



Republic of Rwanda

# Rwanda 6th National Report to the Convention on Biological Diversity



Rhino in Akagera National Park taken by Jordi Van Oort.

**Submitted in September 2020**





Karago Lake(Photographer: IUCN)

# Table of Contents

Preface .....	xi
Acknowledgments .....	xii
Executive summary .....	xiii
Abbreviations and acronyms.....	xxiv
Section 1: Information on the targets being pursued at the national level.....	1
1.1 National Target 1.....	1
1.2 National Target 2 .....	2
1.3 National target 3.....	3
1.4 National target 4 .....	3
1.5 National target 5.....	4
1.6 National target 6.....	5
1.7 National target 7 .....	5
1.8 National target 8.....	6
1.9 National target 9.....	7
1.10 National target 10.....	7
1.11 National target 11.....	8
1.12 National target 12.....	8
1.13 National target 13.....	9
1.14 National target 14.....	10
1.15 National target 15.....	11
1.16 National target 16.....	11
1.17 National target 17.....	12
1.18 National target 18.....	13
1.19 National target 19.....	13
Section 2: Implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets.....	15
2.1. Valuation of biodiversity and ecosystem services and development of natural capital accounts.....	15
2.2: Increasing forest cover to 30% of the Rwanda’s total land area by the year 2020 (this was a policy measure embedded in Vision 2020, EDPRS & NST1).....	21
2. 3 Conservation of the endangered and critically endangered species .....	31
2.4 Improving livelihoods and social economic development of local communities by integrating conservation and development.....	38
2.5 Sustainable urbanization (development of green cities with a pilot being part of Kigali).43	
2.6 Wetlands conservation measures.....	49
2.8. Climate change mitigation and adaptation measures. ....	53
2.9 Resource mobilization for the implementation of the national biodiversity strategy and action plan.....	57
2.10 National biodiversity data mobilization .....	60
Section 3: Assessment of progress towards each national target.....	65
3.1 National target 1 .....	65

3.2 National target 2 .....	67
3.3 National target 3 .....	68
3.4 National target 4 .....	70
3.5 National target 5 .....	72
3.6 National target 6 .....	73
3.7 National target 7 .....	81
3.8 National target 8 .....	85
3.9 National target 9 .....	87
3.10 National target 10 .....	90
3.11 National target 11 .....	92
3.12 National target 12 .....	95
3.13 National target 13 .....	96
3.14 National target 14 .....	97
3.15 National target 15 .....	99
3.16 National target 16 .....	100
3.17 National target 17 .....	101
3.18 National target 18 .....	102
3.19 National target 19 .....	104
Section 4: Description of national contribution to the achievement of each Aichi biodiversity target.....	109
4.1 Aichi biodiversity target 1 .....	109
4.2 Aichi biodiversity target 2 .....	110
4.3 Aichi biodiversity target 3: .....	111
4.4 Aichi biodiversity target 4: .....	112
4.5 Aichi biodiversity target 5: .....	113
4.6 Aichi biodiversity target 6: .....	114
4.7 Aichi biodiversity target 7: .....	114
4.8 Aichi biodiversity target 8: .....	115
4.9 Aichi biodiversity target 9: .....	115
4.10 Aichi biodiversity target 11: .....	115
4.11 Aichi biodiversity target 12: .....	116
4.12 Aichi biodiversity target 13 .....	117
4.13 Aichi biodiversity target 14: .....	117
4.14 Aichi biodiversity target 15: .....	118
4.15 Aichi biodiversity target 16: .....	118
4.16 Aichi biodiversity target 17: .....	119
4.17 Aichi biodiversity target 18: .....	119
4.18 Aichi biodiversity target 19: .....	119
4.19 Aichi biodiversity target 20: .....	119
Section 5: Rwanda updated biodiversity profile .....	121
Conclusions and Recommendations.....	126

# List of Tables

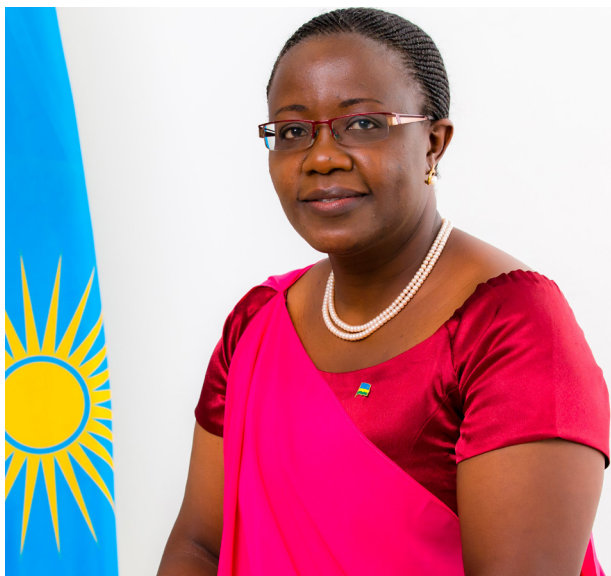
Table 1: Ecosystem types and area (ha) 1990 -2015 .....	16
Table 2: Achievements of the restoration efforts of the LAFREC project in the Gishwati Mukura national park as at June 2018 .....	22
Table 3: Forest cover 2011-2019.....	24
Table 4: Summary statistics of forest cover types per category of forest density .....	24
Table 5: Summary statistics of forest cover type and density per province.....	25
Table 6: Indicative forest restoration potential in Rwanda as per the roam method. ....	28
Table 7: List of threatened species and ecosystems in Rwanda .....	32
Table 8: List of SACOLA housing and infrastructure development projects .....	40
Table 9: Results of an analysis of the effectiveness of the RDB TRS program (around Nyungwe forest).....	41
Table 10: Species numbers of plants and animals of the four different study sites.....	50
Table 11: Rwanda’s protected area system.....	52
Table 12: Selected projects focused on climate change adaptation, or some aspect of it, in Rwanda.....	56
Table 13: Summary of Data Sets and Records for Rwanda in GBIF .....	61
Table 14: List of cooperatives and number of members participating in the production of sustainable coffee in Rwanda.....	71
Table 15: Forest plantation by size per province .....	79
Table 16: Forest plantation increase (area in ha) 2013 - 2017 .....	80
Table 17: Priority invasive alien plant species in Rwanda.....	85
Table 18: Invasive alien fish species .....	86
Table 19: Invasive alien insect species .....	86
Table 20: Protected area and size .....	88
Table 21: Grey crowned crane distribution by habitat type .....	92

# List of Figures

Figure 1: Ecosystem service trends for Rwanda, 1990 – 2015.....	16
Figure 2: Trend in forest cover increase from 2011 -2019 .....	23
Figure 3: Rwanda forest cover map, 2019. ....	26
Figure 4: Rwanda forest cover density, 2019 .....	26
Figure 5: Map of FLR project coverage in Rwanda 2011-2018 .....	29
Figure 6: Rwanda species range rarity map .....	31
Figure 7: Grey crowned cranes .....	34
Figure 8: Mountain gorilla population in the Virunga massif & Bwindi-Sarambwe ecosystems....	35
Figure 9: Trends in population growth of the grey crowned cranes (Rwca reports 2017 to 2020)	37
Figure 10: Tourism trends 2008-2009 .....	39
Figure 11: Tourism revenue sharing 2005-2018.....	39
Figure 12: Map of wetlands in Rwanda.....	49
Figure 13: Number of records made available over time .....	60
Figure 14: Overall state, pressure and response on ecological integrity for Rwanda wetlands....	62
Figure 15: Trees on farms in a landscape.....	76
Figure 16: Bird species increase with increasing tree diversity.....	76
Figure 17: Species in cropland compared to pastureland and plantation.....	77
Figure 18: Trend of capture and aquaculture 2011 - 2018 .....	78
Figure 19: Forest cover change 2009 -2019 .....	80
Figure 20: Rwanda water monitoring sites .....	84
Figure 21: Degradation within ecoregions (2016) Rwanda.....	88
Figure 22: Protected and connected index Rwanda.....	89
Figure 23: Key biodiversity area protection .....	89
Figure 24: Protected area management effectiveness Rwanda .....	89
Figure 25: Virunga massif gorilla population trend between 1970 – 2016.....	91
Figure 26: Rwanda carbon storage in the environment.....	98
Figure 27: Summary of estimated financial needs for Rwanda’s NBSAP II.....	105



Grevillea woodlot in Gatsibo district (Photographer: IUCN)



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Dr. Jeanne d'Arc Mujawamariya  
Minister of Environment.

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## FOREWORD

Rwanda, as a Party to the Convention on Biological Diversity (CBD) has obligations to report on measures undertaken to implement the provisions of the CBD including their effectiveness in meeting the objectives of the Convention and achieve inclusive and sustainable development. This report has been prepared in accordance with the CBD 13<sup>th</sup> Conference of Parties' decision XIII/27.

Rwanda has diverse habitats and ecosystems that range from humid montane forests to savannahs, lakes, rivers and wetlands which support a wide range of biodiversity. However, the Country's biodiversity faces various threats which has led to loss of species, shrinkage in population sizes and ecosystem degradation. Rwanda's development agenda recognizes the important and central role that biodiversity and natural resources play in terms of supporting the country's economic growth, livelihoods as well as in the provision of critical ecosystem services such as water, soil erosion and flood control as well as climate change mitigation. In this regard, conservation of the environment and natural resources has been well integrated in country's development blueprints such as Vision 2020 Economic Development and Poverty Reduction Strategy (EDPRS II); Vision 2050; and the National Strategy for Transformation (NSTI 2018-2024). It is worth noting that Rwanda was recently the first country in Africa to submit its revised Nationally Determined Contribution (NDC) on the Paris Agreement this year.

Rwanda developed its first National Biodiversity Strategy and Action Plan (NBSAP) in 2003 as part

of meeting its obligations to the CBD. The 1<sup>st</sup> NBSAP was revised in 2016 and aligned to the CBD Strategic Plan for Biodiversity (2011-2020) and its Aichi Biodiversity Targets (ABTs). This 6<sup>th</sup> National Report has been done in a participatory manner involving consultations with stakeholders and presents measures undertaken since 2011 when the CBD Global Strategic Plan for Biodiversity was adopted. The report highlights key achievements since 2015 when the Fifth National Report was submitted. Some of the notable achievements include:

- The Country has fully achieved one of its Vision 2020 target of increasing forest cover to 30% of its total land area. The current forest cover according to a 2019 forest cover mapping report is 724, 695 ha, (30.4%);
- The continued increase in the population of the Mountain Gorilla, with Rwanda now hosting half of the existing global population (estimated at 1,004 individuals by Hickey et al. 2018);
- The historic re-introduction of 23 Black Rhinos in 2017 & 2019; and 11 lions into Akagera National Park after 10-year absence;
- The tremendous increase in populations of other species such as Eastern Chimpanzee, Golden Monkeys, and the Grey Crowned Cranes;
- Continued growth of tourism with a significant part of it being nature based. In 2019 alone, a total of 400 million USD was realised.

We are proud to note that out of the 19 national targets identified in the country's revised NBSAP (2016-2020); 1 was on track to exceed target 12 were on track to achieve target and 6 showed progress but at an insufficient rate. We are pleased to share with you the progress we have made in the implementation of the NBSAP and wish to reassure you that the Government of Rwanda is committed to fulfilling subsequent development of the post-2020 global biodiversity framework.





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Juliet Kabera  
Director General of REMA

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## PREFACE

Rwanda's National Biodiversity Strategy and Action Plan (NBSAP) developed in 2016, has given considerable impetus to biodiversity conservation and sustainable development in Rwanda. This related sixth National Report to the United Nations Convention on Biological Diversity (UN-CBD) highlights the achievements towards the 19 targets set under the NBSAP not only at national level, but also assesses how its implementation has contributed to the Global Aichi Biodiversity Targets, set by the international community and to which the government of Rwanda has committed to.

The 6th National Report is a result of a thorough analysis and assessment of available data on current state and trends in the field of biodiversity, its conservation and sustainable use in Rwanda. The report was prepared with the assistance of a large number of specialists from ministries, academic institutions, private sector, and Civil society organizations. The process to produce the 6th National Report has involved stakeholder engagement through inception workshop, individual experts consultations, informant discussions with experts and data sources, as well as desk reviews and national validation workshop.

We hope that the information provided in this Report will assist relevant actors to identify common issues to be addressed, to formulate focused strategies and programmes to assist the country in meeting its obligations towards the CBD Convention. Rwanda is committed to building on these achievements and tackle the threats and challenges the country is facing. These have been well documented in the participatory development of NBSAP and the participatory production of this National CBD Report. I am confident that this momentum will continue as we move towards the Post-2020 Global Biodiversity Framework for enhancing further the health of our ecosystems as well as improving the living conditions among the Rwandan population.

With this in mind, we will continue to count on collaboration and support from various stakeholders and I look forward to partnering together to achieve Rwanda's green future.

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## Technical coordination:

REMA

Marie Laetitia Busokeye

Yvette Umurungi

## Production:

International Union for Conservation of Nature (IUCN)

Jane Wambui Kahata

Dr. Samuel Kanyamibwa

Dr. Alain Ndoli

Charles Karangwa

Leo Niskanen

Pena Moreno Sonia

Joseph Njue

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# Acknowledgements

Juliet Kabera	REMA - Director General
Faustin Munyazikwiye	REMA - Deputy Director General
Marshall Banamwana	MoE - Ag Director General of Environment and Climate Change
Antony Kamau	UNED CBD Project Manager
Telesphore Ngoga	RDB – Project Analyst
Prof. Beth Kaplin	URCoEB – Acting Director
Emmanuel Kabera	REMA – Biosafety Focal Point
Djuma Nsanzimana	REMA – ABS Focal Point
Phillipe Kwitonda	RWB – Catchment Officer
Patrick Umuhoza	REMA - Multilateral Agreements Officer
Alex Mulisa	Private consultant
Dr Claver Ngaboyinsonga	RAB
Dr. Felicien Shumbusho	RAB
Stephen Niyonzima	Rwanda Resource Efficient and Cleaner Production Centre
Dr. Olivier Nsengimana	RWCA
Bright Ntare	FONERWA
Dr. Athanase Mukuralinda	ICRAF
Elisee B. Ntawuhiganayo	ICRAF
Benefique Gatete	REMA – Research Officer
Samuel Mugisha	Nyamagabe District - Environment Office
Josine Tuyishime	ACNR - Biodiversity Office
Vedaste Hakizimana	MINALOC
Jean Claude Habimana	Gatsibo District – Environment Officer
Peter Rwibasira	URCoEB Research Fellow
Pacifique Isimbi	ARECO Rwandanziza
Billy Michel Migambi	REMA – NUWEP District Officer
John Kalisa	WB – Project Manager
Musoni Protais	Musanze District
Bigengimana Yvonne	ARCOS
Dr. Brigitte Nyirambangutse	GGGI
Nizeyimana Aime Adrien	Rutsiro District
Dusabe Marie Claire	RWCA
Anna Behm Masozera	IGCP
Protais Niyigaba	WCS
Jean-Paul Kubwimana	ARCOS Network

# EXECUTIVE SUMMARY

## Introduction

In 1995, Rwanda ratified the Convention on Biological Diversity (CBD); the act which provided the formal framework for the implementation of the provisions of the Convention especially its three objectives namely:

- » 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”

The mechanism for implementation of the CBD objectives is a National Biodiversity Strategy and Action Plan (NBSAP) which Rwanda first prepared in 2003. The NBSAP was revised in 2016 and aligned to the CBD Strategic Plan on Biodiversity 2011 -2020. Rwanda, as party to the Convention on Biological Diversity, has the obligation to report on measures taken for the implementation of the CBD’s provisions and their effectiveness in meeting the objectives of the Convention (Article 26 of the Convention text). Through the 13th Conference of Parties’ decision XIII/27; parties to the CBD are encouraged to submit their sixth National Report by end December 2019. The sixth National Report will provide relevant information for the review of the implementation of the Strategic Plan for Biodiversity 2011-2020. It will also be an important communication tool for biodiversity planning, providing the analysis and monitoring necessary to inform decisions on implementation.

The Country prepared its 5th National report and submitted it to the CBD Secretariat in 2015. This 6th National Report is a follow up to the 5th National report and while the main focus are activities that have been implemented since the last reporting period (from 2015-2020), it also reviews achievement over the period of implementation of the CBD Strategic Plan (2011-2020) which is guided by five strategic goals and 20 Aichi Biodiversity Targets.

## Process of Preparing the 6th National Report.

Preparation of the 6th National Report commenced with a 3 hour online inception meeting between REMA who are the National Focal Point for the CBD and the Consultant (the International Union for Conservation of Nature and Natural Resources

(IUCN), Rwanda Country Office on the 25th June 2020. The modalities of preparing the report as well as the timelines were agreed upon. This was followed by a National Stakeholder Workshop held on the 7th July 2020 at the Lemigo Hotel and attended by 18 persons. The objective of this workshop were to:

- » Create awareness about the development of the 6th national report and officially commence the process. It also solicited for stakeholder’s cooperation and input during the process;
- » Present an overview of the process and key considerations as per the requirements of the CBD Secretariat as well as present the Structure of the Sixth National Report.
- » Provide a general overview of what has been achieved since the last reporting (5th National report) period; intended to provide linkage between the last and current reporting periods;
- » Conduct preliminary data collection from the participants on some of the major achievements over the reporting period (achieved through constitution of 5 working groups);
- » Present a Road Map for the development of the Sixth National Report (6NR).

After the national workshop, follow up interviews were done with respective stakeholders to collect additional information or clarify issues. Individual one on one interviews were also done with the National Consultant while questionnaires were also sent out to targeted individual respondents. Literature review/web searches have also contributed immensely to data collection (REMA also provided useful web links to the Consultants facilitating the process).

A national validation workshop of the Draft 6th National Report was held on line on 15th September 2020.

## Structure of the 6th National Report.

The reporting format in this report has closely followed the provided Guidance for the preparation of the 6th National report. The main sections in the report are:

- » Section 1: Information on Targets being pursued at the National Level. This section lists each of the 19 National Targets in the Revised NBSAP and provides a rational why the target was set;
- » Section II: Implementation measures taken, assessment of their effectiveness, associated

- obstacles and scientific and technical needs;
- » Section III: Assessment of progress towards implementation of each National Target
- » Section IV: Description of national contribution to the achievement of each Aichi Biodiversity Target (ABT);
- » Section VII: Country Updated Biodiversity Profile.

### *Key highlights on the achievements Rwanda has made with regard to implementation of its NBSAP and biodiversity Conservation.*

Using the 19 national targets as the framework for reporting, this section consolidates key findings reported in Sections 2, 3 & 4. The 6th National reporting is evidence based and uses indicators from the NBSAP but also borrows some as necessary from the CBD 6th National Report Technical Guidance Document. Reporting is also broad based and goes beyond the indicators in the NBSAP, capturing other activities that directly or indirectly contribute to conservation of the natural resources and biodiversity.

#### *National Target 1: Rwandan people in at least districts that are adjacent to protected areas are aware of the values of biodiversity and ecosystem services and understand the steps for its sustainable use and conservation.*

Various awareness activities have been undertaken around the protected areas as well as nationally to raise awareness about pertinent conservation issues. These include:

- » The World Environment Day held annually since 1974 and which focuses on different themes that are of importance globally or nationally. The event lasts for a week during which different audiences (students in primary and tertiary institutions, local communities at the districts levels) as well as the general public are targeted.
- » Kwita Nzina" Baby Gorilla naming ceremony held annually has heightened awareness in general about the plight of the Mountain Gorilla which is endangered species. In 2018, this ceremony attracted 65,000 people of whom were in attendance were very high-ranking dignitaries.
- » Campaign on the plight of the Grey crowned cranes held in captivity and the illegality of the activity which led to the release of 166 cranes in the Park and many others kept in a sanctuary

(Umusambi Village). This has led to an increase in the population of the cranes in the wild.

- » One awareness raising program that has had a wide reach is a local radio program of the Eastern province (RADIO IZUBA) entitled "TUMENYE PARIKI Y'AKAGERA" (Knowing Akagera National Park) which is done in Kinyarwanda.
- » Other awareness creation activities have been undertaken by various projects around specific protected areas with great success in terms of mobilizing local community participation in the protection and conservation.

While people are generally aware of the value and importance of biodiversity, they may not be fully aware of the steps they can take to conserve it or may be constrained by factors such as lack of alternative livelihood options that can reduce their reliance on land and other natural resources, poverty, technical and technological capacity, for example that can allow increase agricultural productivity on a small parcel of land.

Progress towards achievement of this target: On track to achieve target.

#### *National Target 2: Values of biodiversity and ecosystem services for at least two selected protected areas have been determined and integrated into planning processes.*

Valuation of Biodiversity and ecosystem service for protected areas.

The following are the results of Economic valuation assessments undertaken for 4 protected areas in Rwanda:

- » The value of Nyungwe National Park was 4.80 billion USD in 2014.
- » Total monetary value (TEV) of Rugezi wetlands was 374.32 million USD in 2014 (ARCOS, 2014);
- » The Total Economic Value (TEV) of Mukura Landscape was estimated at 981,266,600 FRW equivalent to 1,443,039 USD per year (ARCOS, 2014). The monetary benefits from the Mukura landscape translate into a value of US\$803 per hectare per year; which is comparable to the most productive forest landscapes.
- » The total value of the Akagera Wetland Complex includes a stock value (carbon storage) of 1.1 billion USD, or 967 trillion Rwf, and an annual flow value of 11.9 million USD, or 10.6 billion RWF REMA, 2019. Economic Assessment of Akagera Wetland Complex:

Identifying Finance Solutions for Improved Management.

### **Natural Capital Accounting.**

Rwanda is one of the Countries that joined the Wealth Accounting and Valuation of Ecosystems Services (WAVES), led by the World Bank whose goal is to enhance the mainstreaming of natural capital into development planning and national economic accounting systems. Natural capital accounts have been developed for land, water and mining and they are being integrated into planning processes. In addition, ecosystem accounts were tracked over a 25-year focused on Soil. The Government of Rwanda has further committed to continue developing and mainstreaming NCA into development activities in the Strategic Plan for the Environment and Natural Resources Sector (2018 – 2024). In this strategy, the Government commits to the following:

- » Adopt Natural Capital Accounting (NCA) practices to track the Total Economic Value (TEV) of natural capital to the Rwandan economy focusing on land, water, forests, wetlands and mining, thereby accounting for gains and losses relative to GDP growth;
- » Linked to the above, systematically track the total value of green (and efficiency) investments and corresponding returns on investment across ENR sub-sectors and key productive sectors (agriculture, energy, infrastructure among others). The aim of doing this is to highlight the triple-bottom-line benefits (economic, social, and environmental) of green growth as Rwanda urbanizes and industrializes (See Section 2.1 for more details).

Progress towards achievement of target: On track to achieve target.

**National Target 3: Positive incentives for biodiversity conservation and sustainability towards local communities' development is boosted and applied and harmful incentives are eliminated.**

The following are some of the positive incentives provided:

- » Tourism Revenue Sharing (TRS): This has significantly impacted the local communities living adjacent to protected areas since its inception in 2005. The cumulative amount shared by 2018 was \$5.3 million. 690 community development projects had been funded under the TRS programme resulting into a significant

boost in education, health and provision of water and other social infrastructure. Overall, conservation in general has benefited immensely due to the implementation of these measures. This is validated for example by the results of a survey done around Nyungwe forest in 2015 to establish effectiveness of the revenue sharing programme on the sustainable management of natural resources where 100% of the respondents gave responses in the affirmative.

- » Community-based enterprises have been established as alternative income generation sources such as the Sabyinyo Silverback Lodge. Through income generated by the lodge, many development projects (housing, improved access to water, education, health facilities, economic empowerment for all including youth and women among others) have been implemented around Volcanoes National Park. Income generating activities such as bee keeping have also been promoted around all the protected areas. Members of the local communities especially the youth have also been employed as rangers.

Assessment of progress towards achievement of this target: On track to achieve progress.

**National Target 4: Public and private sectors and civil society organizations have promoted and implemented plans that consider ecological limits.**

Some of the activities that are being implemented to address this target include:

- » Promotion of energy use efficiency in public buildings and at household level in the energy, water and sanitation institutions;
- » Promotion of energy saving cook stoves, biogas and other alternative energy sources that reduce consumption of biomass energy by different stakeholders;
- » Capacity building on cleaner production and sustainable consumption and production (SCP) for industries for various sectors;
- » Promotion of green and climate resilient villages and green schools (rainwater harvesting systems, biogas, reforestation and agroforestry, sustainable management of soil and water, use of organic manure (Source: 5th National Report to the CBD).
- » Establishment of the Rwanda Resource Efficiency & Cleaner Production Centre (RECPC);

- » Implementation of Green certification programmes for coffee and tea;
- » Promotion of sustainable initiatives by the private sector (e.g. Eco-lodges promoting indigenous species and buying organic products from surrounding communities etc).

Progress towards achievement of this target: On track to achieve target.

**National Target 5: At least 50 percent of natural ecosystems are safeguarded, their degradation and fragmentation is significantly reduced.**

Government intensified efforts to safeguard all its protected areas which constitute the bulk of natural ecosystems in Rwanda. Remnant natural forests were protected by Ministerial Order No 006/MINIRENA/2015 of 18/06/2015 determining the management of protected state forests not managed by Special laws; while Adoption of the Prime Minister's Order N°006/03 of 30/01/2017 drawing up a list of swamp lands, their characteristics and determining modalities of their use, development and management. Through the Environment Law N°48/2018 of 13/08/2018 on Environment, wetlands have been given due recognition and protection especially by Articles N° 42, 47, 48, 49 and 60 which have very explicit provisions on sustainable wetlands management.

The Government also made a pledge under the Bonn Challenge to restore 2million ha of degraded land by the year 2030, for which 35% of the target has been achieved. The Key Biodiversity Areas (KBAs) (Volcanoes National Park, Akagera National Park, Lake Kivu, Cyamudongo Forest, Gishwati-Mukura National Park and Gishwati Landscape) were some of the beneficiaries in terms of forest restoration using the Forest Landscape Restoration Approach (FLR). The main measures implemented in these KBAs were allowing for natural regeneration as well as assisted restoration in their vicinity as well as in protected areas. In addition, the attainment of the target set in Vision 2020 of increasing forest cover to 30% (724, 695 ha) of the Country's total land area will eventually have a major positive impact on the conservation of natural forests by reducing demand for biomass energy and other wood products such as timber from natural habitats.

Progress towards achievement of this target: On track to achieve target.

**National Target 6: Fishing and aquaculture, agriculture and forestry are managed sustainably taking into consideration ecosystem specificities to ensure biodiversity conservation.**

### ***Sustainable fisheries and aquaculture:***

Aquaculture production has tremendously increased from 265 metric tons in 2011 to 5,128 metric tons in 2018 according data from FAOSTAT. However, this is still very low as compared to the amount of fish from capture fisheries. Aquaculture is seen as a means of reducing pressure in natural ecosystems due to over exploitation by capture fisheries. Measures proposed in the NBSAP implemented include:

- » Evaluation of the fish stocks in Lake Kivu which is informing policies and interventions pertaining to issuance of fishing licenses to companies as well as the regulation of fishing thresholds. In addition, closed fishing periods have been implemented to allow for stock recovery.
- » Re-introduction of native fish populations and selective fishing targeting invasive species: 650,000 fingerlings of *Limnothrissa miodon* fingerlings were collected from Lake Kivu and stocked in Bulera and Ruhondo lakes to enhance fish production. 100,000 *Tilapia* fingerlings have been stocked in Muhazi Lake to increase production. (RAB – Aquaculture and Fisheries Annual Report 2019/2020). This has increased production of *Tilapia* and catfish species from these lakes.

### ***Sustainable agriculture.***

- » Promotion of integrated management of watersheds around water bodies. Catchment management plans have been developed for several catchment areas. Tree planting (mainly agroforestry) is a major activity in catchment conservation as well as construction of terraces and other soil conservation measures. Agroforestry has been promoted through various programs across the country with great success, not only for soil conservation but also to enhance soil fertility.
- » To enhance soil fertility, livestock keeping is being integrated into crop farming.

## Sustainable forestry.

Forest plantations have had a steady increase from 301,500 ha in 2010 to 387,425 ha by 2019, representing an increase of 85,925 ha (28.5%) MoE, 2019). According to the 2019 forest cover mapping report, they accounted for 53.5% of the forested area. In general, forest degradation was remarkably reduced between 2009 and 2019, with analysis indicating a net of 5% afforestation rate was achieved based on the fact that about 105,713 ha of forests had suffered deforestation while 139,674 were afforested accounting for 15.7% and 20.7% respectively over this period.

Progress towards achievement of target: On track to achieve target.

**National Target 7: Pollutants including those from excess nutrients are controlled and their harm has been brought to levels that are not detrimental to ecosystem function and biodiversity.**

Pollution is still a major environmental issue in Rwanda and arises from various sources such as agricultural inputs (fertilizers and pesticides from farmlands), industrial operations, and poor solid and liquid waste management. Air pollution is mainly generated by motor vehicles in urban areas while in the rural areas, it is from use of wood for fuel especially at household level. The Government passed a new air quality management law 18/2016 governing the preservation of ambient air quality and prevention of related pollution. Standards have also been developed to enhance the regulation of air emissions that include: Non-road mobile machinery, thermal power plants; and for the testing environmental compliance for motor vehicles, cycles and tricycles exhaust emissions. In addition, Rwanda in an effort to enhance the governance and management of ambient air quality standards and emissions limits in the country has adopted the three East African Standards listed below:

- » RS EAS 750 2010 –Emissions by Cement factories;
- » RS EAS 751 2010 –Air quality specification;
- » RS EAS 752 2010 Tolerance limits of emissions discharged to the air by factories.

These and many other measures including catchment restoration, improved management of watersheds, implementation of sustainable cities will go a long in mitigating pollution from various sources. There is also a national water quality

monitoring system in place which will provide feedback on the success of measures being implemented.

Progress towards achievement of this target: Progress but at an insufficient rate.

**National Target 8: Invasive alien species, their pathways, are identified and prioritized invasive alien species controlled or eradicated.**

The impact of invasive alien species (flowering plants, fish and insects) in natural forests, agro-ecosystems, lakes and wetland ecosystems in Rwanda were assessed in 2016 in a study commissioned by REMA. The analysis was based on the degree of invasiveness, impacts and distribution potential for 32 plant species. Lantana camara and Eichornia crassipes (water hyacinth) were categorized as high in terms of invasiveness, impact and distribution potential. Overall, according to this report, 10 species of plants were highly invasive. A General Management Plan for IAS's was developed as part of this report and it has provided actions that need to be implemented to address the respective IAS.

Control/eradication of IAS have been undertaken in Gishwati forest reserve, Akagera NP, and Cohosh wetland.

Progress towards achievement of this target: Progress towards target but at an insufficient rate.

**National Target 9: at least 10.3 percent of national territory holding particular biodiversity and ecosystem services is protected considering the landscape approach in order to maintain biological diversity.**

There are four fully protected areas in Rwanda covering 9.13% of the Country's total surface area. The Government increased the area of protected terrestrial and inland waters through dedication of 74% of wetlands that should be exploited under conditional use while 20% of wetlands are to be totally protected (REMA 2015, PM Order 2017). The Ministerial Order No006/MINIRENA/2015 of 18/06/2015 determining the management of protected State Forests not governed by special laws was passed and it will in the long term enhance conservation of these forests. With this, the current total area dedicated to biodiversity conservation and sustainable natural resources management is 12,501 km<sup>2</sup> (47%) of the Country's total land area according to the National Land Use and Development Master Plan of May 2020). According to the World Database of Protected

Areas that tracks changes, 14.8% of the terrestrial and inland water areas are covered by protected areas since December 2016 (NLUDMP 2020).

Progress towards achievement of this target: On track to achieve target.

**National target 10: Extinction of threatened species is prevented, and their conservation status improved, particularly for those identified as "Alliance for Zero Extinction (AZE).**

Populations of threatened species in Rwanda continued to increase (the Mountain Gorilla, Grey Crowned Cranes, Golden monkey and the Eastern Chimpanzee among others. A total of 23 (18 in 2017 & 5 in 2019) black rhinos were reintroduced into Akagera National Park in 2017 after a 10 year absence. 11 lions were also reintroduced into the same national park in 2015 and a year later, their population had doubled. Through enhanced protection of key biodiversity areas, lots of other species have also been protected.

Progress towards achievement of this target: On track to achieve target.

**National Target 11: the genetic diversity of priority cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.**

- » Continued conservation of Crop Wild Relatives (CWR) in natural ecosystems.
- » On-farm management of plant genetic resources (for use and maintenance) of local crop varieties grown in agricultural systems and home gardens.
- » Continued collection and storage of germ plasm in the Gene Bank
- » The Government is also promoting the growing of under-utilized indigenous crops and vegetables.

Progress towards achievement of this target: On track to achieve target.

**National Target 12: By 2020, the potential risks resulting from biotechnology use and placement on the market of its products have been minimized and/or eliminated.**

As a safeguard measure, REMA in 2018 embarked on developing a Law governing the use and placement of Genetically Modified Organisms (GMOs) which is pending approval. The objective of this Law is to ensure adequate levels of protection in the safe transfer, handling and use of GMOs resulting from modern biotechnology. The Law also provides for a transparent and predictable process for review and decision making on GMOs and other related activities. This law will also operationalize implementation of the Cartagena Protocol which Rwanda is a signatory.

