article 8, 9 and 10 CBD.

<sup>75</sup> D Ryan *The convention on biodiversity* Plant Talk Magazine Available at <http://www.plant-talk.org/stories/cbd11.html> [Accessed 29 May 2007].

which biodiversity protection is highly prioritized in more threatened areas.

The CBD adopts a broad approach to biodiversity conservation and requires parties to integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies, and into decision-making.<sup>76</sup>

Once strategies, plans and programmes are elaborated, parties must take further steps of identification and monitoring of biodiversity components, the subject of the following section.

#### **2.3.4.2 Identification and monitoring of biodiversity components**

Better conservation will be ensured if the components in need of protection are identified, and particular attention is paid to those requiring urgent conservation measures and those offering the greatest potential for sustainable use. Identification and monitoring are tools for action required by article 7 of the CBD. They concern the collection and usage of information on biological diversity in a practical way. It is not easy to make full inventories of biodiversity, but at least countries should determine their biodiversity components, which are important for conservation and sustainable use.

After collecting the information, monitoring follows. Monitoring is the action of watching and checking something over a period of time in order to see how it develops, so that one can make necessary changes.<sup>77</sup>

Article 7 (c) of the CBD requires the identification of processes and activities, which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitoring of their effects through sampling and other techniques. Such processes and activities have to be regulated and managed if a significant adverse effect on biological diversity has been determined.<sup>78</sup> After

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<sup>76</sup> Article 6 (b) and 10 (a) CBD.

<sup>77</sup> A S Hornby Oxford Advanced Learners Dictionary of current english, 7<sup>th</sup> ed. 1997 at 949.

<sup>78</sup> Article 8 (m) CBD.

identification and monitoring, the next step is to take conservation measures as described below.

### **2.3.4.3 Conservation measures**

The most significant obligations placed on the parties concern *in situ* conservation measures, and to a lesser extent, *ex situ* conservation measures. These are now dealt with in turn.

#### **2.3.4.3.1 *In situ* conservation**

*In situ* conservation is defined by the CBD as the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surrounding where they have developed their distinctive properties.<sup>79</sup>

The obligation of *in situ* conservation results from article 8 of the CBD which provides for a wide range of measures to be taken for the purpose of conserving biodiversity in its surrounding. They include the establishment of protected areas, the protection of ecosystems and natural habitats and populations of species.<sup>80</sup> Parties have also to regulate and manage biological resources both inside and outside protected areas, and insure the rehabilitation of degraded areas and the recovery of species.<sup>81</sup> They are obliged to prevent the introduction of invasive and alien species into the natural environment, which is of particular value for biodiversity *in situ* conservation.<sup>82</sup> Further, there is the measure of protecting threatened species and populations, and regulation or management of processes and activities that threaten biodiversity.<sup>83</sup>

#### **2.3.4.3.2 *Ex situ* conservation**

*Ex situ* conservation is defined as the conservation of components of biological diversity outside their natural habitats.<sup>84</sup> It is the process of protecting an endangered species of plant or animal by removing part of the population from a threatened habitat and placing

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<sup>79</sup> Article 2 CBD.

<sup>80</sup> Article 8 (a) and 8 (d) CBD.

<sup>81</sup> Article 8 (c), (f) CBD.

<sup>82</sup> Article 8(h) CBD.

<sup>83</sup> Article 8(l) CBD.

<sup>84</sup> Article 2 CBD.

it in a new location, which may be a wild area or within the care of humans.<sup>85</sup> *Ex situ* conservation results from article 9 of the CBD and it is acknowledged that *ex situ* conservation approaches have an important role to play.

The convention says that *ex situ* conservation should be done preferably in the country of origin of such components.<sup>86</sup> Countries are then obliged to establish and maintain facilities for *ex situ* conservation.<sup>87</sup> They must regulate and manage the collection of biological resources from natural habitats for *ex situ* conservation purposes for not threatening ecosystems and *in situ* populations of species, except where special temporary *ex situ* measures are urgently necessitated.<sup>88</sup>

However, according to the convention, *ex situ* conservation measures are required as a complement to the *in situ* conservation measures.<sup>89</sup> *Ex situ* conservation is to be used as a last resort or as a supplement to *in situ* conservation because it cannot recreate the habitat as a whole. Instead, it removes the species from its natural ecological contexts, preserving it under semi-isolated conditions whereby natural evolution and adaptation processes are either temporarily halted or altered by introducing the specimen to an unnatural habitat.<sup>90</sup> All these *in situ* and *ex situ* conservation efforts are balanced with other obligations, which include sustainable use of biodiversity, an obligation discussed below.

#### **2.3.4.4 Sustainable use of biological resources**

Sustainable use is the major theme of the CBD and is required by its article 10.<sup>91</sup> It is the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.<sup>92</sup> Sustainable use is the ability to achieve a balance between the use of the natural world, harvesting its products

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<sup>85</sup> Glowka et al. supra note 19 at 25.

<sup>86</sup> Article 9(a) CBD.

<sup>87</sup> Article 9(b) CBD.

<sup>88</sup> Article 9 (d) CBD.

<sup>89</sup> Article 9 (a) CBD.

<sup>90</sup> Glowka et al supra note 19 at 26.

<sup>91</sup> Kiss and Shelton supra note 1 at 359.

<sup>92</sup> Article 2 CBD.

and enjoying the non-material human requirements such as the spiritual and cultural benefits.<sup>93</sup> It maintains the natural support and regulatory functions of ecosystem. General requirements for sustainability include adequate information, management, law, institutions and incentives.<sup>94</sup>

#### **2.3.4.5 Creation of incentive measures**

Current regulatory measures have proven inadequate for the effective conservation of biodiversity. The international community is therefore encouraging alternative ways to conserve biodiversity, such as the creation of mechanisms enabling individuals, companies, communities and conservational organizations to participate in the process of conservation on a voluntarily basis.<sup>95</sup> The CBD explicitly acknowledges the importance of using incentive measures to promote biodiversity conservation.<sup>96</sup> They may include grants to land-owners to maintain land in ways that allow rare plants to survive, tax deductions for donations to conservation reasons, etc.<sup>97</sup> It is not only incentives that are envisaged by the CBD, but also disincentives such as high rate of taxation for activities that are damaging biodiversity can be used. Incentive and disincentive measures promote voluntary conservation which needs also to be strengthened by development of public education and awareness.

#### **2.3.4.6 Public education and awareness**

Public support of measures implementing the CBD is crucial to the convention's success.<sup>98</sup> State parties have to promote and encourage the understanding of the importance of, and the measures required for, the conservation of biodiversity. They also have to cooperate with other States and international organizations in developing educational and public awareness programmes, in relation to conservation and sustainable use of biological diversity.<sup>99</sup> A number of approaches, such as integrating

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<sup>93</sup> Birnie and Boyle supra note 16 at 575.

<sup>94</sup> Glowka et al. supra note 19 at 23.

<sup>95</sup> A Paterson 'Tax incentives - valuable tools for biodiversity conservation in South Africa' (2005) 122 *The South African Law Journal* 1 at 182.

<sup>96</sup> Article 11 CBD.

<sup>97</sup> Ryan supra note 75.

<sup>98</sup> L Glowka et al. *A Guide to the Convention on Biological Diversity* (1994) Environmental Policy and Law Paper No. 30 IUNC Environmental Law Centre at 68.

<sup>99</sup> Article 13 CBD.

biodiversity into school curricula, and tools, such as videos, advertisements, games and computer programmes can work in this context.<sup>100</sup>

Public education and awareness has to be supplemented by public participation of the local population. Also, local or international Non-Governmental Organizations (NGOs) cannot be ignored. The CBD recognizes in its preamble the role of NGOs, where it stresses the importance and the need to promote cooperation between governments and NGOs in the conservation and sustainable use of biological diversity. Currently, many of the education activities are carried out by NGOs and international organizations, and their efforts through conservation groups and the scientific community have greatly increased awareness of biodiversity issues.<sup>101</sup> Another very important obligation required by the CBD is the environmental impact assessment process described below.

#### **2.3.4.7 Impact Assessment**

Impact assessment, commonly called environmental impact assessment (EIA), is currently used as a mechanism to implement the precautionary principle.<sup>102</sup> EIA is described as the evaluation of the effects likely to arise from a major project or other action significantly affecting the natural and man-made environment.<sup>103</sup> It helps decision-makers by advising of whether to allow the project to go ahead or stop it from continuing.

The CBD requires state parties to introduce procedures that require EIA of proposed projects likely to have significant adverse impacts on biological diversity.<sup>104</sup> They are also required to introduce appropriate arrangements to ensure that the

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<sup>100</sup> P Herkenrath 'The Implementation of the Convention on Biological Diversity-A Non-Government Perspective Ten Years On' (2002) 11 *Review of European Community International Environmental Law* 1 at 35.

<sup>101</sup> Ibid.

<sup>102</sup> P Kameri-Mbote and P Cullet 'Biological Diversity Management in Africa: Legal and Policy Perspective in the Run-up to WSSD' (2002) 11 *Review of European Community International Environmental Law* 1 at 46.

<sup>103</sup> C Wood *Environmental Impact Assessment: A Comparative Review* 2<sup>nd</sup> ed. 2003 Longman at 1.

<sup>104</sup> Article 14 (1) (a) CBD.

environmental consequences of programmes and policies likely to have significant adverse impacts on biological diversity are duly taken into account.<sup>105</sup>

However, the CBD uses vague terms such as ‘likely to’, ‘significant adverse effects’, ‘as far as possible’ and ‘as appropriate’, and does not precisely specify the kind of activities to be assessed. It leaves this to the discretion of national legislation.<sup>106</sup> By leaving more detail to the individual judgment of state parties, as well as asking them to act only as far as possible and appropriate to assess whether or not particular projects and programmes are likely to have a significant adverse impact, the parties may well escape any form of EIA, particularly when the possible risks may be long-term and difficult to predict.<sup>107</sup>

#### **2.3.4.8 Regulation of access to genetic resources and equitable benefit-sharing**

The term ‘genetic resources’ means genetic material of actual or potential value. Genetic material means any material of plant, animal, microbial or other origin containing functional units of heredity.<sup>108</sup>

Access to genetic resources and equitable benefit-sharing is one of issues that raised hard and long discussions during the negotiation of the CBD. Finally the CBD addresses the terms and conditions for access to genetic resources and benefit-sharing. It recognizes the sovereignty of States over natural resources and provides that access to them shall be subject to the Prior Informed Consent (PIC) procedure of the country providing such resources. Access to genetic resources has also to be based on mutually agreed terms in order to ensure the sharing of benefits arising from the commercial or other utilisation of these resources.<sup>109</sup>

The benefits to be shared include results from research and development, commercial and other benefits derived from using the resources, access to and transfer

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<sup>105</sup> Article 14 (1) (b) CBD.

<sup>106</sup> Ibid.

<sup>107</sup> Birnie and Boyle supra note 16 at 576.

<sup>108</sup> Article 2 CBD.

<sup>109</sup> Article 15 CBD.

of technology, participation in biotechnology which uses the genetic resources, and priority of access to the results and benefits arising from their biotechnological use. In this regard, parties are obliged to cooperate with respect to national and international laws in order to ensure that rules concerning patents and other intellectual property rights are supportive of, and do not run counter to the objectives of the convention.<sup>110</sup>

For the best implementation of these provisions, the Secretariat of the CBD has published guidelines designed to assist parties in developing overall access and benefit-sharing strategies, though these are not binding.<sup>111</sup> Regulation of access and fair and equitable benefit-sharing of resources is one of the convention's main objectives whose implementation is the key to the success of the convention.<sup>112</sup> In sharing benefits derived from the use of genetic resources, indigenous and local communities have to be accommodated, as described under the following subheading.

#### **2.3.4.9 Recognition of indigenous knowledge**

The CBD complements the Draft declaration on the Rights of Indigenous Peoples and is in conformity with principle 22 of the Rio Declaration.<sup>113</sup> It reflects the recognition of the interrelationship between the natural environment, sustainable development, and the well-being of indigenous peoples.<sup>114</sup> Its preamble recognizes the dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of equitably sharing benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components. In addition to the preamble, article 8 (j) of the CBD obliges parties to respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities with regard to conservation and sustainable use of biological diversity. This is supposed to be encouraged through the adoption of national laws that include the provisions on

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<sup>110</sup> Article 15 (7) and 16 CBD.

<sup>111</sup> Secretariat of the Convention on Biological Diversity *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization* (2002) Montreal.

<sup>112</sup> Birnie and Boyle supra note 16 at 582.

<sup>113</sup> The Draft declaration on the Rights of Indigenous Peoples was elaborated by the United Nations Group on Indigenous Peoples.

<sup>114</sup> Birnie and Boyle supra note 16 at 579.

indigenous knowledge.<sup>115</sup> Further, parties are encouraged to develop national laws and policies that regulate and facilitate the exchange of indigenous knowledge.<sup>116</sup> They must cooperate in developing and using indigenous and traditional technologies, and they have to ensure that the prior informed consent of the community or individuals that hold the knowledge and technology has been obtained.<sup>117</sup>

However, the implementation of these provisions is difficult as the CBD does not define indigenous communities. It has used ambiguous language arising from the fact that international law on indigenous peoples and protection of their environment remains controversial.<sup>118</sup> The following discussion is about handling of biotechnology.

#### **2.3.4.10 Handling of biotechnology**

Biotechnology means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.<sup>119</sup>

Although modern biotechnology has demonstrated its actual and potential utility, there are safety and ethical concerns about the potential risks to biodiversity and human health posed by genetically modified organisms (GMOs).<sup>120</sup> Country parties have an obligation to establish and maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse impacts on biodiversity, taking also into account the risks to human health.<sup>121</sup>

The CBD does not detail rules on GMOs. It simply requires parties to provide, to the country into which such organisms are to be introduced, any available information on the use and safety regulations required in handling such organisms, and on the

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<sup>115</sup> Glowka *supra* note 19 at 13.

<sup>116</sup> Article 17 (2) CBD.

<sup>117</sup> Article 18 (4) CBD.

<sup>118</sup> Birnie and Boyle *supra* note 16 at 580.

<sup>119</sup> Article 2 CBD.

<sup>120</sup> Glazewski *supra* note 20 at 264.

<sup>121</sup> Article 8 (g) CBD.

potential adverse impact of the specific organism.<sup>122</sup> More details were left to the Biosafety Protocol, discussed in the following paragraph.