Progress towards achievement of this target: Progress but at an insufficient rate

**National Target 13: All ecosystems that provide essential services to human well-being and contribute to health as well as livelihoods are restored and safeguarded.**

Rwanda has made great strides in protecting and restoring critical ecosystems such as the Nyungwe montane forest, Volcanoes NP, Akagera and Gishwati Mukuru National Park and several other watersheds. Through the Forest Landscape Restoration approach, landscapes including farmlands, steep slopes have been restored through various measures such as agroforestry and terracing for soil conservation. These will ensure full restoration as the planted and regenerated forest patches reach maturity and the threats that caused the loss are kept at bay. On the other hand, certain Orders (wetlands and Forests not managed by special laws) have been made and will help protect ecosystems.

Progress towards achieving this target: On track to achieve target

**National Target 14: Ecosystem resilience and the contribution to carbon stocks has been enhanced through increase of forest cover by up to 30% of the country's total land area and restoration of other ecosystems thereby contributing to Climate Change adaptation and Mitigation.**

The current status of Rwanda's forest cover as per the Forest Mapping Report (2019) is 724,695 ha



(30.4%) of Rwanda's total land area) This Survey was a follow up to a 2012 Mapping Report. As of the time the target was set in Vision 2020, the forest cover was 24.5% of the country's total land area. The increased forest cover has also increased the carbon storage and sequestration potential in the country.

Progress towards achievement of this target: On track to exceed target.

**National Target 15: Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is integrated into national legislation and administrative practices and enforced.**

In support of the implementation of the Nagoya Protocol, a Ministerial Order governing access to genetic resources and the fair and equitable sharing of benefits arising from their use was developed and is awaiting approval. With support from a UNDP-GEF Global ABS project currently being implemented, review and harmonization of existing legal and institutional instruments intended to enhance the Rwanda's capacity for implementation of the Protocol on ABS is being undertaken. Partnerships and coordination among the various stakeholders as well as their technical and institutional capacities are also being strengthened. Benefit sharing mechanisms for agro-ecosystems production in the country have also been established. Rwanda's ABS Guideline and Toolkit for access and benefit sharing related to traditional knowledge associated with genetic resources in Rwanda is in place.

Law No. 31/2009, which enforces protection of Intellectual Property Rights is also in place.

Progress towards achievement of this target: On track to achieve target.

**National Target 16: Rwanda has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated National Biodiversity Strategy and Action Plan (NBSAP).**

The NBSAP was prepared through a participatory process and adopted in December 2016. The proposed actions were mainstreamed into various sectors and implementation has been going on well.

Progress towards achievement of this target: On track to achieve target.

**National Target 17: Values of traditional knowledge, cultural heritage and practices, and their customary use of biological resources, are respected, and fully integrated and reflected in the implementation of the Convention.**

A study on the role of cultural practices in the conservation of biodiversity in Rwanda was conducted in 2009. Another study undertaken was the assessment of traditional ecological knowledge and beliefs in the utilization of important plant for Buhanga sacred forest (Ikiza et al. 2016). The study indicated that cultural norms/beliefs and values associated with the forest had protected it against exploitation. One cultural practice that has been integrated into conservation is the Kwita Izina (baby naming for Gorillas). There is also an association of traditional healers.

Progress towards achievement of this target: Progress but at an insufficient rate

**National Target 18: Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, applied and reflected in the implementation of the NBSAP.**

The following are the summary measures that have been undertaken towards achievement of this targets;

- » National Stock Taking and Assessment as a part of the revision of the NBSAP. This helped identify the status of biodiversity and trends as well as the threats facing it;
- » Inventories have been undertaken on forests and wetlands following which Ministerial Orders have been prepared and adopted to enhance their conservation;
- » Technical capacity of institutions are being strengthened through training programmes at post graduate levels;
- » Training has been conducted for various stakeholders on efficient and sustainable mineral exploration and exploitation promoted.
- » Rwanda's data sets and records in the GBIF increased steadily and there were 13,679 records by 2020 covering several taxa.

Progress towards achievement of this target: Progress but at an insufficient rate.

### National Target 19: Mobilization of financial resources for an effective implementation of NBSAP.

Government biodiversity expenditures increased from RWF 10.17 billion in 2011/12 to RWF 11.5 billion in 2016/17, representing a cumulative growth rate of 2.5 percent annually. Similarly, expenditures by non-government implementing entities increased annually from 4.6 billion RWF to 5.7 billion RWF annually between 2011/12 and 2016/17 (REMA, UNDP and Global BIOFIN 2017). Over the reporting period, the government managed to mobilize the following resources:

- » Over USD 100 million through Rwanda’s environment and climate change fund, FONERWA;
- » Developing a green city toolkit and roadmap, identification of a pilot site for the Green City Pilot (GCP) as well as mobilizing USD 7 million in resources for the initial pilot;

- » Rwanda was selected for project development support under the Pilot Programme for Climate Resilience (PPCR) and Forest Investment Programme (FIP);
- » Adoption of a model mine concept by 35 companies, and funding awarded for two model mines by FONERWA.

The establishment of Rwanda’s Environmental Fund – FONERWA as a vehicle for direct financing of a range of climate and environmental programmes and projects has created valuable institutional capacity that could be expanded in the future.

Progress towards achievement of this target: Progress but at an insufficient rate.

Summary of Progress in Achieving the National Targets

Summary of Progress in Achieving the National Targets

Rank	No. of targets	Targets in category	Percentage under each category.
On track to exceed target	1	14	5
On track to achieve target	12	1,2,3,4,5,6,9,10, 11,13,15,16	63
Progress but at an insufficient rate	6	7,8,12,17,18,19	32
No significant change	0		0
Moving away from target	0		0
	0		0

### Contributions to the Aichi Biodiversity Targets (ABTs and the Sustainable Development Goals (SDGs).

Since the National Targets were aligned to the ABTs, their achievement has also contributed to the achievement of the respective ABTs and SDGs.

### Conclusions and Recommendations

Rwanda has demonstrated commitment to the conservation of biodiversity resources and the ecosystems that support it which has been captured at the highest Government policy level (Revised Vision 2020 and EDPRS II, Vision 2050 and the NST1 (2017-2024). Remarkable

achievements are visible in increasing forest cover to 30% of the Country's total land area, and reducing use of biomass fuel from 95% to 50% by 2020 among others. While the Country has made commendable achievements, continued efforts are needed, particularly in the area of improving quality of the forest resources in order to meet fully the needs of the country and its people. Similarly, it is important to improve silvicultural practices especially among the small-scale plantation farmers. This would lead to increased productivity of better quality wood, as recommended by the Strategic Plan for Environment and Natural

Resources Management Sector (2018-2024). This is the same for different sectors that need further mainstreaming of biodiversity and environmental conservation in order to sustainably continue the road towards poverty eradication that the country has effectively embarked on. Finally, there is need to strengthen monitoring and evaluation in the various institutions implementing various biodiversity related programmes in order to support decision-making.



Giraffe in Akagera National Park (Photographer: Jordi Van Oort)



Akagera National Park (Photographer: Jordi Van Oort)

# ABBREVIATIONS AND ACRONYMS

ABS	Access and Benefit Sharing
AMC	Advanced Market Commitment
ARCOS	Albertine Rift Conservation Society
AWF	African Wildlife Foundation
AZE	Alliance for Zero Extinction
BER	Biodiversity Expenditure Review
BIOFIN	Biodiversity Finance Initiative
BOD	Biological Oxygen Demand
BRT	Bus Rapid Transit
CBD	Convention on Biological Diversity
CC	Climate Change
CCD	Convention to Combat Desertification
CHM	Clearing House Mechanism
CIAT	International Center for Tropical Agriculture
CIMMYT	Maize and Wheat Program and the International Maize and Wheat Improvement Center
CIP	International Potato Center
CIDT	Capacity Building Initiative for Trade Development
CITES	Convention on International Trade in Endangered Species
CMS	Content Management System
COD	Chemical Oxygen Demand
CoEB	Center of Excellence in Biodiversity and Natural Resources Management
CSIS	Center for Strategic and International Studies
CSO	Civil Society Organization
CWR	Crop Wild Relatives
DFID	Department for International Development
DRC	Democratic Republic of Congo
EAZA	European Association of Zoos and Aquaria
EAPGREN	East African Plant Genetic Resources Network project
EDPRS	Economic Development and Poverty Reduction Strategy
EEP	EAZA Ex-situ Programme
EIA	Environnemental Impact Assessment
EMP	Environmental Management Plan
ENR	Environment and Natural Resources
ES	Ecosystem Services
FAO	Food and Agriculture Organization
FERWACY	Rwanda Cycling Federation
FIP	Forest Investment Programme
FLR	Forest Landscape Restoration
FMES	Forest Monitoring and Evaluation System
FONERWA	Rwanda Green Fund
FRC	Freshwater Research Centre
GBIF	Global Biodiversity Information Facility
GCP	Green City Pilot
GDP	Gross Domestic Product
GEF	Global Environment Facility
GGCRS	Green Growth and Climate-Resilience Strategy
GGGI	Global Green Growth Institute
GHG	Green House Gases
GIS	Geographic Information Systems
GMO	Genetically Modified Organisms

GoR	Government of Rwanda
GPS	Global Positioning System
GVTC	Greater Virunga Transboundary Collaboration
IAS	Invasive Alien Species
IBA	Important Bird Areas
IBRD	International Bank for Reconstruction and Development
ICT	Information Communication Technology
IFAD	International Fund for Agricultural Development
IGCP	International Gorilla Conservation Program
INDC	Intended Nationally Determined Contributions
IRST	Institut de la Recherche Scientifique et Technologique
ISFM	Integrated Soil Fertility Management
IT	Information Technology
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resource Management
KBA	Key Biodiversity Areas
LAFREC	Landscape Approach to Forest Restoration and Conservation
LDCF	Least Developed Countries Fund
LED	Light Emitting Diodes
LPG	Liquid Petroleum Gas
LWH	Land husbandry, Water harvesting and Hillside irrigation Project
MEA	Multilateral Environmental Agreements
M&E	Monitoring and Evaluation
MINCOFIN	Ministry of Economic Planning and Finance
MINAGRI	Ministry of Agriculture and Animal Resources
MoE	Ministry of Environment
MoU	Memorandum of Understanding
MRT	Mass Rapid Transport System
MW	MegaWatts
NAPA	National Adaptation Program of Action
NAP-GSP	National Support Plan Global Support Programme
NBSAP	National Biodiversity Strategy and Action Plan
NCA	Natural Capital Accounts
NDF	Nordic Development Fund
NDR	Nutrient Delivery Ratio
NGO	Non – Governmental Organizations
NHR	National Herbarium of Rwanda
NIRDA	National Industrial Research Agency
NISR	National Institute of Statistics of Rwanda
NLUDMP	National Land Use and Development Master Plan
NNP	Nyungwe National Park
NRMGCD	National Road Map for Green Cities Development
NST	National Strategy for Transformation
NUA	New Urban Agenda
OGC	Open Geospatial Consortium
PA	Protected Area
PACE	Pan African Conservation Education
PAIGELAC	The Inland Lakes Integrated Development and Management Support Project
PBS	Public Bicycle Sharing
PEARLS	Partnership for Enhancing Agriculture in Rwanda through Linkages
PES	Payment for Ecosystem Service
PGRFA	Plant Genetic Resources for Food and Agriculture
PM	Prime Minister
PPCR	Pilot Programme for Climate Resilience

RAB	Rwanda Agricultural Board
RBIS	Rwandan Biodiversity Information System
RCA	Rwanda Cooperatives Authority
RCMRD	Regional Center for Mapping of Resources for Development
REMA	Rwanda Environment Management Authority
RDB	Rwanda Development Board
CPCIC	Cleaner Production & Climate Innovation Centre
RFCM	Rwanda Forest Cover Mapping
RMB	Rwanda Mines Petroleum and Gas Board
RNBF	Rwanda National Biosafety Framework
RNFP	Rwanda National Forest Policy
RNRA	Rwanda Natural Resources Authority
ROAM	Restoration Opportunity Assessment Method
RWCA	Rwanda Wildlife Conservation Association
RWF	Rwanda Franc
SACCO	Savings and Credit Co-operatives Organization
SACOLA	Sabyinyo Community Livelihood Association
SANBI	South Africa, and South African National Biodiversity Institute
SCP	Sustainable Consumption and Production
SDG	Sustainable Development Goals
SDR	Sediment Delivery Ratio
SEA	Strategic Environmental Assessment
SMS	Short Message Service
SPSS	Special Program for Social Scientist
SOE	State of Environment
SEEA	System for Environmental Economic Accounting
TDS	Total Dissolved Solids
TEV	Total Economic Value
TRS	Tourism Revenue Sharing
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WAVES	Wealth Accounting and the Valuation of Ecosystem Services
WCS	Wildlife Conservation Society
WFP	World Food Program
WFS	Web Feature Service
WMS	Web Map Service
WRI	World Resources Institute





Akagera National Park Landscapes (Photographer: Jordi Van Oort)

# SECTION I: INFORMATION ON THE TARGETS BEING PURSUED AT THE NATIONAL LEVEL

Check this box if your country has adopted national biodiversity targets or equivalent commitments associated to the attainment of the Aichi Biodiversity Targets or other parts of the Strategic Plan for Biodiversity 2011-2020.

My country has adopted the national biodiversity targets or equivalent commitments in line with the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets.

All the 19 national targets were developed through a participatory process involving the key stakeholders and adopted through a stakeholder validation workshop. Setting up of each target is dependent largely on what is priority and feasible within the budgetary constraints of the implementing sectors.

## 1.1 National Target 1

*By 2020, at the latest, Rwandan people in at least Districts that are adjacent to protected areas are aware of the values of biodiversity and ecosystem services and understand the steps for its sustainable use and conservation.*

### Rationale for the national target

The government recognizes the need for sensitization and capacity building of its citizens on environmental matters including biodiversity issues; especially those communities that live adjacent to key ecosystems such as parks and other protected areas (NBSAP, 2016). The livelihoods of these communities are dependent on exploitation of natural resources which they tend to over exploit. This degrades the natural resource base. By raising awareness on the importance and value of biodiversity resources, the government hopes to endear these protected areas to the communities and rally them to conserve them.

### Level of application

*(Please specify the level to which the target applies):*

- Regional/multilateral
- National/federal
- Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

- 1    6    11    16
- 2    7    12    17
- 3    8    13    18
- 4    9    14    19
- 5    10    15    20

Other related Aichi Biodiversity Targets.

- 1    6    11    16
- 2    7    12    17
- 3    8    13    18
- 4    9    14    19
- 5    10    15    20

Other relevant information.

### Relevant websites, web links, and files

- Rwanda National Biodiversity strategy and Action Plan 2016

## 1.2 National Target 2

By 2020, the values of biodiversity and ecosystem services for at least two selected protected areas have been determined and integrated into planning processes, i.e. poverty reduction strategies and national economy.

### Rationale for the national target.

While the linkages between biodiversity and ecosystem services are well understood in Rwanda, the value of biodiversity is not fully reflected in broader government policies and incentive structures. There also has not been a comprehensive economic valuation of biodiversity and ecosystem services provided to the national economy. In addition, costs of biodiversity loss as well as the ecosystem services they provide and the benefits that accrue have not been fully computed for all ecosystems (NBSAP, 2016). Establishment of the value of biodiversity and integrating it into the national planning and development processes is therefore critical for the realisation of their sustainable management and utilisation for the benefit of all (*rather you cannot take good care of something who's worth you do not know*). The target also seeks to enhance the knowledge of stakeholders at the grassroots so as to enable them develop environmentally sustainable practices/enterprises that holistically promote natural resources conservation (NBSAP, 2016).

### Level of application (Please specify the level to which the target applies):

- Regional/multilateral
- National/federal
- Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

#### Main related Aichi Biodiversity Targets

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#### Other related Aichi Biodiversity Targets

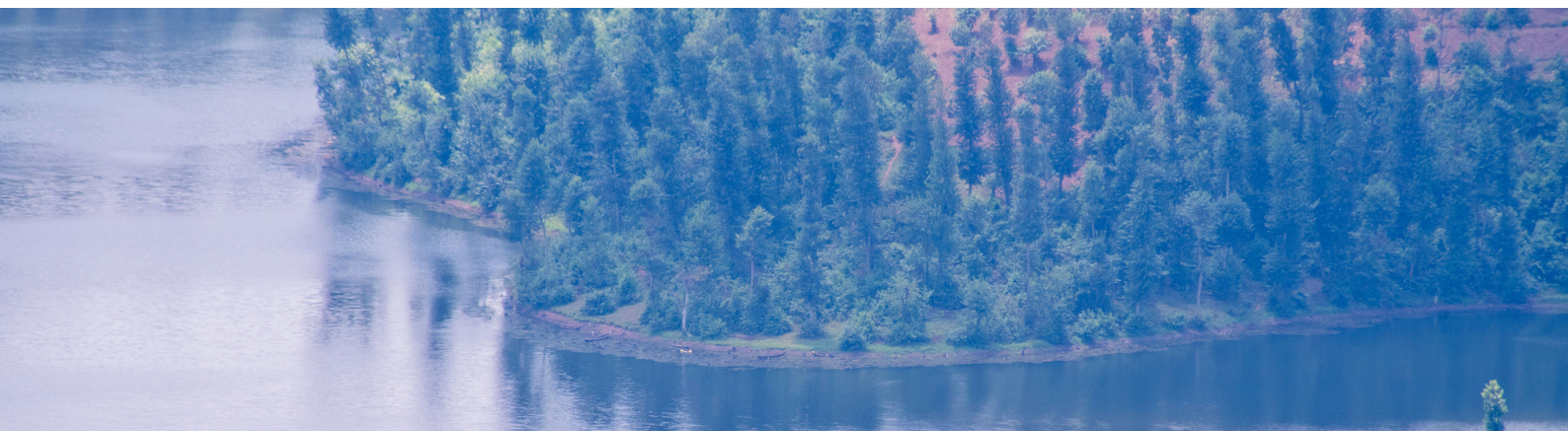
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### Other relevant information

Ecosystem services valuations have been conducted for: (i) Rugezi wetland, Nyungwe montane forest, (ii) Mukura landscape (ARCOS), (iii) Forest ecosystem services and Akagera national park. Moreover, ecosystem services account have been developed and are part of the National Capital Accounting system (WAVES project).

### Relevant websites, web links, and files

- Rwanda National Biodiversity strategy and Action Plan 2016



### 1.3 National Target 3

By 2020, at the latest, positive incentives for biodiversity conservation and sustainability towards local communities" development is boosted and applied and harmful incentives are eliminated.

#### Rationale for the national target

A significant proportion of the population still depends directly on exploitation of natural resources for survival and livelihood. This has a significant impact on environmental resources, and with increasing population pressure, there is potential for ecosystems degradation. While the Rwanda Development Board (RDB) has over the years increased patrols and surveillance in the national parks which has significantly reduced human/wildlife conflicts, the problem still exists and could escalate especially if people don't directly benefit (NBSAP, 2016). These include encroachments, over extraction of resources, poaching for game meat and trophies among others. Carnivores are also threatened with extinction on most of the PA as they are killed or poisoned. There is therefore need to incentivise conservation by the local communities. Other positive subsidies need to be enhanced/provided while harmful ones should be removed.

#### Level of application

- Regional/multilateral
- National/federal
- Subnational

#### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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Other related Aichi Biodiversity Targets

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### Other relevant information

Lead government agencies (Rwanda Environment Management Authority (REMA), Rwanda Development Board, Local government and other stakeholders drawn from the private and civil society sectors) develop appropriate incentive programs that encourage sustainable conservation and management of the protected areas, contribute to poverty reduction and general improvement of social economic wellbeing of the local communities living adjacent to them.

#### Relevant websites, web links, and files

- [Rwanda National Biodiversity Strategy and Action Plan 2016](#)

### 1.4 National Target 4

By 2020, public and private sectors and civil society organizations have promoted and implemented plans that consider ecological limits.

#### Rationale for the national target

Often, there has been over exploitation of various resources in Rwanda (land, water, forests, fisheries, wildlife) which has degraded the natural capital base. This undermines sustainable development. In a country like Rwanda which is highly dependent on natural resources for social and economic development with agriculture supporting about 70% of the population's livelihoods and 33% of the country's GDP (SoE, 2015), while tourism contributing up to 14.9% of the country's GDP and is growing at a rate of 9.66% annually (Knoema, 2020), it becomes very important to commit and ensure the development agenda is within safe ecological limits.

#### Level of application

- Regional/multilateral
- National/federal
- Subnational

## Relevance of the national targets to the Aichi Biodiversity Targets

### Main related Aichi Biodiversity Targets

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### Other related Aichi Biodiversity Targets

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### Other relevant information.

Several sustainable certification schemes exist in Rwanda such as the Rainforest Alliance certification for tea and coffee.

### Relevant websites, web links, and files

- *Rwanda State of Environment and Outlook Report 2015*
- *Rwanda National Biodiversity Strategy and Action Plan 2016*
- *Rwanda - Contribution of travel and tourism to GDP as a share of GDP 2018*
- *Rainforest Alliance work in Rwanda*

## 1.5 National Target 5

By 2020, at least 50 per cent of natural ecosystems are safeguarded, their degradation and fragmentation significantly reduced.

### Rationale for the national target

Natural ecosystems in Rwanda (forests, wetlands, rivers, lakes and other lands rich in biodiversity resources together with the biodiversity they host have been degraded by deforestation, encroachments, expansion of agricultural activities, human settlements, grazing, illegal logging and charcoal production. Previous excisions of existing natural areas such as Akagera National Park for resettlement of returnees has reduced the area of natural ecosystems significantly. It is reported that between 1960 and 2007, Rwanda lost 65% of its forest cover (SoE, 2015). This also leads to habitat fragmentation. The key driver for this

has been population growth and dependence on natural resources for livelihoods (SoE, 2015). To reverse this trend, the government has committed to implement measures that safeguard natural ecosystems, reduce their degradation and fragmentation significantly.

### Level of application

- National/federal
- Subnational – Restoration efforts will be undertaken at all levels including the Districts

## Relevance of the national targets to the Aichi Biodiversity Targets

### Main related Aichi Biodiversity Targets

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### Other related Aichi Biodiversity Targets

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| <input type="checkbox"/> 3 | <input type="checkbox"/> 8  | <input type="checkbox"/> 13            | <input type="checkbox"/> 18 |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input checked="" type="checkbox"/> 14 | <input type="checkbox"/> 19 |
| <input type="checkbox"/> 5 | <input type="checkbox"/> 10 | <input type="checkbox"/> 15            | <input type="checkbox"/> 20 |

### Other relevant information

To implement this target, a preliminary study that evaluates the status and restoration needs of natural ecosystems was undertaken in 2014 to inform the development and implementation of proposed rehabilitation/restoration works. This target was captured in the Vision 2020 target of increasing forest cover to 30% of Rwanda's land area by the year 2020 (RFCM, 2019). The target was cascaded to the EDPRS 1 & EDPRS II. As of now, this target has been achieved. Vision 2050 and The National Strategy for Transformation (NST1), 2018-2024) have captured the same and committed to maintaining forest cover at 30% of the country's total land area going forward (RNFP, 2018).

### Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan 2016*
- *Rwanda Forest Cover Mapping Using High Resolution Aerial Photographs 1*
- *Rwanda National Forestry Policy 2018*
- *Forest Landscape Restoration Opportunity Assessment for Rwanda, 2014*

## 1.6 National Target 6

By 2020, fishing and aquaculture, agriculture and forestry are managed sustainably taking into consideration ecosystem specificities to ensure biodiversity conservation.

### Rationale for the national target

Fisheries, aquaculture, agriculture and forestry have not been managed sustainably leading to resource degradation. Capture fisheries is characterised by use of wrong mesh size nets, while agricultural intensification so as to boost the country's GDP and improve livelihoods of the people has also had serious impacts on biodiversity (NBSAP, 2016). Forests have been seriously degraded mainly by illegal logging, encroachments, illegal and intentional fires and other unsustainable practices. These unsustainable practices need to be addressed if the benefits that accrue from these resources are to be realised in the long term (NBSAP, 2016).

### Level of application

- Regional/multilateral  
 National/federal  
 Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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| <input type="checkbox"/> 4 | <input type="checkbox"/> 9            | <input type="checkbox"/> 14 | <input type="checkbox"/> 19 |
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Other related Aichi Biodiversity

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| <input checked="" type="checkbox"/> 5 | <input type="checkbox"/> 10           | <input type="checkbox"/> 15 | <input type="checkbox"/> 20 |

### Other relevant information

This target will be achieved using various approaches such as re-introduction of native fish species into their habitats, setting fishing thresholds to mitigate overfishing, selectively targeting invasive alien species of fish for

harvesting and also promoting integrated watersheds management approaches for the various water bodies. In addition, efforts will be cascaded down to the district administrative level through the development of appropriate district land use management plans that will also cover the monitoring of water quality, a key factor in the sustainable conservation of fish stocks, within those regions.

National Forest Sector Strategic Plan 2018 – 2022

### Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan 2016*
- *Forest Sector Strategic Plan 2018 – 2022, Rwanda*

## 1.7 National Target 7

By 2020, pollutants including those from excess nutrients are controlled and their harm has been brought to levels that are not detrimental to ecosystem function and biodiversity.

### Rationale for the national target

Pollution of water bodies (rivers, lakes, wetlands) has been identified as a big problem with adverse impacts on resources such as fisheries and aquatic life. In addition, pollution compromises the goal of providing clean and safe water to the country's growing population (NBSAP, 2016).

### Level of application

- National/federal  
 Subnational – Mitigating pollution of rivers, lakes etc is a national effort that has to be cascaded up to the community levels.

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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| <input type="checkbox"/> 3 | <input checked="" type="checkbox"/> 8 | <input type="checkbox"/> 13 | <input type="checkbox"/> 18 |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9            | <input type="checkbox"/> 14 | <input type="checkbox"/> 19 |
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### Other related Aichi Biodiversity Targets

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| <input type="checkbox"/> 5            | <input type="checkbox"/> 10 | <input type="checkbox"/> 15            | <input type="checkbox"/> 20            |

### Other relevant information

The Government has adopted an Integrated Water Resources Management which will make a significant impact in terms of Improving water quality/minimizing pollution from agricultural chemicals and sediments washed from away from farmlands.

#### Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan 2016*

## 1.8 National Target 8

*By 2020, invasive alien species, their pathways, are identified and prioritized invasive alien species controlled or eradicated.*

### Rationale for the national target

There are several invasive alien species (IAS) in Rwanda and they have had serious adverse impacts on various types of biodiversity resources both terrestrial and aquatic. The water hyacinth introduced as an ornamental plant has impacted Lake Mihinda in the Eastern Province and Lake Kishanju which has more or less completely disappeared together with the fisheries resources it supported (REMA, 2016). The species continues to spread to other water bodies impacting seriously on biodiversity resources. Fish predators (Clarias gariepinus and Protopterus aethiopicus introduced to control gastropods and boost fisheries production have become invasive and they are a big threat to other indigenous fish species such as the Tilapiines, Haplochromines and other small native fish species whose populations have drastically declined. In terrestrial ecosystems, the main IAS include, Lantana camara and the jointed cactus Opuntia spp (Opuntia is also a big threat in some of the protected areas as well as the areas adjacent to them) (REMA, 2016).

### Level of application

- Regional/multilateral  
 National/federal  
 Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

Other related Aichi Biodiversity Targets

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### Other relevant information

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In 2016, REMA commissioned a study to assess the impacts of invasive alien species (flowering plants, fish and insects) in natural forests, agro-ecosystems, lakes and wetland ecosystems in Rwanda and develop their management plans. In this report, an analysis of the characteristics of IAS was done for plants, animals and insects in terms of invasiveness, impacts and distribution potential for 32 plant species with Lantana camara and Eichornia crassipes (water hyacinth) being categorized as high in terms of invasiveness, impact and distribution potential. 5 had a high impact while 2 had a high distribution potential. Overall, according to this report, 10 species of plants were highly invasive, Eradication of IAS is adequately provided for in Law N° 70/2013 of 02/09/2013 Governing Biodiversity in Rwanda (Articles 18, 19, 20, 21, 22, 23, 24 and 25).

### Relevant websites, web links, and files

- *Assessment of Invasive Alien Species in Rwanda 2016*
- *Rwanda National Biodiversity Strategy and Action Plan 2016*

## 1.9 National Target 9

By 2020, at least 10.3 per cent of national territory holding particular biodiversity and ecosystem services is protected taking into account the landscape approach in order to maintain biological diversity.

### Rationale for the national target

Since the 1960s, massive tracts of landscape have been continually converted or encroached into for various socioeconomic purposes such as settling people and agricultural production. This has led to loss of critical habitats for biodiversity which is threatening the survival of certain species as well as ecosystem services (NBSAP, 2016). These natural habitats/ecosystems also provide essential goods and services that support Rwanda's economic growth and peoples' livelihoods. This target therefore seeks to provide maximum protection to these areas in order to safeguard the biodiversity and ecosystem services.

### Level of application

- National/federal.

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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Other related Aichi Biodiversity Targets

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### Other relevant information.

The national stock taking and assessment undertaken prior to the preparation of the NBSAP identified and analysed the drivers and pressures leading to biodiversity loss, in addition to measures that need to be implemented to address them.

### Relevant websites, web links, and files

- Rwanda National Biodiversity Strategy and Action Plan 2016

## 1.10 National Target 10

By 2020, the extinction of threatened species is prevented and their conservation status improved, particularly for those identified as "Alliance for Zero Extinction (AZE)".

### Rationale for the national target

The potential threat of extinction of biodiversity species is real in Rwanda. Rwanda is one of the range states for the endangered Mountain Gorilla, with the highest population found in the Virunga massif (shared between Rwanda, Uganda and Democratic Republic of Congo); the critically endangered Chimpanzee (*Pan troglodytes*) found in the Nyungwe Forest National Park and the once contiguous Cyamudongo natural forest reserve, the endangered lion (*Panthera leo*) among others (NBSAP, 2016). There are also several species of fish that are threatened with extinctions. Local extinctions of certain species (buffaloes) have been documented in Nyungwe and Akagera National Parks. The threats that can cause the extinctions are still rife and need to be addressed if these populations are to be saved from extinction. This is what informed the development of this target in an effort to reverse the trend. Key threats include loss of habitat, habitat fragmentation leading to isolation of species and poaching (NBSAP, 2016). The major driver of loss in Rwanda is the high population growth rate which creates a demand for land to support livelihoods.

Level of application

- Regional/multilateral  
 National/federal  
 Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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### Other related Aichi Biodiversity Targets

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### Other relevant information

Priority activities for implementation of this target will be:

- » Inventorying all threatened species especially those in danger of extinction by Years 1 & 2);
- » Re-introduction of species lost;
- » Ex situ and in Situ conservation for endangered and critically endangered species; and
- » Identification of AZE sites and evaluation of their status in terms of degradation (NBSAP, 2016).

### Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan*

## 1.11 National Target 11

*By 2020, the genetic diversity of priority cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.*

### Rationale for the national target

Agricultural intensification and commercialization policies that favour high yielding crop and animal varieties have led to the under-utilization and disappearance of land races and local breeds of animals. Such changes lead to the loss of the genetic pool that can be used in the improvement of future breeds of crops and livestock. Additionally, cultivation of large tracts of land with exotic species may also contribute to genetic erosion especially through invasion and colonization of ecosystems (NBSAP, 2016).

Progress towards achievement of this target: On track to achieve target.

### Level of application

- Regional/multilateral
- National/federal
- Subnational

## Relevance of the national targets to the Aichi Biodiversity Targets

### Main related Aichi Biodiversity Targets

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| <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input type="checkbox"/> 14            | <input type="checkbox"/> 19 |
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### Other related Aichi Biodiversity Targets

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### Other relevant information

Various approaches are being developed to assess the extent of impacts relating to loss of genetic resources and inform the development of appropriate measure to manage the situation. The Government is also looking into ways of controlling the introduction of exotic flora and fauna resources to mitigate potential adverse environmental impacts. (Rwanda Agricultural Board, 2020).

### Relevant websites, web links, and files

Rwanda National Biodiversity Strategy and Action Plan;

Biotechnology Rwanda Agricultural Board.

## 1.12 National Target 12

*By 2020, the potential risks resulting from biotechnology use and placement on the market of its products have been minimized and/or eliminated.*

### Rationale for the national target

The government of Rwanda recognizes the potential of biotechnology as a tool for improving productivity especially in the agricultural sector in a bid to improve rural livelihoods, food security and reduce the high incidence of poverty. However, it also acknowledges that there are risks associated with extensive adoption and use of biotechnology. The main thrust of this target is to build/strengthen Rwanda's policy, legal institutional and technical capacity for effective direction and regulation of use of biotechnology (RNBF, 2005).

Progress towards achievement of this target: On track to achieve target.

### Level of application

- Regional/multilateral
- National/federal
- Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity

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Other related Aichi Biodiversity Targets

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### Other relevant information

REMA working in collaboration with all the other stakeholders (Rwanda Agricultural Board, Rwanda Development Board, Ministry of Agriculture and Animal Resources, University of Rwanda among others) will spearhead implementation of this target.

### Relevant websites, web links, and files

- [Rwanda National Biosafety Framework](#)
- [Rwanda National Biodiversity Strategy and Action Plan 2016](#)

## 1.13 National Target 13

*By 2020, all ecosystems that provide essential services to human well-being and contribute to health as well as livelihoods are restored and safeguarded, taking into account the needs of women, local communities especially the vulnerable groups.*

### Rationale for the national target

Various ecosystems in Rwanda that provide essential services such as wetlands, lakes, rivers,

forests and land have been degraded due to unregulated use, over exploitation, pollution of water sources and encroachment among others. For example, many of the farmers cultivate on land with a slope of more than 55% which leads to serious soil erosion problems. Ecosystem services support the social economic wellbeing (support livelihoods, provide goods and services such as water, timber, fuel wood, medicinal plants among others) of societies and especially in Rwanda and the rest of Africa. Those living adjacent to protected areas also suffer from human/wildlife conflicts (NBSAP, 2016). This then calls for the involvement of local communities in the sustainable management of these resources. Local people should also share benefits arising from the conservation of these resources. It's on this understanding that this target was developed to guide development and implementation of strategies and measures that ensure that local communities especially the vulnerable ones participate and benefit from conservation programs that also take into account their socioeconomic needs.