#### **2.4 The Cartagena Protocol to the CBD (The Protocol)**

The Protocol to the convention on biological diversity (CBD) was adopted on 28 January 2000 and entered into force on 11 September 2003. Rwanda ratified the Protocol on 29 December 2003. It seeks to protect biodiversity from the potential risks posed by living modified organisms (LMOs) resulting from modern biotechnology. Its objective is to contribute to ensuring an adequate level of protection in the field of safe transfer, handling and use of LMOs resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, also taking into account risks to human health, and specifically focusing on their transboundary movements.<sup>123</sup>

The Protocol defines LMOs as living modified organisms that possess a novel combination of genetic material obtained through the use of modern biotechnology.<sup>124</sup> Its key feature is the Advanced Informed Agreement (AIA) procedure for trade in LMOs which are intended to be directly introduced into the environment. Exporters are required to notify the importing country of the intention to introduce LMOs into their environment, and the notified state makes the decision on the import based on scientific assessment of any risk to the environment. If there is a lack of scientific information, or in case of uncertainty due to insufficient scientific evidence, states apply the precautionary principle.<sup>125</sup> Country parties have to make sure that LMOs subject to transboundary movement are packaged, labeled and safely transported.<sup>126</sup> LMOs have also to be accompanied by appropriate documentation giving details on their identity and contact point for further information.<sup>127</sup>

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<sup>122</sup> Article 19 (4) CBD.

<sup>123</sup> Article 1 Protocol.

<sup>124</sup> Article 3 Protocol.

<sup>125</sup> Article 8 (6) Protocol.

<sup>126</sup> Annex I (k) Protocol.

<sup>127</sup> Annex I Protocol.

The AIA procedure applies to a small proportion of traded LMOs because of exceptions provided in the Protocol. It is not applicable to LMOs subject to transboundary movement for the purpose of direct use as food or feed, or for processing. It does not apply to pharmaceuticals, to LMOs in transit and to LMOs destined for contained use, and to LMOs exempted from the AIA procedure by the Conference of the Parties.<sup>128</sup> With regard to LMOs subject to a transboundary movement for the purpose of direct use as food or feed, or for processing, the exporting party must simply inform the Biosafety Clearing-House within fifteen days of making the decision.<sup>129</sup> This exception is balanced with the possibility for the importing party of applying the precautionary principle, and taking a decision according to its domestic legislation, provided that it is consistent with the objectives of the Protocol.<sup>130</sup> However, this may open the door to national import regulations which may be difficult to harmonize.<sup>131</sup>

The Protocol sets out principles and methodologies of conducting a risk assessment.<sup>132</sup> It therefore requires parties to establish and maintain appropriate mechanisms, measures and strategies to regulate, manage and control risks to biological diversity or human health if they are identified in the risk assessment process.<sup>133</sup>

After discussing the CBD and its protocol, the following section is dedicated to other international and regional legal instruments which, in one way or another, contribute indirectly to the protection of biodiversity.

## **2.5 Other biodiversity-related conventions**

The following seven international conventions play an important role in the protection of biological diversity. The first is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). It was negotiated in 1973 and Rwanda acceded to it on the 20<sup>th</sup> of October 1980. It came into force in Rwanda on 18 January 1981. Its main objective is the control of international trade in endangered species and

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<sup>128</sup> Article 7 (2), 5, 6 (1) and 6 (2) Protocol.

<sup>129</sup> Article 11 (1)-(7) and annex II Protocol.

<sup>130</sup> Article 11 (8) Protocol.

<sup>131</sup> Birnie and Boyle *supra* note 16 at 738.

<sup>132</sup> Annex III Protocol.

<sup>133</sup> Article 8 (g) CBD and article 16 (1) and (2) Protocol.

their products, as it was realized that unregulated international trade in wildlife and wildlife products has become a major cause of the decline of many animal and plant species.

The CITES is of great value in the array of treaties which lead to the accomplishment of the CBD's goals.<sup>134</sup> It protects some wild animal and plant species through the controls it places on the commercial trade in such species. The CITES regulates international trade in wild plant and animal species through a permitting system basing on whether a species is listed in either one of the three appendices to the treaty.<sup>135</sup> The principles of CITES have been widely accepted by a large number of country parties and have been implemented successfully.<sup>136</sup> However, its role in furthering the CBD's goals is limited.<sup>137</sup> It focuses only on trade of listed species and does not address habitat loss. It does not apply the ecosystem approach and does not regulate other activities that may affect the species listed in its appendices.

The second international instrument is the Convention on the Conservation of Migratory Species (Bonn Convention or CMS), which came into force in 1983 and Rwanda ratified it on the 29<sup>th</sup> of December 2003. The CMS aims to conserve terrestrial, marine and avian species throughout their migratory ranges. It aims to promote cooperation between countries in order to protect migratory species and their habitats, and focuses on the concept of 'Range State' in relation to a migratory species.<sup>138</sup> The CMS is the first global convention to be entirely devoted to all migratory species.<sup>139</sup> It does not make reference to birds or other particular species; it refers instead to migratory species.

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<sup>134</sup> Birnie and Boyle supra 16 at 626.

<sup>135</sup> Article II (i), (2) (a), (3) and III (3) (c) CITES.

<sup>136</sup> de Klemm supra note 6 at 13.

<sup>137</sup> Birnie and Boyle supra 16 at 625.

<sup>138</sup> A Range State is any state that exercises jurisdiction over any part of the range of a migratory species.

<sup>139</sup> P Van Heijnsbergen *International Legal Protection of Wild Fauna and Flora* at 133 Available at <http://books.google.com/books?id=vyLXRzqMT3IC&RAI-PA133&1pg=RAI-PA133&dq=the+convention+on+the+conservation+of+migratory+species> [Accessed 24 November 2007].

Like CITES, the CMS works through appendices. Appendix I concerns migratory species that are in danger of extinction throughout all or a significant portion of their range. Parties must collaborate in the protection of such species.<sup>140</sup> Appendix II lists migratory species that have unfavourable conservation status. Parties have to conclude further agreements on their conservation and management. It then sets out guidelines for these agreements.<sup>141</sup>

The CMS is of relevance to the conservation of biodiversity, for it offers comprehensive protection to all migratory species.<sup>142</sup> However, its implementation has encountered difficulties due to lack of sufficient parties to cover the majority of species included in the appendices (for example the United States of America and Canada).<sup>143</sup> In addition, all threatened species are not listed in its appendices.<sup>144</sup>

The third convention is the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar convention). It was signed on 2 February 1971 and entered into force on 21 December 1975. It has been amended twice, firstly by the Paris Protocol of 3 December 1982 and secondly by the Regina Amendments of 28 May 1987. Rwanda has been party to it since 29 December 2003 and it came into force on the Rwandan territory on the 1<sup>st</sup> of April 2006.

The Ramsar convention is primarily concerned with the conservation and management of wetlands included in the List of Wetland of International Importance and waterfowls. Parties are required to designate at least one wetland to be included in that list, promote its conservation and continue to designate other wetlands situated on their territories.<sup>145</sup> They must take measures for the conservation of wetlands and

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<sup>140</sup> Article III CMS.

<sup>141</sup> Article IV and V CMS.

<sup>142</sup> Birnie and Boyle supra note 16 at 625.

<sup>143</sup> de Klemm supra note 6 at 41.

<sup>144</sup> Birnie and Boyle supra note 16 at 625.

<sup>145</sup> Article 2 (4) and 2 (5) Ramsar Convention.

waterfowls by establishing nature reserves on wetlands regardless of whether they are included on the list or not.<sup>146</sup>

Ramsar convention is an area-based conservation treaty which is of great importance in protecting biodiversity. Wetlands are sensitive areas of great utility in biodiversity conservation. It is also in a limited way a species-based conservation treaty as it recognizes the need to protect waterfowl.<sup>147</sup> However, its coverage is not holistic as it is exclusively limited to wetlands, and waterfowl.<sup>148</sup> Other types of ecosystems and species in need of protection fall aside.

The fourth important convention to mention is the Convention on the Protection of World Cultural and Natural Heritage (world Heritage Convention). It was adopted in Paris on 16 November 1972 and entered into force on 17 December 1975. Rwanda has been party to it on the 28<sup>th</sup> of December 2000. It is relevant to the conservation of biodiversity, as it requires parties to ensure identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage situated within their territories.<sup>149</sup>

The World Heritage Convention defines natural heritage to include natural features of outstanding universal value from aesthetic or scientific point of view; geological and physiographical formations and areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from an aesthetic or scientific point of view; and natural sites of outstanding universal value from the point of view of science, conservation or natural beauty.<sup>150</sup> Consequently, some components of biodiversity can be protected by the implementation of the World Heritage Convention, though the protection is limited to a number of areas of

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<sup>146</sup> Article 4 (1) Ramsar Convention.

<sup>147</sup> The convention defines waterfowl as birds which are ecologically dependent on wetlands.

<sup>148</sup> de Klemm supra note 6 at 14.

<sup>149</sup> Article 4 World Heritage Convention.

<sup>150</sup> Article 1 and 2 World Heritage Convention.

outstanding universal value from the point of view of science, conservation or natural beauty.<sup>151</sup>

The fifth convention relevant to the conservation of biological diversity is the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD). It was adopted in Paris on 17 June 1994 and entered into force on 26 December 1996. Rwanda signed the UNCCD on the 22<sup>nd</sup> of June 1992 and ratified it on the 22<sup>nd</sup> of October 1998. Its objective is to combat desertification and mitigate the effects of drought through effective action at all levels supported by international cooperation and partnership arrangements.<sup>152</sup> The UNCCD defines desertification as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.<sup>153</sup> Consequently, desertification causes loss of biodiversity, since it contributes to the destruction of the habitats of animal and plant species and micro-organisms. It also encourages the genetic erosion of local livestock and plant varieties and species living in fragile ecosystems.<sup>154</sup>

The UNCCD contributes to the protection of biodiversity since it aims at the protection of soil, a component of biological diversity, from wind and water erosion. It seeks protection of soil against degradation resulting from agricultural activities, deforestation, over-exploitation, overgrazing and industrial activities. All these causes of desertification constitute threats to biodiversity.

The sixth instrument to highlight is the United Nations Framework Convention on Climate Change (UNFCCC). It is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992. It was opened for signature in New York on 9 May 1992 and entered into force on 21 March 1994. Rwanda ratified the UNFCCC by the presidential

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<sup>151</sup> de Klemm supra note 6 at 14.

<sup>152</sup> Article 2 UNCCD.

<sup>153</sup> Article 1(a) UNCCD.

<sup>154</sup> A.P Koohafkan, *Desertification, drought and their consequences* Available at <http://www.fao.org/sd/EPdirect/EPan0005.htm> [Accessed 24 October 2007].

order of 30 May 1995. Its primary objective is the prevention of climate change. It requires parties to stabilize the greenhouse gas concentration in the atmosphere.<sup>155</sup> The treaty, as originally framed, does not set mandatory limits on greenhouse gas emissions for individual nations and contains no enforcement provisions. It was later amended by the Kyoto Protocol to which Rwanda has been party since the 29<sup>th</sup> of December 2003.<sup>156</sup> The protocol requires developed countries to reduce their greenhouse gas emissions below levels specified for each of them in the treaty (by applying the principle of common but differentiated responsibilities).<sup>157</sup>

The UNFCCC defines the adverse effects of climate change as changes in the physical environment or biota resulting from climate change which has significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems....<sup>158</sup> It is therefore understood that by achieving its objective of preventing climate change, the UNFCCC will contribute to the preservation of biodiversity which is already being impacted by the climate change. It is relevant to mention that the climate change was even integrated into the work of the CBD at its 5<sup>th</sup> conference of the parties.<sup>159</sup>

Apart from global environmental instruments relevant to biodiversity described above, the seventh and last convention to talk about is a regional African Convention on the Conservation of Nature and Natural Resources. It is the first of the major modern conservation treaties.<sup>160</sup> Its original text was adopted in Algeria on 15 September 1968 and entered into force on 16 June 1969. It was revised on 11 July 2003 by the General Assembly of African Union.

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<sup>155</sup> Article 2 UNFCCC.

<sup>156</sup> The Kyoto Protocol entered into force on 16 February 2005.

<sup>157</sup> According to Sands, the principle of common but differentiated responsibility means the recognition of special needs of developing countries which must be taken into account in the development, application and interpretation of rules of international environmental law.

<sup>158</sup> Article 1 (1) UNFCCC.

<sup>159</sup> This is detailed by the Decision V/4 in relation to the Progress report on the implementation of the programme of work for forest biological diversity, in which the link between CBD and UNFCCC was emphasized on. The decision is available at <http://www.cbd.int/decisions/cop-05.shtml?m=COP-05&id=7146&lg=0> [Accessed 26 November 2007].

<sup>160</sup> Kiss and Shelton *supra* note 1 at 366.

The African convention on the Conservation of Nature and Natural Resources is dedicated to the conservation of wildlife. It is of great significance to the protection of biodiversity for it requires parties to adopt measures necessary for ensuring conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles and with due regard to the best interests of the people.<sup>161</sup> Parties must use their resources on a sustainable basis and manage populations and habitats. They have to control hunting, capture and fishing. Also, some methods of harvesting biological resources such as the use of poisons, explosives and automatic weapons in hunting are prohibited. They also have to prevent and control water pollution, establish conservation areas and consider ecological factors in developing plans. Hence, the African Convention on the Conservation of Nature and Natural Resources adopts a holistic approach in the conservation of wildlife on a regional level, with manifest importance in the protection of biodiversity.<sup>162</sup>

The second chapter has illustrated that there are soft-law instruments which inspired the adoption of global and regional biodiversity-related conventions. These conventions, apart from the CBD, do not insure a full protection of biodiversity. They are either area or species-based instruments, or they are regionally limited. Only the CBD takes a holistic approach, but as it is a framework convention, it leaves action to national laws. This brings us to review Rwandan laws relevant to biodiversity protection.

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<sup>161</sup> Article II African Nature Convention.

<sup>162</sup> Articles IV-VII African Nature Convention.

## Chapter Three: A Review of Rwandan laws relevant to Biodiversity

### 3.1 Introduction

The Rwandan legal regime is disparately developed in terms of biodiversity protection. This is illustrated by describing below the laws that are relevant to the protection of biodiversity in that country.