### Level of application.

- Regional/multilateral (Rwanda is a part of the East African Community and is involved in activities relating to the conservation of Lake Victoria).
- National/federal
- Subnational (local level Government structures as well as local communities are critical in the implementation of this target).

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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Other related Aichi Biodiversity Targets

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### Other relevant information

The government seeks to enhance the role of local communities not only as secondary players

in the conservation arena but to work with them in establishing viable conservation complementary enterprises. Currently engagement of local communities mostly revolves around implementation of projects as subcontractors, building their capacity, participation in resources management such as management of lakes and rivers' buffers, joint patrol of reserved areas and participation during the development of management plans.

### Relevant websites, web links, and files

- Rwanda National Biodiversity Strategy and Action Plan 2016

## 1.14 National Target 14

*By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced through increase of forest cover up to 30 percent of the Country and restoration of other ecosystems thereby contributing to Climate Change adaptation and mitigation.*

### Rationale for the national target

Climate change has been identified as being a factor that can adversely affect biodiversity, livelihoods, and provision of ecosystem goods and services such as water; and overall development of a Country. Rwanda is already experiencing the effects of climate change which are expected to be more severe in future; and especially if the loss of forests continues. Since the 1960s, land use changes have been rapid and extensive due to anthropogenic pressures especially conversion to agriculture (NBSAP, 2016). This target seeks to enhance ecosystem resilience as well as the carbon sequestration potential of Rwanda through enhanced protection of natural ecosystems, afforestation and reforestation of degraded lands among others. Implementation of the proposed measures also responds to the Country's obligations to the United Nations Framework Convention on Climate Change (UNFCCC).

### Level of application

- Regional/multilateral
- National/federal
- Subnational (local government structures as well as local communities will be involved).

## Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

Other related Aichi Biodiversity Targets

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### Other relevant information

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Based on the fact that natural vegetation is the most important carbon sink through sequestration, the government has set goals to raise the tree and forest cover to 30% of the country's land mass as a cushion to the impacts of Climate Change. This is also expected to result into multiple benefits such as control of soil erosion and flooding; micro-climate modification as well as enhance biodiversity conservation.

Climate change mitigation and adaptation has been integrated into the following sector policies and strategies:

- » Green Growth and Climate Resilience; National Strategy for Climate Change and Low Carbon Development, 2011;
- » Nationally Determined Contributions (INDCs), 2020;
- » National Policy for Water Resources Management;
- » Energy policy; and
- » Forest and Agriculture policies.

### Relevant websites, web links, and files

Rwanda National Biodiversity Strategy and Action Plan 2016

## 1.15 National Target 15

By 2017, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is integrated into national legislation and administrative practices and enforced.

### Rationale for the national target

Rwanda ratified the Nagoya Protocol on access to genetic resources and equitable sharing of benefits derived from the use of biological resources. The Protocol needs to be domesticated through various steps such as the review of existing legal framework to create an enabling regulatory framework; create awareness about the potential benefits to the local communities and the country at large as well as build capacity for implementation of the Access and Benefit Sharing (ABS) Mechanism (NBSAP, 2016; Rwanda ABS, 2018). The Country also needs to maintain and improve the Clearing House Mechanism (CHM). Some of the proposed actions in the NBSAP include granting access permits to local communities living adjacent to protected areas for sustainable harvesting/extraction of medicinal plants.

### Level of application

- Regional/multilateral  
 National/federal  
 Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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Other related Aichi Biodiversity Targets

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## Other relevant information

Relevant websites, web links, and files

- Rwanda National Biodiversity Strategy and Action Plan 2016
- Rwanda Nagoya Protocol and ABS: Country Brief

## 1.16 National Target 16

By 2016, Rwanda has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated National Biodiversity Strategy and Action Plan (NBSAP).

### Rationale for the national target

Rwanda ratified the Convention on Biological Diversity (CBD) in March, 1995. As a contracting Party to the Convention, the Country in Article 6 of the Convention is obligated to develop national strategies, plans or programs for the management, conservation and sustainable use of biodiversity. These are captured in a National Biodiversity Strategy and Action Plan (NBSAP). Rwanda's 1st NBSAP was prepared in 2003 and had to be revised to align it with the CBD Strategic Plan for Biodiversity and the Aichi Biodiversity targets covering the periods 2011-2020.

### Level of application

- Regional/multilateral  
 National/federal  
 Subnational (Implementation of this target will need to be trickled to the lower Government level as well as to the local communities.

### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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## Other related Aichi Biodiversity Targets

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## Other relevant information

By the end of 2016, Rwanda had already revised and updated their NBSAP identifying five key objectives and nineteen national targets to be pursued towards addressing the CBD Strategic Plan 2011 – 2020 as well as the Aichi targets. The NBSAP has indicated the milestones already made especially in relation to stakeholders' engagement, awareness creation, and collaborative coordination of efforts, resources mobilization and prioritization of issues for action.

The process of preparing the NBSAP and adopting all the national targets was coordinated by REMA, through a project Steering committee. Due to the cross-cutting nature of biodiversity issues, Stakeholders from Government and related agencies (central and local Government levels), the private sector and NGOs involved in the conservation and management of biodiversity were engaged through three national workshops. To facilitate the work, a technical working group with broad representation from the various actors was constituted. In total, about 70 persons were consulted during the process with a broad representation from all the stakeholder (directly and indirectly involved in biodiversity conservation).

## Relevant websites, web links, and files

Rwanda National Biodiversity Strategy and Action Plan 2016

### 1.17 National Target 17

*By 2020, values of traditional knowledge, cultural heritage and practices of local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of local communities, at all relevant levels.*

## Rationale for the national target

Local people have always interacted with nature drawing from; and managing biodiversity resources and ecosystems to support their livelihoods. The many years of interaction led to an accumulation of traditional knowledge which over time was integrated into their cultures with some being beneficial for conservation. However, the traditional knowledge, values and cultural practices have not been recognized and integrated into policies, laws biodiversity management programmes. This target seeks to bridge this gap.

Level of application

- Regional/multilateral
- National/federal
- Subnational

## Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity Targets

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## Other relevant information

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The NBSAP prioritized undertaking of comprehensive research on traditional knowledge, skills and practices with potential to enhance conservation efforts. When the study is completed, viable proposals will be integrated into the policy and legislative framework as well as the socioeconomic development frameworks for implementation. The process highly depends on extensive engagement of local people being the custodians of these knowledge and heritage.

Guidelines and toolkit for access and benefit sharing of Traditional Knowledge associated to genetic resources in Rwanda have been developed and they can be found at list on UNDP website.

## Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan 2016*

### 1.18 National Target 18

By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, applied and reflected in the implementation of the NBSAP.

#### Rationale for the national target

Limited knowledge on biodiversity and the ecosystems that support it (economic value, status, trends among others) has constrained informed decision making in the design and implementation of policies, programmes and activities that can ensure their sustainable conservation and management. This also includes knowledge and technologies on genetic resources especially those important for the development of agriculture. In addition, the institutional and technical capacities of those mandated to manage these resources is grossly inadequate. Even where knowledge exists, it has not been shared widely which again affects the robustness of the measure being proposed for implementation.

#### Level of application

- Regional/multilateral
- National/federal
- Subnational

#### Relevance of the national targets to the Aichi Biodiversity Targets

Main related Aichi Biodiversity

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Other related Aichi Biodiversity Targets

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#### Other relevant information

Implementation of this target will provide through research and monitoring the factual basis for informed decision making, a major gap in the conservation and management of biodiversity. Technological improvements are also expected to greatly boost not only research, but also provide alternatives that can help reduce threats to biodiversity, enhance efficiency in terms of resource use as well as monitoring the status of biodiversity and ecosystems.

#### Relevant websites, web links, and files

- *Rwanda National Biodiversity Strategy and Action Plan 2016*

### 1.19 National Target 19

By 2020, at the latest, the mobilization of financial resources for an effective implementation of NBSAP from all potential sources, and in accordance with agreed process in the strategy for resource mobilization, is reinforced and increased substantially from the current levels.

#### Rationale for the national target

Funding for Biodiversity conservation has been limited and grossly inadequate for implementing proposed environmental activities in different sectors. The major sources of financing biodiversity conservation have been Government, development Partners and some international NGOs. Part of the reason why funding levels have been low from the various actors is due to lack of a holistic approach to financing biodiversity conservation that takes into consideration the potential of biodiversity in poverty reduction, economic development, health, and sanitation among others. There is also need to diversify funding sources such as bringing on Board the private sector as well as explore other mechanisms such as the Payment for ecosystem service (PES) and carbon trading.

### Level of application

- Regional/multilateral
- National/federal
- Subnational

### Relevance of the national targets to the Aichi Biodiversity Targets.

#### Main related Aichi Biodiversity Targets

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#### Other related Aichi Biodiversity Targets

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### Other relevant information

Exploration and expansion of more financing mechanisms is key for the successful implementation of the NBSAP. In addition, getting Government to increase funding for implementing the NBSAP is also critical. To achieve this, there was need to develop the resource mobilization capacity of various agencies as well as their ability to utilize available financial resources in a transparent manner that ensures value for money and gives confidence to the funders. The Resource Mobilisation Plan in the NBSAP has provided direction into how this national target is to be achieved.

### Relevant websites, web links, and files

- [Rwanda National Biodiversity Strategy and Action Plan 2016](#)

## SECTION II: IMPLEMENTATION MEASURES TAKEN, ASSESSMENT OF THEIR EFFECTIVENESS, ASSOCIATED OBSTACLES AND SCIENTIFIC AND TECHNICAL NEEDS TO ACHIEVE NATIONAL TARGETS

*This section has identified several key measures that Rwanda has implemented over the plan period (2011 -2020) that contribute to the achievement of Rwanda's National targets as well as the Aichi Biodiversity Target.*

### 2.1. Valuation of Biodiversity and Ecosystem Services and Development of Natural Capital Accounts

#### a) Valuation of Biodiversity

Economic valuation was undertaken covering the following 4 protected areas: (Nyungwe montane forest, Rugezi wetland, Mukura Landscape and Akagera National Park. The following are the values of these ecosystems:

#### Valuation of ecosystem services

- » The economic value of Nyungwe montane forest was 4.80 billion USD in 2014 (Pankal, Lal et. Al, 2017);
- » The Total Economic Value (TEV) of Rugezi wetland was 374.32 million USD in 2014 (WCS, 2017);
- » The Total Economic Value (TEV) of Mukura Landscape was estimated at 981,266,600 FRW equivalent to 1,443,039 USD per year (ARCOS, 2014). The monetary benefits from the Mukura landscape translate into a value of US\$803 per hectare per year; which is comparable to the most productive forest landscapes (ARCOS, 2014).
- » The total value of the Akagera Wetland Complex includes a stock value (carbon storage) of 1.1 billion USD, or 967 trillion Rwf, and an annual flow value of 11.9 million USD, or 10.6 billion Rwf (REMA, 2019).

#### b) Development of Natural Capital Accounts (NCA)

Natural capital (land, water, minerals, soils and biodiversity among others) support livelihoods and are also the basis for generating the country's Gross Domestic Product (GDP) which is normally

used as a measure of a country's development. However, GDP only takes into account one aspect of economic performance, i.e. income, but does not provide details about the wealth and assets that underlie the income. This weakness leads to over exploitation/unsustainable use of the natural capital. In addition, adequate safeguards are not put in place to ensure a continued supply of the goods and services (assets) that derive from natural capital. About 90% of Rwanda's population depend on natural resources for their livelihood which translates to about 7% contribution to the GDP (WAVES, 2015). Depletion of natural capital especially in developing countries whose populations are more dependent on natural resources has a negative impact on poverty reduction and sustainable development objectives.

Rwanda is one of the Countries that joined the Wealth Accounting and Valuation of Ecosystems Services (WAVES) programme which is spearheaded by the World Bank. Its goal is to enhance the mainstreaming of natural capital into development planning and national economic accounting systems. WAVES is implemented in line with the System for Environment and Economic Accounts (SEEA) adopted by the United Nations Statistical Commission.

Lead agencies in spearheading WAVES were the Rwanda Natural Resources Authority (RNRA), Rwanda Environment Management Authority (REMA) and the Ministry of Finance and Economic Planning. Through a technical committee comprising of several stakeholders, a Natural Capital Accounting steering committee and a technical working group were established in 2014. At the same time, a scoping exercise to determine sectoral priorities for developing NCAs was conducted. Water and land resources were identified as the priorities and a workplan for implementation was also developed at the end of the scoping exercise. Water and land were to be the focus pilot NCA owing to their value in agriculture which is the pillar of Rwanda's economy. (WAVES, 2015a as cited by REMA,



2015). The actual development of the NCAs commenced in 2015 and was implemented over a 3-year period with technical support from the Netherlands Statistics Agency.

**c) Ecosystem Services Modelling:**

Ecosystem Services Modelling was adopted to enable the collection of data and generation of the outputs. This was spearheaded by a working group convened by the Science for Nature and People Partnership between 2015 and 2017;

as well as consultation with other relevant stakeholders. The invest 3.3.3 modelling software was used to quantify carbon storage, sediment regulation (i.e. sediment delivery ratio (SDR) model), nutrient regulation (nutrient delivery ratio (NDR) model), and annual & seasonal water yield in Rwanda for the period 1990 to 2015. This was largely based on land-cover data generated by the Regional Center for Mapping of Resources for Development (RCMRD) based in Nairobi, Kenya.

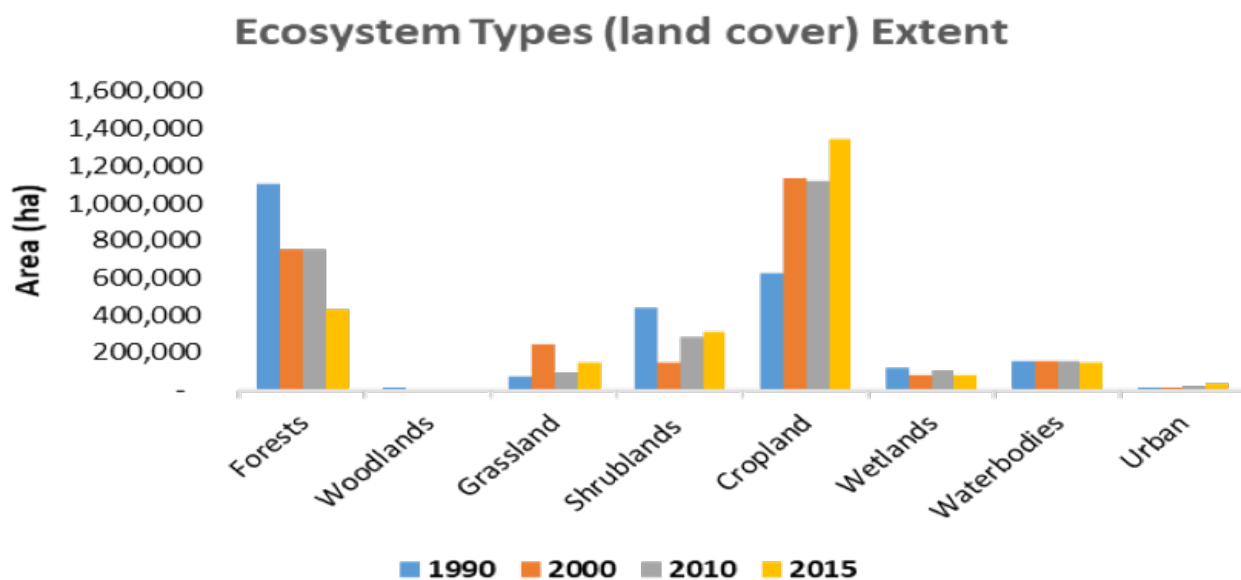


Figure 1: Ecosystem service trends for Rwanda, 1990 – 2015

Source: Towards ecosystem accounts for Rwanda: Tracking 25 years of change in flows and potential supply of ecosystem services

Table 1: Ecosystem Types and Area (ha) 1990 -2015

Year	Forests	Woodlands	Grassland	Shrublands	Cropland	Wetlands	Waterbodies	Urban
1990	1,101,089	9,922	75,013	439,720	629,133	115,945	153,427	11,632
2000	750,345	7,967	245,730	150,667	1,132,596	79,932	153,491	13,842
2010	752,909	472	95,243	281,708	1,121,847	104,780	155,805	20,642
2015	429,823	-	148,211	313,392	1,340,498	83,359	150,040	36,176

Source: Towards ecosystem accounts for Rwanda: Tracking 25 years of change in flows and potential supply of ecosystem services.

This data has been consolidated from a more disintegrated source as captured in the 2019 “Towards ecosystem accounts for Rwanda: Tracking 25 years of change in flows and potential supply of ecosystem services Report”. The data also borrows from the NCA generated for land, water, minerals and ecosystems (focusing on soil) that have employed the System for Environmental Economic Accounting (SEEA). It was noted that ecosystem conditions, potential supply and ecosystem services flows degraded substantially over the 25-year period. This was mainly driven by the conversions of forests to croplands. However, declines indicated in the forest cover trends did not include recovery noted in the 2010 – 2015 period especially of dense cover in protected areas. The disintegration of this data was also different from the approach in other national records thus portraying a different scenario e.g. forest cover captured sizes differ to some extent with those used in reporting on the current forest cover trends (Bagstad, et al., 2019).

*For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.*

*Measure responds to national targets 2, 13 and 19.*

*Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:*

- Measure taken have been effective.

*Explanation of the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above.*

The development of national accounts has influenced key decisions such as the gazettelement of Gishwati-Mukura forests as a national park, led to the proclamation of various Orders; improved the budgetary allocations for environment/biodiversity management. It has also motivated the restoration efforts of key ecosystems such as the Gishwati – Mukura National Park, Rugezi wetland as well as several watersheds.

### **Relevant websites, web links and files**

- » WAVES Country Brief: Rwanda, 2015
- » Natural Capital: WAVES World Bank
- » Towards ecosystem accounts for Rwanda 2019
- » Total Economic Value (TEV) of Mukura Landscape, Rwanda 2014
- » Valuing visitor services and access to protected areas: The case of Nyungwe National Park in Rwanda, 2017

- » *Economic Assessment of Akagera Wetland Complex: Identifying Finance Solutions for Improved Management, Rwanda 2019*

### **Other relevant information,**

#### **Achievements**

#### **Development of Land Use Accounts:**

These have been generated using data from the Land Administration Information System using the System of Environmental Economics Accounting (UN – SEEA). It has enabled the classification of land uses into 13 categories with the six major types being Agriculture, Forestry, Industrial, Livestock, Residential, and Unclassified; accounting for about 97.8% of the country’s total land mass. Other identified land uses included Administrative, Commercial, Economic, Fishing, Research/Scientific, Social Cultural and Tourism that occupy the remaining 2.2% of available land area. This has facilitated analysis of land use changes and patterns over time as well as regionally thus aiding policy development and responsive planning.

#### **Development of Water Resource Accounts:**

These capture data on available water resources by type i.e. surface, ground and rain water; as well as its utilization according to the various economic sectors. The process also enables establishment of quantities and use of soil water considering the country’s heavy reliance on rain-fed agriculture (National Institute of Statistics of Rwanda, 2019).

#### **Development of the Mining Sector Accounts:**

The key objective of these accounts is to address inefficient mining activities such as artisanal mining. The accounts have availed collated time-series data, while examining environmental, social and economic issues related to the sector.

**Ecosystem Services Accounts:** These have also been generated with the key objectives being to:

- » Demonstrate how ecosystems are being transformed over time, as a form of natural capital in Rwanda;
- » Establish trends in terms of variation in associated ecosystem services;
- » Detect impacts and understand the effect of these changes on ecosystems services; and
- » Facilitate the development of appropriate measures such as management plans that will guide sustainable management of these ecosystems.

The NCA approach will assist in the integration of natural resources into economic analysis in Rwanda, providing a broader picture of the development path through consistent, and reliable data that informs sound policy formulation and implementation. In addition, development of the NCAs has also generated significant interest and demand to expand on the solid analysis carried out on land, water, and minerals accounts. The accounts have been integrated into several sectors of Government that include: Ministry of Environment, and the Ministry of Finance and Economic Planning as well as informing the revision of the Land Use Master Plan and the State of Environment Report.

### Relevant websites, web links and files

- » *NCA Rwanda Annual progress report (2015)*
- » *Rwanda NCAs – Ecosystems Accounts 2019*
- » *Rwanda NCAs - Minerals resource flows Accounts 2019*
- » *Rwanda NCA - Water Accounts 2019*
- » *Rwanda NCAs - Land Accounts 2018*

### Obstacles and scientific and technical needs related to the measure taken:

- » Due to lack of local expertise, the Government has had to rely on externally sourced professional and technical support in the development the NCAs;
- » Financial constraints are also a key challenge in the midst of numerous competing developmental needs, that affect the pace at which valuation of natural resources is conducted;
- » Initial phases of developing the NCAs and ecosystem services accounts, relied heavily on available records from previous researches and studies. This data had discrepancies and gaps owing to how they were collected. This resulted in the use of estimations, assumptions

and professional judgement during analysis;

- » Inconsistent data collection mechanism prior to the implementation of this program, for example, Land Cover mapping was last conducted in 2010 and may not capture the up to date scenario; and
- » Coordination and data sharing across various government agencies and department needs to be improved through the linkage of data systems, integration and efficacy in data compilation.

### Capacity Needs

- » The Land Cover Mapping conducted in 2010 was done by the Kenya-based Regional Centre for Mapping of Resources for Development. There is a need therefore to develop the Country's capacity to do mapping;
- » Land Use Accounts were developed with the assistance of Statistics Netherlands. This also calls for strengthening of the Rwanda's National Bureau of Statistics in terms of capability to undertake NCA;
- » Gaps were identified in the set of available data used in the generation of these NCAs. These will have to be improved not only to enhance their usability locally, but also to enhance compatibility with international reporting standards.

### Opportunities:

Engage tertiary institutions to develop in-house capacity for implementation of the WAVES programme. There is also need to enhance resource mobilization so as to fast-track valuation of all-natural resources. This will ensure their timely inclusion into the national economic planning frameworks.



Muhazi Lake landscape (Photographer: IUCN)



Indigenous trees planted in the landscapes of Muhazi Lake (Photographer: IUCN)

## **2.2: Increasing Forest Cover to 30% of the Rwanda's total Land Area by the Year 2020 (this was a policy measure embedded in Vision 2020, EDPRS & NST1)**

Rwanda's Forest cover has been lost over the years due to competing demands on land for agriculture which is the main livelihood activity. The country's population density is one of the highest in Africa and increased from 321 persons/Sq. Km to 416 persons/Sq. Km between 2012 and 2002 -2012 (GoR, 2012). Recognizing that forest resources had dwindled significantly from the 1930's, and the adverse impacts of this loss on the environment and the ecosystem services they provided, the Government of Rwanda committed to increasing the forest cover to 30% of the Country's total land area. This commitment was captured in Vision 2020 (revised Vision 2020 in 2012 retained same target). In the same Vision, a target was set of reducing the percentage of households using wood energy from 86.3% (baseline) to 50% (revised in 2012 from 55%) by the year 2020. Vision 2020 has been implemented through the Economic Development and Poverty Reduction Strategy (EDPRS) which is a five-year plan "designed to accelerate progress and to shape the country's development in the future". The reporting period for the 6th national report coincides with EDPRS II which builds on EDPRS 1. As at the end of the 2011/2012 financial year, Rwanda had achieved a forest cover of 24.5% (GOR, 2012). This is the baseline for this reporting period. In 2017, Rwanda developed the National Strategy for Transformation (NST1, 2017-2024) which is guiding implementation of Government's national agenda over a 7-year period (GoR, 2017). This strategy continues the commitment of restoring forest cover to 30% of Rwanda's total land area by 2020 and maintaining it at that level into the future.

Various projects/Initiatives have been implemented over the reporting period to address this target that include:

### ***The Bonn Challenge (Implemented using the Forest Landscape Restoration (FLR) Approach).***

Rwanda is one of the countries that joined the Bonn Challenge in 2011, an initiative of the Global Partnership on Forest Landscape Restoration that sought to increase forest cover

by 150 million hectares by the year 2020 and 350 million ha by 2030. The Government of Rwanda made a pledge to restore 2 million hectares of its degraded and deforested landscapes by the year 2030, the highest as a proportion of the total land area of participating countries. This decision was made due to the severe environmental degradation in the country. For example, soil erosion across Rwanda has been documented to average 65 tons/hectare/year; increasing to 380 tons/hectare/year in croplands (MoE 2019), while the country had lost up to 65% of its forest cover by 1960 (See Case study below for more details about the Bonn Challenge). Through the Bonn Challenge, Rwanda has been able to achieve 35% of its target of restoring 2 million ha of degraded forest landscapes by 2018 using various strategies (2nd Barometer progress report, 2018).

An integrated approach to forest conservation that focused restoration efforts (tree planting on degraded sites as well as assisted regeneration) in degraded natural forests, mitigating threats that lead to forest degradation; (enhanced protection, expanding and improving silvicultural practices on all plantations (public and private including small ones that cover land of less than 0.25ha); new agroforestry (on gently sloping/flat land where this was integrated with crop farming; afforestation of roadsides, on land that is on steep slopes (where the goal is soil conservation); and protective forests established on river banks and lakeshores. The Government of Rwanda has also adopted the FLR as a strategy of forest restoration that combines different interventions based on the location, terrain and needs of local communities (soil and water conservation, improved incomes/ food security, timber, fuelwood and cash income).

### ***Landscape Approach to Forest Restoration and Conservation (LAFREC) Project***

This is a five-year project being implemented by REMA with funding support from the Global Environment Facility (GEF) through the World Bank. The project objective is the rehabilitation of the Gishwati-Mukura landscape by using a landscape approach which is intended to bring this forest ecosystem into better management and develop multiple benefits. Initiated in January 2015, the project is implemented in four districts (Rutsiro, Ngororero, Nyabihu and Rubavu) in Western Province. LAFREC' project goals are to be achieved through the conservation and

sustainable use of biodiversity, increasing forest cover, climate change adaptation interventions, combating land degradation and provision of alternatives livelihood opportunities to the impacted communities. The impact of this project is expected to be restoration of both the productive and environmental/biodiversity values of the ecosystem. It is also part of Rwanda's efforts to fully transform and operationalize Gishwati Mukura forests as a National park; officially gazetted in February, 2016. The three components of the project are focused on:

- » Rehabilitating forests and biodiversity within the Gishwati and Mukura Forest Reserves;

- » Enhancing sustainable land management in the agricultural lands between them, and
- » Introducing silvo-pastoral approaches in the rangelands of the central former Gishwati Reserve (for the GEF/World Bank Component).

The LAFREC project also integrated a project of the Nordic Development Fund (NDF) which had three components namely: i) improving woodlot management, ii) improving tree seed quality, and iii) providing technical assistance for more efficient charcoal production and biomass processing.

Table 2: Achievements of the Restoration Efforts of the LAFREC Project in the Gishwati Mukura National Park as at June 2018

Activity	Achievement
Provision of agricultural and livestock equipment	860 Households benefitted
Provision of agricultural inputs	853 Households benefitted
Rehabilitation of Mukura Gishwati National Reserves	500 hectares of trees planted using 19 indigenous tree species
Gishwati –Mukura forest reserves restoration	435.3 ha (99%) done out of 439 ha planned for Gishwati 105.9 ha (94%) done out of 112 planned for Mukura
Rehabilitation of illegal mining sites	14 ha in Mukura national reserve done
Introduction of Silvo pastoral practices	315 ha covered
Agroforestry (using both indigenous and agroforestry tree species) in the critical Gishwati – Mukura micro catchment.	2000 ha of trees done
Area covered under agroforestry	737 ha.
Protection of river banks	45.5 Km
Training on sustainable land management	9500 local community members trained
<b>Total Improved woodlots</b>	<b>729 ha out of a target of 933</b>

Source: LAFREC 2018 (Issue N0 007- April – June 2018 LAFREC Magazine.

**For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.**

Responds to the following National targets: 1, 2, 5, 6, 7, 9, 10, 13, 14 & 19

Assessment of the effectiveness of implementation of measure taken in achieving desired outcomes:

- Measure taken has been effective

Explain the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above.

Increasing forest cover to 30.4% of Rwanda's land total land area using the Forest Landscape Restoration (FLR) approach has had a nationwide reach; although the density of interventions was varied across the country. It has also helped

restore critical habitats that include (Volcanoes National Park, Akagera National Park, Lake Kivu, Cyamudongo Forest, and Gishwati-Mukura National Park and Gishwati Landscape) as well as increased tree cover in areas adjacent to them through agroforestry (2nd Bonn Challenge Barometer Progress Report). This will reduce demand for forest products from the protected areas.

The current status of Rwanda's forest cover as per the Forest Mapping Report (2019) is 724,695 ha (30.4% of Rwanda's total land area). Fig. 2 below shows the trend in the forest cover since 2011 (data used to generate the trend curve is sourced from the 2012 Forest mapping report, while for the years 2011, 2013-2016, data is picked from the Compendium of Environmental Statistics (REMA, 2018). The 2019 figure is from the 2019 Mapping report. For the year 2017 and 2018, there was no date available therefore the trend for those 2 years is by extrapolation (See Table 3 Below)

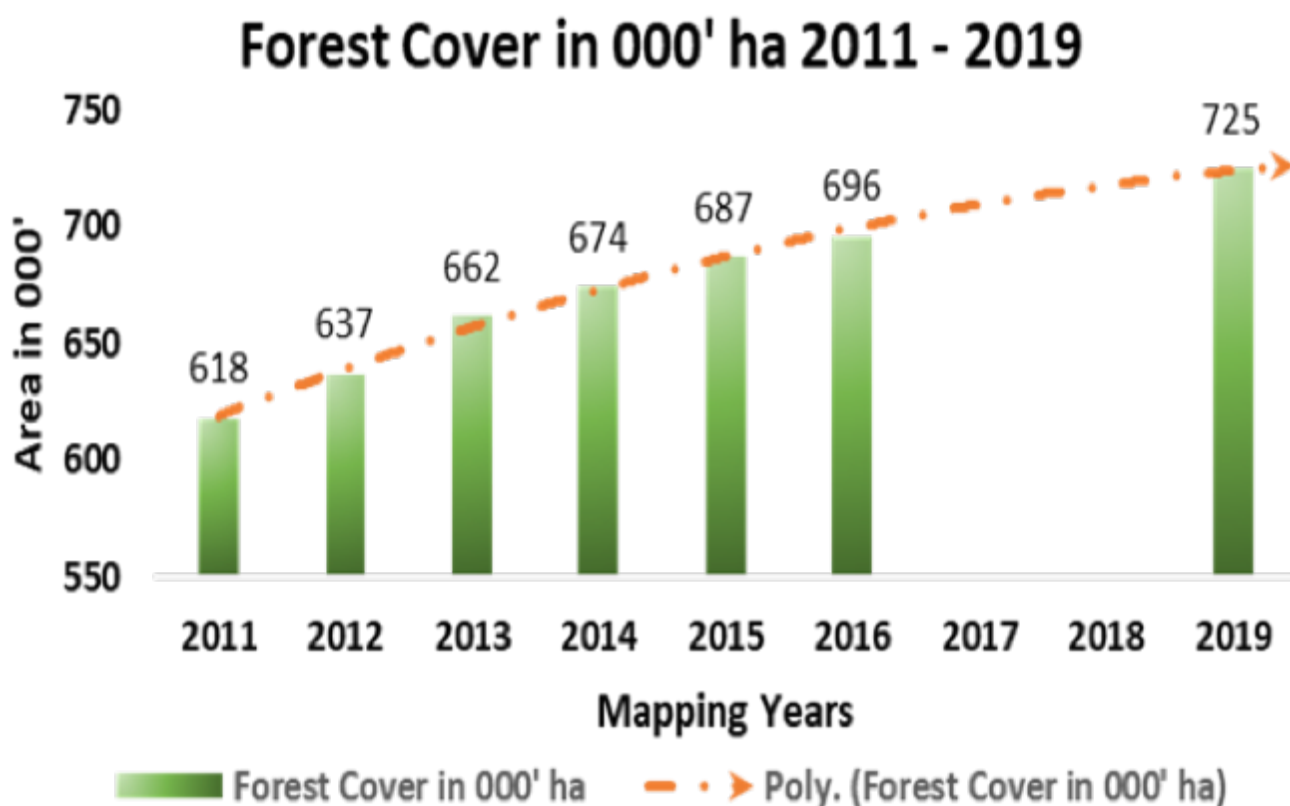


Figure 2: Trend in Forest Cover Increase From 2011 -2019

Source (s): MINIRENA/RNRA, 2015; and Rwanda Forest Cover Mapping, 2019.



Table 3: Forest Cover 2011-2019

Mapping year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Forest Cover (ha)	617,593	637,089	662,293	673,635	687,175	696,402			724,695

Source (s): MINIRENA/RNRA, 2015; and Rwanda Forest Cover Mapping, 2019

Table 4: Summary statistics of forest cover types per category of forest density

Forest Cover Type	Very low (0 - 10%)	Low (10 - 40%)	Medium (40 - 70%)	High (>70%)	Grand Total (ha)	Percentage (%)
Bamboo stand	15	39	149	410	613	0.1
Forest plantation	11,034	46,077	150,752	179,562	387,425	53.5
Natural forest	466	2,848	207	127,329	130,850	18.1
Shrub	3,184	13,791	24,470	2,518	43,963	6.1
Wooded savannah	11,336	83,466	58,425	8,616	161,843	22.3
Grand Total (ha)	26,035	146,222	234,004	318,434	724,695	100.0

Source: Rwanda Forest Cover Mapping, 2019

Table 4 above classified forest coverage in terms of type per category of forest density as follow: 613 ha (0.1%) are bamboo stands; 387,425 ha (53.5%) are plantation forests; 130,850 ha (18.1%) are mountain rainforests; 161,843 ha (22.3%) are wooded savannahs while 43,963 ha (6.1%) are shrubs.

The distribution of forest cover types and density for each of the 7 provinces is as shown in Table 5 below. According this data, a total 318,434 ha

(about 44% of the total forest area) have a high-density tree cover. Of these 179,562 ha (56%) are plantation forests. This is indicative that the current consumption of forest resources in various economic sectors (energy, construction and manufacturing) are being harvested in accordance with the guidelines governing their use thus preventing degradation. From the foregoing, afforestation and harvesting rates seem to balance out.

Table 5: Summary statistics of forest cover type and density per province

Forest Cover Type	Forest Cover Density	Province Name					Grand Total (ha)
		Kigali City (ha)	East (ha)	North (ha)	South (ha)	West (ha)	
Bamboo	High (>70%)	110	66	71	46	117	410
	Medium (40 - 70%)	22	36	59	14	18	149
	Low (10 - 40%)	1	24	9	1	5	39
	Very low (0 - 10%)	0	10	4	1	0	15
<b>Bamboo Total</b>		<b>133</b>	<b>135</b>	<b>144</b>	<b>62</b>	<b>141</b>	<b>613</b>
Forest plantation	High (>70%)	4,690	20,620	34,873	55,214	64,164	179,562
	Medium (40 - 70%)	5,668	30,005	30,165	53,720	31,194	150,752
	Low (10 - 40%)	1,664	10,288	7,027	20,045	7,052	46,077
	Very low (0 - 10%)	356	3,735	1,725	3,704	1,514	11,034
<b>Forest plantation Total</b>		<b>12,379</b>	<b>64,649</b>	<b>73,791</b>	<b>132,683</b>	<b>103,924</b>	<b>387,425</b>
Natural	High (>70%)		3,645	11,740	43,000	68,944	127,329
	Medium (40 - 70%)		146		4	57	207
	Low (10 - 40%)		2,833	0	6	9	2,848
	Very low (0 - 10%)		460	0	4	1	466
<b>Natural forest Total</b>			<b>7,085</b>	<b>11,740</b>	<b>43,014</b>	<b>69,012</b>	<b>130,850</b>
Shrub	High (>70%)	52	2,322	9	14	120	2,518
	Medium (40 - 70%)	44	23,598	0	330	499	24,470
	Low (10 - 40%)	29	11,987	3	1,287	485	13,791
	Very low (0 - 10%)	4	3,023	1	137	18	3,184
<b>Shrub Total</b>		<b>129</b>	<b>40,930</b>	<b>14</b>	<b>1,768</b>	<b>1,122</b>	<b>43,963</b>
Wooded savannah	High (>70%)		8,615			1	8,616
	Medium (40 - 70%)		58,420		4		58,425
	Low (10 - 40%)		83,461		5		83,466
	Very low (0 - 10%)		11,335		1		11,336
<b>Wooded savannah Total</b>			<b>161,832</b>		<b>10</b>	<b>1</b>	<b>161,843</b>
<b>Grand Total</b>		<b>12,641</b>	<b>274,630</b>	<b>85,688</b>	<b>177,537</b>	<b>174,199</b>	<b>724,695</b>

Source: MoE, 2019, Rwanda Forest Cover Mapping 2019

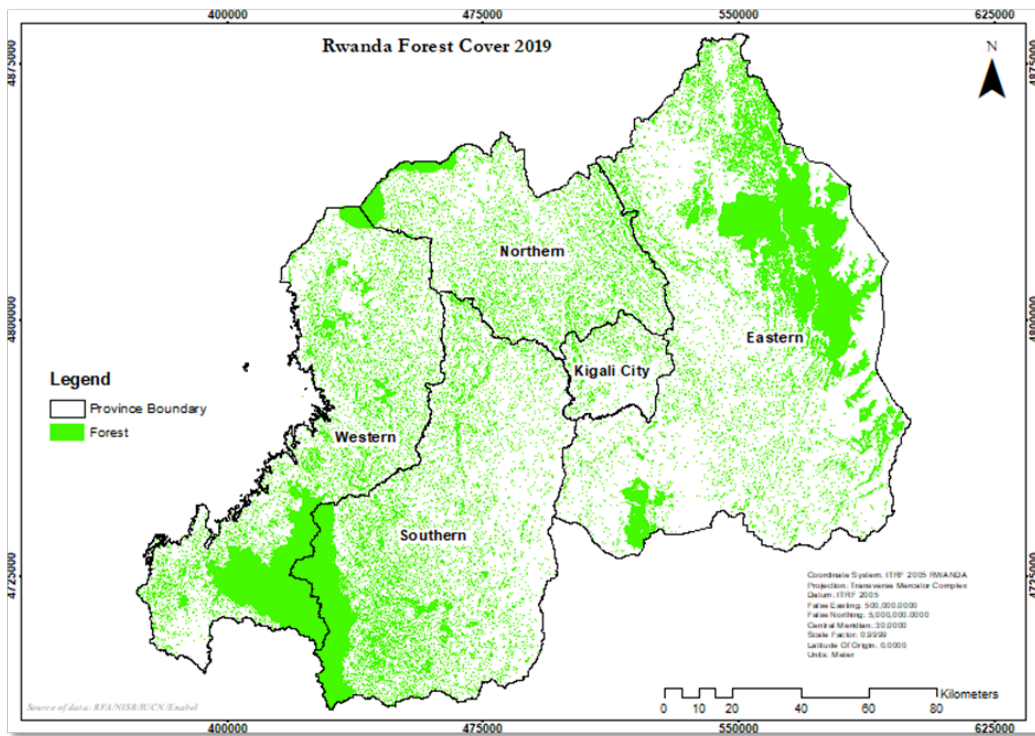


Figure 3: Rwanda Forest Cover Map, 2019.

Source: MoE, 2019, Rwanda Forest Cover Mapping, 2019.

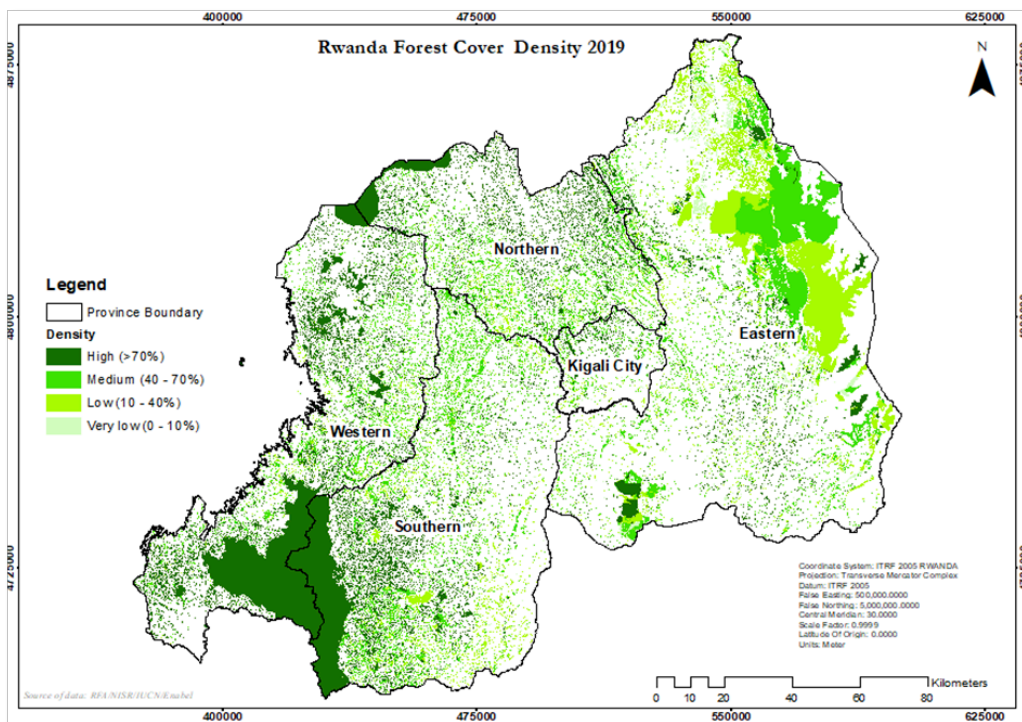


Figure 4: Rwanda Forest Cover Density, 2019

Source: Rwanda Forest Cover Mapping, 2019

## Methodology used in the 2019 Forest Cover Mapping Report.

The 3rd forest cover mapping for Rwanda was conducted by the Ministry of Environment in Partnership with the International Union for Nature (IUCN). This was a follow up mapping of the one conducted in the year 2009. The 3rd mapping used the World View Satellite images of 30cm resolutions which resembled those used in the second mapping that was conducted in 2012. The 2019 Forest mapping used the same definition of forest as that used in the 2012 one, however it has included roadside, river and lakeshore plantations as well as the tree patches down to 25sqm. The 2009 mapping only covered tree cover of areas equal to or greater than 2500sqm at the minimum. From this mapping, five categories of forest types were arrived at that included natural forest (mainly mountain rainforests), forest plantations (both exotic and indigenous species lumped together), Bamboo stands, Shrubs, and Wooded savannah. Further categorization was done based on the cover density classified as either high (70%), medium (40%-70%), low density (10%-40%), and very low (<10%). The process of mapping involved the creation of a Geodatabase template to host the digitized forest polygons (including their attributes) collected, with the main aim of reducing redundancies and errors. On screen analysis of captured images was undertaken and later data cleaning and validation to clear gaps, overlaps and minimum cluster tolerance; thus reducing the possibility of erroneous calculations of the forest cover was done. Data for the period 2011 to 2016 was derived from the Initial Compendium of Environmental Statistics for Rwanda that in turn relied on the review of secondary data from surveys, thematic reports, and censuses conducted by the National Institute of Statistics of Rwanda (NISR) as well as other published official reports. In this context, they are considered to be official estimates presented by credible government agencies. (Source: 2019 Forest Mapping Report).

### Relevant websites, web links and files

- *Landscape Approach to Forest Restoration and Conservation Project 2018*
- *Rwanda National Forestry Policy 2018*

- *Bonn Challenge Barometer of Progress: Spotlight Report 2017*
- *Second Bonn Challenge progress report. Application of the Barometer in 2018.*
- *Rwanda: State of Environment and Outlook Report 2015.*
- *Rwanda Compendium of Environment Statistics, 2018*
- *Rwanda Forest Cover Mapping 2019*

## 2.2.4 Other relevant information,

### CASE STUDY ON THE SUCCESS OF THE BONN CHALLENGE IN RWANDA

As at 2011 when the Bonn challenge pledge was made, the Government of Rwanda had already acknowledged the extent of environmental degradation in the country and captured that in "Vision 2020" – (Revised in 2012); and measures to address this had been integrated into the EDPRS I(2008 -2012) and II (2013 -2018). Vision 2020 recognized the cross-cutting nature and connectedness of natural resources, environment and climate change. Their sustainable management and conservation were integral to the realization of the Vision 2020 goals. Restoration was also reflected in District Development Plans, which set targets for hectares to be brought under restoration every year for a five-year period. In addition, Rwanda had developed in 2011 its national Green Growth and Climate-Resilience Strategy (GGCRS), which was to be a framework for the Country to become a developed climate resilient low carbon economy by 2050. Due to the high pressure on land arising from the high population whose livelihoods are dependent on agriculture; agroforestry was seen as the best opportunity for increasing tree cover.

Based on the FLR approach, and using the Restoration Opportunity Assessment Method (ROAM) undertaken between 2012 and 2014 by the Government of Rwanda, with the support from IUCN and World Resources Institute (WRI), opportunities to facilitate the actualization of the pledge potential were identified as indicated in the Table 6 below:

Table 6: Indicative Forest Restoration Potential in Rwanda as Per the ROAM Method.

Approach/Methodology	No of Hectares
New agroforestry	1,110,476
Improved management of woodlots:	255,930
Improved management of timber plantations	17,849
Natural forests	13,933
Protected forests:	128,191
<b>Total No. of Hectares to be restored</b>	<b>1,526,379</b>

Source: Bonn Challenge Barometer of Progress: Spotlight Report 2017

### *Institutional Arrangements for Achieving the Bonn Challenge:*

Following a review using the ROAM process in 2014, inadequate coordination among various institutions and agencies implementing the Bonn Challenge was identified as an obstacle to progress in the implementation and realization of Rwanda’s FLR commitment to the Bonn challenge goal. This necessitated the establishment of several institutional arrangements at both the national and local levels which included:

- » The Prime Minister’s Office, economic, social, and governance clusters;
- » The Joint Sector Review that cuts across sectors at the Central Government level; and
- » The Joint Action Development Forum at the local level. This forum cuts across sectors.

In addition, in an effort to facilitate improved coordination across sectors involved in land use and land-use management, a cross-sectoral collaborative task force bringing together different ministries and government institutions, private sector and civil society organizations focusing on FLR and Sustainable Food and Agriculture was established. Sectors represented in the task force include agriculture, education, forestry, environment and climate change, land administration, livestock management and mining.

### *Achievements under the Bonn Challenge.*

The initiative was implemented by a wide cross section of stakeholders who included small scale farmers, grass root organizations, Government (Central and Local) as well as Non-governmental Organizations. In addition, the initiative had a

fairly good reach countrywide as indicated in the Figure 4 below Impacts of the FLR efforts under the Bonn Challenge.

**Impacts on Biodiversity:** Eight of the forty-four projects evaluated using the Barometer tool as reported in the Second Bonn Challenge Progress Report covered key biodiversity areas (KBAs). The KBAs covered included (Volcanoes National Park, Akagera National Park, Lake Kivu, Cyamudongo Forest, Gishwati-Mukura National Park and Gishwati Landscape). The main measures implemented in the KBAs were allowing for natural regeneration as well as assisted restoration in their vicinity as well as in protected areas. The overall impact on biodiversity has not been articulated, however, it can be assumed that since habitat loss is one of the major threats to biodiversity, improvements in the habitat definitely had an overall positive impact on overall biodiversity conservation.

**Climate Impact Mitigation (carbon Dioxide offset):** The Bonn challenge has also made a significant contribution to climate change mitigation. Based on information on the number of hectares under restoration through the FLR for 44 projects that were assessed in the 2nd Bonn Challenge Barometer application, a total cumulative removal of 27,860,228 tCO<sub>2</sub> e had been achieved from 2011 to 2018.

In this assessment, it was assumed that watershed protection and erosion control measures involving tree planting were all part of agroforestry and were merged with agroforestry (Date of assessment - application of the Barometer is 2018).

**Creation of Jobs:** Between 2017 and 2018, the Rwanda Water and Forestry Authority Monitoring and Evaluation Department reported that 22,325

jobs had been created within the forestry sector as a result of implementation of the Bonn challenge. Rwanda's Green Fund, FONERWA reported that 137,562 green jobs had been created between 2013 – 2018 periods, out of 36 of the 44 Barometer projects evaluated.

**Improved Institutional Coordination, Planning and strengthening as well as Adaptive Management:**

Bonn Challenge through the FLR has led to

transformative changes in policy as well as helped strengthen the capacity of participating organizations in sustainable restoration activities. Whenever bottlenecks were encountered during implementation, appropriate changes were made to address them. Planning together as stakeholders in both government, private sector, NGOs and local communities also ensured that all were pulling together and working towards achieving the same goal.

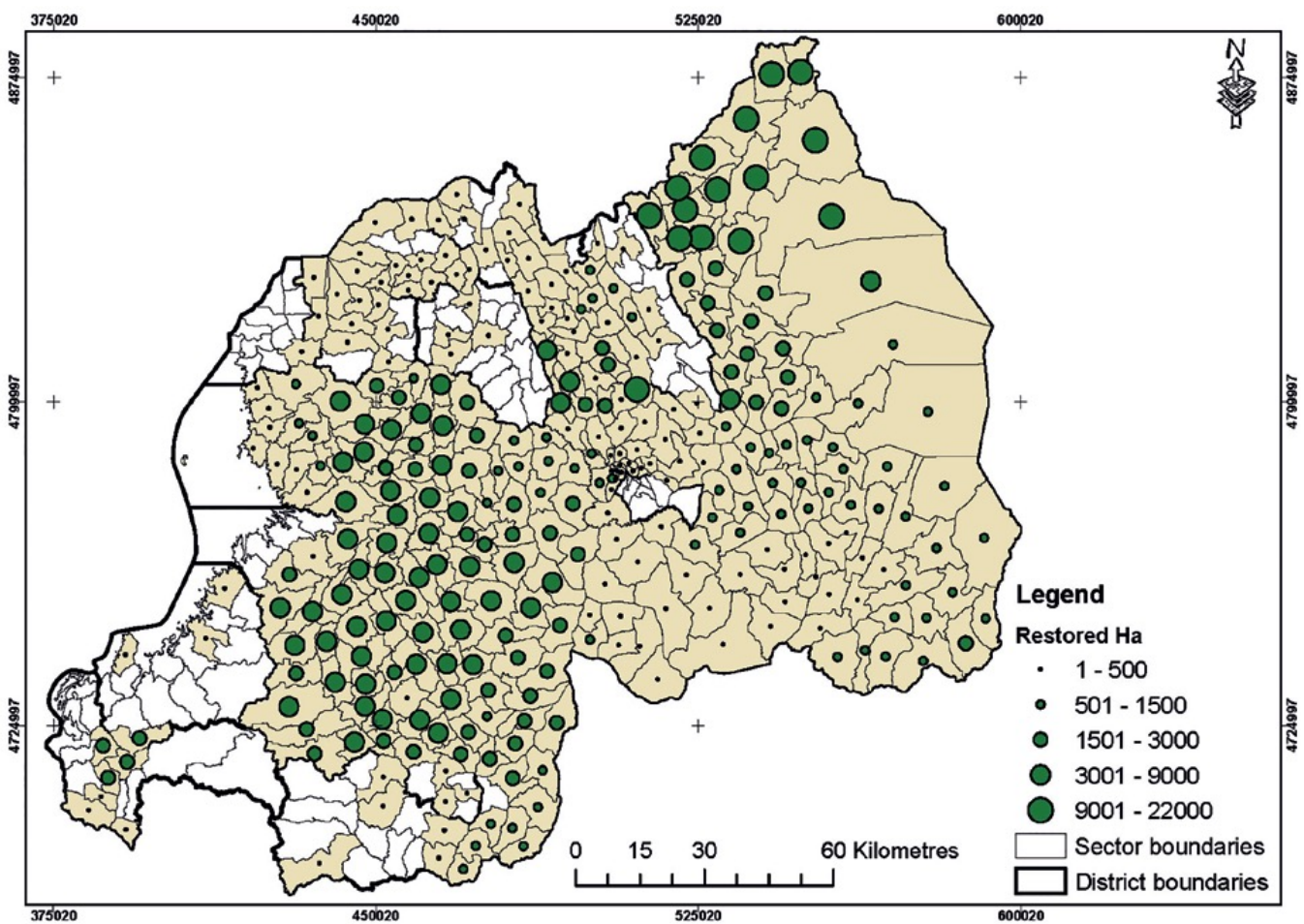


Figure 5: Map of FLR Project Coverage in Rwanda 2011-2018

**Relevant websites, web links and files**

- Bonn Challenge Barometer of Progress: Spotlight Report 2017
- Second Bonn Challenge progress report. Application of the Barometer in 2018.

**Obstacles and scientific and technical needs related to the measure taken:**

- Continued high dependency on wood fuel as the primary source of energy for cooking in most households continues to exert a lot of

- pressure on forest resources as the population increases;
- Plantation forest monocultures dominated by Eucalyptus species threaten the sustainability of the sectors productivity. Monocultures also affect biodiversity adversely;
- There is low productivity in the manmade forests due to inbreeding and monoculture, e.g. of eucalyptus species resulting to poor forest genetic quality;
- Pressure on land continues to be a big challenge

due to competing demands especially from agriculture and settlements needs;

- Low uptake of climate-smart agriculture affects agroforestry and the adoption of sustainable land use techniques that would result into increased productivity per unit area and reduce the need to convert more virgin lands into farmlands;
- Lack of alternative livelihood options has limited transition of the population from dependency on agriculture;
- Wood deficits in some parts of the country and overexploitation of available tree resources to fill the deficit due to unevenly distribution of forest resources in the country;

### Technical Capacity Needs:

- Inadequate extension capacity on forestry and agriculture affects the quality of services given to farmers and their ability to adopt sustainable livelihood practices;
- Insufficient/inadequate capacity in spatial analysis and mapping expertise mainly in the staff of Government executing agencies and especially at the local level (districts, sectors and cells) in terms of mapping tools and software. The National Forest strategic plan has identified the need to build the capacity of staff in GIS, Remote sensing and database management as key areas of intervention;
- The Forestry sector M&E system (FMES) did not capture all the information needs of the FLR activities (IUCN is already supporting them in this regard), while the Ministry of Agriculture and Animal Resources (MINAGRI) Management Information System (MIS) was not operational as of the time of the 2nd Barometer assessment;
- Data/information pertaining to the implementation of the Bonn Challenge was largely not disaggregated (In the Bonn Challenge 2nd barometer evaluation, only 25% of projects had disaggregated data. In addition, a very good record of what specific interventions had been undertaken and where, did not come out clearly. This presented the challenge of having accurate data/information

on the social and economic impact of the interventions as well as the conservation impacts;

- Weaknesses in the practice of good silvicultural practices especially among smallholder private forest plantation owners which reduced biomass productivity and quality of trees; and
- Insufficient scientific research on native tree species to inform restoration.

### Opportunities

- Development of the training and research capacities on other tree varieties that can be used for agroforestry and plantation forests to reduce the eucalyptus domination. Research and development can also incorporate the introduction of high-quality tree germplasms for use in agroforestry to enhance agricultural production;
- Explore sustainable and ethical utilization of biotechnology to improve tree seedling production to enhance productivity of plantation forests and agroforestry as an alternative income generating activity for farmers;
- Promote and incentivize the production of fodder and fruit trees as an alternative farming option that will increase tree cover while at the same time adding economic value to livestock rearing and from the trading of fruits;
- Establish the carbon credit tracking and trading systems e.g. Carbon market & REDD projects, as an alternative source of income for farmers as well as an incentive to encourage tree planting and conservation across the country; and
- Develop incentives as well as partnerships with the private sector in developing favorable credit facilities to cater for most citizens that are interested in investing in renewable and clean energy e.g. solar and LPG, but are hindered by the initial capital needs.

## 2.3 Conservation of the Endangered and Critically Endangered Species

Rwanda like many other nations is likely to lose its biodiversity resources with several species of plants, birds, mammals and amphibians being

categorised as Threatened as per the IUCN Red List. The country is also home to many endemic species by virtue of being in the Albertine Rift. In 2015, REMA commissioned a study whose main objective was to establish a list of threatened terrestrial ecosystems and species of Rwanda.

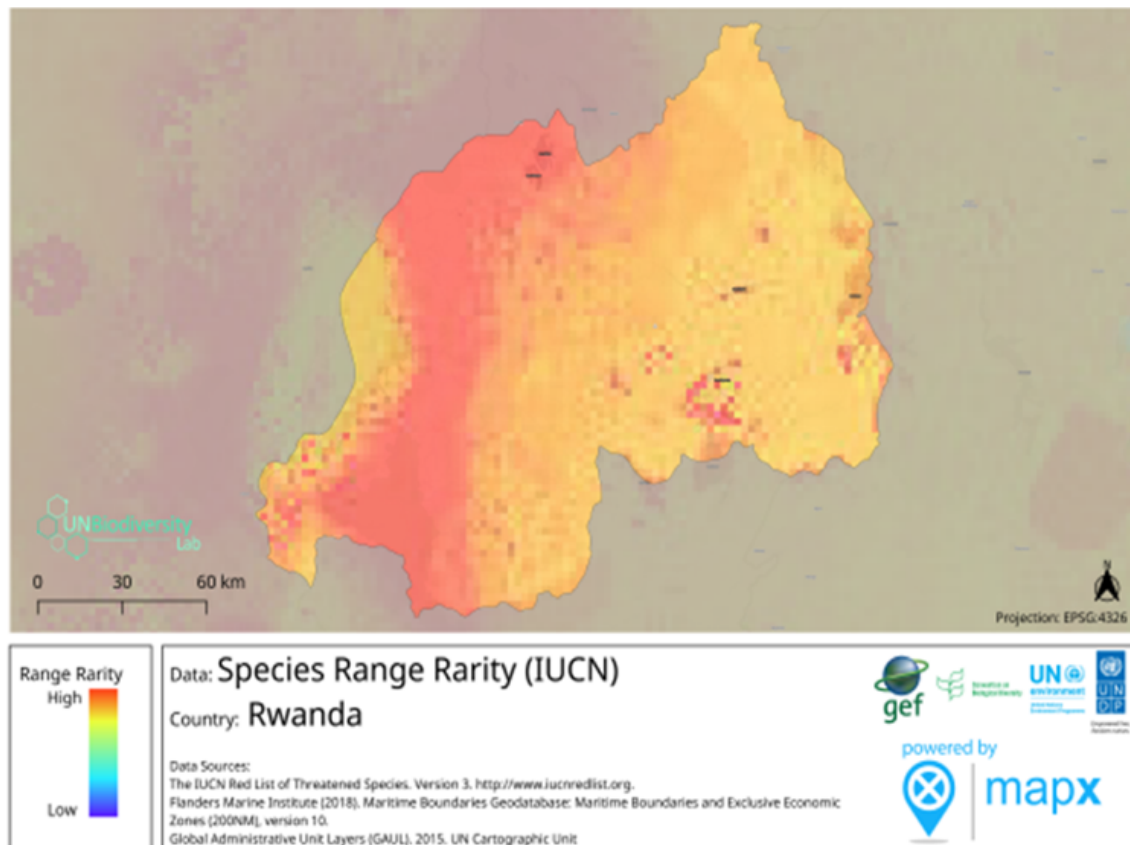


Figure 6: Rwanda Species Range Rarity Map

The study was intended to serve as a scientific reference point and decision-making tool for conserving threatened ecosystems and species in Rwanda. In the study, different ecosystems and five taxonomic groups (plants, mammals, birds, reptiles and amphibians) across the country were

investigated. The final output of this assessment was an updated list of threatened ecosystems and species, main threats affecting them and proposals to conserve them. A summary of the findings is summarized in Table 8 below.



Table 7: List of Threatened Species and Ecosystems in Rwanda

Species	Number classified as Threatened	Threatened status: Critically endangered (CR) Endangered: (E) Vulnerable: (V)
Plants	38	CR:7; E: 25; V: 6
Birds	26 (49 birds were not classified because of insufficient data)	CE: 11 E: 9 V:6
Mammals	42	CE: 6; E: 32; V: 5.
Reptiles and Amphibians	4	CE; 2; E: 2
Threatened Ecosystems		
Ecosystem	No classified in each category	Status
Natural forests	3	Collapsed
National Forest except Volcanoes	10	Critically endangered
2 National Parks & 2 natural forests	4	Endangered.

Source: REMA, 2015. Study to establish a National List of Threatened Terrestrial Ecosystems and Species in Need of Protection in Rwanda, Final Report.

Rwanda is home to populations of endangered and critically endangered species of wildlife such as the Mountain Gorilla, the, Eastern Chimpanzee, the wild dogs; and the Golden monkey (*Cercopithecus mitis kandti*, Inkima) among others. Both the Mountain Gorilla and Chimpanzee have been affected mainly by habitat loss and poaching.

#### a) *The Mountain Gorilla (Gorilla beringei ssp. beringei (Matschie, 1903)*

The Mountain Gorilla is an endangered species which has two sub populations, the larger one in the Virunga Massif that straddles the Democratic Republic of Congo (DRC), Uganda and Rwanda; and the other one in Bwindi Impenetrable Forest National Park in Uganda. The three parks in the Virunga massif are Volcanoes national

park (Rwanda), Mgahinga Gorilla National Park (Uganda) and Virunga National Park in DRC. The latest survey of the Gorilla population within this ecosystem has estimated that Rwanda is home to about half of the existing global population.

A combination of measures has been implemented over the years, which have mitigated the threats facing the Gorilla population in Rwanda. These include the following:

- » Strengthening the Volcanoes National Park Security and surveillance program (wardens, rangers and local community members);
- » Undertaking continuous patrols and monitoring which reduces illegal activities such as poaching, prevents encroachment and overexploitation of resources;
- » Routine de snaring;
- » Conservation campaigns and sensitization

that has promoted community participation in conservation efforts thus mitigating illegal activities and human – wildlife conflicts. Key among this is the annual Kwita Izina (the naming ceremony of new born Gorilla babies) which has held since 2005. The naming is followed by celebration activities lasting for a whole week including a conservation exhibition and highly acclaimed Conversation dialogue forum hosted in Kigali. A fund- raising dinner is also held in Rubavu as well, followed by familiarization trips for international Tour Operators and the Media. The ceremony is normally attended by tens of thousands of people who congregate in a small town outside Volcanoes National Park. This event has heightened awareness to plight of the Gorillas thereby enhancing their conservation;

- » Strong engagement with the local communities in monitoring, decision making, as well as undertaking security activities;
- » Elaborate and effective transboundary management with the other 2 park authorities who share the ecosystem has been developed and implemented by state agencies, private sector organizations and other wildlife stakeholders across Rwanda, DR Congo and Uganda;
- » A Tourism Revenue sharing programme by the RDB has been in operation since 2005. It supports the social economic development of the communities living adjacent to the park (for more details, see measure 2.4);
- » Disease surveillance and an elaborate veterinary service program are in place;
- » The African Wildlife Foundation (AWF) in 2018 purchased land directly adjacent to Volcanoes National Park and donated it to the Rwandan government to expand the great ape’s habitat. During the past seven years, the great ape’s populations have shown an increase of 26.3 percent.

### **b) Reintroduction of the Black Rhino (*Diceros biconis*) into Akagera National Park**

Eighteen Eastern black rhinos were reintroduced to Akagera NP from South Africa in 2017 through a collaborative initiative between the RDB, African Parks and the Howard G. Buffett Foundation. This re introduction was a momentous occasion that saw the historic return of the species not only to the Akagera NP but the entire country, after a 10-

year absence. The re-introduction was preceded by many years of research, planning, preparation and training of Akagera NP staff in rhino tracking and monitoring to ensure that the objectives of the translocation were achieved. Security measure employed to safeguard the rhinos has also been advantageous for all other wildlife species which has significantly reduced poaching to an all-time low leading to an increase in the wildlife population. Resources deployed for security include a helicopter for aerial surveillance, and a successful K9 anti-poaching unit. One rhino was birthed in September of the same year. On June 24th 2019, five black rhinos raised in European Zoos were donated to the Rwanda Development Board (RDB) for re- introduction to Akagera NP through a partnership among the European Association of Zoos and Aquaria (EAZA), the Rwandan Government and African Parks. These five comprised of three females and two males ranging between two to nine years of age and were part of the EAZA Ex-situ Programme (EEP). Unfortunately, one of the rhinos died in 2019.

### **c) Reintroduction of Lions (*Panthera leo*) into Akagera National Park**

Eleven lions, locally extinct in Akagera National Park were re-introduced in 2015 and one year later, the population had already doubled with the birth of eleven cubs. This is a great success so far. In 2017 two additional males were translocated from South Africa to Akagera National Park to increase the population’s genetic diversity.

### **d) The Eastern Chimpanzee (*Pan troglodytes schweinfurthii*) population and Golden Monkeys.**

Nyungwe National Park (NNP) harbours the largest remaining Eastern Chimpanzee

population in Rwanda which is about 400 while the Gishwati forest had about 25 of them in (RDB, 2017). The major threat to the Chimpanzee population has been loss of forest habitat, degradation and encroachment. In addition, there has been fragmentation of the populations. The population of the Golden monkeys was 100 animals found in groups of 18 (RDB, 2017). The main measures taken have been:

- Forest restoration and regeneration in the degraded areas. This was funded under the LAFREC project;
- Gazettement of Gishwati –Mukura Forests as a National park (Legal Notice in 2015). This has

helped enhance the protection of habitats and therefore mitigating a major threat of species loss;

- Engagement with the local communities and development of community projects that endear the parks/wildlife to the local communities; and
- Establishment of agro forestry in the buffer zone that clearly demarcates the National Park boundaries thus preventing potential encroachments.

### e) Conservation of the Grey Crowned Crane (*Balearica regulorum*).

This bird has been listed as endangered since 2012 under the IUCN Red list. Although its global population was assessed to be 17,700 -22,300 as at 1st October 2016, its population has been declining. The Grey Crowned Crane is considered an icon of Africa’s wetlands and savannahs (Morrison, 2015; RWCA, 2017).



Figure 7: Grey Crowned Cranes

Wetlands of Akagera National Park. Photo credit: Olivier Nsengimana -RWCA

The Grey crowned crane is the only species in the family found in Rwanda and an estimate undertaken by Kabanguka (2013) put its population existing in the wild to be between 300 – 500 birds, while Morrison and Bajer (2012) placed their estimates to between 50 – 500 individuals. This indicated a decline of about 50% since 1985. Four national censuses of the Cranes have been conducted since 2017. In 2017, the number of cranes counted was 487 individuals while in 2020 881 birds were counted. This gradual increase in population represents an approximate 55.3% growth over the last 4 years.