### 3.2 General laws

#### 3.2.1 The Rwandan Constitution

The Rwandan constitution states:

*'Every citizen is entitled to a healthy and satisfying environment. Every person has the duty to protect, safeguard and promote the environment. The State shall protect the environment. The law determines the modalities of protecting, safeguarding and promoting the environment.'*<sup>163</sup>

This provision is relevant to the protection of biodiversity as it reinforces the role of law in protecting the environment and imposes a duty on every citizen and the state to protect the environment. Biodiversity is clearly an aspect of the environment that needs protection. In addition, this provision is the foundation of all laws that may be enacted in terms of environmental protection. Therefore, all laws that can be adopted in order to protect biodiversity will be rooted in this provision. In the absence of specific laws, this provision forms the bedrock for biodiversity protection in Rwanda.

#### 3.2.2 Organic Law n° 04/2005 of 08/04/2005 Determining the Modalities of Protection, Conservation and Promotion of the Environment in Rwanda (Environmental Framework Law)

The Environment Framework Law is a law of general application to all environmental matters in the country including biodiversity. It has some provisions which are particularly relevant to biodiversity as highlighted below.

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<sup>163</sup> Article 49 Rwandan Constitution.

### 3.2.2.1 Principles of environmental law relevant to biodiversity

The first environmental principle relevant to biodiversity incorporated by the Environmental Framework Law is the principle of sustainable development. The term "sustainable development" is generally considered to have been introduced by the 1987 Brundtland Report which defines it as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.<sup>164</sup> It incorporates two main concepts: the concept of 'needs', particularly the basic needs of the poor to which priority should be given, and the concept of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.<sup>165</sup> The principle of sustainable development is referred to in article 7 (2) of the Environmental Framework Law which states:

*“Human beings are central to sustainable development. They are entitled to the right of a healthy and productive life in harmony with nature. However, the right to development must be achieved in consideration of the needs of present and future generations.”*

The incorporation of the principle of sustainable development in Rwandan legislation is relevant to the protection of biodiversity, as it is the cornerstone principle that governs the exploitation of natural resources.

The second principle referred to by the Environmental Framework Law is the precautionary principle. The precautionary principle is generally accepted to mean that decision-makers must proceed with caution when recommending management strategies and goals whenever scientific data is unavailable, uncertain, or unreliable. It provides guidance in the development and application of law where there is scientific uncertainty.<sup>166</sup> The Rio Declaration outlines the precautionary principle in the following terms:

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<sup>164</sup> Sands supra note 43 at 252.

<sup>165</sup> Id. at 253.

<sup>166</sup> Id. at 267.

*“Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”*

The precautionary principle is recognized by the preamble of the CBD and article 7 (1) of the Rwandan Environmental Framework Law endorses it as follows:

*“...Activities considered or suspected to have negative impacts on environment shall not be implemented even if such impacts have not yet been proved. Scientific uncertainty must not be taken into consideration for the benefit of the destroyers of environment instead it may be used in conservation of the environment.”*

This provision is relevant to the protection of biodiversity, as the precautionary principle is generally accepted as being fundamental to biodiversity conservation in case of scientific uncertainty. One may say that uncertainty in terms of biodiversity matters is likely to be observed. Consequently, the precautionary principle intervenes to reduce excessive damage to biological diversity.

### **3.2.2.2 Prohibition of activities harmful to biodiversity**

The Environmental Framework Law regulates activities that are likely to have harmful impacts on the environment in general, including biodiversity. They include mining, quarrying, construction, agricultural and grazing activities, bush fires with the aim of agriculture, waste disposal in inappropriate places and burning of forests. They are prohibited in national parks and reserved areas.<sup>167</sup> It is stressed that waste disposal is prohibited in any place where it may kill and destroy flora and fauna.<sup>168</sup>

Other activities such as hunting, fishing, keeping or capturing wild animals or products from wild animals, hawking, sale, exchange, trading, importation, exportation

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<sup>167</sup> Article 29, 38 and 32 Environmental Framework Law.

<sup>168</sup> Article 82 Environmental Framework Law.

of wild animals or their products and wild plants may only be carried out if a competent authority has issued an authorization.<sup>169</sup>

The application of these provisions ensures the protection of biodiversity for all these activities cause pollution, destruction of habitats and increase unsustainable consumption of biological resources.

### **3.2.2.3 Obligation of establishing protected areas and listing protected species**

The State and the population are obliged to establish, maintain and manage parklands and green spaces.<sup>170</sup> It must identify reserved areas, forests, woodlands, species of biodiversity and protected zones, water systems for protection, banks and shores, rivers, streams, lakes, plains, valleys and swamps all of which deserving special protection.<sup>171</sup> Some tight restrictions are specifically adopted in order to protect some types of ecosystems. A certain distance from the banks of streams and rivers has to be respected by developers. No agricultural activities, pastoral activities, or construction of cattle kraals can be performed in such reserves.<sup>172</sup> In addition, construction of houses in wetlands is prohibited and all buildings must be constructed in 20 metres away from banks of the streams.<sup>173</sup> What is questionable is how effectively this distance will help to maintain the functioning of the whole ecosystem, as the distance may be not adequate to protect the entire ecosystem.

However, a proviso to the above is that the Minister of Environment may authorize construction of houses in wetlands intended for the promotion of tourism.<sup>174</sup> This is questionable as tourism may be preferred at the expense of ecosystem conservation. The Environmental Framework Law does not provide basic or specific criteria to consider in the decision-making process.

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<sup>169</sup> Article 9, 22, 23 and 24 Environmental Framework Law.

<sup>170</sup> Article 46 Environmental Framework Law.

<sup>171</sup> Article 52 Environmental Framework Law.

<sup>172</sup> Article 85 and 86 Environmental Framework Law.

<sup>173</sup> Article 87 Environmental Framework Law.

<sup>174</sup> Article 87 Environmental Framework Law.

Moreover, the State is assigned to establish lists of animal and plant species that shall be protected depending on their role in ecosystems, their scarcity, their aesthetic value, their extinction and their economic, cultural and scientific role.<sup>175</sup>

These provisions are in line with the requirement of *in situ* conservation of biodiversity. The problem is that the criteria and conditions to be taken into consideration in setting aside protected areas are not provided. Therefore, there will not be harmony in the establishment of protected areas due to lack of common and basic conditions for both individuals and the State. It is necessary to mention that some protected areas have been established but most of them were set aside before the adoption of this law. Therefore, the role of this new law would be to strengthen their protection. With regard to the duty of listing protected species, up to this date, the only list established is the one containing few animal species which are differently protected. It is provided by the law decree of 26 April 1974 creating the Rwandan Office of Tourism and National Parks discussed further in paragraph 3.3.6. No new list of protected animal and plant species has been established.

Furthermore, decentralized entities together with the population are required to establish green spaces and reserved areas, responsible for protection and proper management of sensitive ecosystems and species.<sup>176</sup> This is appreciated for the population and decentralized entities are in a better position to ensure the proper protection and management of different sensitive areas as they are closer to them.

#### **3.2.2.4 Environmental Impact Assessment**

Environmental Impact Assessment (EIA) is a procedure for evaluating the likely impact of a proposed activity on environment. It is fundamental to any regulatory system, which seeks to prevent or minimize environmental harm, or to promote sustainable development.<sup>177</sup> Its object is to provide decision-makers with information about possible environmental effects when deciding whether a given activity may be authorized to

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<sup>175</sup> Article 54 (1) Environmental Framework Law.

<sup>176</sup> Article 61 and 64 Environmental Framework Law.

<sup>177</sup> Wood supra note 103.

proceed or not.<sup>178</sup> EIA is recognized as a matter of national competence and contributes to the implementation of national policies on sustainable development and the precautionary action.<sup>179</sup> It helps governments to foresee and avoid harmful environmental consequences.

The Environmental Framework Law has introduced the system of conducting EIA. It provides that EIA is necessary before an authorization is given to the person who wants to undertake an activity.<sup>180</sup> It prescribes the content of an EIA report, mentions the competent authority to examine and approve the EIA and gives to the Minister of Environment the power to make regulations specifying the details for EIA.<sup>181</sup> In addition, the Minister is required to establish and revise the list of planned works, activities and projects that cannot be carried out unless an EIA is done and a list of activities which are not subject to EIA.

The requirement of EIA by the Environmental Framework Law is of great value for biodiversity protection. Possible harmful consequences to biodiversity will be taken into consideration in the EIA process. However, the problem that may arise is that determining whether an activity is likely to have harmful impacts on the environment (emphasis on biodiversity added), is a matter of discretion. It is subject to abuse as there are no specified criteria to use in exercising this discretion. It would be effective if the list of activities that need EIA is provided.

### **3.2.2.5 Crimes against biodiversity and their punitive sanctions**

The criminal procedures constitute a way of enforcing environmental laws at a national level, and they help to regulate individual conduct.<sup>182</sup> According to the provisions of Rwandan law, biodiversity protection is ensured through criminal procedure, which is an important development.

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<sup>178</sup> Birnie and Boyle supra note 16 at 130.

<sup>179</sup> Id. at 131.

<sup>180</sup> Article 67 Environmental Framework Law.

<sup>181</sup> Article 68 and 70 Environmental Framework Law.

<sup>182</sup> Birnie and Boyle supra note 16 at 282.

In terms of the Environmental Framework Law, the acts that harm biodiversity such as burning, cutting trees or causing others to do so, killing animals in protected forests and other protected areas and in national parks, carrying out agricultural activities, pastoral activities and construction of cattle kraals in areas closer to the banks of streams and rivers, and building houses in wetlands are crimes.<sup>183</sup> The Environmental Framework Law provides sanctions for each of these crimes.

In addition to the general laws namely the Constitution and the Environmental Framework Law, the following details concern Rwandan sectoral laws which are important to biodiversity protection.

### **3.3 Sectoral laws relevant to biodiversity protection**

#### **3.3.1 Law no 47/1988 of 5 December 1988 relating to the organization of forests (Forest Law)**

The Forest Law classifies forests into three categories, namely forests that constitute the State's domain, forests considered to be of local domain (at the level of district) and forests of private domain. According to these three categories, there must be forest plans. At the national level, there has to be a framework plan for the whole territory showing forest resources available and how they must be managed.<sup>184</sup> At the local level, the plans must show inventories of forests and areas covered by forests, which can be classified as protected areas.<sup>185</sup> At an individual level, any one who has a forest of more than two hectares, is required to have a management plan and must respect provisions of this law relating to conservation of forests and their exploitation.<sup>186</sup>

Forests under the State's domain and forests under local domain are almost all composed of natural forests which are situated in natural areas where, according to the law, any act contrary to the conservation of fauna and flora is prohibited. For example, hunting, collecting animals and plants, mining, introduction of new plant species, and others are prohibited. What is accepted is scientific research, which is also subject to

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<sup>183</sup> Article 96, 108 (6) and 110 Environmental Framework Law.

<sup>184</sup> Article 2 Forest Law.

<sup>185</sup> Article 4 Forest Law.

<sup>186</sup> Article 62 Forest Law.

prior permission issued by a competent authority.<sup>187</sup> In those areas, there is a possibility of establishing protected areas dedicated to the conservation of fauna and flora, soil, hydrological systems and natural ecosystems in general. In addition, the Minister of Environment has the power to list other prohibited activities that cannot be carried out in those areas.<sup>188</sup>

To ensure the better conservation of forests, a permit is required before cutting trees over a surface of two hectares and more, and for the sale of forest products and mining. Before issuing the permit, the competent authority must consider if measures to conserve fauna and flora are provided, and if related laws have been respected.<sup>189</sup> The permit cannot be granted if the act is contrary to laws and regulations governing national parks and nature reserves. It cannot also be granted if the act undermines the conservation of natural forests, savannah and natural ecosystems.<sup>190</sup>

The forest law establishes a national forest service, which has the power to protect national forests and ensure the protection of fauna, flora and natural ecosystems in general.<sup>191</sup> It further creates a National Forest Fund whose funds are committed to the management and rehabilitation of forests.

All the above-mentioned provisions of the Forest Law play an important role in the conservation of biodiversity, even though it was adopted before the emergence of the concept of biological diversity. This is justified by references to the conservation of fauna, flora and natural ecosystems. It provides the possibility of creating protected areas which is necessary in ensuring *in situ* conservation. It also prohibits a number of activities which are harmful to biodiversity and requires development of management plans which constitute an effective tool for sustainable utilisation of biological resources. However, what is questionable is how these provisions are enforced.

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<sup>187</sup> Article 32 Forest Law.

<sup>188</sup> Article 33 Forest Law.

<sup>189</sup> Article 67 Forest Law.

<sup>190</sup> Article 75 and 81 Forest Law.

<sup>191</sup> Article 6 Forest Law.

### **3.3.2 Organic law no 08/2005 of 14/07/2005 determining the use and management of land in Rwanda (Land Law)**

Land use and management constitute a threat to biodiversity if not adequately regulated. Conservation, rational use of land and promotion of its optimum utilisation help the land to retain its capacity for supporting human life and other biological resources.<sup>192</sup>

In Rwanda the land regulatory regime was instituted in 2005 and has some provisions relevant to biodiversity protection. It provides for different categories of land among which there is the category of state land. This is composed of land containing lakes and rivers; shores of lakes and rivers; land occupied by springs and wells; and land composed of natural forests, national parks, reserved swamps, public gardens and tourist sites. The Minister of Environment has the power to make lists of these areas.<sup>193</sup> However, up to date, no listing activity has been conducted.<sup>194</sup>

The above-mentioned provisions are relevant to the biodiversity protection, as most of these areas are the best habitats of plant and animal species. They are particular ecosystems suitable for biodiversity conservation. It is easier for the State to act for the greater conservation than individuals, who may own the same types of land. Individuals may pursue other interests at the expense of biodiversity conservation. As long as all these areas make up the state land, their use and management would not generally give rise to legal problems. According to de Klemm, this is known as public ownership of land, which forms a powerful conservation tool of area-based biodiversity conservation.<sup>195</sup> The State, the land-holding government, has the right, in its capacity as a landowner, to prohibit or restrict access and other activities by third parties on the land it owns, and to carry out any management measures that may be required.<sup>196</sup>

Moreover, there is an opportunity to consider biodiversity in the process of land planning, which is required by articles 19 and 29 of the Land Law. They provide for the

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<sup>192</sup> Sands supra note 43 at 555.

<sup>193</sup> Article 12 Land Law.