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.

*Responds to the following National targets: 1, 2, 5, 6, 7, 9, 10, 13*

### Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

- ☒ Measure taken have been effective for the Mountain Gorillas, Black Rhinos, the Crowned Cranes as well as the Chimpanzee populations.

### Explanation for the Rating

The Gorilla population in the Virunga Massif has been increasing and species was down listed from the status of Critically endangered species in 1994 to endangered The population has continued to increase and there are about 604 Gorillas in the Virunga massif, the trend in mountain gorilla population statistics is as follows:

# Mountain gorilla populations

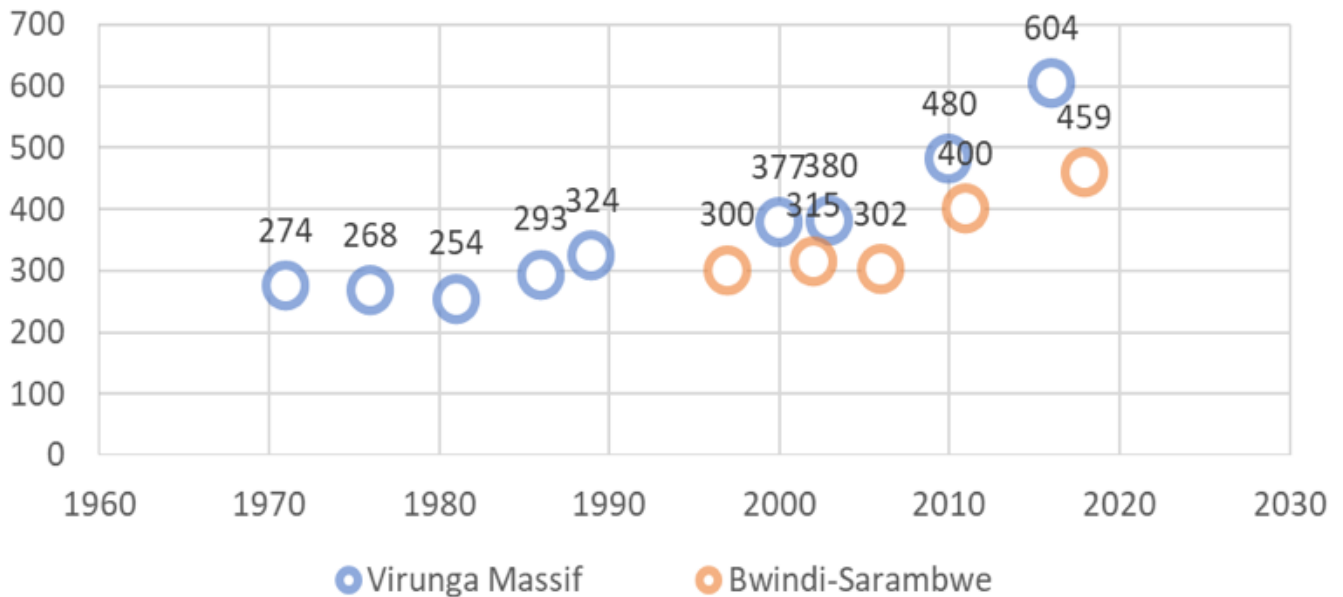


Figure 8: Mountain Gorilla Population in the Virunga Massif & Bwindi-Sarambwe Ecosystems

Sources: Gorilla Population trend 1970-2016 (data from Granjon et al., 2020)

The method used in the assessment covered both the Virunga Massif and the Bwindi-Sarambwe subpopulations. The most recent surveys of the total Mountain Gorilla population estimated that there are now at least 1,004 individuals (Hickey et al. 2018). Robbins and Robbins (2004) demonstrated that about 60% of the population is likely mature based on a combination of data from known habituated Gorilla groups and population simulations from an agent-based model.

### Relevant websites, web links and files

- Virunga Massif Mountain Gorilla Census – 2010 Summary Report, 2011
- Virunga 2015–2016 surveys: monitoring mountain gorillas, other select mammals, and illegal activities, 2019
- Volcanoes National Park: a success story for Rwanda’s communities and conservation
- Saving Mountain Gorillas, Rwanda, 2017
- Active participation of local community in wildlife management, Volcanoes National Park/Rwanda; Case of porter association called Cooperative Kabaho Ngagi Sabyinyo.

- Mountain Gorilla; AWF 2020
- Grey Crowned Crane IUCN Red List
- Rhinos Return to Rwanda 2019
- Mountain gorilla lodge is saving Rwanda’s great apes
- Mountain Gorilla IUCN Red List

### Other relevant information.

**Mountain Gorilla:** Transboundary collaboration is key to the management of the Gorilla population whose last remaining population is in the Virunga massive. The initiative has been implemented by various agencies who include the International Gorilla Conservation Program (IGCP), the African Wildlife Foundation (AWF), Rwanda Development Board (RDB) and the management of the national parks at the Local Government level. Collaboration across borders (Rwanda, Democratic Republic of Congo and Uganda) is achieved through the Greater Virunga Transboundary Collaboration (GVTC) Mechanism who normally hold regular collaborative meetings.

### **2.3.4.2 Case study: Successful Conservation of the Grey Crowned Crane through Awareness Creation, stakeholder engagement and reintroduction into the wild.**

#### **Threats to the Species**

The two main threats to the Grey Crowned Cranes are Habitat loss and illegal pet trade. Their eggs, chicks and birds are also poached. Wild birds once caught are domesticated and sold as pets in hotels. Other threats include pollution, habitat loss from grazing, harvesting of thatch materials for crafts, and encroachment by farming activities. This was acknowledged during the development of the African Eurasian Water Assessment (AEWA) Technical Series No. 59 International Single Species Action Plan for the Conservation of the Grey Crowned-crane, in 2015. Some of the important habitats for the cranes are the Rugezi marshland, Nyabarongo and Akanyura Wetland which are all listed as Important Bird Areas (IBAs). The Grey Crowned Cranes are also found in Akagera National Park and Kamiranzovu wetland in Nyungwe National Park. Being a migratory species, it's worth noting that about 70% of the counted birds, were sighted in locations very close to the borders of Rwanda with Uganda, Tanzania and Burundi.

#### **Strategies used:**

A holistic and multi-disciplinary approach was used to save the Grey crowned crane by addressing the main threat to its survival, i.e. illegal trade and holding them in captivity.

#### **Awareness creation and sensitization**

A nation-wide media campaigns mainly using a radio station that had a wide reach was initiated to raise awareness to the general public on the status and plight of the cranes; as well as the existing laws that protect it. The Radio campaign spearheaded by the Rwanda Wildlife Conservation Association (RWCA) was complimented with Live Talk shows where people would call in and ask questions pertaining to the subject matter. Television was also used as tool for awareness raising. At the same time, a nation-wide amnesty was announced for those who held the birds in captivity, thus encouraging them to voluntarily declare cranes in their possession. This activity enabled the RWCA to achieve the following:

- Identification of cranes held in captivity;
- Development of a national database which helped determine extent of the illegal trade on the Grey Crowned Cranes; and further; and
- Facilitated the monitoring of this illegal trade and law enforcement.

#### **Community and Stakeholders engagement**

Having established rapport with the stakeholders including local communities, the next stage involved engaging and educating them about the Cranes, for example, their habitats. This was aimed at encouraging cooperation between them and state agencies, among other stakeholders. Local leaders and security personnel were also engaged and trained so that they could participate effectively in implementation of crane conservation activities and local school children through conservation clubs. Ex poachers involved in the pet trade were trained to develop their capacity to establish alternative livelihoods and sources of income.

#### **Construction of a Purpose-built Quarantine facility.**

Birds held in captivity were not released immediately to the wild since they needed time to be assessed for their health status and other issues they may have had (for some, their feathers had been clipped so that they don't fly, others had not been fed properly while others may have had diseases.

#### **Establishment of a Release site in Akagera National Park.**

This served as the first release site that facilitated observation of their behaviour before final release into the wild.

#### **Achievements in saving the species**

Four national censuses on the population of the cranes in Rwanda have been conducted from 2017 - 2020. The number of birds counted in each of the censuses is as shown in Figure 9 below which shows an approximate increase of 55.3% over a 4-year period. The RWCA has engaged a total of 31 Marsh rangers who include 12 women at the Rugezi Marshland. They conduct regular patrols and monitor illegal activities, educate members of the local community about conservation as well as what are some of the prohibited activities in the

marshland such as grazing livestock and cutting vegetation. The rangers also monitor breeding activities and population numbers.

The country has committed itself to rehabilitating captive birds and when appropriate, they are reintroduced into the wild, with the main goal being zero captive cranes in Rwanda. By 2020 a total of 239 cranes had been rescued from

captivity, and 160 of them had been released into Akagera National Park successfully. Another 51 rescued cranes that were unhealthy and/or disabled, and therefore not fit for release into the wild were taken into a large naturally restored wetland (21 ha) set aside as a crane sanctuary in Umusambi village (RWCA, 2020).

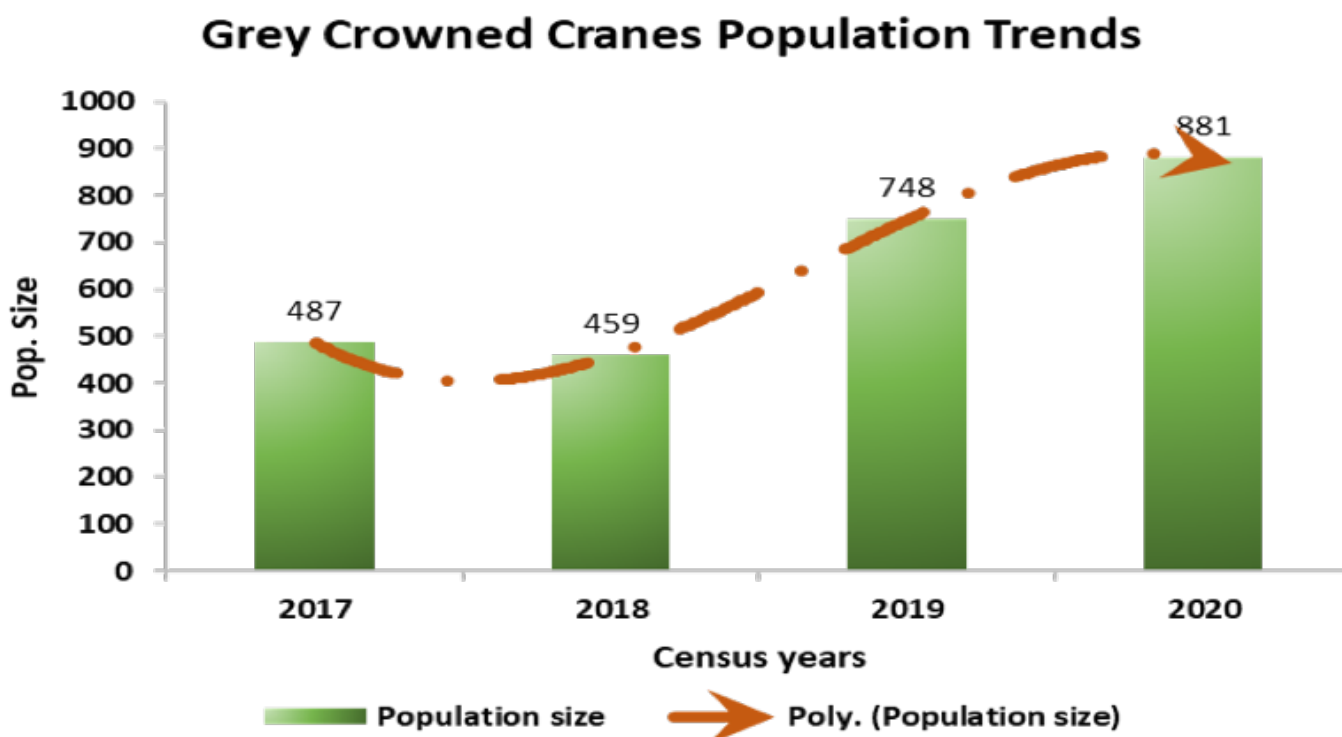


Figure 9: Trends in Population Growth of the Grey Crowned Cranes (RWCA Reports 2017 to 2020)

#### Methodology Used in the Assessment.

#### **Methodology Used in the Assessment.**

The first census on the Grey Crowned Cranes in Rwanda was conducted in 2017, where previous estimates indicated their population to be anywhere between 50 – 500 individuals. Techniques employed were aerial and ground surveys. The methodology used in subsequent annual censuses is not indicated, therefore it is assumed that a similar methodology was employed in the 2018 and 2019 censuses. Information/data was collected using the following methods/approaches: direct counting of birds and taking photos of the flocks; (documenting number of individuals; activity as of the time of sighting (whether breeding, nesting or foraging);

type of habitat birds were found in and the GPS coordinates of the location. Ground surveys were undertaken by direct counting of visible birds, using binoculars and a telescope, while aerial surveying was aided by flying over the targeted zones. The surveys were conducted over a three-day period running concurrently in each of the ecosystems to avoid double counting. Key target ecosystems were Akagera National Park, Rugezi wetland and their immediate surroundings. Community informants were engaged by the survey team to establish new sightings. While the survey was timed to coincide with the non-breeding season of the grey crowned cranes, a number of juveniles were still spotted.

## Relevant websites, web links and files

- *Minimum Population Size and Distribution of Grey Crowned Cranes in Rwanda: Aerial and Ground Survey, 2017*
- *Saving the Endangered Grey Crowned Cranes: RWCA*
- *RWCA Grey Crowned Crane Census Report 2019. pdf*
- *Grey Crowned Crane IUCN Red List*
- *International Gorilla Conservation Programme: Rwanda*
- *Umusambi Village: A Unique Grey Crowned Cranes Conservation Project.*

### 2.3.5 Obstacles and scientific and technical needs related to the measure taken:

- Due to the close similarity of the genetics in human beings, chimpanzees, and Gorillas, constant interaction between them pose the risk of diseases transmission across the species and humans;
- Continued habitat degradation and loss due to high demand for land (to settle and cultivate), dependency on wood fuel and unsustainable exploitation of forests leads to a reduction in wildlife habitats;
- Reduction and fragmentation of habitats reduces species interactions and leading to inbreeding which reduces immunity, fertility, and increases genetic disorders which can potentially lead to extinction.
- Accidental and intentional fires started by honey harvesters destroys vast areas of habitats and probably also results into the injury as well as death of numerous flora and fauna species;
- Poaching and illegal wildlife trade are still an issue within most of the wildlife areas. However, attention has shifted from highly protected and monitored species to other species that have let protection attention. Most of the poachers use crude methods of capturing animals that don't discriminate on its victims thus a threat even to endangered species.

## 2.4 Improving livelihoods and social economic development of local communities by integrating conservation and development

Poverty and lack of alternative livelihood options are a major threat to the conservation of natural resources (land, water, fisheries, forests and wildlife). Threats to biodiversity/natural resources include the extraction of resources from the forests, poaching, encroachments, snaring of wildlife, forest fires as well as unsustainable agricultural practices. To reverse this, there is a need to support local communities in terms of improving livelihoods, improvements of rural infrastructure as well as mitigate potential resource-based conflicts among others. In the draft Vision 2050 Development Strategy, Rwanda commits to continue with the poverty reduction agenda set in the Vision 2020 (Vision 2020 set to reduce poverty from a level of 78% after 1994 to 39% in 2014) and eliminate poverty by the year 2030 (GOR, 2019 draft). In the National Strategy for Transformation (NST1) the Government commits to reduce levels of poverty as well as extreme poverty.

Several programmes have been implemented around Protected areas in an effort to provide incentives for conservation through improving rural livelihoods. In addition, other initiatives such as the Bonn Challenge using the Forest Landscape Restoration (FLR) integrated agroforestry not only as a measure for increasing forest cover, but also as a way and means of soil and water conservation to address the serious problem of land degradation that had impacted agricultural production and therefore livelihoods adversely. The following are some of the interventions that have been implemented to improve livelihoods of local communities, especially those living adjacent to protected areas.

### a) Tourism Revenue Sharing Program (was 5% up to 2018 then increased to 10%)

From the year 2005, the Rwandan Government through the Rwanda Development Board (RDB) has had a policy of sharing tourism revenues with local communities living adjacent to the national parks. These funds are used to support community-based projects which help them rally behind conservation. The total amount

of Revenue shared between 2005 and 2019 stands at \$5.3 million and has funded so far 690 projects. In 2019 alone, over 400 million USD was generated from tourism. The 10% equivalent of it (\$40 million) which was given to communities. This program has continued to have a significant impact on rural livelihoods improvements as well as contributing to the reduction of threats

around national parks. The range of projects implemented include: Establishment of health care facilities, schools, water supply projects, and economic/poverty eradication projects, Youth empowerment projects, Technical and Vocational Education and Training (TVET) {see Figure 10 & 11) below on TRS/ Revenue shared

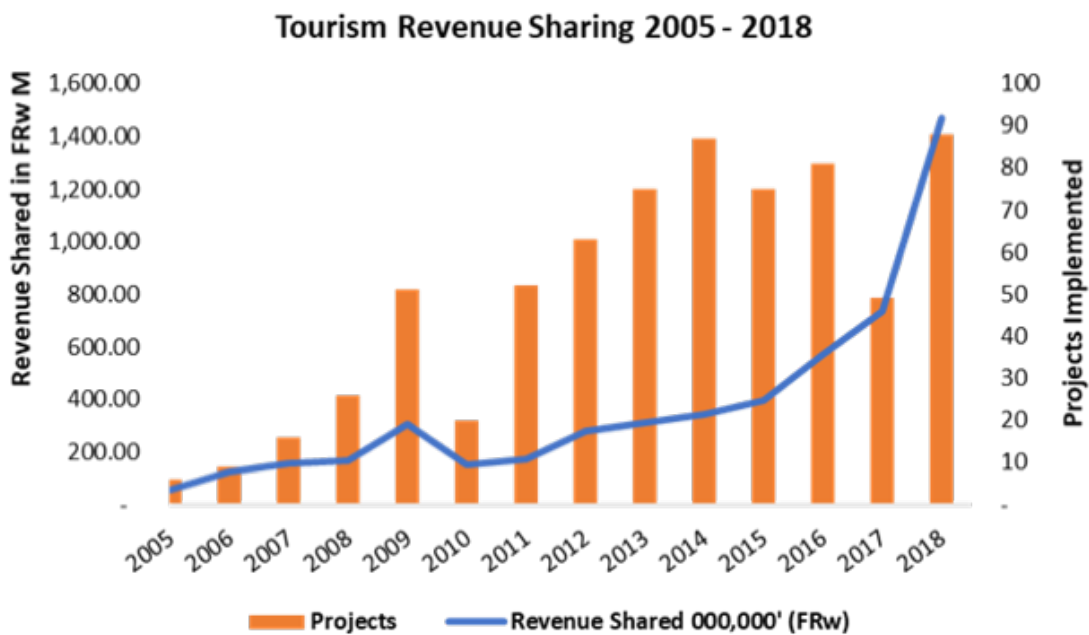


Figure 10: Tourism Trends 2008-2009

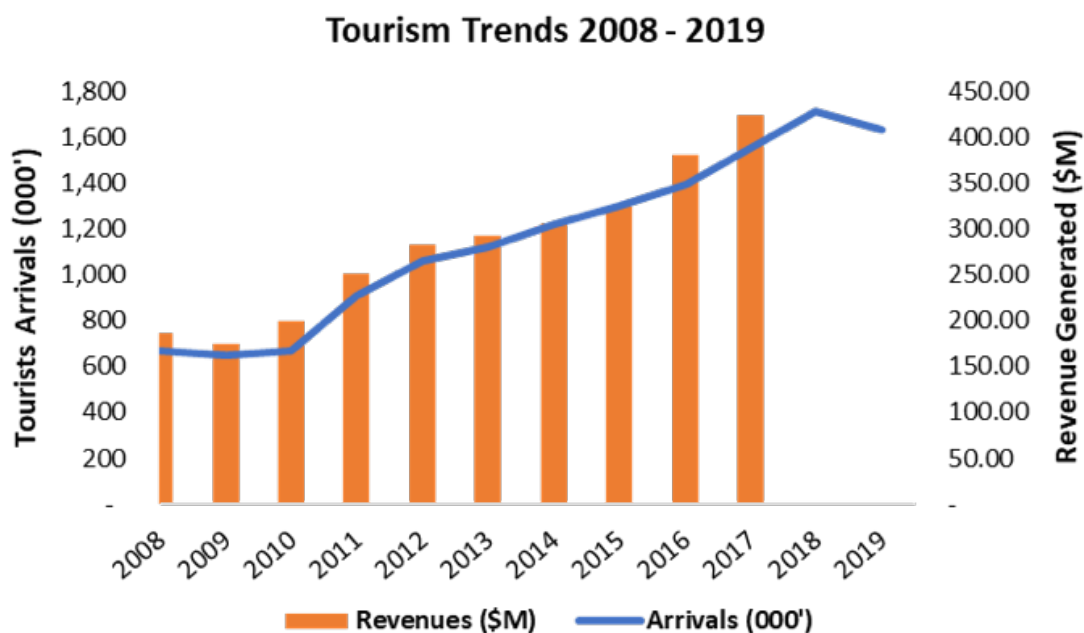


Figure 11: Tourism Revenue Sharing 2005-2018



## b) Community Based Tourism (the case of Sabyinyo Silverback Lodge and its role in improving local community livelihoods)

Developed by Sabyinyo Community Livelihood Association (SACOLA), which has since become a Non-Governmental Organization (NGO), the lodge is community owned and was established in 2007 through partnerships with the African Wildlife Foundation (AWF); and the Rwanda Development Board. It is located at the foothills of the Volcanoes National Park. Using revenues generated by the lodge, SACOLA has been able to support over 5,800 households in the

villages adjacent to Volcanoes National Park cumulatively to date. Interventions by SACOLA's social economic development program have improved all aspects of community life. It has also established a Savings and Credit Co-operatives Organization (SACCO) which is administered through community banks, two of which SACOLA helped construct. With funds from the SACCO, the community members are able to undertake various projects that uplift their standards of living. This cumulative number of projects implemented by SACOLA is summarized below.

Table 8: List of SACOLA Housing and Infrastructure Development Projects

Type of Project	Number constructed OR Beneficiaries
New Houses	44
Houses connected to electricity	5,800
Construction of roads	12km
People with piped water	12,000
Villages constructed for relocated communities	2
Bridges constructed over waterways	2
New health care centre under construction	
Number receiving healthcare insurance	7,000
Classrooms built	55 in 6 schools
No of computers donated	60

Source: Mountain Gorilla lodge is saving Rwanda's great apes: AWF 2019 (Data is not disaggregated to indicate what has been undertaken during this reporting period 2011-2019.)

### Other projects implemented include:

- Construction of SMART ROOMS – where people are given basic IT skills and they are able to access information;
- The PEARLS Partnership with SACOLA that works to address the peoples' mental health issues;
- Youth Hope Bakery project that provides the youth with skills and the potential to start baking enterprises filling a gap on the availability of bread as employment especially for those not able to get college;
- 250 cows donated under the cow's programme: One cow per poor family –Pay it forward (you get a cow but give your first calf to another poor family;

- 13,000 avocado trees planted;
- 84 houses constructed for genocide widows and ex poachers; and
- Fees for 200 children paid.

### c) Umurenge Initiative to Increase Access to financial Inclusion in the Rural Areas.

The bulk of the Rwandese people especially the rural population were unbanked which has negatively affected their capability to engage in activities that improve their social and economic wellbeing. The Government in its efforts to address this gap has promoted the Savings and Credit Cooperative Societies (SACCOs) countrywide under the banner of UMURENGE

Initiative. UMURENGE means one SACCO at the level of an administrative sector. SACCOs have also been formed around the national parks and have become vehicles for implementing various activities. For example, around the Nyungwe Forest, nine existing cooperatives were grouped under as union and registered by the Rwanda Cooperatives Authority (RCA). They are being used as a mechanism for leveraging local community members to participate in the Carbon credit trading (the existing SACCO is also having the dual role of being the carbon cooperative through which carbon sequestered in the Nyungwe NP will be aggregated across multiple land owners. In the Volcanoes NP Area, a Sacco has also been formed).

For the implementation measure, please indicate to which national target(s) it contributes.

- This measure has contributed to the following national targets 1,2,3,5 14 & 17.

### 2.4.2 Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

Measures taken has been effective

### 2.4.3 Please explain the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above

- For SACOLA in the Volcanoes National park, the measures have been effective in integrating

local communities into conservation activities. Through the benefits that accrue to them, the value of biodiversity in terms of contributing to the economic and social wellbeing of the local people has been demonstrated. This contributes to the achievement of national target 1 on awareness. The Kwita Izina ceremony that attracts thousands of people (local and international) has also helped raise awareness on the need to conserve the endangered Mountain Gorilla. The fact that this ceremony is premised on a local traditional/cultural practice of naming babies has not only integrated culture but has raised the profile of conservation in Rwanda.

- In the Nyungwe National Park Area, activities implemented under the revenue share have been effective in addressing a wide cross section of the social and environmental issues affecting the local communities. This is validated by the results of two evaluations of the Revenue sharing Programme around Nyungwe forest (See text below).

Evaluation Results: The Effectiveness of Rwanda Development Board Tourism Revenue Sharing Program towards Local Community Socioeconomic Development: (Around Nyungwe National Park)

In a survey to evaluate the effectiveness RDB' revenue sharing program towards local communities' social economic development in Nyungwe forest undertaken in April 2015, the results indicated that the programme had a positive impact overall as indicated by the following responses from a total 2,563 respondents (disaggregated into 2527 community members, 11 cell officials and 25 RDB employees).

Table 9: Results of an Analysis of the Effectiveness of the RDB TRS Program (around Nyungwe Forest)

Question – Had the Tourism Revenue sharing helped improve or contributed to the following:	Respondents responses	
	Strongly Agree	Agree
Improved the health facilities	53.1%	27.1%
Promoted the education services	12.5%	83.3%
Improved water accessibility	75%	21.9%
Improved the housing condition	21.8%	78.2%
Improved the agriculture activities	17.7%	82.3%
Increased local employment opportunities	28.1%	68.8%
Promoted local enterprises	85.4%	14.6%
Sustainable use of natural resources	66.7%	33.3%

Overall, the revenue sharing program had contributed to social-economic development as it had facilitated the construction of 6 health centres and 10 schools, ensured communities access to safe water supplies and improved housing condition. Several agricultural projects were supported directly through the revenue sharing scheme; it had created employment, promoted local enterprises and sustainable use of natural resources in Nyungwe national park.

### **Methodology used in this assessment**

Simple random sampling was done of 2563 respondent (disaggregated into 2527 community members, 11 cell officials and 25 RDB employees) for purposes of collecting quantitative data while purposive sampling was employed for collecting qualitative data. The study adopted descriptive and statistical approaches in processing data and Special Program for Social Scientist (SPSS) computer program was employed in data analysis. (It is assumed that the after is the cumulative impact as at August 2017).

### **Effectiveness of Revenue Sharing program in addressing community social economic problems around Nyungwe National Park.**

In another study undertaken around Nyungwe National Park and published in 2019 (East African Journal of Science and Technology, Vol.9 Issue 2, 2019 Herman & Olivier (P.56-64) titled "Contribution of tourism revenue sharing (TRS) program on transforming the living conditions of communities around Nyungwe National Park", 90% of the respondents noted that the TRS had a positive impact on decreasing illegal activities around Nyungwe NNP. It had also contributed towards community ownership of Park and helped reduce conflicts. On the community development front, TRS had helped increase food availability; health care (access increased from 58% prior to TRS to 92% with TRS); education (All children went to school from 10% prior to TRS to 52% with TRS); improvements in income went up by 23% with TRS and water access increased. Social economic activities supported included bee keeping, pottery, maracuja crop project, construction of a tile factory and establishment of a porter's club. From 2005- 2016, 121 projects had been implemented under the TRS program at total of amount of 924,864 USD around Nyungwe National park.

### **Methodology used in this assessment**

This was accomplished through literature review and a field survey conducted in April 2019 in the area around Nyungwe National Park in the Rangiro sector. 50 Interviewees and 10 members of the cooperatives in this area were interviewed out of a population of 612 project beneficiaries in May of 2016. In addition, 2 RCAs and 1 employee of the RDB deployed to evaluate the impact of infrastructure developed on the social economic conditions of beneficiaries were also interviewed. At the central level, an interview was conducted with Rwanda Development Board staff.

Through the Forest Landscape Restoration initiative under the Bonn Challenge, 22,325 were created between 2017 and 2018 within the forestry sector. This has been reported by the Rwanda Water and Forestry Authority Monitoring and Evaluation Department. The Rwanda's Green Fund, FONERWA reports that overall, 137,562 green jobs had been created between 2013 – 2018 periods, out of 36 of the 44 Barometer projects evaluated.

### **Relevant websites, web links and files**

- *Rwanda Vision 2020 (Revised 2012)*
- *National Strategy for Transformation (NST1) 2017 - 2024*
- *The Effectiveness of Rwanda Development Board Tourism Revenue Sharing Program towards Local Community Socioeconomic Development: A Case Study of Nyungwe National Park, 2015*
- *Sabyinyo Community Livelihood Association (SACOLA)*
- *Umurenge Savings and Credit Cooperatives (Umurenge SACCOs)*
- *A best practice of community involvement in the sustainable conservation of the Volcanoes Biosphere Reserve in Rwanda*
- *SACOLA Project Pipeline*
- *Mountain gorilla lodge is saving Rwanda's great apes: AWF 2019*

### **Other relevant information.**

Several community-based tourism enterprises have been initiated in and around the Protected areas and are making a significant contribution towards improving the livelihoods of the local communities. Through this model, the local people are integrated into the tourism value chain which also helps endear biodiversity and the parks with them. Ultimately, this has helped reduce levels of human/wildlife conflict.

### Relevant websites, web links and files

- Contribution of tourism revenue sharing (TRS) program on transforming the living conditions of communities around Nyungwe National Park
- The Effectiveness of RDB - TRS Program towards Local Community Socioeconomic Development: A Case Study of Nyungwe National Park

### Obstacles and scientific and technical needs related to the measure taken:

In the Virunga national park area, the following are the challenges;

- Due to the high population density, poverty and few alternative income generating alternatives, encroachment into the park still persists around various ecosystems;
- Though forest degradation has reduced significantly in the Volcanoes national Park, it is still a threat arising from encroachment, high dependency on wood fuels;
- The close evolutionary relationship of human beings and the primates increases the risk of disease transmission between the species. Such diseases include Pneumonia and Ebola;
- Concerns have been raised about the sustainability of the projects being implemented under the TRS programme considering the continued population increase and high poverty levels that is driver of environmental degradation;
- Low levels of alternative skills among the local people limits their source of livelihoods to subsistence agriculture and exploitation of natural resources;
- Communication strategies between and among various stakeholders, for example local authority's staff, project implementers/ community leadership involved in project implementation and the beneficiaries have been weak;
- There is the feeling that those most affected by human/wildlife conflict are not adequately compensated through the TRS programme that benefits even those who are a bit far from the park boundaries and therefore suffer less (MoE, 2017).

### Technical and Scientific Capacity Needs

- Inadequate skilled manpower to implement interventions for sustainability starting from

the project identification stage through implementation. This also includes skills in M&E for proper documentation of project activities as well as the success;

- There is need to strengthen participation in all the stages of the project cycle. Participation was weak especially in the road, river banks and lake shore plantations, restoration and rehabilitation activities;
- Insufficient/inadequate capacity in spatial analysis and mapping expertise mainly in the staff of Government executing agencies and especially at the local level (districts, sectors and cells) in terms of mapping tools and software. The National Forest strategic plan has identified the need to build the capacity of staff in GIS, Remote sensing and database management as key areas of intervention;
- The Forestry sector M&E system (FMES) in the did not capture all the information needs of the FLR activities (IUCN is already supporting them in this regard). The Ministry of Agriculture and Animal Resources (MINAGRI) Management Information System (MIS) was not operational as of the time of the 2nd Barometer assessment;
- Data/information pertaining to the implementation of the Bonn Challenge was largely not disaggregated (In the Bonn Challenge 2nd barometer evaluation), only 25% of projects had disaggregated data. In addition, a very good record of what specific interventions had been undertaken and where; did not come out clearly. This presented the challenge of having accurate data/information on the social and economic impact of the interventions as well as the conservation impacts; and
- Weaknesses in the practice of good silvicultural practices especially among smallholder private forest plantation owners has been noted as a problem. This reduces biomass productivity and quality of trees. This can be attributed to insufficient scientific research on tree species to inform sustainable propagation and production.

## 2.5 Sustainable Urbanization (Development of Green Cities with a pilot being part of Kigali)

According to Rwanda's Fifth State of Environment Report produced in 2017, the Country's urban growth is estimated at 4.5% which exceeds the

global average of 1.8% and the Sub Saharan Africa rate of 4.1% (CSIS, 2018). Further, by 2017 it was estimated that 16.6% of Rwandan's were urban dwellers of whom an estimated 70% were residing within Kigali city (REMA, 2017). With such a high rate of urbanization which is expected to reach 35% by 2024, the government recognizes that this has the potential to positively or negatively impact on the Country's Green Growth and Climate Resilience transformation agenda.