<sup>194</sup> The Minister of Water is obliged to list land containing rivers and lakes and land occupied by springs and wells, while the Minister of Environment has to list shores of lakes and rivers.

<sup>195</sup> de Klemm supra note 6 at 165

<sup>196</sup> Ibid.

establishment of a land structural exploitative chart, where different types of land are dedicated to different purposes. For instance some areas are reserved for agriculture, others for nature reserves, lakes and rivers, settlement, industrial purposes, etc. It is important to note that planning is a powerful tool for sustainable utilisation of biological resources.

Further, in recognizing the right to property over the land, the land law allows expropriation in case of public interest.<sup>197</sup> Expropriation is regulated by the law no. 18/2007 of 19/04/2007, which gives a list of acts considered to be in the public interest, and includes acts that aim at the conservation of biodiversity.<sup>198</sup>

### **3.3.3 Ministerial order n°2 of 24 September 2001 relating to the Utilisation and Management of Wetlands in Rwanda (Wetland Regulation)**

The Wetland Regulation protects sensitive ecosystems such as banks of streams, rivers and lakes. It requires an EIA before undertaking any activity in wetlands. The introduction into wetlands of non indigenous species likely to harm the environment, especially species from GMOs is prohibited. Hunting and fishing in those sensitive areas are subject to prior authorization.<sup>199</sup>

The Wetland Regulation is relevant to biodiversity protection as it serves to protect and control the use of wetlands, ecosystems known to be cradles of biological diversity. They provide the water and primary productivity upon which countless species of plants and animals depend for survival.<sup>200</sup>

### **3.3.4 The law of 27 April 1971 instituting the Mining Code (the Mining Law)**

The Mining Law, as it has been amended up to date, protects national parks from mining activities. Mining activities are potential to bring about changes in habitat use by species or the changes in the habitat characteristics, which constitutes a big threat to biodiversity. Therefore, the Mining Law is relevant in the protection of biodiversity, as

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<sup>197</sup> Article 67 Land Law.

<sup>198</sup> Article 5 (12) Expropriation Law.

<sup>199</sup> Article 4 and 5 of Wetland Regulation.

<sup>200</sup> Ramsar Convention Secretariat *The Ramsar Convention Manual: a Guide to the Convention on Wetlands* 4th ed. (2006) Gland, Switzerland Available at [http://www.ramsar.org/lib/lib\\_manual2006e.htm](http://www.ramsar.org/lib/lib_manual2006e.htm) [Accessed 16 November 2007].

it prohibits mining activities which constitute a big threat to biodiversity and essentially focuses on national parks, the most sensitive areas with a diversity of animal and plant species.

### **3.3.5 Law no 11/82 of 30 March 1982 related to the Protection, Conservation and Utilisation of Soils (the Soil Conservation Law)**

This law is of relevance to biodiversity protection as it prohibits the practice of bush fires except where it is necessary to prevent a fire that has started from continuing, or if there are plants affected by diseases which need to be destroyed.<sup>201</sup> It establishes a control measure to eradicate plant diseases. It therefore ensures the protection of the remaining plants and animal species dependent on them.

### **3.3.6 The decree law of 26 April 1974 establishing the Rwandan Office of Tourism and National Parks (ORTPN)**

ORTPN is in charge of promoting tourism in national parks. The tourism must be compatible with the protection of nature, particularly the fauna and the flora.<sup>202</sup> Many activities likely to harm fauna and flora such as hunting, fishing, capture and killing of animals, exploitation of forests, agriculture, mining, activities that tend to modify the aspects of national parks or disturbing the fauna and flora, movements inside those areas, the introduction of non native species, and the import, export, transport and sale of animals or animal products are prohibited.<sup>203</sup> This law provides for the possibility of establishing special reserves and areas reserved for hunting.<sup>204</sup>

The law establishing the ORTPN contains three appendices which indicate different types of protection accorded to animal species. Appendix I contains 21 animals that are fully protected, appendix II contains 20 animals that are partially protected, and appendix III concerns harmful animals that are not protected and which can be killed.<sup>205</sup> However, they are not individually specified. This may cause the killing of many animals, while some of them are not harmful.

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<sup>201</sup> Article 5 of the law no 11/82 of 30 March 1982 related to the Protection, Conservation and Utilisation of Soils.

<sup>202</sup> Article 2 (2) of the law establishing ORTPN.

<sup>203</sup> Article 31, 42, 44, 48, 50-60 Law establishing ORTPN.

<sup>204</sup> Articles 32-34 Law establishing ORTPN.

<sup>205</sup> Article 44, 45 and 50 Law establishing ORTPN.

In addition, some crimes that can be committed against biodiversity are regulated and sanctions are provided for the best protection of fauna and flora of national parks and special reserves.<sup>206</sup>

This law is consequently of great relevance to the protection of biodiversity as it ensures the conservation of some sensitive areas like national parks and the protection of some animal species. Nonetheless, no individual protection of plant species is offered while there are many plant species that need special protection.

### **3.3.7 Other sectoral laws relevant to biodiversity protection**

There are other laws enacted during the colonial period when the concept of biodiversity was not in the minds of lawmakers, which play an important role in biodiversity conservation. Firstly, there is the ordinance of 1/7/1914 regulating pollution and contamination of watercourses and lakes. It requires the determination of appropriate zones for the protection of lakes and watercourses, which are serving or may serve to produce potable water. It also prohibits the deposit of harmful substances and any other waste material in watercourses.<sup>207</sup> This ordinance is then of great importance to biodiversity as it contributes to the protection of particular and high sensitive ecosystems from the effects of pollution which is a great threat to biodiversity as seen in paragraph 1.4.

Secondly, there is the ordinance n° 51/162 of 4 May 1955 prohibiting detention, culture, multiplication, sale and transport of water jacinth (*Eichhornia crassipes*). Water jacinth constitutes a major threat to the environment in general and biodiversity in particular. It can change an entire habitat, placing ecosystems at risk as it is the case in the Akagera National Park in Rwanda. It can crowd out or replace native species that are beneficial to a habitat.<sup>208</sup> Therefore, the importance of this law in the protection of

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<sup>206</sup> Articles 86-91 Law establishing ORTPN.

<sup>207</sup> Article 1 of the ordinance of 1/7/1914 regulating pollution and contamination of watercourses and lakes.

<sup>208</sup> D Simberloff *Introduced Species: The Threat to Biodiversity & What Can Be Done* Available at <http://www.actionbioscience.org/biodiversity/simberloff.html> [Accessed 30 December 2007].

biodiversity is manifest for it prohibits the introduction of water jacinth, a harmful invasive species.

The third law is the decree of 18 December 1930, which requires a permit before activities of cutting and selling trees are carried out. This law ensures the protection of forests and this is relevant to biodiversity for forests provide perfect habitats for animal and plant species. They actually contain most of the living species and they often possess the highest level of biodiversity and therefore provide the biggest genes reservoir.<sup>209</sup>

The fourth law is the ordinance n° 52/443 of 21 December 1952 as amended up to date by the presidential decree n°291/11 of 15 May 1987 establishing adequate measures to protect watercourses, underground napes and lakes. It establishes some measures to avoid water pollution. The implementation of this law is of great relevance to biodiversity for water pollution has, among other consequences, that of causing deep long-term modifications of biodiversity. For instance, if watercourses, underground napes and lakes are polluted, this causes eutrophication.

The following group of laws consists of biosafety-related laws relevant to biodiversity, as their application contributes to the control and handling of modified genetic materials. They include the law n° 14/2003 of 23/05/2003 regulating production, quality control and commercialization of plant quality seeds. This law provides that commercial quality seeds have to be processed.<sup>210</sup> They must be free from foreign materials, clean, well packed and labeled. The label must clearly show the characteristics of the seeds. The Minister of Agriculture is obliged to make regulations on the quality seed processing standards.<sup>211</sup> Each juridical person marketing quality seeds must have an authorization and enlisted in the register of quality seed sellers. The conditions and requirements to get authorization are fixed by the regulations to be made

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<sup>209</sup> R. Braun and K. Ammann *Biodiversity: The impact of biotechnology* (2002) Encyclopedia of Life Support Systems EOLSS Publishers Oxford at 1 Available at <http://www.botanischergarten.ch/EFB/UNESCO-Biodiv-Biotech-Final.pdf> [Accessed 30 December 2007].

<sup>210</sup> Article 7 Seed Law.

<sup>211</sup> Ibid.

by the Minister of Agriculture.<sup>212</sup> Further, imported seeds must always be accompanied by an official certificate delivered by the country of origin and be subjected to controls referred to in this law.<sup>213</sup>

This law is important as it contributes a lot to the protection of agro-biodiversity from risks associated with GMOs. Because of the barrenness of Rwandan soil in some parts of the country, for instance its southwestern part, there is an increasing looking for better seeds, including those enhanced by modern biotechnology, which may be more productive. Therefore, there are possibilities of introduction of GMOs into Rwandan environment. The seed law, if implemented effectively, facilitates the control of their introduction.

Another biosafety-related law to mention is the law on the Protection of Plants, Plant products and utilization of pesticides. It prohibits the introduction, transport, and keeping of pests within the national territory. Imported plants and plant products are subject to import controls. When they enter the national territory, they must be accompanied by a phytosanitary certificate issued by the official authorities of the country of origin, testifying that they are safe from pests and fulfill the requirements of the regulations applied in Rwanda.<sup>214</sup> It provides that the introduction of some plants into the national environment may be prohibited or submitted to the control or subordinated to the observance of certain conditions set by the Minister of Agriculture. All individuals entering the national territory carrying plants or plant products are obligated to declare them to the nearest administrative authority in charge of plant protection for phytosanitary control.<sup>215</sup>

The diversity of plants has to be protected from pests which can destroy native plants. A legal control of the introduction of foreign plants is necessary for the sake of biodiversity protection as they can be introduced in Rwandan environment while they

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<sup>212</sup> Article 9 Seed Law.

<sup>213</sup> Article 10 Seed Law.

<sup>214</sup> Article 6 Plants and Plant Products Law.

<sup>215</sup> Article 8 Plants and Plant Products Law.

are already attacked by diseases, and this is unfavorable to biodiversity. Therefore, the adoption of the plant law in Rwanda is of great value as it contributes to the protection of plants which are likely to be attacked by potential pathogens. However, there must be scientific infrastructure for facilitation of such control, and this is a problem in Rwanda which is a developing country.

A further biosafety-related legal instrument to mention is the ordinance of 28 July 1938 regarding domestic animal health control and animal feeds. It subjects the import, export and transition of animals to a covering certificate and health delivery note from the country of origin.<sup>216</sup>

Like the diversity of plants, diversity of animals also needs protection against animal diseases, which may result from the introduction of new animal species that are affected by potential pathogens. The legal control of introduction of animal species in Rwandan environment regulated by the animal health control ordinance is of high appreciation. The problem is again its ineffective implementation due to lack of adequate infrastructure.

Although the above-mentioned laws do not expressly talk about biotechnology, their implementation plays an important role in addressing this issue. They contribute to the protection of biodiversity from risks associated with biotechnology.

### **3.4 The Rwandan Biosafety Bill**

Given the increasing adoption of biotechnology in agricultural production, many biotechnology products, some of which contain GMOs, are likely to flow into Rwanda. There would be undesirable effects of biodiversity on human health and biodiversity if no legal mechanisms were put in place to ensure the country's biodiversity and the people against such risks. It was shown that there is no adequate domestic legislation explicitly addressing biosafety issues in the country. Therefore, the national Biosafety Bill is the main legal instrument, and has been formulated for the purpose of establishing

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<sup>216</sup> Article 143 of ordinance of 28 July 1938 regarding domestic animal health control and animal feeds.

a protection system (protecting human health and environment, particularly biodiversity) from the negative impacts of modern biotechnology.

### **3.4.1 Scope of application**

The biosafety bill shall apply to the import, export, transit, contained or confined use, release or placing on the market of any GMOs, whether intended for introduction into the environment, or for use as food, feed or processing, that may have an adverse effect on the conservation and sustainable use of biological diversity, taking into account risks to human health.<sup>217</sup> It excludes the transboundary movement of GMOs which are pharmaceuticals for humans.<sup>218</sup> A GMO is defined as any biological entity capable of replication or of transferring genetic material and includes plants, animals, micro organisms, cell cultures and other vector systems in which the genetic material has been altered through modern biotechnology. It includes a product of GMO intended for food.<sup>219</sup>

The scope of the biosafety bill focuses on transboundary movements of GMOs. It includes also those intended for food once one considers the definition of a GMO. This is important because genetically modified organisms are likely to be introduced into the Rwandan environment within the form of food aid for Rwanda is a developing country that has been destroyed by a civil war of 1990-1994. The scope of this bill is wide, to some extent, to protect biodiversity from harmful effects of GMOs which may be introduced in the country in different forms.

### **3.4.2 Institutions**

Three responsible administrative institutions are established with the possibility of establishing Ad Hoc Committees as long as expertise is required in some scientific matters. The first institution is the National Competent Authority (NCA), which is the Rwanda Environment Management Authority (REMA). Its functions are receiving, responding or communicating decisions made by the National Biosafety Committee (NBC) on GMO notifications and applications. REMA is also entitled to establish

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<sup>217</sup> Article 1 (i) Biosafety Bill.

<sup>218</sup> Article 1 (ii) Biosafety Bill.

<sup>219</sup> Article 3 Biosafety Bill.

mechanisms for ensuring the appropriate handling, dissemination and storage of documents and data in connection with notifications, applications and other matters covered by this Bill. In addition, REMA shall promote public awareness and education concerning the activities regulated by the biosafety bill, and it will serve as the Focal Point for liaison with the Secretariat and the Biosafety-Clearing House of the Cartagena Protocol.<sup>220</sup>

The second institution is the National Biosafety Committee (NBC). The NBC is established within the NCA and consists of eleven members from different fields. Its major role will be to take decisions on GMOs' applications and review any decision regarding GMO upon receipt of new scientific information, and to make appropriate recommendation to the Competent Authority.<sup>221</sup> It will also be responsible for giving advice on the implementation of the national biotechnology law and biosafety policy, for coordinating, monitoring and supervising all sectoral activities that involve modern biotechnology and biosafety issues, and for insuring the integration of safe application of biotechnology in the national development planning and policy formulation.<sup>222</sup> The NBC will also have a duty to provide guidance and advice for the carrying out of risk assessments, to evaluate or cause the evaluation of the risk assessment and to consider the result of such evaluation.