This informed the inclusion of the Low Carbon Urban Systems Programme in the 2011 Rwanda Green Growth Strategy. Its implementation will enhance urban areas Climate change resilience, aesthetics, promote preservation as well as conservation of natural ecosystems and biodiversity within their environs. For instance, in Kigali city agriculture occupies a significant part of the land accounting for about 60.5%; while other land uses occupy the following percentage area: forest ecosystems (10.6%); water {0.2%, about 1.6 km<sup>2</sup>}; wetlands {12.5%, 91.6 km<sup>2</sup>}, with infrastructure occupying the remaining area (REMA, 2017). The Low Carbon Urban Systems Programme is aimed at catalyzing the development of sustainable modern urban areas in Rwanda. This programme emphasizes key action areas that will ensure a balance in the socioeconomic and environmental needs of urban areas. These are enumerated below:

**Low Energy Building and Services:** This is intended to achieve resource efficiency, for example, solar heating, insulation and thermal capacity for temperature regulation, as well as shading and proper ventilation for cooling. Other resource conservation actions will target water and waste management for a holistic environmental approach.

**Integrated Multi-mode Urban Transport:** This is aimed at encouraging the development of mass transportation such as Bus Rapid Transit (BRT) and Mass Rapid Transport System (MRT). This will contribute towards mitigation and reduction of Green House Gas (GHG) emissions by reducing the number of automobiles on the roads. Overall, the impact of this is that there will be less consumption of fossil fuels, a major contributor of GHGs.

**Urban Planning:** The focus of this is the development of high-density mixed use, co-located urban systems, centered on local services. This would enhance land use planning, encourage non-motorized movement such as walking and cycling, ultimately reducing the need for

motorized transportation; ultimately leading to a reduction in the use of fossil fuels.

**Utilization of the Waste Stream:** Intended to promote investment in waste recovery, recycling and reuse. For example, through composting which reduces the amount of solid and liquid wastes generated. This will in turn reduce the continued demand for waste treatment facilities and disposal burden, promote alternative entrepreneurship and mitigate pollution.

### Kigali Green City Pilot Project

An ongoing pioneer gradual transformation of the city of Kigali into a modern sustainable urban area that will also set the benchmark for the upgrading of another 6 secondary cities. With the assistance from the Global Green Growth Institute (GGGI), the National Road Map for Green Cities Development (NRMGCD) was launched in 2016. The Kigali City Master Plan was developed and ready by 2013 for implementation. By 2019, it had resulted into the undertaking of the following measures and projects:

**Infrastructural Improvements:** For improved urban planning that integrates sustainable environmental management some of the project/programmes being implemented include:

**Improved organized settlements:** various housing projects have been launched in Kigali City to promote decent homes. These include: construction of 2,000 affordable housing units on a 30-ha piece of land targeting the average income earners at Nyamirambo area in 2019. This is expected to accommodate about 10,000 residents. Another 410 houses are proposed for development in Cactus Green Park in Kinyinya area, of Gasabo district.

**Drainage:** A total of 14,655 sq. meters of honeycomb retaining walls have been completed to enhance soil conservation and mitigation of erosion. Drainage rehabilitation works were undertaken at Nyabugogo and Rwabutabura water drainage channels to mitigate flooding and control erosion by enhancing the flow of surface runoff. This will in addition also enhance accessibility to these neighborhoods.

**Solid Waste Management:** UNDP Rwanda offered technical and financial support to improve the Nyanza landfill in Kigali between 2009 and 2013 under the Consolidated Waste Management Project. The aim was to develop a framework and necessary infrastructure to enhance social and environmental sustainability

in waste management. Project impacts included mitigation of fire incidents at the dumpsite with the implementation of Fukuoka methods. Various stakeholders in the waste management value chain were trained and sensitized on better waste management and handling methods and practices; enhancement of revenue collection from waste handling services, creation of various green jobs for example from recycling activities. Additionally, Nduba landfill rehabilitation was completed in 2015; further enhancing Solid waste management handling capacity. In the same year, construction of a biogas digester was completed at Gikondo Transition Centre to enhance waste management and promote the use of biogas.

**Liquid Waste Management:** Kigali City Sanitation Master Plan is being implemented, under Rwanda's Sustainable Water Supply and Sanitation Programme, where the Kigali Sanitation and Central Sewerage System is to be constructed comprising of 89 km of tertiary, secondary and primary sewer network and the installation of Gitikinyoni sewerage treatment plant with a daily waste water/ effluent processing capacity of 12,000 cubic meters. Installation of a central sewerage system will provide an alternative to use of septic tanks for effluent management.

### **Urban Design and Aesthetics**

**Green Spaces:** Construction of Nyandugu Urban Wetland Eco-Tourism Park is under implementation and is expected to be completed by the 2022/23 financial year. Once completed, it will support socioeconomic activities and conservation efforts across the 134-ha site. In addition, feasibility studies have also been undertaken for Meranzeza Public park, Tapis rouge recreational center. Further, a pre-feasibility study for a demarcated zone to host urban wetland parks covering an area of 194.8 hectares was also completed. Establishment of these facilities will promote the conservation of key wetland ecosystems in Kigali city.

**Landscaping:** About 50,000 ornamental trees were planted along 105 kilometers of roads in 2015. Additionally, a broad-leaved tree nursery was established in 2015 comprising of 320,000 seedlings to support the emerging green infrastructure. This will boost urban afforestation efforts and contribute to maintaining the national forest cover.

## **Sustainable Transportation and Entrepreneurship**

**Public Mass Transportation:** To encourage the use of public transport, efforts have been directed towards improvement of the quality of service in the sector, including the training of public transport drivers and conductors on customer and service delivery, installing sheltered bus stops and pedestrian walkways. Street lighting to enhance safety has been maintained on 265 kilometers with installation of better energy saving LED bulbs.

**Green businesses and jobs:** Support for sustainable/green entrepreneurship has enabled the establishment of Ampersand, a firm specializing in the production of affordable electric vehicles and motorcycles (e-motos). These automobiles are designed with zero tailpipe emissions thus emit 75% less carbon, compared to conventional models that use fossil fuels. The emissions are mainly anticipated to come from recharging on the main grid that might comprise of thermal generation whereas using renewable energy is estimated to lower the emission by about 98%.

In 2019, Volkswagen started assembling electric vehicles in Kigali. This investment is creating green jobs at various levels and promoting sustainable businesses externally e.g. e-moto taxis, where the riders are also taking home better wages due to fuel savings. Other investments are also being established such as the Safi Universal Link Ltd, putting up the first electric charging station in Kigali to serve the e-motos; while the German power equipment firm Siemens is also planning to set up 15 charging stations.

**Cycling tourism:** In 2020, Rwanda Cycling Federation (FERWACY) launched the cycling tourism at the Africa Rising Cycling Centre. They also hold the Rwanda Cycling Cup to nurture the cycling talent in the country while also promoting cycling as a sustainable transportation means. Such initiative further boosts the countries resilience to climate change and related impacts.

### **Other Sustainable Urbanization Plans**

With the assistance of the Global Green Growth Institute, the Government developed the *National Road Map for Green Cities Development* (NRMGCD) 2016 programme. Its key goal is to drive urbanization away from Kigali city by providing economic incentives that encourage urban growth in the other six green cities/urban areas. The programme was developed guided

by two key global urbanization policies i.e. the Sustainable Development Goals (SDGs) and the New Urban Agenda (NUA). Urbanization plans are anchored on Rwanda's, Vision 2020, EDPRS 11; and the Government 7-Year National Strategy for Transformation (NST1).

The proposed cities where this programme will be implemented are Huye, Muhanga, Nyagatare, Rubavu, Musanze and Rusizi. Citywide surveys have been conducted in Huye, Nyagatare and Rubavu secondary cities on green and public spaces in collaboration with the Ministry of Infrastructure, Rwanda Housing Authority and GGGI to facilitate development of their District Development Strategies for the period 2018 – 2024 (GGGI, 2018). Other plans include the establishment of the *Rwanda Public Bicycle Sharing* (PBS) initiative to promote non-motorized transportation. The plan is to leverage on private sector resources to pilot the program at feasible locations. The GGGI team has already conducted city wide surveys to assess Public Bicycle Sharing in Musanze and Rubavu secondary cities. Instruments intended for mainstreaming sustainable urbanization include the following:

### Policies

- Rwanda National Urbanization Policy;
- National Housing Policy; and
- Construction Industry Policy.

**Legislations:** Presidential, Prime Minister and Ministerial Orders geared towards regulating and enforcing implementation of the sustainable urbanization plans have been issued and they include:

- Law No20/2011 governing human habitation;
- Law No10/2012 on governing urban planning and building;
- Law No43/2013; Rwanda Urban Planning Code (2019);
- Rwanda Building Code (2019);
- Rwanda Green Building Minimum System (2019).
- National Land Use Master Plan, 2011;
- Kigali City Master Plan, 2013; Kigali Urban Wetlands Master Plan;
- Urbanization and Rural Settlement Sector (2013 – 2018);
- National Investment Strategy;

**FONERWA** is spearheading resource mobilization for the various green urbanization plans. Apart from internal funding, resources have also been

secured from other development partners such as the UN Green Climate Fund, and the German Development Cooperation through KfW Development Bank, among others.

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.

Responds to National Targets: 4, 5, 6, 7, 9, 10, 13, & 14.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

- Measure taken has been effective
- Measure taken has been partially effective

Explanation of the selection above as well as tools or methodology used for the assessment.

This is the starting point of a long-term process and most of what has been achieved is about laying the foundation for implementation (policy changes, a supportive legal framework, development of the requisite Master plans as well as the establishment of the institutional framework for implementation. Some activities have however been implemented (Development of the Kigali City Masterplan among others). The Government of Rwanda is totally committed to implementing sustainable cities.

### Relevant websites, web links and files

- *Rwanda: State of Environment and Outlook Report 2017*
- *Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development 2011*
- *National Roadmap for Green Secondary City Development, 2015*
- *GGGI Rwanda Green City Pilot Project*
- *Kigali City Master Plan 2013: Towards a Centre of Urban Excellence.*
- *Consolidated Waste Management Project in Rwanda*
- *Rwanda: Ministry of Infrastructure (MININFRA)*
- *FONERWA Publications*
- *GGGI: Rwanda Climate Resilient Green Cities*
- *FONERWA: Electrifying Rwanda's Moto Taxis*
- *Ampersand: E-motos*



Karago landscape (Photographer: IUCN)





Akagera National Park Landscapes (Photographer: Jordi Van Oort)

## 2.6 Wetlands Conservation Measures

Wetlands in Rwanda are facing a myriad of challenges mostly anthropogenic that include invasive alien species, land use conversion and encroachment, over and uncontrolled use of resources such as sand extraction, and pollution/contamination (from domestic, agricultural

practices, industrial effluent discharge as well as solid waste dumping). Climate change especially due to variations in the precipitation patterns has also been noted to have a significant impact on wetlands (Nile Basin Initiative, 2019). According to an identification and mapping of wetlands survey, Rwanda had 935 marshlands covering about 10.6 % of the Rwandan surface area by 2017 (MoE, 2019).

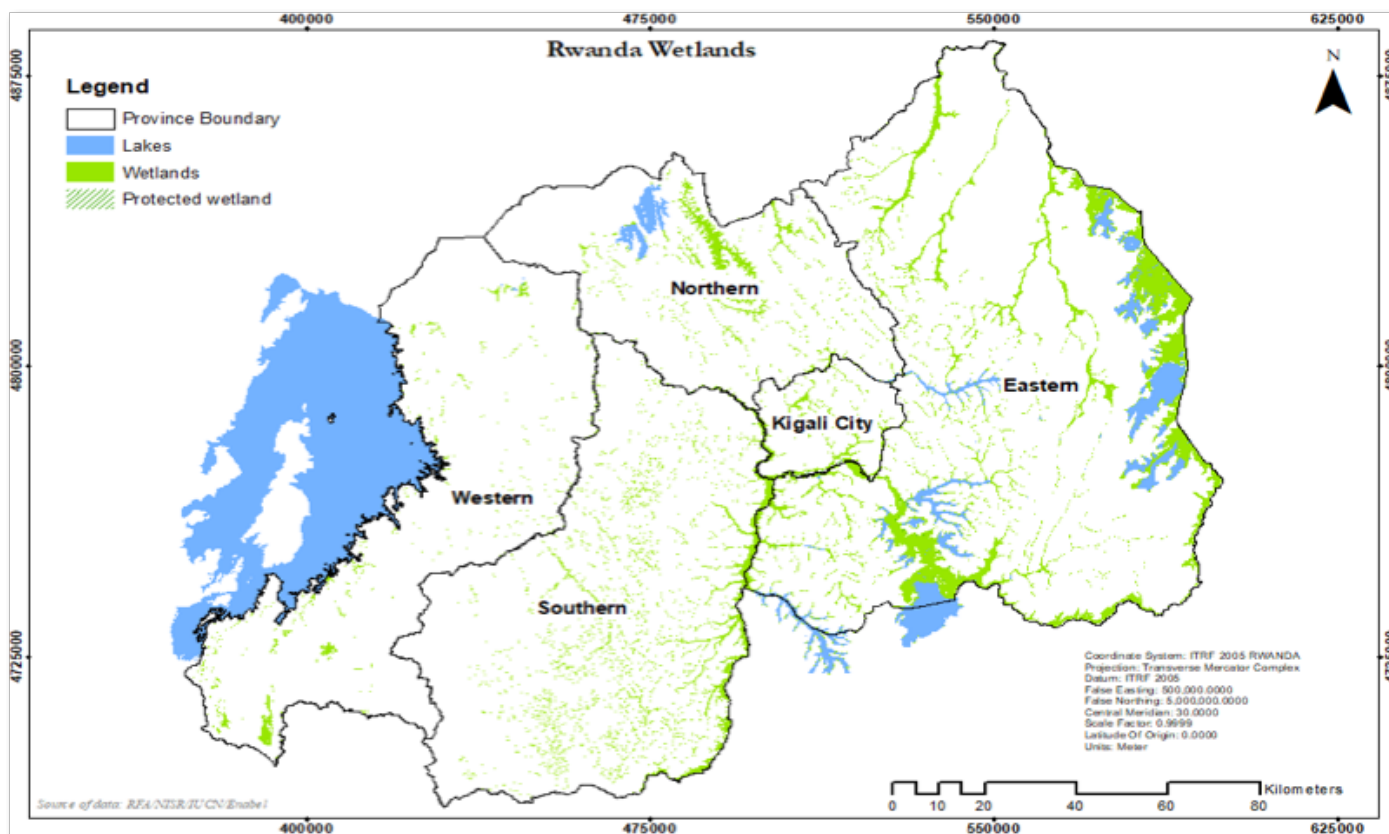


Figure 12: Map of Wetlands in Rwanda

Source: IUCN, 2019

To address these threats/challenges, the following measures have been undertaken or adopted over the reporting period.

**Legislation on matters pertaining to the protection and wise use of wetlands in Rwanda.** On 13th August 2018, Law N°48/2018 of 13/08/2018 on Environment was enacted. The Law especially Articles N° 42, 47, 48, 49 and 60 have very explicit provisions on sustainable wetlands management which are as follows:

- Article 42 provides for prohibitions in wetlands and protected areas;
- Article 47 has provisions against polluting and damaging wetlands;

- Article 48 has provisions against change of the nature of wetlands;
- Article 60 provides for unauthorized introduction of plant and animal species in wetlands.

Legal protection of wetlands is a milestone in the implementation of wise use of wetlands and management measures. Fines and penalties for undertaking activities that have adverse impacts on wetlands are also provided.

**Adoption of the Prime Minister's order N°006/03 of 30/01/2017** drawing up a list of swamp lands, their characteristics and determining modalities of their use, development and management. This was a follow up action following the identification

and mapping of wetlands which established that the country has 935 marshlands covering about 10.6 % of the Rwandan surface area by 2017 (MoE, 2019). The aim was to establish their characteristics and boundaries in order to set out mechanisms for sustainable management, use and development. According to the Rwanda Wetlands Governance and Management Profile of 2019 only Rugezi wetland has been gazetted as a Ramsar site covering a surface area of 6,736 hectares (Nile Basin Initiative, 2019). The application of SEA and EIA tools has also been enhanced in projects being implemented on wetlands.

**Development and adoption of the National Land Use Master Plan.** This was approved on 29th July 2019. The Master Plan which will guide how land will be managed up to 2050 was developed through an extensive stakeholder’s consultation process that included the local people. Its purpose is to guide the sustainable and optimal use of land in Rwanda; which when implemented will mitigate many of the negative impacts on wetlands. Wetlands in the Masterplan have been categorized as protected zones where no infrastructure developments and other wetlands degrading activities are allowed. Buffer zones for

protecting the wetlands are set at 50m for lakes, 20m for marshlands and 10m for rivers.

**Relocation of illegal activities and structures in wetlands.** A country wide inventory and relocation of illegal activities and properties in wetlands is ongoing;

**Development of Kigali Urban Wetland Master Plan.** As part of the implementation of this plan, structure constructed on wetlands in Kigali have been demolished.

In 2013 the new land law placed wetlands under public land which gives the state responsibly to ensure their protection; sustainable use and management.

An inventory of key wetlands in Rwanda was undertaken in the spring of 2011. The inventory covered the following wetlands: Kamiranzovu complex; Rugezi complex; Rweru-Mugesera complex and the Akagera complex. For each of the 4 sites, the following were characterised: flora and vegetation; amphibians; reptiles, birds and mammals. This generated data/information useful for planning and prioritizing activities in the 4 sites. Table 11 below indicates the results of this survey (REMA, 2011).

Table 10: Species Numbers of Plants and Animals of the four Different Study Sites

	Kamiranzovu	Rugezi	Rweru-mugesera	Akagera	Totals
Vascular plants	326	94	53	77	457
Amphibians	12	6	13	16	33
Reptiles	12	3	6	13	27
Birds	26	37	40	54	118
Mammals	18	2	16	11	33

Source: (REMA, 2011). Biodiversity Inventory of Key Wetlands in Rwanda, 2011

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes to:

Responds to National Targets: 5, 7, 8, 9, 10, 13, and 14.

**Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:**

Measure taken has been partially effective

**Explanation of the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above**

While the measures have far reaching effects, their full implementation and the realization of positive results will take a while. Wetlands are also found in several locations countrywide and therefore implementation in all key locations will take a while.

#### Relevant websites, web links and files

- *Ramsar National Report to COP13, 2017*
- *Biodiversity Inventory for Key Wetlands in Rwanda, 2011*
- *Rwanda-Wetlands-Governance-and-Management-Profile 2019.pdf*
- *LAWN°48/2018OF13/08/2018ONENVIRONMENT, Rwanda*

#### Other relevant information,

Obstacles and scientific and technical needs related to the measure taken:

- Wetlands management in relation to shortage of land due to high population density (415 inhabitants per square kilometre) with over 80% of the population depending on agriculture;
- High cost of wetlands rehabilitation/restoration and relocation of degrading properties from wetlands;
- Most of the interventions focused on wetlands and not at catchment level due to limited funding
- Limited funds for wetlands management and monitoring;
- Wetlands management against the impacts of climate change;
- Respect of the 20 m buffer zone from the boundaries of wetlands.
- Long term monitoring of wetlands and their catchments is needed to inform on the seasonal effects on wetlands integrity;
- Less than 35% of wetland complexes have benefited from initiatives on sustainable use;

#### Priority actions to mitigate these challenges

- Continued raising of awareness on the importance of wetlands in support of livelihoods and the need for their wise use;
- Fast track the relocation of degrading activities and illegal infrastructure from wetlands;
- Need to develop a strong monitoring system on wetlands wise use;
- Strengthen the Country's technical capacity on wetlands management;

- Mainstreaming wetlands wise use in the national priorities namely National Strategy for Transformation (NST1), the Green Economy agenda and Vision 2050;
- Update the National Wetlands Plan and strengthen the role of a national wetlands/Ramsar committee;
- Construct waste management systems for point source pollution;
- There is need to build/strengthen the national capacity on the wise use, management and monitoring of wetlands in Rwanda among the various sector teams. Besides management, sector teams need skills in project formulation, planning and execution as well as in the mobilization of required resources.
- There is need to simplify funding mechanisms for Ramsar contracting parties.

#### 2.7 Protection and Conservation of Natural Forests

Forests play a major role in the social economic development of Rwanda by providing goods and ecosystem services in addition to employment. According to the Forest policy of 2018, the forestry sector is, one of the pillars for sustainable development and climate resilience to improve livelihoods of present and future generations. Charcoal production provides the largest benefits (61.8%) followed by wood production at (19.2%) (National Forest Policy, 2018) both located in the production areas. Additional benefits accrue from distribution and selling of both charcoal and wood provide 6% and 12.8% of the which generated employment, respectively. A report on Rwanda's biomass sector estimated that, for 2007, the value of firewood and charcoal added to US\$ 122 million which was about 5% of the national GDP. Tourism (based) on the national parks which are mainly forests) is a growing industry in Rwanda and in 2016, generated almost US\$ 404 million and therefore considered as Rwanda's largest earner of foreign exchange with the bulk of visitations being to See Mountain Gorillas in Volcanoes national park (Rwanda National Forestry Policy, 2018).

Table 11: Rwanda's Protected Area System

Name of Protected Area	Date of Establishment	Management Responsibility	Area of Protected Area
Akagera National Park	1934	RDB (have contracted African Parks to manage)	112,193
Nyungwe National Park	2004	RDB (contracted New Forest Company to Manage it)	101,659
Volcanoes	1925	RDB (contracted Africans Parks to manage)	16,021
Gishwati	1933	RDB	1,488.89
Mukura	1933	RDB	1,600.15

Source: Rwanda State of the Environment Report (2015).

#### a) Enhanced Protection of Gishwati –Mukura Forest Reserves by upgrading them to National Park status.

Gishwati and Mukura forests, previously managed as forest reserves were Gazetted as Gishwati-Mukura National Park in 2015 (Law No 45/2015 enacted on 15th October 2015 bringing the total number of national parks to four. Gishwati forest reserve has been under intense pressure since its gazettelement in the 1930's from encroachments, large scale cattle ranching and conversion for forestry plantations. Much more recently, cattle grazing in the forest, small scale agriculture and resettlement of the returnees have been the key threats. About 70% of Gishwati forest had been lost by 1970. Mukura was gazetted as a forest reserve in 1951, but its size has been reduced by uncontrolled mining and deforestation.

The Gishwati-Mukura National Park today is composed of the Gishwati Natural Forest with an area of 1,439.72 hectares and Mukura Natural forest with an area of 1,987.74 hectares and a buffer zone for this National Park covering the surface of 992.48 hectares (SOURCE GEF PIF DOC). The 2015 gazettelement increased the areas of national parks/protected areas by 3,427.5 hectares, a major achievement (Source: as above). This measure is expected to protect the rich biodiversity resources found in these forests as a result of the stringent protection measures provided in the Wildlife Act/ National Parks Act. Some of the important wildlife species to benefit will include the Chimpanzees and the Golden monkeys. In addition, a wildlife corridor is also proposed to link the Gishwati and

Mukura forests; and the Mukura and Nyungwe forests which will when actualised allow for free movement of wildlife especially the primates (Golden Monkeys and Chimpanzees).

#### b) Continued Protection of forests that are National Parks (Nyungwe, Volcanoes and Akagera).

Protection of these forests has continued through various interventions such as continuous surveillance and patrols, engagement with the local communities as well as benefit sharing through the Tourism revenue sharing program; employment of locals as rangers and in other duties; and promotion of poverty alleviation programmes as well as overall social economic development of the areas adjacent to them. These have helped endear the parks to the local communities thereby reduces potential human/wildlife and other resource use conflicts. Promotion of agroforestry also reduces need for wood fuel from natural systems.

#### c) Ministerial Order No 006/MINIRENA/2015 of 18/06/2015 determining the management of protected state forests not managed by Special laws.

The Order provides for the following forests:

- A natural forest which is not governed by special laws,
- Any forest planted alongside streams, rivers and lakes.

It also provides as an ANNEX a list of natural forests which are not governed by special laws.

Natural forests protected by this Order are small, terrestrial natural ecosystems, many of which are remnant forests that have resulted from fragmentation of larger forest ecosystems. The Order also stipulated that natural forests should be protected by demarcating a boundary around them, by planting a belt of trees of a different species around them. For planted forests, use of any possible means to demarcate them from the neighbourhoods is proposed. All activities are prohibited other than those allowed by the Minister In charge of forests while roles and responsibilities for local authorities with regard to their management is also provided. The list of the protected forests provides the name of the forest, GPS points, location and area of each. This measure was a major boost to the area of protected areas in Rwanda. This Order has communicated to all about how these forests should be managed in addition to providing measures that not only demarcate them but add clarity as to which is the boundary lines, thereby wading off potential encroachments.

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.

Responds to the following national targets: 5, 9, 10, 13, 14

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

- Measures taken has been effective.

Explanation on the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above.

Measures have increased the area of protected areas which contributes to the attainment of national target 9. In addition, the condition of the forests in Gishwati – Mukura national park continued to improve owing to the enhanced protection once the key threat was addressed coupled with assisted regeneration and restoration of previously degraded areas.

Relevant websites, web links and files

- *Rwanda National Forestry Policy 2018*
- *Gishwati-Mukura Forest National Park*
- *Rwanda National Parks*
- *Rwanda LAND Policy Research Brief: Contested Claims Over Protected Area Resources in Rwanda*
- *Contested Claims over Protected Area*

Resources in Rwanda, LAND Project Policy Research Brief No. 1, Kigali, Rwanda: USAID | LAND Project, 2014

## 2.8. Climate change mitigation and adaptation measures.

### National Government Strategies and Policies

Rwanda Environment Management Authority (REMA) is the National Focal Point for the coordination and execution of Climate Change issues in Rwanda. The country has ratified various Multilateral Environmental Agreements (MEAs) that are geared towards promoting proactive sustainable environment cum natural resources management, towards ecosystems and biodiversity conservation. These MEAs include the UN Convention on Biological Diversity (CBD), the Convention to Combat Desertification (UNCCD), the Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. In 2016, Rwanda also signed the Paris Agreement on climate change and ratified it. Rwanda also developed the National Adaptation Program of Action (NAPA) and identified the following priority adaptation options:

- An Integrated Water Resource Management – IWRM;
- Setting up an information system to early warning of hydro-agro meteorological system and rapid intervention mechanisms;
- Promotion of non- agricultural income generating activities;
- Promotion of intensive agro-pastoral activities;
- Introduction of species resisting to environmental conditions; and
- Development of firewood alternative sources of energy.

Plans are underway to undertake an evaluation of the NAPA with support from the National Support Plan Global Support Programme (NAP-GSP).

Rwanda has also just prepared its updated National Determined Contributions (NDC) report to the UNFCCC making it the 1st African Country in Africa to do so.

Rwanda prepared the National Strategy for Climate Change and Low Carbon Development (2011). This was integrated into EDPRS II 2013-2017 as well as in sectoral strategies. Sustainability of the environment and natural resources is one of the five key principles of the GGCRS that

also identified fourteen programme actions for mitigating and adapting to climate change. In 2016, Rwanda submitted its Intended Nationally Determined Contributions (INDC) to the UNFCCC which outlined adaptation as a key priority. The INDCs are built on the Green Growth and Climate Resilience Strategy and have identified the following priority actions:

**Adaptation actions include:** i) sustainable intensification of agriculture; ii) diversification of agriculture for both local and export markets; iii) sustainable forestry, agroforestry and biomass energy; ecotourism, conservation and payment for ecosystem services promotion in protected areas; iv) integrated water resource management and planning; v) integrated approach to sustainable land use planning and management; vi) disaster management; vii) climate data and projections to provide climate information necessary for future monitoring, climate trend detection, management of climate variability, early warning and disaster management.

**Mitigation actions include:** i) low carbon energy mix developments; ii) sustainable small-scale energy installations; iii) energy efficiency and demand side management; iv) efficient resilient transport systems; green industry and private sector development; v) implementation of low carbon urban systems; and vi) sustainable forestry, agroforestry and biomass energy use.

The successful implementation of projects and development activities responding to the NAPA priority options and the Green Growth and Climate Resilience Strategy (GGRS) programme actions, address various environmental issue including mitigation of ecosystems degradation and thus conservation and preservation of biodiversity.

The following policies, strategies and Plans have been developed aimed at enhancing the integration of climate change into the national planning framework.

- Vision 2020 (Revised 2012);
- Economic Development and Poverty Reduction Strategy (EDPRS II);
- National Environmental and Climate Change Policy, 2019;
- National Biodiversity Policy, 2011;
- National Agriculture Policy, 2017;
- National Forestry Policy, 2018;
- National Land Policy, 2019;
- National Energy Policy, 2015;
- National Urbanization Policy, 2015;

- National Biomass Energy Strategy, 2017;
- National Agroforestry Strategy and Action Plan 2018–2027;
- National Strategic Plan for Agriculture Transformation 2018 – 24;
- National Forest Sector Strategic Plan 2018 – 2022;
- National Strategy and Action Plan for the Conservation of Biodiversity; and
- National Strategy and Action Plan to Right against Desertification.

Additionally, various laws and regulations have been reviewed to align with sustainable development agenda and enhance the environmental and natural resources governance.

### *Projects and programmes being implemented*

Various programmes and projects have been implemented while others are ongoing towards addressing the CC issues, in different sectors and regions. Notable mitigation measure includes:

**Conservation and restoration of forest cover as well as increasing forest cover to 30% of Rwanda's total land area.**

Refer to section 2.3 and 2.7 above.

**Clean and Green Energy:** The energy sector is a major contributor of GHGs especially from the burning of fossil fuels and wood fuel. In Rwanda, wood fuel still accounts for a huge proportion of household primary energy source and with the high population exerts a lot of pressure on forest resources.

**Provision of Tax incentives for Liquefied Petroleum Gas (LPG):** The Government has given tax incentives to encourage the uptake and use of LPG as an alternative cooking and heating energy source. The objective of this is to reduce over reliance on the use of biomass energy, a major driver of forest degradation which in turn reduces the Country's carbon sequestration potential in addition to other impacts such as land degradation. Rwanda LPG imports statistics have risen from 724.6 metric tons in 2010 to 10,278.6 metric tons by 2017 (EAC, 2018 cited in the Compendium of Environment Statistics, Rwanda, 2018). The targets set in the Vision 2020 were that by the year 2020, biomass energy use for cooking will have reduced to 50% down from 95% in 2010 (base year).

Other measures being promoted for purposes of reducing biomass energy use at the household level include biogas and briquettes. This will ease demand for wood fuel thereby mitigating against one of the threats to forest resources.

The government is also promoting and investing in the generation of renewable and clean energy to reduce GHG emissions within the country. Electricity generation from renewable sources has been on focus to reduce and eventually eliminate thermal energy generation. By 2018, according to the Rwanda Energy Group, installed electric energy generation capacity stood at 218MW of which 115MW (about 52.75%) came from renewable sources. Other clean and renewable energy potential sources include geothermal, wind, and waste utilization. Reducing the reliance on fossil fuels will mitigate GHG emission, in turn enhancing the control on climate unpredictability and resilience of ecosystems as well as various species.

**Improved Land Use and Urban Planning:** Through integrated sustainable land use planning, Rwanda intends to reduce the pressure on land from various competing needs especially settlement and agriculture. Land use planning is expected to mitigate against continued encroachment into natural ecosystems such as wetlands and forests that are habitats for biodiversity. Intensification of agricultural production through improved land fertility, use of Integrated Pest Management (IPM) and Integrated Water Resources Management are expected to boost yields per unit area, thus reducing the demand for expansion of agricultural land. These measures are also anticipated to contribute to the reduction of GHG emissions from agricultural sources.

Proper planning of settlements and other built up environments will also relieve pressure on land and

by extension natural ecosystems. To enhance land use planning in urban area, various programmes are being implemented to resettle people living on sensitive wetlands. This will be followed by rehabilitation works. Rwanda is also implementing the sustainable urban areas development with focus on enhancing resource efficiency especially energy consumption. Various programmes targeting promotion of clean energy include: the electric automobile industry development, improved public mass transportation, tax incentive for LPG, development and promotion of better energy efficient cook stoves and encouraging the use of non-motorized transports such as cycling and walking (see more details in section 2.5 on sustainable urbanization).

All these measures will significantly improve resource use efficiency especially for water and energy, reduce generation of GHGs and mitigate against encroachment into forests and other natural ecosystems such as wetlands.

**Early Warning Systems:** Through LDCF support, Rwanda implemented the Reducing Vulnerability to Climate Change by Establishing an Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood Prone Areas. The aim was to reduce the vulnerability of the Gishwati ecosystem and its associated Nile-Congo crest watersheds and the people who derive livelihoods from. This project was implemented from 2007 to 2014 included: Project outputs included: Development of an Early Warning System for climate change risks in Gishwati Ecosystem; Climate change risks were incorporated into Nyabihu district development planning; and the reduction of the adverse effects of floods and droughts in the Nile-Congo crest watersheds (Nyabarongo and Sebeya rivers) and Gishwati ecosystem.



Table 12: Selected projects focused on climate change adaptation, or some aspect of it, in Rwanda

Selected Program	Amount	Donor	Year	Implementer
Strengthening climate resilience of rural communities in Northern Rwanda (SCRNRP)	\$33.2 million	Green Climate Fund	2018–2024	Ministry of Environment
Increasing the Capacity of Vulnerable Rwandan Communities to Adapt to Adverse Effects of Climate Change	\$6.3 million	GEF, LDCF	2017–ongoing	Rwanda Energy Group
Rwanda Climate Services for Agriculture	Not available	USAID	2016–2019	CGIAR Research Program on Climate Change, Agriculture and Food Security
Assessing sustainability and effectiveness of climate information services in Africa	Not available	USAID	2016–2018	Winrock
Programme of Support to Agriculture in Rwanda	£43 million	DFID	2014–2019	IBRD, International Development Association, WFP
Reducing Climate Change Vulnerability in Rwanda through Community Based Adaptation	\$9.97 million	Adaptation Fund	2014–2018	Ministry of Environment
Provision of finance to the Rwanda Fund for Climate Change and Environment	£22 million	DFID	2013–2018	WYG International, KPMG Rwanda, FONERWA

Source: Rwanda Climate Risk Profile (USAID, 2019)

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.