The third institution is the Registrar which is also established within the NCA. The Registrar's functions, apart from administrative functions like the reception and screening of GMO applications for submission to the Committee, will pivot around the issuance of permits where approvals have been given.<sup>223</sup>

The establishment of these institutions reveals the need for Rwanda to coordinate the national efforts in the field of GMOs management. It reflects the Rwandan developmental stage of establishing the framework of an administrative system for

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<sup>220</sup> Article 4 Biosafety Bill.

<sup>221</sup> Article 9 (h), (i), (j) and (p) Biosafety Bill.

<sup>222</sup> Article 9 (a), (c) and (e) Biosafety Bill.

<sup>223</sup> Article 12 Biosafety Bill.

competent and effective decision-making process on notifications and requests related to GMOs. Biodiversity will benefit from proper and adequate decision-making process once such institutions perform well their task.

### **3.4.3 Risk assessment and risk management**

The objective of risk assessment is to identify and evaluate the potential adverse effects of GMOs on the conservation and sustainable use of biological diversity in the likely potential receiving environment, taking also into account risks to human health.<sup>224</sup> Risk assessment is used by a competent authority to make informed decisions regarding GMOs.

Risk assessment shall be undertaken on a case-by-case basis and any approval shall specify the step-by-step sequences. The NCA shall not take any decision on any GMO applications without assessment of the risks to the environment, biodiversity and human health, and this shall be undertaken in accordance with Schedule II of the National Biosafety Bill.<sup>225</sup>

Risk assessment is the main method of evaluating hazards in GMOs. Producers of GMOs would claim that their products are safe if they pass a series of tests under a risk assessment regime. However, critics would argue that it is not an easy or convincing task to accurately predict and control ecological and health impacts due to uncertainties of long-term assessments, and the lack of resources for developing viable alternatives.<sup>226</sup>

Concerning risk management, the GMOs' applications shall not be approved unless the NCA is convinced beyond reasonable doubt that the GMO in question poses

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<sup>224</sup> A H Zakri *International Standards for Risk Assessment and Risk Management of Biotechnology* (2001) Bellevue Switzerland Available at <http://www.ictsd.org/dlogue/2001-07-19/Zakri.pdf> [Accessed 20 October 2007].

<sup>225</sup> Article 19 (i) Biosafety Bill.

<sup>226</sup> Zakri supra note 224.

manageable risks. Applicants shall, in this case, be required to provide a plan with sufficient proof of how they would manage the risks identified.<sup>227</sup>

Risk management is often seen as a subsequent and distinct process from risk assessment. It is a political process in which risk managers decide how much of the scientifically determined risk should be exposed to as individuals or should be accepted by a society.<sup>228</sup>

The requirements of risk assessment and risk management are the key tools in protecting biodiversity against harmful effects of GMOs and their regulation by the Biosafety Bill is of high value. In fact, risks of GMOs are supposed to be assessed over a broad range of potential impacts, including impacts on diversity of plants, animals and non-target organisms; toxic or allergenic effects; and potentials for increased weediness, invasiveness, or gene escape to related plants.<sup>229</sup> All these effects harm biodiversity. However, in Rwanda like in other developing countries, the implementation of provisions on risk assessment and risk management will not be easy. It will be confronted by the lack of local expertise to carry out risk assessment and the lack of scientific evidence on the nature and behavior of the GMOs in Rwandan environment.

#### **3.4.4 Liability and Remedies**

Any person who imports, transits, makes contained or confined use of, releases or places on the market a GMO, shall be strictly liable for any harm caused by such GMO and shall be bound to fully compensate all persons affected by such release, transit, use or placement on the market of the GMO in question.<sup>230</sup> It is clear that the biosafety bill endorses the system of strict liability for damage caused by GMOs which is favorable to the protection of biodiversity. Strict liability does not require proof of fault which may be difficult for Rwandans. Considering that Rwanda is a poor country having been in a state of civil war for long, many citizens are grappling with many problems relating to food, health, education, etc. In such circumstances, they may not afford high legal fees,

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<sup>227</sup> Article 20 Biosafety Bill.

<sup>228</sup> Zakri supra note 224

<sup>229</sup> Ibid.

<sup>230</sup> Article 34 Biosafety Bill.

and spend a lot of time in courts trying to prove the fault on behalf of the operator of GMOs.

### **3.4.5 Confidentiality**

Information considered to be confidential by the competent authority, after the applicant's claim and if the applicant withdraws the application before approval, shall not be disclosed. There are exceptions in particular circumstances such as the description of the GMO, names and addresses of the applicant and purpose of the import, transit, contained or confined use, release or placing on the market of the GMO; methods and plans for monitoring the GMO; and the evaluation of foreseeable effects, in particular any pathogenic and/or ecologically disruptive effects.<sup>231</sup> However, the competent authority may decide to make available to the public, any information not mentioned in the above exceptions, if it is in the public interest.

This provision is double faced, as on the one hand, it is favorable to people who intend to introduce GMOs within the Rwandan environment. It protects their intellectual property rights. On the other hand, Rwandan citizens are entitled to have access to information required as exceptions. Therefore, if the information reveals that the GMO is likely to harm biodiversity, they will not accept its introduction. Also, these exceptions contribute to the identification of a person who will be liable in case of damage caused by such GMO and this will facilitate the procedure of compensation.

The third chapter has illustrated Rwandan laws that contribute to the protection of biodiversity. Some protect it using area-based mechanisms; others use species-based mechanisms. They prohibit a number of activities which are harmful to biodiversity and require EIA in some cases. They also provide for crimes against biodiversity and their penalties and help to a limited extent to handle biotechnology. The following chapter will determine to what extent the application of these laws comply with the CBD in Rwanda.

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<sup>231</sup> Article 27 Biosafety Bill.

## **Chapter Four: State of biodiversity protection under Rwandan legal regime in compliance with the CBD**

### **4. 1 Introduction**

Rwanda signed and ratified the CBD and other related conventions discussed in Chapter Two. This constitutes the confirmation, by the Rwandan government, of the concern for the conservation of biological diversity. After the ratification, Rwanda, like other country parties is required to individually take appropriate measures for their implementation according to its own particular circumstances. This chapter places emphasis on the CBD only which is the only convention that takes a holistic approach to the protection of biodiversity, and is built upon the prior biodiversity-related conventions discussed in chapter two.

### **4. 2 Implementation of the CBD in Rwanda**

Each one of the CBD's obligations discussed in chapter two will be examined by analyzing the level of its implementation in Rwanda.

#### **4.2.1 Establishment of national strategies, plans and programmes**

The key mechanisms for domestic implementation of the CBD are national biodiversity strategies, plans and programmes as set out in article 6 (a) of the CBD.<sup>232</sup> In this context, Rwanda developed its national strategy and action plan (RNBSAP) in April 2003. This is of great relevance to Rwanda as biodiversity strategies, plans and programmes are intended to encourage countries to gather accurate and comprehensive information about the opportunities for, and threats to, biodiversity conservation.<sup>233</sup> The RNBSAP has five major aims: the improvement of conservation of protected areas and wetlands; sustainable use of biodiversity of natural ecosystems and agro-ecosystems; rational use of biotechnology; development and strengthening of policy, institutional, legal and human resource frameworks; and equitable sharing of benefits derived from the use of biological resources.<sup>234</sup>

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<sup>232</sup> Hernkenrath supra note 100 at 30.

<sup>233</sup> Hunter et al. supra note 22 at 962.

<sup>234</sup> MINITERE *Rwandan National Biodiversity Strategy and Action Plan* (2003) Kigali at 51.

With regard to the aim of improved conservation of protected areas and wetlands, Rwanda is aware of the fact that all of its protected areas and wetlands are threatened by human activities. Two objectives are envisaged for the achievement of this aim namely the improvement of protection and management of these special areas, and improved knowledge of their biodiversity.

The types of protected areas known in Rwanda are mainly national parks, which were created a long time ago. However, their sizes have been shrinking due to ineffective protection and management. If adequate action may be taken with regard to this aim, the remaining part of their biodiversity may be preserved.

As far as wetlands are concerned, the Environmental Framework Law discussed in paragraph 3.2.2 acknowledges the importance of best use and management of wetlands. It prohibits construction of houses in wetlands. In addition, the ministerial order discussed in paragraph 3.3.3 requires all activities of exploiting wetlands to be authorized and preceded by an EIA.<sup>235</sup> This order also prohibits the introduction into wetlands of non-indigenous species that are likely to harm the environment, especially species from GMOs.<sup>236</sup>

Concerning the aim of sustainable use of biodiversity of natural ecosystems and agro-ecosystems, it is recognized that these ecosystems are not effectively managed. This causes the significant depletion of their biodiversity due to various human activities, particularly agriculture. To change the situation, the RNBSAP sets up four objectives for achieving this aim. They are the conservation of genetic biodiversity of native plant and animal species, sustainable use of biological resources of natural ecosystems, sustainable use of agro-biodiversity, and development of an environmentally sustainable and economically viable tourism.

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<sup>235</sup> Annex to the Wetland Regulation.

<sup>236</sup> Article 5 Wetland Regulation.

With regard to the aim of rational use of biotechnology, the country is aware of advantages and disadvantages of the use of GMOs both for man and for biodiversity, knowing that they are not much controlled in Rwanda. Two objectives, namely improved access to and transfer of biotechnology and risk-free use of biotechnology, are envisaged. The national biosafety bill discussed in paragraph 3.6 was drafted in 2005 towards the achievement of this aim. However, two years have passed without the promulgation of a biosafety law, which means that assessment and management of risks caused by GMOs are still not governed by any law, although this is one of the priorities of the country envisaged by the RNBSAP since 2003.

Regarding the aim of developing and strengthening the policy, institutional, legal and human resource framework, the targeted objectives are the improvement of policy and legal frameworks for sustainable conservation of biodiversity, building of institutional and human resource capacities for sustainable conservation of biodiversity, and strengthening regional and international cooperation for conservation and sustainable use of biodiversity.

If attention can be paid to the objective of improving legal developments, there are few new laws favorable to the protection of biodiversity that have been enacted since the establishment of RNBSAP. Only the Environmental Framework Law (discussed in paragraph 3.2.2) and the Land Law (discussed in paragraph 3.3.2) have been recently enacted.<sup>237</sup> This shows that the legal framework in relation to biodiversity conservation is insufficient and inadequate as all other laws mentioned in Chapter Three are old. They do not accommodate all the necessary requirements for biodiversity protection.

The fifth and last aim of the strategy is the equitable sharing of benefits derived from the use of biological resources. Here the objective is the strengthening of the rights of grassroots communities for the control and sustainable use of biological resources.

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<sup>237</sup> Another new legal instrument would be the Biosafety Law if it was not still a draft.

For each one of the above-mentioned aims and their objectives, the RNBSAP has set up strategies, which in turn are translated into a national action plan. The action plan consists of specific and urgent priority actions to be carried out by specified institutions within a specified period of five years.<sup>238</sup>

In addition to the RNBSAP, there are other plans and policies that take into consideration the protection of biodiversity.<sup>239</sup> This is the fulfillment of the obligation of article 6 (b) and 10 (a) of the CBD which requires Parties to integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies, and into decision-making as seen in paragraph 2.3.4.1. This is quite important as biodiversity cannot be conserved by nature conservation agencies alone. It helps to avoid the uncoordinated and sectoral approach, which can lead to a fragmentation of biodiversity conservation since issues like conservation of biodiversity that cut across many departments should be integrated within all policy making.

The RNBSAP is a major tool for implementing the CBD at national level as it sets clear objectives and priorities for biodiversity conservation in the country. However, it is inefficient as it is more general and applicable in the same way for the whole territory of the country. It does not provide for the possibility of developing sub national or local strategies and plans, which are more effective. Sub national or local strategies and plans promote the protection of biodiversity differently according to the places where its components are localized with much emphasis on more threatened areas.<sup>240</sup>

The implementation of the RNBSAP is today facing problems such as poverty, lack of human resources qualified in biodiversity conservation and lack of effective management skills of biodiversity conservation by local communities.

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<sup>238</sup> MINITERE supra note 234 at 64-74.

<sup>239</sup> Those plans and policies are environmental policy, Rwanda Vision 2020 policy, Rwandan Poverty Reduction Paper, National Land policy, National Water Management policy, National Forest policy, National Energy policy and National Investment Strategy policy.

<sup>240</sup> Glowka et al. supra note 98 at 31.

#### 4.2.2 Identification and monitoring

This is one of the most challenging obligations of the CBD. It is an essential scientific action that should accompany any process of national or regional planning.<sup>241</sup>

In Rwanda, knowledge of biodiversity is still limited, and only a few studies have been conducted. These studies have identified ecosystems and habitats containing high biological diversity, large numbers of endemic or threatened species and highly known ecosystems.

Identification tends to cover only specific parts of a wide range of biodiversity. Only mammals, birds, amphibians, reptiles and high plants are known, and to a limited extent.<sup>242</sup> Others like invertebrates and small plants are not known. Also, even for these components, there is no knowledge about the population size, distribution or threat status for them. The inherent dynamics of ecosystems and their functioning are still unknown and it is difficult to predict when impacts on an ecosystem reach a threshold at which the state of the ecosystem changes dramatically and irreversibly.

In addition, only protected areas are identified; those areas which are not under a given status of protection are not considered, although they may have a great number of biodiversity components. This means that the interrelationships between the known and unknown species, between them and identified habitats are not determined. Consequently, the ecosystem approach which was recommended by the COPs in 2000 to be the basic tool for an integrated approach to biodiversity conservation and sustainable use is not applied.<sup>243</sup>

Identification provides for initial and useful information about the components of biodiversity, which, if gathered and organized, can be sufficient for effective action.

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<sup>241</sup> A Martinez *The new regional planning and implementation of the convention on biological diversity* Available at <http://www.oas.org/dsd/publications/Unit/oea04e/ch10.htm> [Accessed 11 December 2007].

<sup>242</sup> MINITERE supra note 12.