Responds to the following national targets: National Targets 5, 6, 10, 13 and 14.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

Measure taken has been partially effective.

Available information is disaggregated thus the overall assessment of the impact of various programmes and project cannot be fully described.

Explain the selection, tools or methodology used for the Assessment above.

The assessment has relied on review of documented information on status of implementation of measures vis a vis what had been proposed.

Expert judgement has also been employed.

Relevant websites, web links and files

- Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development, 2011
- Climate Change Adaptation in Rwanda, 2012
- Climate Change Risk Profile: Rwanda, 2019
- Greenhouse Gas Emissions in Rwanda, 2018
- Climate Change Profile: Rwanda 2018
- National Environment and Climate Change Policy, 2019
- Rwanda introduces new Environment and Climate Change Policy
- Increasing Climate-resilience in Rwanda through EWS, Disaster Preparedness & Integrated Watershed Management
- Employment assessment of renewable energy: Power sector pathways compatible with NDCs and national energy plans, 2020

- Climate-Smart Agriculture in Rwanda, 2015
- Improved Cook Stoves for East Africa - Rwanda
- Rwanda – Renewable Energy Fund, 2017
- Rwanda Least Cost Power Development Plan (LCPDP) 2019 –2040
- Energy Sector Strategic Plan 2018/19 - 2023/24
- Rwanda Energy Sector Review and Action Plan, 2013
- Compendium of Environment Statistics of Rwanda, 2018

### Obstacles and scientific and technical needs related to the measure taken:

Although Rwanda has initiated important steps to determine vulnerability and adaptation priorities, there are a number of critical adaptation needs (data, capacity, and resource deficits) still remain. These include:

- Mainstreaming adaptation into the country's planning frameworks;
- Conducting vulnerability assessments for critical sectors to enhance understanding of the potential impacts of climate change, which can then inform identification of possible promising adaptation measures;
- Developing a national climate change strategy that clearly lays out priority sector and ecosystem vulnerabilities and means for addressing them.
- Inadequate engagements among various stakeholders has been curtailing the mainstreaming of CC into policies/programmes as well as climate smart practices across various sectors, for example, collaboration with CSOs and the private sector is still inadequate;
- Financial capacity needs are still a challenge among various stakeholders, limiting their ability to adapt and implement necessary adaptation and mitigation measures at various levels e.g. low adoption rate of CSA practices among low income farming families;
- There is still very stiff competition for land between various socioeconomic needs, which puts a lot of pressure on virgin lands that are mostly covered by natural ecosystems (forests and wetlands); and which act as important GHG sinks especially forests;
- High reliance on wood fuels i.e. firewood and charcoal still exert a lot of pressure on available tree resource, which also affects the capacity for GHG sequestration; and
- Varying degrees of human and technological

inadequacies are still prevalent limiting the capacity to execute necessary activities such as monitoring and evaluation.

- The Early Warning Systems in place also needs to be scaled up to enhance data collection, analysis and dissemination in a timely and effective manner to vulnerable populations.

### Solutions

- Strengthen extension and advisory services with regard to climate change to ensure more farmers are reached;
- Expand the reach of the government-led subsidy program and other CSA related incentives, to bring on board more farmers, thus accelerating the uptake of CSA practices; and
- Encourage the financial sector to develop favorable credit and insurance facilities to cater for all agricultural players, to enhance their capacity in adopting CSA technologies cost effectively.

### Relevant websites, web links and files

- Why LPG uptake is still low, 2018

## 2.9 Resource Mobilization for the implementation of the National Biodiversity Strategy and Action Plan

Mobilizing the financial resources for the NBSAP implementation is an important element to ensure the goals and targets set in the NBSAP are effectively met. Rwanda's national NBSAP Target 19 states that "By 2020, at the latest, the mobilization of financial resources for an effective implementation of NBSAP from all potential sources, and in accordance with agreed process in the strategy for resource mobilization, is reinforced and increased substantially from the current levels", through the following actions:

- Strengthening institutional capacity in "resource mobilization "to facilitate effective implementation of NBSAP;
- Inventory of all potential internal and external sources of funds for NBSAP implementation and establishment of resources mobilization strategic mechanisms;
- Development and use of innovative financing mechanisms, including market-based instruments.

Against the aim to implement a green economy as part of the road to economic transformation through increased green investment, standards and innovations, the government of Rwanda has achieved notable points of progress including the following:

### **a) Establishment of the Rwanda Green Fund (FONERWA) as institutional centre for Resource Mobilization**

The government of Rwanda established the Rwanda Green Fund (FONERWA) in 2012, with the aims to mobilize domestic and international climate finance, and secure sustainable financing to support projects toward the implementation of the Green Growth and Climate Resilience Strategy. As a cross-sectoral national financing mechanism, FONERWA is the vehicle through which environment and climate financing is channelled, programmed, disbursed, and monitored and is today the engine of green growth in Rwanda and serves as an example for what's possible - in Africa and around the world (FONERWA). Today, FONERWA has been successful in its objective of mobilizing climate finance for Rwanda with total direct capitalization of approximately \$89 million from DFID, the German Development Bank (KfW), the Government of Rwanda (GoR), and the Least Developed Countries Fund (LDCF) of the AfDB.

The key priority of the Fund's operations is to ensure a sustained and effective delivery that continues to incrementally commission projects, build capacity of potential applicants to access funding, commit finance and quality assure implementation of funded projects. Additionally, operations aim to enhance FONERWA's role in addressing wider national strategic needs related to the environment and climate change. This will necessitate technical support to the GoR to adequately resource the Fund, build capacity and execute its mandate. Among the four FONERWA'S funding priorities, two have clear link to biodiversity conservation: Conservation and sustainable management of natural resources and Environment and Climate change mainstreaming.

### **b) Inventory of potential sources of funds and biodiversity expenditure review**

In collaboration with UNDP, the Government of Rwanda through the Rwanda Environment Management Authority (REMA) completed the Biodiversity Expenditure Review as part of

BIOFIN Initiative. BIOFIN is a global partnership seeking to address the biodiversity finance challenge by enabling governments to construct a sound business case for increasing investment in the sustainable and equitable management, protection and restoration of biodiversity and ecosystems. As part of the BIOFIN initiative, a Biodiversity Finance Plan (BFP) which propose finance solutions has been developed.

The Biodiversity Expenditure Review examined expenditures on biodiversity conservation and management across the six-year period of 2011-2017 by estimating a baseline of biodiversity expenditures, and projecting future biodiversity expenditures to 2025 based on budget forecasts and past trends.

The study revealed that Government biodiversity expenditures have been increasing over time from RWF 10.17 billion in 2011/12 to RWF 11.5 billion in 2016/17, representing a cumulative growth rate of 2.5 percent annually. However, the study also shows that the environment and natural resource sector, account for just over one-half of all biodiversity-related expenditures in Rwanda while Biodiversity-related expenditures in the agricultural sector have been variable in both absolute terms (RWF 5.41 billion in 2011/12 to RWF 1.03 billion in 2016/17) and as a proportion of total government biodiversity expenditures (53 percent in 2011/12 to 9 percent in 2016/17), reflecting a lack of consistent mainstreaming of biodiversity objectives across programs.

For the implementation measure, please indicate to which national or Aichi Biodiversity Target(s) it contributes.

Measure responds to national Target 19 and all other targets since funds are required to implement the NBSAP.

Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:

Measure taken has been partially effective.

Please explain the selection and where possible indicate the tools or methodology used for the assessment of effectiveness above.

While resource mobilisation has been successful to a large extent, a lot more resources are still needed to implement the NBSAP satisfactorily. For example, one of the issues cited in a wetlands

inventory of 4 wetland complexes notes that interventions on the conservation of wetlands have in most cases not focused on the catchments where problems such as siltation and pollution emanate from due to limitations of funding.

Establishment of the Rwanda Green Fund (FONERWA) as an autonomous institution for further scale up of resource mobilization and implementation. Accordingly, FONERWA commitments of RWF 32.7 billion were made to 32 innovative projects including promising green technologies and approaches in energy, building, environmental management and agricultural sectors, among others, across national, District, private sector and CSO implementation partners.

The Government has managed to raise funds towards implementation of various actions that contribute to the achievement of the targets in the NBSAP, like:

- Mobilizing over USD 100 million through Rwanda's environment and climate change fund, FONERWA;
- Developing a green city toolkit and roadmap, identification of a pilot site for the Green City Pilot (GCP) as well as mobilizing USD 7 million in resources for the initial pilot;
- Rwanda was selected for project development support under the Pilot Programme for Climate Resilience (PPCR) and Forest Investment Programme (FIP). And
- Adoption of a model mine concept by 35 companies, and funding awarded for two model mines by FONERWA.

The Ministry of Environment was accredited to the Green Climate Fund in July 2015 as an opportunity to drive sustainable development and green growth as envisaged in its national strategies and to scale up its climate change projects and programmes. It is also an opportunity to strengthen national capacity for mobilizing financial resources that are required to achieve national goal on environment and climate change. It is also a platform for it to support other developing countries in developing and implementing their national climate change strategies by sharing notable achievements and experience;

Looking at the annual biodiversity expenditures by the Government of Rwanda allocated through domestic resources and external resources including grants and loans from bilateral and multilateral development partners., external sources of funds have accounted for 56 percent of

biodiversity expenditures and domestic resource allocations have accounted for the remainder (44 percent). Especially large increases in external grants and loans were made in 2014/15, including contributions to the FONERWA fund (RWF 12 billion) to support operations and funding proposals, as well as a large external grant contribution to MINAGRI's Gishwati Land and Water Management Project (RWF 13.1 billion). Non-government expenditures were also captured including those from bilateral donors, GEF-funded projects, NGOs and the private sector. Incremental expenditures by nongovernment implementing entities account for RWF 4.6 billion to RWF 5.7 billion annually (2014 prices), reflecting a modest average growth in biodiversity expenditures of 2.4 percent. Biodiversity expenditures were estimated to account for, on average, 0.3 percent of the national economy -- ranging from RWF 12.82 billion in 2012/13 to RWF 21.66 billion in 2014/15. Total biodiversity expenditures have grown by 2.4 percent annually, well below the growth of the economy and national budget.

#### Relevant websites, web links and files

- *Rwanda National Biodiversity Strategy and Action Plan (NBSAP) 2016*
- *FONERWA: Investing in a Green and Climate Resilient Rwanda, 2019*
- *FONERWA: Rwanda Green Fund*
- *BIOFIN Rwanda*
- *Rwanda Biodiversity Finance Initiative: Biodiversity Finance Policy and Institutional Review, 2017*
- *Rwanda The Biodiversity Finance Initiative (BIOFIN): Biodiversity Expenditure Review, 2017*
- *Rwanda The Biodiversity Finance Initiative (BIOFIN): Biodiversity Financial Needs Assessment, 2018*
- *Strengthening Climate Resilience of Rural Communities in Northern Rwanda: Green Climate Fund, 2018*
- *KawiSafi Ventures Fund: Rwanda Green Climate Fund, 2015*
- *Ministry of Environment (formerly Ministry of Natural Resources of Rwanda), 2015*

Obstacles and scientific and technical needs related to the measure taken:

- Limited capacity of national institutions for mobilization and utilization of financial resources;
- Limited involvement of the private sector; and
- Limited position of biodiversity in environment and climate change resilience initiatives.

## 2.10 National Biodiversity Data Mobilization

Biodiversity data are critical to advance the sustainable development agenda, and can be applied to multiple sectors, including energy development, tourism, agriculture and food security, public health, and the green economy. Rwanda is experiencing effects of climate change including heavy rainfall and flooding events, droughts, and shifts in typical onset of rainy and dry seasons. This coupled with national policies related to agricultural intensification and land use changes, and heavy reliance on natural environment and nature tourism revenues, puts emphasis on the need for information to guide planning. In line with the country needs to monitor changes in the quality of ecosystems over time, Rwanda Development Board (RDB), Ministry of Environment and REMA (main policy makers) expect information on species that indicate healthy ecosystems, alert about change or threats, attract tourists, and invasive species in the catchment to plan annual activities.

The Center of Excellence in Biodiversity and Natural Resource Management was established as the central hub based at the University of Rwanda. The Centre is hosted at the University of Rwanda, and in collaboration with its partners in government and private sector is developing a Rwandan freshwater biodiversity information system (RBIS) to support decision-making for conservation and

sustainable use of Rwanda’s freshwater resources. The current focus is on the Mukungwa catchment in northern Rwanda, which is both an important ecological region and touristic region because of mountain gorillas. Technical assistance is being provided by Kartoza from South Africa with additional support from the Freshwater Research Centre (FRC) in South Africa, and South African National Biodiversity Institute (SANBI). The RBIS will include three main components and will be developed in five phases, with regular roll-outs of system modules and improvements to get early use and buy-in.

The first phase is involving a preparation of the technical platform for the three main components that include biodiversity records and collections using open source software with links to existing data sources and connected to GBIF, where new data sets are being uploaded; a resource site that includes knowledge component with Content Management System (CMS) software where publications, reports, photos and other information will be made available for support decision-makers, researchers and the broader audience of individuals interested in biodiversity in Rwanda; and lastly, an analytic and mapping capacity (e.g., land use/land cover, water quality indicators) with a map server installed following the OGC WMS and WFS standards and completed by a CS-W server. Below, figure 13 shows the number of records made available over time (GBIF reports) and Table 12 summarises the dataset and records.

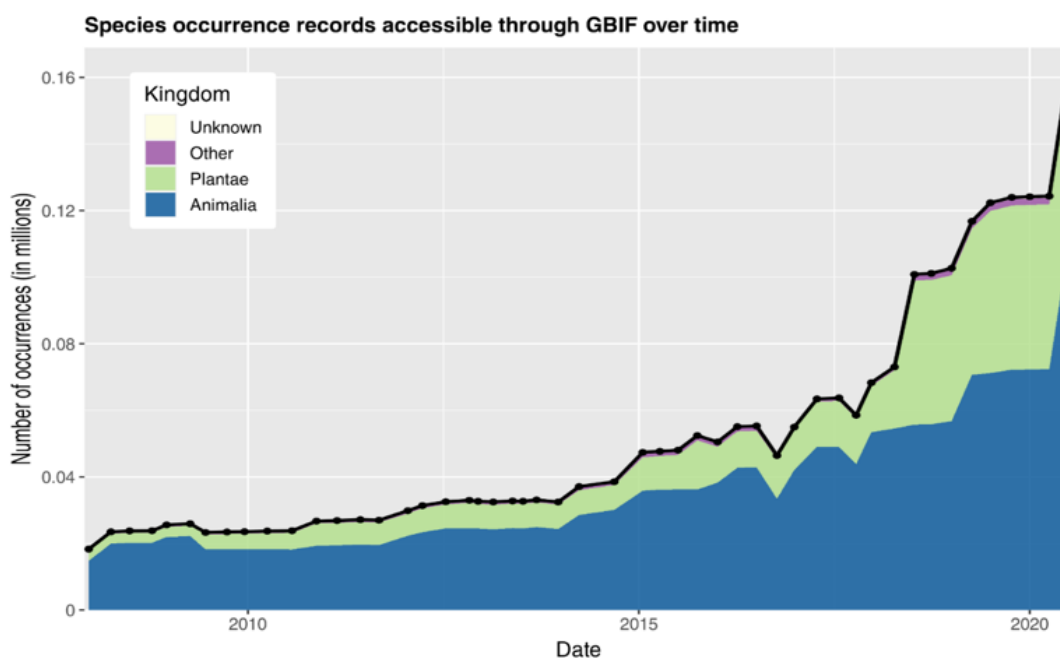


Figure 13: Number of records made available over time

Table 13: Summary of Data Sets and Records for Rwanda in GBIF

Entity	Year of mobilisation	Dataset	Number of records
CoEB	2019-2020	Plants	489 records
	2019-2020	Algae	138 records
	2019-2020	Anurans	121 records
	2019-2020	Birds	7210 records
	2019-2020	Fish	76 records
	2019-2020	Odonates	682 records
	2018-2017	Plants and Animals	620 records
Total			9336 records
ARCOS	2015-2019	Plants and Animals	4343 records
	Grand total		13679 records

Source: GBIF

Other data records are mobilised by the Albertine Rift Conservation Society (ARCOS). ARCOS's data mobilisation has focused on particular taxa including mammals, reptiles, amphibians, birds, macroinvertebrates (see Table 1) from different number of wetlands of Rwanda that include the City of Kigali wetlands, Rweru-Mugesera Complex, Akanyaru, Southern and Eastern Kirehe, Muvumba, Rusizi and Rugezi Wetland Complexes. A complementary survey was done under the Wetland Ecological Integrity Assessment Project. These information were acquired to assess the quality of the aforementioned wetlands. To achieve this, ARCOS is using the ranking system of Ramsar 2005 to categorize the ecological integrity of different wetlands in Rwanda.

For Birds data analysis, ARCOS is studying changes

in bird's population over time using the Wild Bird Index while for other taxa, a use of indicators developed by other agencies will be used.

In collaboration with REMA and other stakeholders, ARCOS facilitated the assessment of Rwanda Wetland Ecological Integrity for the purpose of informing wetland management decisions and contribute to the establishment of Rwanda Biodiversity Information System (RBIS). Below is the summary of the preliminary findings.

The average condition and status of wetland complexes in Rwanda is at 53% of its potential, with the state level at 58%, the pressure at 65% and the response at 35%, showing that the current level of responses is not enough to address the threats faced by wetlands in Rwanda.

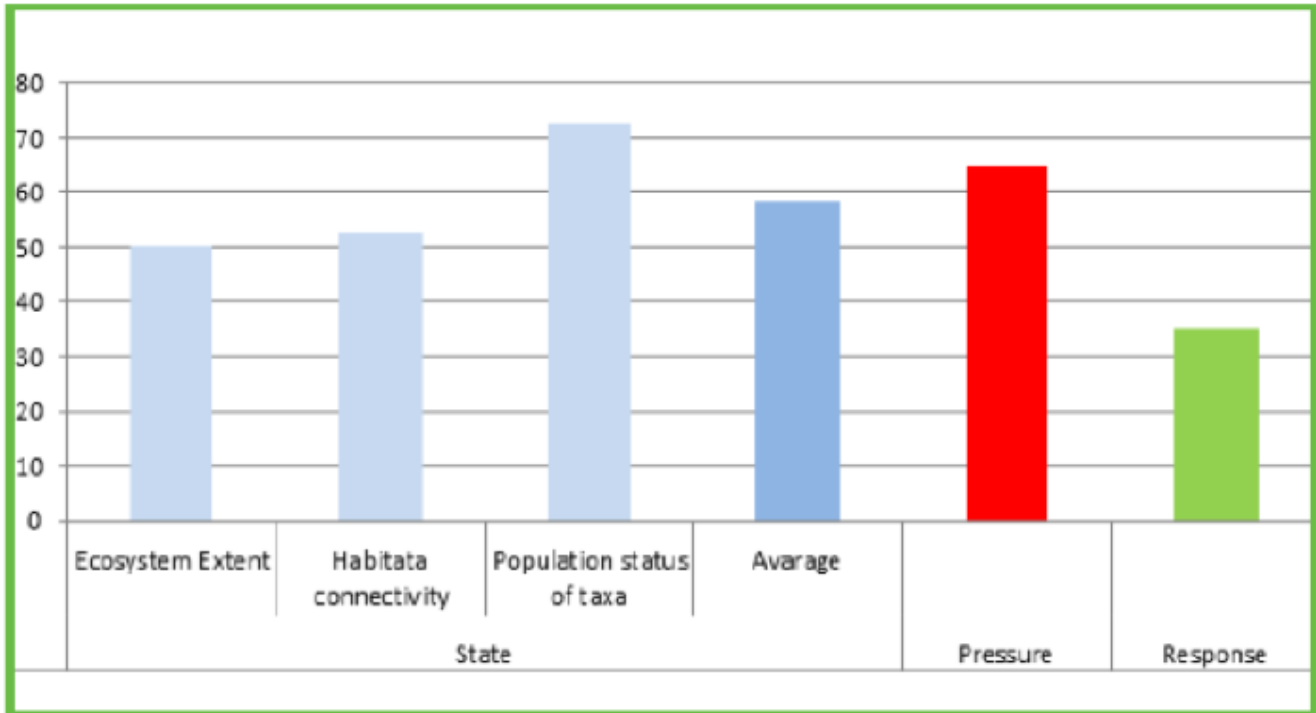


Figure 14: Overall State, Pressure and Response on Ecological Integrity for Rwanda Wetlands

Source: ARCOS 2019

Given the trend in wetland habitat loss and fragmentation, the population status of different species risk to be significantly affected over time. The ecological integrity of Akanyaru and City of Kigali wetland complexes was ranked low (20%-40%), and very low (completed %-20%) for Muvumba wetland complex. These wetland complexes require special attention in terms of restoration.

Assessing the importance of Rwanda wetlands at local, national and international level (adapted from Ramsar criteria), all the wetlands in Rwanda are important in terms of their biogeographic location, ecological and/or hydrological role in the natural functioning of a major wetland system/complex, habitat for biodiversity or ecotourism.

#### Relevant websites, web links and files

- ARCOS Rwanda Engagements
- Rwanda Biodiversity Catalog, FONERWA
- Center of Excellence in Biodiversity and Natural Resource Management (CoEB)
- Rwanda to get its first National Biodiversity Information System, courtesy of CoEB, 2020
- National Herbarium of Rwanda (NHR)
- GBIF Rwanda



Bird of Akagera National Park (Photographer: Jordi Van Oort)





Tree Nursery, Karago rural resource centre (Photographer: IUCN)

## SECTION 3: ASSESSMENT OF PROGRESS TOWARDS EACH NATIONAL TARGET

### 3.1 National Target 1

*By 2020, at the latest, Rwandan people in at least districts that are adjacent to protected areas are aware of the values of biodiversity and ecosystem services and understand the steps for its sustainable use and conservation.*

Category of progress towards the implementation of the selected target.

On track to achieve target.

Explain Evidence used in the Assessment:

Overall, Rwanda has had many programmes/projects that have raised the level of awareness on biodiversity in the country in general. For example, the “Kwita Nzina” Baby Gorilla naming ceremony has heightened awareness in general about the plight of this endangered species. In 2018, this ceremony attracted 65,000 people. Some of those in attendance were very high-ranking dignitaries. This, coupled with the Tourism Revenue sharing program in areas around the protected areas, has also created positivity among a significant part of the local communities who can now connect improved livelihoods to biodiversity conservation. Project activities around, ANP, Nyungwe NP, Gishwati-Mukura NP always had an awareness raising component while some activities were implemented in a participatory manner which provided an opportune moment for raising awareness on the need to conserve biodiversity resources in the general population.

- Kwita Izina event is comprised of several activities lasting for a week each year. These include the involvement of local communities through the Launch of Community Projects funded by the Government of Rwanda’s tourism revenue sharing programme where 10% of total tourism park revenues are invested back into communities, contributing to the development and welfare of communities living adjacent Rwanda’s national park; and
- A two-day Conversation on conversation Forum is held annually to sensitize the general public on matters such as the need to gazette remnant forests and the subsequent Order on the same issued in 2015; the Nyandungu wetlands among others, and rehabilitation of the Rugezi wetland. It brings together leading

global experts to debate Africa’s common conservation challenges and find solutions to preserve ecosystems for future generation.

With regard to the actions in the NBSAP whose focus was to strengthen communication and outreach tools and raise awareness among stakeholders on the values of biodiversity and ecosystems services, a lot was achieved as indicated below:

- Different awareness raising campaign and outreach tools were done by REMA, CoEB, RDB, RFA, RWB, AMC, RWCA, ARCOS, Forest of Hope, IUCN and Nature Rwanda among others. Newsletters, TV and radio shows/talks were used to raise awareness. Others included competitions in drawings, songs, and drama organized in schools surrounding parks and nature reserves. One awareness raising program that has had a wide reach is a local radio program of the Eastern province (RADIO IZUBA) entitled “TUMENYE PARIKI Y’AKAGERA” (Knowing Akagera National Park) which is done in Kinyarwanda. This has been implemented in partnership with the management of the park and targets the local communities around it. The program has been aired every Monday from 20:00HRs – 20:30HRs for over 2 years now. The radio station can be heard at 100 MHz FM and has more than 65% of the country’s coverage.
- Rwanda Comic Book Forum: This was designed in collaboration with the International Crane Foundation to educate and inspire young people to care for their environment, respect wild animals and help protect the Grey Crowned Cranes and their habitat. The forum organizes workshops and so far, it has reached over 20,886 primary school children from 557 primary school national wide. In addition, there are 9 youth environmental clubs that meet every weekend to discuss and learn about the environment and get involved with activities to protect their local habitat, with a specific focus on the endangered Grey Crowned Cranes. The clubs also take the opportunity to mentor the children to help them achieve well in school. 7 of the clubs are set up in communities close to Rugezi marshland and Akagera National Park. The young people have planted hundreds

of indigenous trees around the buffer zone of the marsh that will later be used as roost trees for Grey Crowned Cranes. They get great educational resources from National Geographic and Tusk Trust PACE programmes.

High profile activities such as the re-introduction of lions and rhinos into Akagera national park helped raise awareness of conservation and especially endangered/critically endangered species.

### Indicators used in this assessment

- Number of people sensitized, trained and engaged in sustainable use of biodiversity resources;
- Number of newsletters, Radio and TV programs, produced;
- Number of communication tools and channels developed and in use.
- Number of people reached through various awareness raising activities;

### Please describe any other tools or means used for assessing progress

Since there are very many actors involved in raising awareness on various environmental matters and information/data on the subject matter is not aggregated to give an overall view of how many people have been reached, the assessment has relied on the following:

- Documented surveys on the impact of Tourism Revenue Sharing (TRS) from the Rwanda Development Board (for Nyungwe National Park) – see section 11 on subject matter (a study undertaken around Nyungwe National Park and published in 2019) where 90% of the respondents noted that the TRS programme had a positive impact on decreasing illegal activities around Nyungwe NP. It had also contributed towards community ownership of the Park and helped reduce conflicts. From this it is inferred that almost a similar number had been reached with regard to raising awareness;
- In the Volcanoes national park where revenues generated from Sabyinyo Community Livelihood Association (SACOLA) had reached 5,800 cumulatively since 2007 (disaggregated data not available). It is deduced that the beneficiaries have received messages that draw linkages between the benefits they get and biodiversity conservation. In addition, some interventions that promote sustainable use and management of land and land-based

resources have been undertaken at the Farm level;

- Review of progress reports/project documents/evaluation reports on projects being implemented in various parts of the Country. For example, under the LAFREC project implemented in the Gishwati Mukura National Park under the LAFREC project, 9,500 local community members were trained on sustainable land management and efficient charcoal production and biomass processing.

This assessment has also relied on stakeholder inputs collected during the stakeholder workshop held on 7th July and from questionnaires administered after the workshop.

### Relevant websites, web links and files

- *Kwita Izina: Rwanda Gorilla Naming Ceremony*
- *FONERWA Investments*
- *Rwanda Development Board, Projects*
- *SACOLA Project Pipeline, Rwanda*
- *National Biodiversity Strategy and Action Plan (NBSAP), 2016*
- *The Effectiveness of Rwanda Development Board Tourism Revenue Sharing Program towards Local Community Socioeconomic Development: A Case Study of Nyungwe National Park, 2015*
- *Contribution of tourism revenue sharing (TRS) program on transforming the living conditions of communities around Nyungwe National Park, 2019*

### Level of confidence of the above assessment.

- Based on partial evidence

### Please provide an explanation for the level of confidence indicated above.

Data/information on the achievements under this measure is not fully aggregated; therefore actual verified numbers are not available.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is partial.

### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

The monitoring is done through the Result Based Monitoring and Evaluation System (RBM&E System) under the Monitoring and Evaluation System of the Environment and Natural Resources Sector of Rwanda whereby each sector report on annual achievements. The ENR sector will have a computerized M&E system linking all ENR sub-

sectors including the Districts in data collection, treatment, report and evaluation

### Relevant websites, web links and files

- *Result Based Monitoring and Evaluation System (RBM&E)*

## 3.2 National Target 2

*By 2020, the values of biodiversity and ecosystem services for at least two selected protected areas have been determined and integrated into planning processes, i.e. poverty reduction strategies and national economy.*

### Category of progress towards the implementation of the selected target.

On track to achieve target.

### Date the assessment was done

July/August 2020

### Explain the evidence used in the assessment.

Economic valuations have been undertaken for four protected areas, namely: Nyungwe montane forest, Rugezi wetland, Mukura landscape and Akagera national park (for more details please see section 2.1 (a)).

Rwanda is one of the Countries that joined the Wealth Accounting and Valuation of Ecosystems Services (WAVES), led by the World Bank whose goal is to enhance the mainstreaming of natural capital into development planning and national economic accounting systems. Natural capital accounts have been done for land, water and mining and they are being integrated into planning processes. In addition, ecosystem accounts were tracked over a 25-year focused on Soil. These will inform decision making in the country (for more details, see section 2.1 (b))

Launching the Natural Capital Account (NCA) on land in March 2018, the Minister of Environment noted that this particular account will provide information on trends and tradeoffs in the use of the country's resources. In addition, they will also provide indicators and trend analysis to track targets for sustainability, land allocation service delivery and productivity. The Government is committed to using Natural Capital accounting and ecosystem services valuation on decision making, however, this is not yet fully integrated. This is a continuous process that requires regular updating of the various accounts and full integration into Government development

programs and strategies. The Land NCA was used in the planning for landscape restoration across the country such as Sebeya catchment restoration programme, new National Land Use Master Plan as well as Kigali City Master Plan.

The Government of Rwanda has further committed to continue developing and mainstreaming NCA's into development activities in the Strategic Plan for the Environment and Natural Resources Sector 2018 – 2024. In this strategy, the Government commits to the following:

- Adopt Natural Capital Accounting (NCA) practices to track the Total Economic Value (TEV) of natural capital to the Rwandan economy focusing on land, water, forests, wetlands and mining, thereby accounting for gains and losses relative to GDP growth;
- Linked to the above, systematically track the total value of green (and efficiency) investments and corresponding returns on investment across ENR sub-sectors and key productive sectors (agriculture, energy, infrastructure among others). The aim of doing this is to highlight the triple-bottom-line benefits (economic, social, and environmental) of green growth as Rwanda urbanizes and industrializes.

### Research and Educational institutions

Research and educational institutions are key partners of the Environment and Natural Resources (ENR) sector. The National Institute of Statistics of Rwanda (NISR) integrates Environment and Natural Resources issues into questions of national surveys, censuses and other data collection systems to provide technical support in the analysis and overview of the Environment and Natural Resources.

### Indicators used in this assessment.

- Number of relevant target groups trained in biodiversity and ecosystem services valuation. Number of sectoral strategic and action plans integrating accounting of biodiversity and ecosystem services values;
- Biodiversity valuation undertaken for at least 2 selected protected areas by 2020;
- Natural Capital accounts developed; and
- Natural Capital Accounts integrated into planning processes and poverty reduction programmes.

## Please describe any other tools or means used for assessing progress

This assessment is based on desk studies and expert opinion.

## Relevant websites, web links and files

- *Wealth Accounting and the Valuation of Ecosystem Services, Rwanda*
- *Rwanda NCAs – Ecosystems Accounts 2019*
- *Rwanda NCAs - Minerals resource flows Accounts 2019*
- *Rwanda NCA - Water Accounts 2019*
- *Rwanda NCAs - Land Accounts 2018*
- *Towards ecosystem accounts for Rwanda 2019*
- *Rwanda The Biodiversity Finance Initiative (BIOFIN) Economic Assessment of Akagera Wetland Complex: Identifying Finance Solutions for Improved Management, 2019*
- *WAVES Country Brief: Rwanda, 2015*

## Level of confidence of the above assessment

- Based on partial evidence

## Please provide an explanation for the level of confidence indicated above.

This assessment has used the following indicators:

- Biodiversity valuation undertaken for at least 2 selected protected areas by 2020. This was completed for Nyungwe National Park, Mukura Forest and Rugezi wetland.
- The economic assessment of Akagera Wetlands was conducted by BIOFIN (2019)
- Natural Capital accounts developed (these were completed for land, water and minerals. Work on and ecosystems is still on going.
- Integration of Natural Capital Accounting into Government policies and strategies.

The extent of integration of these into planning processes is not very clear (see section 2.1 for more details about this target).

## Adequacy of monitoring information to support assessment

- Monitoring related to this target is partial.

## Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Project/programme level monitoring is undertaken by the implementing organisations (Ministry of Economic Planning and Finance (MINECOFIN), World Bank) and Ministry of Environment.

## Relevant websites, web links and

- *Rwanda The Biodiversity Finance Initiative (BIOFIN) Economic Assessment of Akagera Wetland Complex: Identifying Finance Solutions for Improved Management, 2019*
- *Valuing visitor services and access to protected areas: The case of Nyungwe National Park in Rwanda, 2017*
- *Total Economic Value (TEV) of Mukura Landscape, Rwanda 2014*

## 3.3 National Target 3

By 2020, at the latest, positive incentives for biodiversity conservation and sustainability towards local communities' development is boosted and applied and harmful incentives are eliminated.