<sup>243</sup> The ecosystem approach was defined in the COPs' Decision V/6 as an integrative and adaptive management of biological resources based on scientific methodologies focused on levels of biological organisation, which encompass the essential structure, processes, functions, and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

Nevertheless, in Rwanda, information is gathered disparately by different educational and research institutions and some governmental departments. Activities related to taxonomy are carried out disparately by isolated researchers from national and international institutions. There is then lack of coordination. However, even though it is difficult to make an inventory of all biodiversity components, where there is lack of full scientific certainty, the need for more information should not be used as an excuse to delay action.<sup>244</sup> The application of a precautionary approach is recommended, and this principle is recognized by the environmental framework law, as discussed in paragraph 3.2.2.1.

In addition to the identification of biodiversity components, parties have to identify processes and categories of activities which have or are likely to have adverse impacts on biodiversity as elaborated on in paragraph 2.3.4.2. In Rwanda, some activities and processes threatening biodiversity have been identified. They include population pressure over biological resources, population resettlement, uncontrolled introduction of exotic resources, poaching, bush fires, and conflicts and wars.<sup>245</sup>

After identification, monitoring of biodiversity components, activities and processes that threaten biodiversity must follow, as it is quite clear that for Rwanda to have information only is inadequate. It is more effective if, on the basis of the information collected, a follow-up with checks to see if there is an increase or decrease of biodiversity loss. In case of increase, more precautions may be taken while in case of decrease, they should strengthen the measures that contributed to the decrease of biodiversity loss. However, there is no systematic monitoring program for biodiversity components, and for activities and processes that threaten biodiversity.<sup>246</sup> In addition, according to the CBD, such activities have to be regulated. In Rwanda, they are regulated in a fragmented way by different biodiversity-related laws discussed in Chapter Three. There is no specific list of activities and processes that are harmful to biodiversity, instead they are identified and regulated differently by those laws which

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<sup>244</sup> Glowka et al. *supra* note 98 at 33.

<sup>245</sup> MINITERE *supra* note 234 at 40.

<sup>246</sup> *Id.* at 61.

may create conflicts as they sometimes regulate the same types of activities in different ways. Also, some of those laws are old and the rules of enforcement that they prescribe are outdated.

The implementation of this obligation in Rwanda is challenging due to lack of trained personnel, and mostly, monitoring tends to be on the basis of indicator species rather than on the basis of a comprehensive program of identification of species, ecosystems and activities together with their evaluation. The assemblage of information is costly and demanding due to the lack of information on the economic and social value of biodiversity. Further, the cost of biodiversity loss mostly encountered by Rwanda like other developing countries is difficult to assess.<sup>247</sup>

#### **4.2.3 Conservation measures**

*In situ* conservation, the conservation of species in their natural habitats, is the most appropriate way of conserving biodiversity. *Ex situ* conservation measures come to complement *in situ* methods as they provide an insurance policy against extinction. They are both examined below to see how they are developed in Rwanda.

##### **4.2.3.1 *In situ* conservation measures**

Conserving the areas where populations of species exist naturally is an underlying condition for the conservation of biodiversity. That is why the CBD requires parties to establish a system of protected areas or areas where special measures need to be undertaken for biodiversity conservation.<sup>248</sup>

In Rwanda, despite the small territorial size, the country has established protected areas which cover 10% of the territory.<sup>249</sup> They have been established long time ago in areas that were least populated, when there were no conflicts over land use. Currently, Rwandan protected areas are mainly composed of three national parks and two aquatic areas.

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<sup>247</sup> Ryan supra note 75.

<sup>248</sup> Article 8 (a) CBD.

<sup>249</sup> MINITERE supra note 234 at 65.

The first one is the National Volcano Park (NVP) which was created in 1925 by the ordinance of 26 November 1925. It is currently protected by the decree of 24 April 1974. The NVP was accepted as a Biosphere Reserve in 1983 under the UNESCO programme “Man and Biosphere”. It is recognized because of the presence of mountain gorillas, an endemic primate in danger of extinction. In addition, it hosts a lot of plant and other animal species. However, its surface has been gradually shrinking as it originally covered 34 000 Ha in 1924 but currently covers 16 000Ha.<sup>250</sup>

The second is the Akagera National Park (ANP) established in 1934 by the decree of 26 November 1934. It is the habitat of 90 species of mammals, 530 of bird’s species and a great number of plant species. Unfortunately, like the VNP, the ANP has lost about a third of its surface coverage due to the resettlement of people from exile in 1994.<sup>251</sup>

The third is the Nyungwe National Park (NNP), which was initially recognized as a nature reserve in 1933 and legally became a national park in 2004. Nyungwe is the largest known mid-altitude forest of Africa where colobus monkeys, chimpanzees, eagles, hornbills, and other spectacular species can be found.<sup>252</sup> It is legally protected by the law of 2004. Nevertheless, like the two preceding national parks, Nyungwe faces several major threats which result from the high human pressure around the forest and the need for more land or alternative sources of income.

All these three national parks constitute reserved lands, owned by the national government and protected from human development. They were created when they were still wilderness areas. They are located in places which have been largely undeveloped, and often areas with exceptional native animal and plant species and ecosystems. The establishment of these protected areas is of great relevance for it is better to save the area or the species rather than to try to rebuild or recover it later, as it may be expensive and only few ecosystems can be rehabilitated to the level of species

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<sup>250</sup> MINITERE supra note 12 at 124.

<sup>251</sup> Id. at 129.

<sup>252</sup> MINITERE supra note 12 at 8.

richness they had before being damaged.<sup>253</sup> The law has declared their legal status as parks, determined their boundaries and defined few activities that cannot be conducted inside these areas. However, their boundaries have been altered, which means that new legal boundary definitions are needed.

In establishing these areas, there are some substantive elements that in the view of the writer were not included. There should be subdivisions inside the concerned areas, which show different protection accorded to their different parts in order to give greater protection to the highly sensitive parts. The law must indicate the part or parts of the park where every kind of activity is absolutely prohibited, which part is reserved for recreation, in which part a certain activity can be conducted, etc. All of this should be based on different levels of sensitivity or richness in biodiversity.

As far as aquatic areas are concerned, there is no national law that declares the two areas, namely Rugezi and Bulera-Ruhondo ecosystems, as protected areas. Their status as protected areas derives from the decision to list them as Ramsar sites, which puts them under international and national protection.<sup>254</sup>

In Rwandan law, no criteria for the establishment of protected areas have been identified although it is required by the CBD. The Environmental Framework Law, as discussed in paragraph 3.2.2, obliges the State and the population to establish, to maintain and manage parklands and green spaces but the criteria and conditions to be taken into consideration are not provided.<sup>255</sup> Consequently, it will be difficult to establish protected areas and there will be no harmony due to lack of common and basic conditions to be considered either by individuals or by the State. Up to date no new such areas have been created.

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<sup>253</sup> Hunter et al. *supra* note 22 at 965.

<sup>254</sup> Rwanda has become the 148th party to the Ramsar Convention since the 1<sup>st</sup> of April 2006. The Rugezi-Bulera-Ruhondo first Rwandan Wetland of International Importance has been listed since the 1<sup>st</sup> of December 2005.

<sup>255</sup> Article 46 Environmental Framework Law.

The only existing parks are vast areas established according to their ecological function that need to be integrally protected. However, as Glowka mentions, small areas may contain a greater number of species and ecosystems, which may need special protection.<sup>256</sup> This can be easily achieved if the guidelines and the conditions to be met in order to be declared as a protected area are developed. In fact, there should not be one type of protected areas; instead, there should be a mixture of protected areas managed differently for different objectives such as nature reserves, wilderness areas, national parks, etc.

After establishing protected areas, parties are required to regulate or manage biological resources important for the conservation of biodiversity within or outside protected areas as seen in paragraph 2.3.4.3.1.<sup>257</sup> Regulate or manage implies control of all activities that can affect biological resources concerned such as hunting, harvesting and activities that may indirectly affect biological resources such as tourism and pollution.<sup>258</sup>

In Rwandan legislation that protects biodiversity, some activities likely to harm biodiversity in protected areas are regulated generally by different laws as discussed in Chapter Three and in paragraph 4.2.2. However, because of fragmentation, it is difficult to enforce these laws. In addition, some of them have been enacted a very long time ago. Hence, penalties prescribed for their enforcement are inadequate.

In addition, for *in situ* conservation as seen in paragraph 2.3.4.3.1, parties have to assure the protection of ecosystems and natural habitats and populations of species.<sup>259</sup> In this regard, the Rwandan laws, apart from establishing protected areas as seen above, do not provide for the protection of other natural habitats. For individual species, few animal species are protected by the law decree creating the ORTPN, as discussed in paragraph 3.3.6, in terms of which 21 animal species are fully protected, 20 are partially

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<sup>256</sup> Glowka supra note 98 at 39.

<sup>257</sup> Article 8 (c) CBD.

<sup>258</sup> Glowka supra note 98 at 40.

<sup>259</sup> Article 8(d) CBD.

protected and harmful animals are no longer protected.<sup>260</sup> This list is very old and concerns only animal species, no plant species are included. There must be criteria for listing animal or plant species in need of individual protection depending on their role in ecosystems, their scarcity, their aesthetic value, their degree of extinction and their economic, cultural and scientific role.<sup>261</sup>

Moreover, parties to the CBD should do whatever is possible to restore the damaged ecosystems and stop damage from continuing. This obligation cannot be easily assessed in terms of law but some initiatives have been attempted for the rehabilitation of degraded ecosystems.

Furthermore, for effective *in situ* conservation, measures for preventing the introduction of invasive and alien species, whether plants or animals are recommended.<sup>262</sup> Ordinance n° 51/162 of 4 May 1955 prohibits the detention, culture, multiplication, sale and transport of water jacinth, the most invasive species as seen in paragraph 3.3.7. Also, the biosafety bill will regulate the introduction of such species that may be introduced as LMOs.<sup>263</sup> This is of great relevance as invasive alien plants and animals are the big threats to wild flora and fauna as they are likely to have adverse impacts that could affect the conservation and sustainable use of biodiversity.

The problem is the eradication of such species in case they have already spread into Rwandan territory, as is the case in Akagera National Park where the water jacinth is suffocating lakes. If an introduction of these species occurs, there must be a controlling action. If possible, its eradication before it spreads is the most effective action that can be taken for the protection of native species, as they may be destroyed if they have little or no protection.<sup>264</sup> However, the responsibility of eradicating invasive species is not legally determined. For instance, when it is spreading over private land, the owner does not have a legal obligation to eradicate it. In relation to this, one can

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<sup>260</sup> Table I, II and III Law establishing ORTPN.

<sup>261</sup> Article 54 (1) Environmental Framework Law.

<sup>262</sup> Article 8(h) CBD.

<sup>263</sup> Article 6 Biosafety Bill.

<sup>264</sup> Kiss and Shelton *supra* note 1 at 359.

borrow a good example from South African law where the owner of the land is required to notify any relevant authority of the location of the species; take all steps to control and eradicate an invasive species found on the concerned land, prevent it from spreading, and take all the required steps to prevent or minimize its harm to biodiversity.<sup>265</sup>

#### **4.2.3.2 *Ex situ* conservation**

Rwanda has not adopted *ex situ* conservation measures for the protection of the components of biological diversity.<sup>266</sup> It has two institutions that are willing to create botanical gardens and zoological gardens in order to protect species that are endangered in their natural habitats and reintroduce wild animals that have been illegally captured by people in their homes.<sup>267</sup>

The role of law in *ex situ* conservation discussed in paragraph 2.3.4.3.2 should be the establishment of responsible institutions and definition of obligations towards conducting *ex situ* conservation measures. It should also regulate and manage collection of biological resources from their natural habitats for the protection of endangered species whether plants or animals.<sup>268</sup> For the best implementation of this provision, Glowka argues that the requiring of a permit to collect all species or particularly threatened species is the first step.<sup>269</sup> However, in Rwanda no such law has been adopted, hence, the loss of biodiversity increases for no *ex situ* conservation measures are provided while they provide much protection against the extinction of species or of genetic resources in nature. They are helpful in recovery programmes for endangered species and are a good way of making propagating material of useful plants readily available.<sup>270</sup>

It is necessary to notice that the obligation of *ex situ* conservation is difficult to

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<sup>265</sup> Section 73 (2) South African Biodiversity Act.

<sup>266</sup> MINITERE *Third National Report on the Implementation of the Convention on Biological Diversity (CBD)* (2006) Kigali at 78.

<sup>267</sup> These are the Rwandan Office of Tourism and National Parks (ORTPN) and the Institute of Science and Technological Research (IRST).

<sup>268</sup> Article 9 (d) CBD.

<sup>269</sup> Glowka *supra* note 98 at 55.

<sup>270</sup> Ryan *supra* note 75.

implement especially in Rwanda like in other developing countries. *Ex situ* conservation techniques are often costly; the storage is economically expensive in most cases since species stored cannot provide a profit. Instead they slowly cause the expenditure of financial resources by the government or the organization responsible for operating.<sup>271</sup> Though *ex situ* conservation is difficult, Rwanda has to do whatever is possible for the establishment of facilities and regulate collection of animal and plant species from their natural surroundings. This will help to avoid the extinction of a species when it is imminent and *ex situ* conservation becomes the only option left to humanity. It is simply better to preserve a species in part than to let it die out completely.

#### **4.2.4 Sustainable use of biological resources**

The obligation of sustainable use of biological diversity as described in paragraph 2.3.4.4, seeks to integrate consideration of conservation and sustainable use of biological diversity into decision-making, and adopt measures regarding its use while minimizing adverse impacts on biological diversity.<sup>272</sup> It includes the protection of customary use, support for local populations in their efforts to recover degraded areas, and encouragement of cooperation with the private sector in developing methods for sustainable use of biological diversity.<sup>273</sup>

Legally, in order to ensure effective sustainable use of biological resources, the legal framework must set up the following goals: conserving and sustainably using the components of biological diversity and avoiding or minimizing adverse impacts to biological diversity. The laws should establish clear rules on jurisdiction and responsibilities amongst agencies and permitted users, and rules on the issue of ownership of biological resources.<sup>274</sup>

In the case of Rwanda, its laws in relation to sustainable use of biological resources are not widely developed. It is firstly the Forest Law that tries to regulate the use of forest resources. It specifies different competent authorities responsible for forest

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<sup>271</sup> Ibid.

<sup>272</sup> Ibid.

<sup>273</sup> Article 10 CBD.

<sup>274</sup> Glowka *supra* note 98 at 58.

management, where a permit is required if anyone wants to cut trees and sell or transport forest products.<sup>275</sup> More details of this law have been given in paragraph 3.3.1.

The second law that regulates the sustainable use of biological resources is the Land Law which governs the use and management of land resource. It classifies land into different categories for the purpose of better management, and planning is the prioritized tool for achieving sustainable use of land resource.<sup>276</sup> This law is more detailed in paragraph 3.3.2.

The third law that regulates sustainable use of biological resources is the Environmental Framework Law elaborated on in paragraph 3.2.2. It incorporates a whole chapter on the sustainable utilization of biological resources, namely soil and subsoil, water resources, biodiversity including the animal and plant species together with their habitats, and the air resource.<sup>277</sup>

With regard to the use of soil and subsoil, this law stipulates that they have to be rationally used to ensure their rotation. Their exploitation for industrial and urban developments or for getting raw materials is subject to a prior authorization. For water resources, the law simply says that they must be used fairly. Any act concerned with a water resource is subject to a prior EIA. As concerned animal and plant species, whether wild or domestic, importation or exportation of their products, sale, exchange and trade, are subject to prior permission. As concerns the air resource, activities causing atmospheric pollution are supposed to be governed by regulations in order to ensure that this resource serves the present generation but also preserved for its use by future generations. However, these regulations are not yet enacted.

Biological diversity will be sustainably used if the legislation provides for the establishment of management plans and programmes, which must also be effectively

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<sup>275</sup> Article 64 and 81 Forest Law.

<sup>276</sup> Article 19 and 29 Land Law.

<sup>277</sup> Articles 11-27 Environmental Framework Law.

implemented and, if necessary, enforced.<sup>278</sup> However, this is not the case for Rwanda, where the legislation, apart from the Forest Law and the Land Law in a limited way, does not require the establishment of management plans and programmes. This is a problem, because to utilize a given resource in a sustainable way, one has to have information about that resource and then plan for its utilisation in order to ensure its long-term utilisation. Otherwise, the resource may be completely exploited and consumed within a short time due to a lack of planning. This is especially the case for the water resources, which are not governed by a specific law; thus there is no clear guidance on how to use them.

For achieving sustainable utilisation, the law should insure the monitoring of use, management on a flexible basis, adopting a holistic ecosystem approach, restoring areas of depleted biodiversity, adopting both an integrated and a precautionary approach, ensuring inter-generational equity and basing measures on scientific research.<sup>279</sup> In Rwandan legislation, the precautionary approach that promotes sustainable utilisation is recognized by the Environmental Framework Law as seen in paragraph 3.2.2.1. The problem is that the application of the precautionary approach has to be based on scientific information, which is difficult for Rwanda as a developing country. However, sustainable utilization is considered as the only way in which its natural resources can be conserved.

#### **4.2.5 Creation of incentive measures**

Incentives or disincentives as elaborated on in paragraph 2.3.4.5, are adopted in accordance with the particular circumstances of each party. They are effective; they play well the role of conserving biological diversity and promoting its sustainable use when they have a legal basis.<sup>280</sup>

As far as Rwanda is concerned, the Environmental Framework Law provides for a few incentives. It says that activities that aim at protecting forest resources, such as

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<sup>278</sup> Glowka *supra* note 98 at 60.

<sup>279</sup> *Id.* at 576.

<sup>280</sup> de Klemm et al. *supra* note 6 at 15.

afforestation and using renewable energy, may receive support from the National Fund for Environment.<sup>281</sup> The National Fund for Environment may also support public services, associations and individuals when they invest or put in place activities intended to fight against pollution, one of the biodiversity threats.<sup>282</sup> This incentive measure can help to conserve biological diversity found in forests. However, the wording of the Environmental Framework Law, which uses 'may', introduces discretion concerning the provision of support. The support is not mandatory but discretionary. Therefore, some forestry conservationists may not receive support from the Fund, as it is within the discretion of decision-makers. Thus, they are not fully motivated, for there is no guarantee of receiving that support. It would be better if the law has defined the criteria or conditions to be met for benefiting from such support in order to avoid the abuse of discretionary powers in decision-making.

Customs duty deductions to importers of equipments that assist in eliminating or reducing greenhouse gases like carbon dioxide and chlorofluorocarbons for the protection of the air resource are also provided.<sup>283</sup> Persons undertaking activities which promote the conservation of the environment including biodiversity can also benefit from tax deductions.<sup>284</sup> However, these incentive measures (tax and customs duty deductions) are not yet effectively applied as they are subject to laws concerning taxes and revenues, which have not yet been developed to incorporate environmental issues.

With regard to disincentives, apart from punitive sanctions that help in protection of biological diversity as detailed in paragraph 3.2.2.5, no more disincentive measures to discourage undesirable behavior, which lead to the depletion of biological diversity, are adopted in Rwandan laws. For instance, if an industry is emitting pollutants in the atmosphere or discharging waste effluents, causing biodiversity depletion, the law should fix the tax on its operations to a high rate and in proportion to the pollutants that it emits or in proportion to the rate of its discharges. In addition, the law should provide

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<sup>281</sup> Article 71 Environmental Framework Law.

<sup>282</sup> Article 72 Environmental Framework Law.

<sup>283</sup> Article 73 Environmental Framework Law.

<sup>284</sup> Ibid.

the possibility of removing incentives from the beneficiaries, and recharging them all the tax deductions (in the case of tax incentives) that they have benefited from the past, if they are no longer fulfilling their conservational obligations.

#### **4.2.6 Public education and awareness**

The obligation of public education and awareness explained in paragraph 2.3.4.6 can be fulfilled nationally through the combination of formal and informal education. This could lead to a greater public understanding of the relationships between biological diversity and every aspect of daily life; which in turn lead to greater support for conservation measures.<sup>285</sup> Public education and awareness is a powerful tool in conservation of biodiversity.

In Rwanda, formal education in relation to the importance of biodiversity is not sufficient. The issue of biodiversity is raised only at a limited level in higher educational and research institutions, where little research about biological diversity is conducted.<sup>286</sup> At primary and secondary school levels, awareness about biodiversity is still at its starting stage though it would be better if it is highly developed, as it could reach many young people at an age when they are most receptive. The introduction of environmental courses in educational curricula is still in its early stages and it does not have a legislative basis. Formal education towards the development of public awareness concerning biodiversity conservation is effective and firm when it is sustained by legislation.<sup>287</sup>

With regards to informal education, which takes place outside of the classroom, in Rwanda the legislation that can be identified as promoting informal public education and awareness is the legislation that establishes some institutions having environmental matters in their attributions. They are the Rwandan Environment Authority (REMA)

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<sup>285</sup> Glowka supra note 98 at 68.

<sup>286</sup> This is the case of National University of Rwanda (NUR), in the Department of Plant and Animal Production from the Faculty of Agronomy; Departments of Biology, Chemistry and Geography in the Faculty of Science. Another institution is the Institute of Science and Technological Research (IRST), which is interested in research of different fields including research in technology favourable to preservation and conservation of biological diversity.

<sup>287</sup> Glowka supra note 19 at 14.

and the Rwandan Office of Tourism and National Parks (ORTPN). The laws that establish these institutions contain provisions on public education and awareness about environment including biodiversity.<sup>288</sup> These agencies, to certain extent, conduct public education and awareness programs, in fulfillment of their mandates. In addition, the national media tends to provide a limited coverage of environmental issues including biological diversity. Some emissions on radios and television are organized by the Ministry of Lands, Environment, Forestry, Water and Mines (MINITERE), REMA and ORTPN. However, the promotion of education and awareness through media is not sufficient due to lack of information about biological diversity-related questions.<sup>289</sup>

The role of NGOs also cannot be ignored as their projects are more successful in biodiversity conservation. In Rwanda, they are facilitated and supported which is of great relevance as they set out to listen to local people engaged in activities that may have harmful impacts on biodiversity. They likely learn about their techniques and priorities, and work out solutions with them. NGOs are in a better position to have enough finances as long as their investments are facilitated; they are capable of mobilizing the financial resources in relation to biodiversity conservation.<sup>290</sup>

Other initiatives launched in favour of informal education on biological diversity for raising public awareness is the celebration of international days of wetlands, biological diversity and the celebration of a week dedicated to environment in general from 31<sup>st</sup> May to 5<sup>th</sup> June of every year. All these celebrations constitute the best opportunities for developing public education and awareness about biodiversity. However, these initiatives are considered implicit and do not appear in legislative instruments, which lead to their ineffective contribution.

It is better to strengthen public education and awareness of people mostly women and youth who are in contact with and who play a crucial role in the management of land, water and forestry resources. They are the best ones to insure biodiversity

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<sup>288</sup> Article 2 (2) Law establishing ORTPN and article 3 (9) Law creating REMA.

<sup>289</sup> MINITERE supra note 266 at 87.

<sup>290</sup> Glowka supra note 98 at 34.

conservation if they understand its importance. It is quite understandable that biodiversity conservation cannot be effectively ensured unless the people who are closer to its components and mostly engaged in activities of using and harvesting biological resources are fully educated and rendered aware of the problem.

#### **4.2.7 Impact assessment**

The CBD, as discussed above in paragraph 2.3.4.7, requires the country parties to introduce procedures requiring EIA of projects likely to have adverse effects on biological diversity.<sup>291</sup> In Rwandan laws, it is the Environmental Framework Law as discussed in paragraph 3.2.2.4 that requires an EIA for a project or an activity likely to have adverse effects on the environment including biodiversity. The form of EIA report is prescribed, and the competent authority to examine and approve the EIA is determined. The Minister of Environment has the power to make regulations specifying the details for EIA. In addition, the Minister is required to establish and revise the list of planned works, activities and projects that cannot be carried out without an EIA and the ones which do not need it.<sup>292</sup>

The above provisions play an important role in the area of Rwandan biodiversity conservation due to three purposes of an EIA that can be identified in relation to biodiversity conservation. First, EIA helps to identify what aspects of the project are likely to have significant adverse effects on biological diversity at the genetic, species and ecosystem level. Second, with EIA it is possible to identify what steps could be taken to avoid or minimize significant adverse effects, and thirdly, whether the proposed project is in compliance with existing national environmental legislation.<sup>293</sup>

However, the Environmental Framework Law neither gives details on how the EIA must be carried out nor which precise activities are concerned. According to Glowka, the national legislation needed to implement the EIA requirement should clearly indicate the following elements: what projects will be subject to EIA; the

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<sup>291</sup> Article 14 CBD.

<sup>292</sup> Article 67 and 68 Environmental Framework Law.

<sup>293</sup> Glowka *supra* note 19 at 32.

procedure to be followed and for what part of the project's design phase the EIA will be required; who will be required to undertake EIA; who will review the EIA; the assessment criteria to be used to determine significant adverse effects on biological diversity; the requirement to review the proposed project's compliance with existing environmental law; the requirement to address possible alternatives to the projects and why the proposed project is the alternative; the requirement to present options to avoid or minimize adverse effects; the form and level of public participation; the form of report to be produced; the effects of the EIA results on the project approval procedure; and a procedure to evaluate the impact of the project after it is completed.<sup>294</sup>

Among all these suggested elements, few of them (e.g. the form of EIA report and the person who is required to undertake the EIA) are endorsed by the Environmental Framework Law. Other elements do not appear in this law. This complicates the conduct of an EIA in Rwanda. For instance, activities for which EIA is required are not identified which makes the requirement difficult, and prevent it from being fulfilled. In fact, there should be a list of activities of large scale which are likely to have greatly adverse effects on the environment including biodiversity, and those of small scale whose adverse impacts are not likely to be large. The law only obliges the Minister of Environment to establish two lists, namely a list of activities subject to a prior EIA and a list of activities for which EIA is not needed.<sup>295</sup> Nevertheless, neither of these two lists has been established.

Another important tool for the effective carrying out of EIA is public participation, by which people likely to be affected by the proposed project are given opportunities to raise their concerns that can provide for enough information about the consequences of the activity to be undertaken. In addition, Glowka argues that in order to encourage government compliance with the EIA procedures, national legislation should incorporate a right to legal action or legal standing for private parties.<sup>296</sup>

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<sup>294</sup> Glowka *supra* note 98 at 72.

<sup>295</sup> Articles 67 and 70 Environment Framework Law.

<sup>296</sup> *Ibidem*.

However, neither public participation nor a right to legal action is included in Rwandan biodiversity-related laws discussed in Chapter Three.

#### **4.2.8 Regulation of access to genetic resources and equitable benefit-sharing**

Articles 15 and 19 of the CBD, as discussed in paragraph 2.3.4.8, are the provisions on the issue of access to genetic resources and equitable benefit-sharing. They provide the general contours of the obligation of access and benefit-sharing, leaving details of the practical implementation of these provisions to be defined primarily at the national and sub-national levels. Country parties have to create or adapt their legislation, administrative procedures and institutions to the requirements of the convention.<sup>297</sup>

Under Rwandan legal regime, no detailed provisions are established to regulate access to genetic resources and equitable benefit-sharing. There are some laws which prohibit unauthorized entry into, and removal of plants, animals and other objects from forests and national parks but they cannot be regarded as being sufficiently specific or detailed to deal with the issue of access to genetic resources and equitable benefit-sharing. These are for instance the Environment Framework Law as developed in paragraph 3.2.2, which describes the permitting system for taking animals and plants; and the Forest Law, discussed in paragraph 3.3.1, which prohibits the collection of forest products if no authorization has been issued; and the decree of 18 December 1930 prohibiting activities related to the cutting of trees when no prior authorization has been given. There is still a situation of open access to genetic resources.

The role of national laws should be to clarify the legal status of genetic resources, the competent authority to control access to them, conditions of access to genetic resources, the procedure of PIC, and who has interests in benefit-sharing. They also have to ensure the protection of intellectual property rights.<sup>298</sup> For example, in South African law, chapter 6 of the Biodiversity Act is dedicated to the regulation of bioprospecting of genetic resources and ensures the equitable sharing of benefits arising

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<sup>297</sup> Glowka *A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources* (1998) Environmental policy and law paper No 34 IUCN Environmental Law Centre Gland at 1.

<sup>298</sup> O Ajai 'Access to genetic resources and biotechnology regulation in Nigeria' (1997) 6 RECIEL 1 at 45.

from commercialization through bioprospecting. It identifies the competent authority to control access to genetic resources, persons interested in benefit-sharing, the procedure of PIC, the content and format of material transfer agreements, and the establishment of a Bioprospecting Trust Fund which helps to facilitate the equitable and fair sharing of benefits deriving from the use of genetic resources.

Most of these elements do not appear in Rwandan biodiversity-related legislation and this makes it difficult to control access to genetic resources in accordance with the CBD. This causes the continuing depletion of biological diversity's components as they are unrestrictedly accessed and local communities or stakeholders are not motivated in the protection of biological diversity for they do not receive any benefit.

What the Rwandan law provides is the protection of intellectual property rights. The Patents Law assures protection of intellectual property rights in case of transfer of technology. Article 1 creates a legal right to the person or industry that has produced a particular technology. The inventor has a legal monopoly over the commercial exploitation of her or his intellectual property and the technology that embodies it for a given period.<sup>299</sup> As a result, potential users must seek the holder's permission before commercially using the intellectual property. Nevertheless, this law is old and is not comprehensively developed to include all the aspects of patents, and it does not incorporate the concept of biological diversity. In fact, national laws have to identify the components of biological diversity that are patentable from those which are not patentable, and this is not the case in Rwandan law.

#### **4.2.9 Handling of biotechnology**

The field of biotechnology is particularly governed by article 16 and 19 of the CBD and its protocol. All members of both the CBD and its protocol including Rwanda are required to set up legal and regulatory frameworks in line with handling of biotechnology. According to Kinderlerer, legal frameworks do not necessarily need new

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<sup>299</sup> Article 5 Patents Law.

laws; there may well be legal systems in place that address many issues that countries have to consider in handling of biotechnology.<sup>300</sup>

As far as Rwanda is concerned, it has few biosafety-related laws discussed in paragraph 3.3.7. They play a non-negligible role in handling biotechnology issues, although lacking some substantive elements as biotechnology is still a new concept to Rwanda.

The first law to note is the seed law discussed in paragraph 3.3.7. Its article 7 provides that commercial quality seeds have to be processed. They have to be free from foreign materials, clean, well packed and labeled. The label must clearly show the characteristics of seeds and there must be regulations on the quality seed processing standards. A person intending to sell quality seeds must have an authorisation and be listed in the register of quality seed sellers. The conditions and requirements for authorisation are fixed by regulations to be made by the Minister of Agriculture.<sup>301</sup> In addition, imported seed destined for marketing or distribution for any reason in Rwanda are required to satisfy the established norms and regulations for seed produced in Rwanda. For seeds that cannot be produced in Rwanda, international standards are applicable and the seeds must always be accompanied by an official certificate delivered by the country of origin and be subjected to controls referred to in this law.<sup>302</sup>

Another law to mention is the law regulating the protection of plants and plant products and utilisation of pesticides, which is also described in paragraph 3.3.7. Its article 6 requires imported plants and plant products to be submitted to import control and accompanied by phytosanitary certificates from countries of origin, testifying that they are safe. The introduction of some plants into the national environment may be prohibited or submitted to the control or subordinated to the observance of certain conditions set by the Minister of Agriculture. Also individuals entering the national

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<sup>300</sup> J Kinderlerer *Regulation of Biotechnology: needs and burdens for developing countries* Available at [www.unep.ch/biosafety/development/developments/BTregulationpdf](http://www.unep.ch/biosafety/development/developments/BTregulationpdf) [Accessed 30 November 2007].

<sup>301</sup> Article 9 Seed Law.

<sup>302</sup> Article 10 Seed Law.

territory carrying plant products must declare them to the nearest administrative authority in charge of plant protection for phytosanitary control.<sup>303</sup>

Further, the ordinance of 28 July 1938, again discussed in paragraph 3.3.7, requires a certificate and healthy delivery note from the country of origin to be able to import, export and transit animals in Rwanda. In accordance with the information available in the certificate, the competent authority determines the conditions he or she considers necessary to permit the entry.<sup>304</sup>

All these provisions from the above-mentioned laws are relevant in handling biotechnology. They help to determine which seeds, plants and plant products and animals (some of which may be genetically modified) are allowed to be introduced into the Rwandan environment. It is possible to prohibit those that are genetically modified as long as they are identified as having harmful effects on biodiversity. However, the implementation of these laws is not effective as the regulations needed to clarify and facilitate their implementation have not yet been adopted.

It is also necessary to notice that these laws are old; they will be complemented by the national biosafety bill, which introduces the real concept of biotechnology. According to Glowka, the national legislation governing biotechnology has to give a legal definition for GMOs, require permits for the use and release of GMOs, institute the system of risk management and risk assessment and their evaluation as prerequisites to a permit, and identify responsible institutions to oversee the procedure.<sup>305</sup> The Rwandan biosafety bill defines the GMOs, a permit is required to use and release GMOs, risk assessment and risk management procedures are established, and responsible institutions are determined as detailed in paragraph 3.4.

The national biosafety bill will establish the system of liability and remedies as required by the Cartagena Protocol discussed in paragraph 2.4. It says that any person

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<sup>303</sup> Article 8 Plants and Plant Products Law.

<sup>304</sup> Article 143 of ordinance of 28 July 1938 regarding domestic animal health control and animal feeds.

<sup>305</sup> Glowka et al. *supra* note 19 at 33.

who imports, transits, makes contained or confined use of, or releases or places on the market a GMO, shall be strictly liable for any harm caused by such GMO and shall be bound to fully compensate all persons affected by such release, transit, use or placement on the market of the GMO in question as seen in paragraph 3.4.4. This system of strict liability is favorable to the protection of biodiversity, which is threatened by the use of GMOs. Strict liability does not require proof of fault. It therefore makes people who intend to release GMOs to be careful in their operations.

However, the biosafety bill was drafted in 2005 but until now has not seen the light of the day. One may assume that this is due to the long process needed to provide the scientific infrastructure and to facilitate the work of handling biotechnology. Although there has been the establishment of the National Bureau of Standards in charge of controlling the quality of imported and exported products, the handling of biotechnology is not effective.<sup>306</sup>

#### **4.2.10 Indigenous knowledge**

In Rwanda, indigenous knowledge encompasses information and know-how on a variety of matters, including resources management, traditional medicines, crafts, artistic designs, etc. The valuing of herbal medicine and traditional healing, scientific research conducted by the Institute of Science and Technological Research (IRST), and the encouragement together with training of traditional healers are national priorities.<sup>307</sup> However, there is a lack of proper legal and policy frameworks for the protection of indigenous knowledge, which provides an opportunity for the exploitation of the indigenous knowledge.

A thorough examination of the laws detailed above in chapter 3 reveals that there is no attention given to the protection of indigenous knowledge whose owners comprise the majority of the population, and this leaves much to be desired. There should be legislation which incorporates the requirement of prior informed consent before any aspect of traditional knowledge is going to be transferred to somebody else. The

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<sup>306</sup> The Rwandan National Bureau of Standards was created by the law No. 03/2002 of 19 January 2002.

<sup>307</sup> MINITERE supra note 266 at 77.

legislation should encourage customary use of biological resources and adopts rules that enable traditional communities to protect and control their knowledge, innovations and practices.

This chapter has demonstrated the level of fulfilment of the CBD's obligations under the Rwandan legal regime. It has shown which obligations are better implemented and which ones are not effectively implemented. Some substantive elements, necessary in biodiversity laws, have been shown to be missing from Rwandan law. The following chapter consists then of the conclusion and recommendations.

## **Chapter Five: Conclusion and recommendations**

### **5.1 Conclusion**

Law is a powerful tool for biodiversity protection. It regulates resource extraction, and protects species and their habitats. This study has examined Rwandan laws relevant to the protection of biodiversity in the country with a particular emphasis on how they reflect the CBD's obligations. The aim was to test to what extent those laws embody the legal requirements of the CBD. To achieve this aim, specific objectives were addressed: an overview of international and African regional approaches to the regulation of biodiversity was given with a particular emphasis on the CBD; a review of Rwandan biodiversity laws was done with the intention of examining the extent to which Rwandan domestic legislation is relevant and consistent with the CBD.

This study found that the current biodiversity-related laws in Rwanda are not strong enough to halt the loss of biodiversity. To some extent, they are relevant to the protection of biological diversity, but they are not fully in compliance with the CBD's requirements. Although some initiatives towards the legal protection of biodiversity have been launched, quite a number of substantive elements in implementing the CBD's obligations are missing.

With regard to the obligation of establishing national strategy, plan and programmes, it was found that the RNBSAP was developed four years ago. It contains quite important and clear objectives and priorities of the country for biodiversity conservation. However, it seems to be the declaration of what will be done in the future and not of what is being done at the present time.

As far as the obligation of identification and monitoring of biodiversity components, activities and processes that threaten biodiversity is concerned, it is found that this obligation is challenging and difficult to implement. It is fulfilled in a limited way. Only some well known animals and plants, and protected areas are identified. Small animals, small plants and unprotected areas are not considered. For the identification of activities

and processes that threaten biodiversity, it is found that they are identified in a fragmented way. They are regulated by different laws, in different ways, which may create conflicts and contradictions.

Concerning the obligation of establishing *in situ* and *ex situ* conservation measures, the findings are that some steps have been taken as concerns *in situ* conservation measures. Ten percent of the national territory constitutes protected areas. The problem is that their legal protection is not effectively enforced; their legal boundaries have been modified through the years. It is important that the law requires the establishment of other new protected areas. However, it does not determine criteria for choosing other areas that deserve special protection. Consequently, no other new protected areas are being set aside, although new places which are rich in biodiversity may be discovered. Inside those protected areas, it is great that harmful activities are regulated. The problem is that their regulation is fragmented, which raises the problem of ineffective enforcement. For *ex situ* conservation, no legal measures have been adopted.

For the obligation of sustainable use of biological resources, it is discovered that some laws regulate, in a limited way, the use of certain biodiversity components such as forests, land, soil and subsoil, and water. However, except the forest and land laws, such laws do not require management plans and programmes, which constitute effective tools to be used if sustainable use of biological resources is envisaged.

In terms of the obligation of creating incentive measures to encourage biodiversity protection, few incentives have been created by the law, what is relevant. Nevertheless, their enforcement is subject to discretionary decision-making. Also, regulations required to facilitate the implementation of some laws, which create some incentives such as tax deductions are not yet in place.

With regard to the requirement of public education and awareness, formal and informal educations are not widely carried out, and there is no legislation to sustain them. As far as EIA is concerned, it is important that the Environmental Framework

Law requires an EIA. However, it does not give details on which activities are concerned, and how EIA has to be conducted. No criteria to be based on determining if an EIA is needed before a given activity is carried out.

Concerning regulation of access to genetic resources and equitable sharing of benefits derived from their utilization, it is found that only few laws prohibit unauthorized entry into, and removal of plants, animals and other objects from the national territory. There are substantive requirements for the law that regulate access to genetic resources and equitable benefit sharing which are not provided in Rwandan legislation.

The issue of handling biotechnology was also developed and it is realised that it is of great relevance that there are some laws that help to deal with biotechnology. However, the required substantive elements from the CBD and its protocol are not yet incorporated in Rwandan laws. They will see the light of the day when the biosafety bill is promulgated as a law that can be enforced.

The last obligation analyzed in this study is the recognition of indigenous knowledge, where the finding is that no legal recognition of indigenous knowledge is ensured in Rwanda.

Existing biodiversity legislation in Rwanda provides a limited extent of protection. Substantive legislative and policy measures are needed to enhance protection and conservation of biodiversity. Current efforts to develop new legislation and other mechanisms are slow and insignificant. It is therefore necessary that the recommendations in the next section be implemented.

## **5.2 Recommendations**

Having considered the inadequacies of existing legislation, the following recommendations are made:

1. Biodiversity is a complex dynamic system and a target of diverse values. Thus, a new Rwandan biodiversity law is necessary to establish novel legal principles and mechanisms of biodiversity protection. The main objective of the new biodiversity law must be to safeguard the living natural world and its variety. It should reflect the three themes targeted by the CBD namely conservation, sustainable use of biological diversity, and equitable sharing of benefits derived from its utilization. The required law should incorporate the following substantive elements:

- i) Establishment of an institution responsible for administering the recommended biodiversity law;
- ii) Provision on the possibility of planning and monitoring Rwanda's biodiversity in order to provide for an integrated and coordinated regime for biodiversity conservation;
- iii) Criteria for choosing or selecting new protected areas. It is also recommended to provide conditions for listing endangered or threatened animal and plant species in need of protection;
- iv) How alien and invasive species have to be eradicated. In this regard, the law will have to determine who is responsible for eradication considering whether a species is situated on a public land or a private land;
- v) Rules on access to genetic resources and equitable benefit-sharing incorporating the conditions of access to genetic resources, the procedure of prior informed consent and regulating bioprospecting issues. If this law can determine equitably the people who have the exclusive right to benefits derived from utilisation of biological resources, it should encourage people to maintain a resource in the hope that they will find valuable returns;
- vi) Recognition of indigenous knowledge and encouragement of customary use of biological resources;
- vii) Encouragement of voluntary conservation of biological diversity by providing for more incentives; and
- viii) Prescription of crimes committed against biological diversity and their adequate penalties.

2. Adoption of regulations that will facilitate the fulfillment of the aim of protecting biological diversity such as:

- i) Regulations that govern the conduct of an EIA and list harmful activities to the environment, and including an item on biodiversity. Such regulations are required by article 70 of the Environmental Framework Law;
- ii) Regulations required by article 54 (1) of the Environmental Framework Law which will list endangered and threatened animal and plant species;
- iii) Regulations detailing state land occupied by spring, wells, rivers and shores of lakes and governing their management as required by article 12 of the Land Law;
- iv) Regulations determining the standards of quality seeds that have to be introduced in Rwandan environment as required by the Seed Law;

3. Amendment of some of the laws discussed in Chapter Three in order to incorporate the concept of biodiversity. This may help to protect biodiversity in the meantime when the specific biodiversity law is not yet enacted.

4. Adoption of new specific law governing the utilisation of water resources and the law governing protection of the air resource especially from pollution.

5. The amendment of the Rwandan constitution in order to incorporate the right to legal action and public participation in environmental matters including biodiversity. Legal action and public participation are effective tools for enforcing environmental laws in general and biodiversity-related laws in particular.

6. A strong and sustained public education and awareness throughout the whole nation of Rwanda with a special emphasis on young people and women, the particular stakeholders who live closer to biological resources and who utilize them in their daily life.

If the recommendations cited above are implemented, there is likely to be substantial compliance of Rwandan law with the obligations of the CBD, and this will contribute to the developed and effective legal protection of biological diversity in Rwanda.

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