## Category of progress.

1 On track to achieve target

## Date the assessment was done

July/August 2020

## Explain Evidence that has informed this Selection.

Many programmes and projects have been initiated across the country in an effort to encourage the participation of local communities into conservation and sustainable management of biodiversity and the ecosystems that support life. Measures taken have focused on integrating conservation and development as a catalyst to improving the local peoples' socioeconomic wellbeing as well as giving back to them benefits that arise from the conservation. The following are some of the actions/measures implemented to achieve this:

- Tourism Revenue Sharing (TRS) has significantly impacted local communities living adjacent to protected areas since its inception in 2005. The total amount shared by 2018 amounted to \$5.3 million since its inception in 2005. These resources have been used for community socioeconomic development projects;
- Between 2005 - 2019, 690 community development projects had been funded under the TRS programme resulting into a significant boost in education, health and provision of water and other social infrastructure;
- Various community-based enterprises have been established such as the Sabyinyo Silverback Lodge. Initiation of the enterprises is preceded by capacity building and provision of other support needs to the beneficiaries;

- Using conservation as an entry point, cooperatives have been promoted and formed around protected areas (Volcanoes and Nyungwe National Parks). This has helped achieve the twin goal of banking the unbanked; as well as encouraging savings. Overall, this has promoted investments and social economic development of the communities at the household level;
- A good number of artisanal miners (illegal in Mukura forest) have abandoned mining activities in support of conservation and they are now engaged in alternative livelihood options. Similarly, there are reformed and rehabilitated poachers as a result of the TRS programme and other programmes that have integrated conservation and development around the protected areas (stakeholder Consultation Workshop, 7th July 2020).

Overall, conservation in general has benefited immensely due to the implementation of these measures. This statement is validated for example by the results of a survey done around Nyungwe forest in 2015 to establish effectiveness of the revenue sharing programme on the sustainable management of natural resources. 100% of the respondents gave responses in the affirmative (see section 2.4 of this report).

Notable ecosystem gains include:

- significant reduction and mitigation of natural forest cover loss;
- regeneration of rehabilitated ecosystems including forests and wetlands;
- Increase of wildlife numbers including threatened species as per the IUCN Red List species such as the Mountain Gorilla.

However, some of the government subsidies such as the fertilizer subsidy are seen as largely having negative impacts on biodiversity (BIOFIN 2017). Some of the negative impacts of this program include:

- Direct soil and water pollution which has adverse impacts on plant, animal and human health;
- Long-term loss in soil fertility and reduced crop levels, leading to new land clearing for crop cultivation;
- Purchase of inappropriate irrigation technologies resulting in overdraw of water and draining of wetlands;
- Promotion of improved seeds for some crops leading to mono-cultures and loss of native

agro-biodiversity.

### Indicators used in this assessment

- Number of income-generating projects initiated around protected areas and other key biodiversity areas, enhancing their protection and contributing to local communities livelihoods;
- Annual financial value of positive incentives for biodiversity conservation and sustainability;
- Number of households benefiting from positive incentives;
- Number and types of harmful incentives identified; and
- Types of tools developed for eliminating harmful incentives.

### Please describe any other tools or means used for assessing progress

Tools used in assessing progress towards achievement of this target were mainly: through desk review of project documents and progress reports, publications, research/Impact survey reports on the Tourism Revenue sharing program, analysis of data on revenues shared under the TRS program from Rwanda Development Board and various materials available on line published by various stakeholders that include the Rwandan government, development partners, research institutions among others.

**Relevant websites, web links and files** (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

- *The Effectiveness of Rwanda Development Board Tourism Revenue Sharing Program towards Local Community Socioeconomic Development: A Case Study of Nyungwe National Park, 2015*
- *Contribution of tourism revenue sharing (TRS) program on transforming the living conditions of communities around Nyungwe National Park, 2019*
- *Bonn Challenge Barometer of Progress: Spotlight Report 2017*
- *Second Bonn Challenge progress report. Application of the Barometer in 2018.*
- *A best practice of community involvement in the sustainable conservation of the Volcanoes Biosphere Reserve in Rwanda, 2017*
- *Biodiversity Finance Policy and Institutional Review. Rwanda Biodiversity Finance Initiative, 2017*

### Level of confidence of the above assessment

- Based on partial evidence

Please provide an explanation for the level of confidence indicated above.

Available information/data on the analysis of progress does not comprehensively cover all potential projects and/or activities that feed into this particular target and its identified indicators.

**Adequacy of monitoring information to support assessment**

Monitoring related to this target is partial.

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Documentation of what has been done by various projects seems to be good and adequate indicating achievements, challenges and constraints at the project implementation level. However, consolidation of this information/data nationally for a complete appreciation of what has been achieved, where and the total number of beneficiaries is lacking.

The monitoring of number of projects implemented as well as their impact is done adequately by RDB. Conservation and development activities undertaken by other projects/programmes are also done fairly well at that level. There seems to be a gap however in how data from various actors is consolidated to provide a holistic view of status (for more details, see section 2.4).

### 3.4 National Target 4

By 2020, public and private sectors and civil society organizations have promoted and implemented plans that consider ecological limits.

**Category of progress towards the implementation of the selected target**

On track to achieve target

**Date the assessment was done**

August 2020

**Explain evidence used in this assessment.**

Unsustainable use and extraction of resources has been a major driver of biodiversity loss especially in forest ecosystems, lakes, wetlands and rivers. To mitigate against this, the Government of Rwanda and other stakeholders in the private sector have been implementing activities geared towards promoting sustainability. Some of the initiatives undertaken by Government include: Adoption of Green Industry Concept fully. Some of the Private

sector actors have already taken a lead and adopted it, for example –the MoE in conjunction with the Ministry of Industry, Trade and East African Affairs (MINICOM) and the Rwanda Resource Efficiency & Cleaner Production Centre (RECPC) gave awards to 6 industries that had adopted green technologies. Areas where the industries had excelled in were general good housekeeping, adoption of changes in technologies that are more efficient and environmentally friendly; improvements in process control; input substitution (with more environmental friendly one) and equipment modification to increase productivity while reducing environmental degradation. It will however take a while before a significant number of actors adopt the Green Industry concept.

Other activities that promote and enhance sustainability over the reporting period include:

- Promotion of energy use efficiency in public buildings (energy, water and sanitation institutions) and at the household level;
- Promotion of energy saving cook stoves, biogas and other alternative energy sources that reduce consumption of biomass energy by different stakeholders;
- Identification of the National Program for Sustainable Consumption and Production priority projects (SCP);
- Capacity building on cleaner production and sustainable consumption and production (SCP) for industries in various sectors;
- Promotion of green and climate resilient villages and green schools which have embraced rainwater harvesting systems, biogas, reforestation and agroforestry, sustainable management of soil and water and use of organic manure;
- Establishment of the Rwanda Resource Efficiency & Cleaner Production Centre (RECPC). RECPC is a joint project of the Ministry of Trade and Industry (MINICOM) and UNIDO-UNEP housed in the Private Sector Federation (PSF);
- To build efficient industries, Rwanda will establish a framework for reporting energy and water use, setting energy intensity targets, investigating differentiated electricity tariffs that promote off-peak use, and developing guidelines, standards and support for clean production;
- Promotion of sustainable initiatives by the private sector (e.g. Eco-lodges promoting indigenous species and buying organic

- products from surrounding communities etc).
- Green certification programmes in coffee and tea in Rwanda (see the table below on number

of coffee producer cooperatives, farmers and the certification status).

Table 14: List of Cooperatives and number of members participating in the production of sustainable coffee in Rwanda.

Coffee Producer Cooperative	No. of members	Certification		
		UTZ	Rainforest	Fairtrade
Kogimuwaka cooperative	145	In process	In process	
Buhanga coffee	387			Attained
Nyampinga co-operative	235			
Twongere Umusaruro	161			In process
Dukundekawa cooperative	263	Attained	Attained	Attained
Twongerekawa Coko	134		In process	Attained
Gashonga Coffee cooperative	104	In process		Attained
Shangi and Nyabitekeri	102			
Abakangukiyekawa (ABKC) cooperative	540		Attained	Attained
Tuzamurane Cooperative	87		Attained	
Accogico cooperative	122			In progress
Koakaka cooperative	1,316	Attained	Attained	Attained
Abahuzamugambi Maraba	1,326		In process	Attained
Mayogi Coffee	381			
Kotemukama	223			
Kopakaki-Dutegure	1,204	Attained	Attained	Attained
Cocagi	1,031		In process	Attained
Gisuma Coffee	179	In process	In process	In process
Abakundakawa Rushashi	1,962	Attained	Attained	Attained

Source: Sustainable Harvest Rwanda: Rwanda Coffee a Second Sunrise, 2020.

### Greening the Special Economic Zone and provincial industrial parks

Rwanda is establishing a Special Economic Zone (SEZ) in Kigali. This will be a world-class business park intended to attract foreign direct investment. Similar provincial industrial parks in urban centre will also be developed. This initiative is intended to encourage energy and water efficiency as well as promote green industrial and building designs and technologies; including sustainable waste management options. This will lead to a 'triple-win' opportunities such as cost savings in production

and operation, environmental conservation, and contribute towards building climate resilience.

This national target recognizes EIA as a tool that can potentially ensure that development activities are not harmful to the environment. General Guidelines and Procedures for conducting Strategic Environmental Assessment (SEA) were published in June, 2011 by REMA to complement existing EIA Laws. However, the SEA has only been fully covered by Legislation in Law NO 48/2018 of 13/8/2018.

Since 2011 when the SEA Guidelines were



published, some of the SEAs undertaken include:

- SEA for the Agricultural Sector in Rwanda (2012);
- SEA for the Energy Sector Policy;
- SEA for Scaling up Off-Grid Energy Program
- SEA for Mining and Minerals Policy;
- SEA for urbanization policy.

The Government of Rwanda through REMA is ensuring that all proposed plans/programmes are subjected to the SEA process and that sustainability is integrated wholly.

### Indicators used in this assessment

- Percentage of development plans that encompass EIA;
- Number of ecosystems whose resources thresholds exploitation is known;
- Percentage of development plans implementing EMP;
- Number of staff trained in SEA methodology and approach;
- Number of experts registered by REMA as SEA experts;
- Extent to which SEA and EIA recommendations are implemented and monitored.

### Please describe any other tools or means used for assessing progress

The REMA and RDB data bases on EIA and SEA reports submitted and approved, quality of reports in terms of identifying environmental and biodiversity issues clearly and succinctly; and the extent to which the Environmental Mitigation and Monitoring Plans are implemented and monitored.

### Relevant websites, web links and files

- *Green Industry and Private Sector Development*
- *Environment and Natural Resources Sector Strategy 2018-2024.pdf*

### Level of confidence of the above assessment

- Based on partial evidence.

### Please provide an explanation for the level of confidence indicated above.

The target had 4 indicators which focused on the number of development projects that encompass EIA and that are implementing Environmental Management Plans (EMPs). The other indicator on number of ecosystems whose resource threshold exploitation is known does not necessarily tie in with this particular target. In addition, resource threshold exploitation potential should be done at a strategic level (say for water resources)

and this should guide allocation for projects or programmes. Generally speaking, very good reports with the best mitigation measures may not deliver if the measures are not implemented and monitored. This part will only be as good as RDB/REMA are able to regularly audit projects and plans for which they have granted approvals. The EDPRS2 2013 -2018 indicates that only 60% of projects with EIA conditions were monitored and compliance enforced; while 44 environmental audits for projects were conducted. This was undertaken for purposes of enforcing regulations related to effluent discharge standards for industries and commercial buildings. Enforcement of EIA/SEA EMP/conditions therefore seems to be a weak point in the process and needs to be addressed.

### Adequacy of monitoring information to support this assessment

- Based on comprehensive information.

### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

The MoE in conjunction with the Ministry of Industry, Trade and East African Affairs (MINICOM) and the RECPC monitor this target with regard to implementation of cleaner production measures by the private sector.

RDB ensures EIA's are undertaken prior to licensing for implementation of projects while REMA ensures that policies, Plans, and programmes, plans are subjected to Strategic Environmental Assessment (SEA) process.

### Relevant websites, web links and files

- *Strategy for Environment and Natural Resources Sector 2018-2024.pdf*

## 3.5 National Target 5

*By 2020, at least 50 percent of natural ecosystems are safeguarded, their degradation and fragmentation significantly reduced.*

### Category of progress towards the implementation of the selected target

- On track to achieve target.

### Date the assessment was done.

July 2020

### Explain evidence that supports this assessment.

The efforts of the Government of Rwanda to reduce degradation and enhance connectivity of natural ecosystems is reflected in several national strategies and plans that were developed and implemented over the last 10 years. Key conservation areas protected include all the 4 national parks (degradation in the parks has been reduced significantly due to stringent protection measures); Rugezi wetland complex which is a Ramsar site; other small patches of natural forest protected by Ministerial Order No 006/MINIRENA/2015 of 18/06/2015 determining the management of protected state forests not managed by Special laws; and Adoption of the Prime Minister's Order N°006/03 of 30/01/2017 drawing up a list of swamp lands, their characteristics and determining modalities of their use, development and management. The Prime Ministers order on wetlands was a follow up action after the identification and mapping of wetlands which established that the country had 935 marshlands covering about 10.6 % of the Rwandan surface area (MINEvrn, 2019). Through the enactment of Environment Law N°48/2018 of 13/08/2018 on Environment, wetlands have been given due recognition and protection especially by Articles N° 42, 47, 48, 49 and 60 which have very explicit provisions on sustainable wetlands management. These conservation efforts will go a long way towards increasing the area of natural habitats protected eventually.

### Indicators used in this assessment

- Number of rehabilitation plans elaborated and implemented
- Area of natural forests OR percentage of natural forests restored;
- Density/quality of natural forests;
- Extent to which fragmentation of natural forests has been controlled/reduced; and
- Number of new policies, laws and orders adopted by the government.

### Please describe any other tools or means used for assessing progress

Progress has mainly been assessed based on the indicators mentioned above. The information is primarily based on the developed rehabilitation plans and implementation reports indicated above

### Relevant websites, web links and files

- *Gishwati Forest Reserve Three Years Interim Management Plan 2015-2018*
- *National Parks in Rwanda*

### Level of confidence of the above assessment.

- Based on comprehensive evidence

### Please provide an explanation for the level of confidence indicated above.

There is enough data/information that indicates what has been implemented and what has been achieved.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is adequate.

## 3.6 National Target 6

*By 2020, fishing and aquaculture, agriculture and forestry are managed sustainably taking into consideration ecosystem specificities to ensure biodiversity conservation.*

### Category of progress towards the implementation of the selected target

- On track to achieve target.

### Date the assessment was done

July 2020

### Explain evidence used in this selection

Various programmes and activities aimed at promoting sustainable agriculture, fisheries and forestry have been implemented nationally. While a lot of progress has been made, it will take a while before sustainability is fully adopted by the various actors in each of the respective sectors of the economy.

#### Agriculture:

Agriculture supports about 86% of the population as their main livelihood activity and contributes about 1/3 of the Country's GDP. According to the Seasonal Agricultural Survey (2019) approximately 1.38 million ha of land were under agricultural use accounting for about 60% of the country's total land area. The government recognizes that increased agricultural production has implications on the environment especially due to land scarcity, soil erosion, and loss of soil fertility and pollution from agrochemicals and emission of GHGs among other issues (NISR, 2019).

Some of the programmes implemented that promote sustainability include:

- Sustainable Land Management (SLM) around River Kagera. The intervention area covers the downstream districts of Nyagatare, Kirehe, Kayonza and Bugesera and the upstream districts are Rulindo and Kamonyi. 11 micro catchments were identified on the basis of land degradation severity in these districts as sites for project implementation. These are: Karambo and Butare in Rulindo; Gasharu and Nyarurembo in Kamonyi; Gatebe II in Nyagatare; Kiyanja and Cyabajwa in Kayonza; Nyirarubomboza and Gakindo in Bugesera; and Muganza and Nyagasozi in Kirehe district. Project interventions being promote are agroforestry, soil fertility improvement, construction and maintenance of terraces, construction of rain water harvesting dams, practicing of appropriate agronomic techniques, and integrating livestock keeping with crop production.
- Agroforestry has widely been promoted as a practice that controls soil erosion, enriches it, provides fodder for livestock, promotes biodiversity and reduces peoples' reliance on natural forests for biomass energy. Current successes of the Sustainable Land Management Programme include: 320,000 trees planted in all the catchments; 7 Ha of terraces constructed in Karambo micro catchment; 45 km of anti-erosion infiltration ditches constructed in four micro catchments; 16 km of river buffer in three micro catchments put in place; water trapping pits with a combined capacity of 12,500 m<sup>3</sup> in four micro catchments constructed; Integrated soil fertility management trials and agronomic practices undertaken in 22 study plots with a combined area 10 Ha; and Undertook livestock – crop activities in 8 micro catchments (see case study below on potential for agricultural landscapes to contribute to biodiversity conservation).
- Development of Village land use action plans, landscape restoration measures which have helped protect 3000 ha of farmland has been protected against erosion with support from the Netherlands Government. This activity is on-going (Questionnaire Feedback – Netherlands Embassy).
- Land Husbandry, Water Harvesting and Hillside Irrigation (LWH) Project: Initiated by the government in 2008, the project has been implemented in Karongi, Rutsiro, Nyanza

and Gatsibo. The main aim of the project is to enhance hillside agriculture productivity and commercialization using a holistic and comprehensive watershed management approach adaptable to local conditions. Modern appropriate conservation and irrigation techniques and technologies were promoted. Targeted crops to be cultivated were coffee, tea, mangoes, avocado, cooking banana and pineapple in areas conducive to their production.

- International Fund for Agricultural Development (IFAD) Pilot Projects in Rwanda: The main objective of the pilot project was to address soil fertility constraints, protect watersheds, improve livestock and increase rice production. Some of the practices promoted under this program included:
  - Sustainable and productive land management systems and soil conservation measures based on the introduction of systematic hedging;
  - Management of biomass and anti-erosion measures including planting of grass and shrubs;
  - Agroforestry on steep slopes and terraces;
  - Integration of improved animal husbandry practices into the agricultural production system; and
  - Development of marshlands for rice cultivation.
- Integrated Soil Fertility Management (ISFM): To promote soil fertility while at the same time enhancing the management of agricultural inputs especially chemical fertilizers, the government has been promoting (ISFM) based on research conducted to determine the need for soil fertility improvement across the country. Other measures targeting soil quality improvements include:
  - Growing nitrogen-fixing fodder and green manure crops such as peas and integrating them back into soil;
  - Promoting the “Zero tillage” approach where minimal tilling of land or done during planting of seeds.
- The one cow per family has also significantly impacted on the environment and socioeconomic wellbeing of the citizens. Manure from livestock has been noted to comprise the most significant proportion of soil improvement inputs. It's also being deduced that this programme has contributed towards controlling overgrazing and land degradation;
- The Rwanda Climate Services for Agriculture

**Project:** Launched on WorldMetDay in 2016, this 3-year project is intended to build a more climate-resilient agricultural sector in Rwanda. The Rwandan government working in collaboration with several Partner Organizations and with funding support from USAID is expected to provide nearly one million farmers with access to essential and timely climate information services. The ultimate goal of the project is to help transform Rwanda's rural farming communities and national economy through improved climate risk management. Participatory Integrated Climate Services (PICSA) approach is used

in the dissemination of the information to smallholder farmers. In 2016, 2,559 farmers (48% female) and 72 farmer representatives (32% females) were given training in the PICSA approach (CGIAR, 2020).

- Establishment of Rwanda Institute of Conservation Agriculture (RICA). RICA focuses on developing skills in Conservation Agriculture and One Health principles and trains its students about farming and irrigation techniques that improve agricultural productivity. Students from the Institute graduate with a Bachelor of Science Degree in Conservation Agriculture. The Institute was established in 2019.

### Case study: Strengthening decision making through capacity building in implementing effective monitoring instruments and the farmland biodiversity score.

Since 2015 Rwanda has been actively taking part in the development of a novel biodiversity monitoring tool, the Farmland Biodiversity Score (FBS). Experts both from civil organizations, research organizations and governmental institutions have worked with a network, led by World Agroforestry (ICRAF), of 25 biodiversity experts from the global South to develop an indicator that measures the biodiversity value of agricultural landscapes and compliments the existing recommended indicators for Aichi Target 7. The existing indicators were limited to capture information on biodiversity species that live on farms whereas the new protocols allow for measuring and accounting the contribution of agriculture on the broader wild biodiversity within a landscape. By measuring the composition and configuration of Trees on Farms (TonF), the FBS provides robust information on the integrity and connectivity of the landscape.

TonF describe any integration of trees with crops or with livestock on the same piece of land. In landscapes dominated by seasonal crops, they can be individual trees, such as fruit trees or shade trees on a pasture, patches such as woodlots and orchards or hedges. They can also be closely integrated with crops in agroforestry systems that aim at optimising synergy effects between trees, crops, and livestock, through nutrient cycling and micro-climate regulation. In forest landscapes, trees on farms will often be naturally regenerated forest species that are found in fallows and traditional agroforestry gardens characterised by the diversity of plants in the proximity of houses and serving multiple purposes (see Figure 1). Trees on private land make up a significant percentage of forest cover: globally 45% of farms worldwide already have more than 10% tree cover. As such FBS is linked to SDG Target 15.2 and compliments the existing metadata under Indicator 15.2.1 which only measure trees in forests by measuring forests in agricultural areas.

TonF are a critical component of farmland biodiversity, because of their contribution to habitat diversity and the mobility of forest dependent species through the farm landscape. Furthermore, because trees and tree features can be seen from space, TonF present a means to scale out field assessments and cost-efficiently monitor the state of agricultural biodiversity through time. The core protocols that were designed to provide data at landscape and national level also cover birds, which are a well understood component of biodiversity that can be reliably and cost-efficiently surveyed. Using data on birds, we can assess the value of agricultural habitats, and their tree components, for species of conservation concern and to understand habitat connectivity for forest dependent species.

FBS uses ESA Sentinel-2 – data, which is available since 2015 in a 5 day interval. FBS will be available as a global indicator at pixel resolution ~100 m. At a national scale the scores can be disaggregated to a single number based on the proportion of land with high, medium or low FBS. It can also be disaggregated by biome or biomes within countries. Rwanda has been a pilot country in testing the new indicator. In a survey from September 2019 to March 2020, the TonF Biodiversity Assessment Tool has been used in Gishwati landscape covering Nyabihu, Rubavu, Ngororero and Rutsiro districts. Data on trees, birds and arthropods

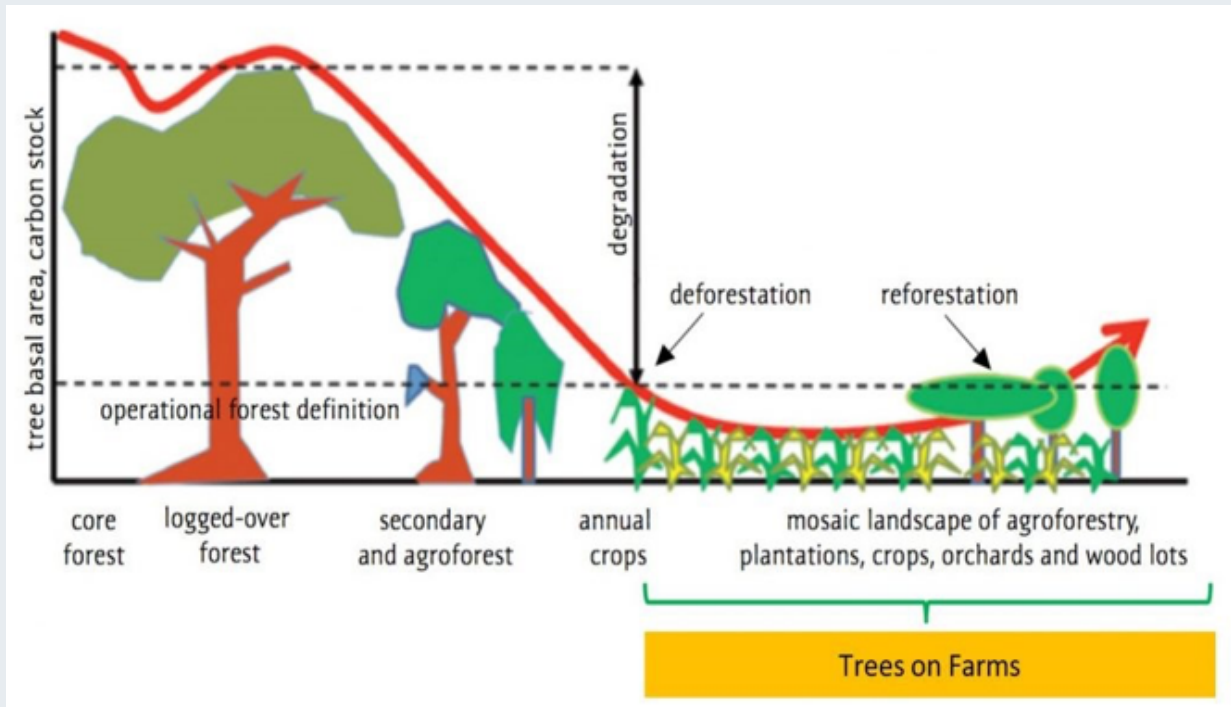


Figure 15: Trees on Farms in a landscape

were collected from a 25 x 25 km area comprised of 115 plots in different land use systems covering vegetation structure from cropland (58), rangelands (30), plantation (25) and natural forest (2).

Among others, preliminary results on 77 tree species, 171 bird species and 7608 arthropods samples have indicated a positive correlation between trees on farms and bird species

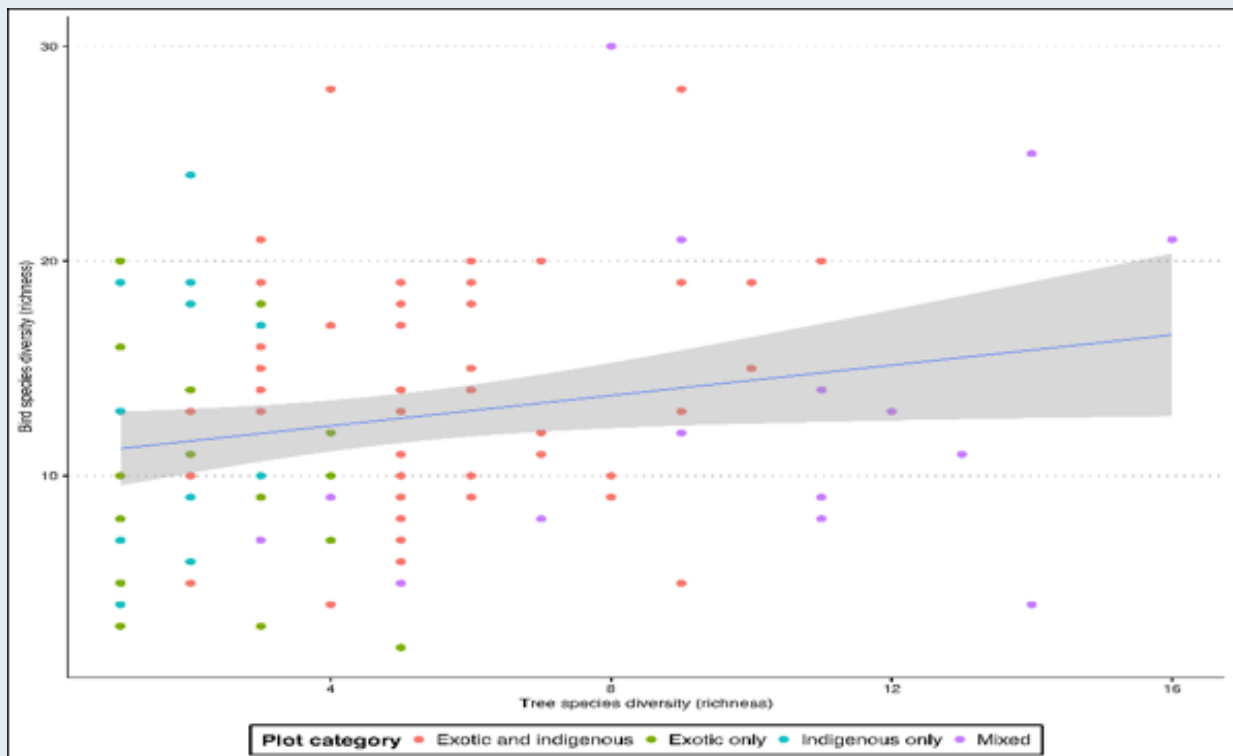


Figure 16: Bird species increase with increasing tree diversity

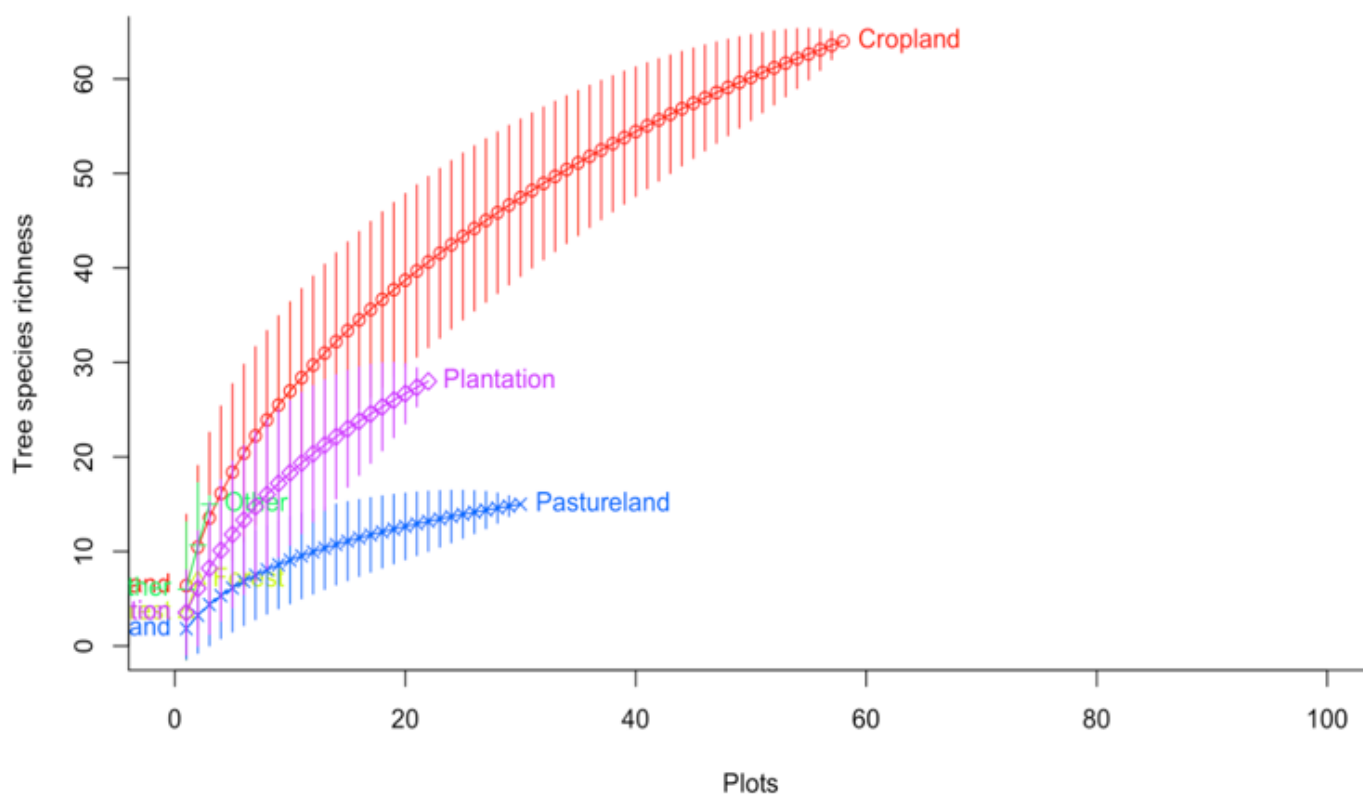


Figure 17: Species in cropland compared to pastureland and plantation

There were more trees species in cropland compared to pastureland and plantation.

In Rwanda, through different programs and projects, agroforestry has meaningfully contributed to environmental and land restoration targets on managed agricultural landscapes while bringing significant benefits to farmers. For instance, in 44 projects that were evaluated for the Barometer report towards the achievement of Bonn Challenge, 43% of the progress was attributed to trees on farms that were planted on 860,000 hectares. This underlines the evidence for supporting biodiversity friendly land use practices.

Rwanda is committed to continue to increase its capacity in national biodiversity data accounting to ensure an informed and effective implementation of biodiversity conservation actions. Agricultural lands are regarded as key for ensuring a balance between ecological and social wellbeing. Such biodiversity friendly land-use practices that include the incorporation of TonF have the highest potential to enhance coherence and synergies across multiple intergovernmental processes, including the SDGs, IPBES, UNCCD and various biodiversity-related conventions.

Prepared by Mr. Elisée Bahati Ntawuhiganayo and Dr. Athanase Mukuralinda

Sustainable Fisheries: Fish production in Rwanda has been on a steady growth over the decade, with capture fisheries being the main source. According to bkp Development Research & Consulting (2015) major fishing activities occur in lakes of Kivu (accounting for about 70% of the catch), Cyohoha and Mugesera, as well as in another 14 lakes. Artisanal fishing is common with the main capture fishes comprising of: *Limnothrissa miodon* (Isambaza); *Haplochromis* spp (Haplochromines); *Oreochromis niloticus* L. (Nile tilapia); and *Claries gariepinuss* (Catfish).

The Nile tilapia and catfish catch volumes in lake Kivu are low but they account for about 90% of the capture in other lakes (The New Time daily Rwanda, 2019). With regard to aquaculture, production has tremendously increased from 265 metric tons in 2011 to 5,128 metric tons according to FAO in 2018. Aquaculture is seen as a means of reducing pressure from capture fisheries.

Overall, the country is considered a net fish importer of fish products despite the rising production.

### Capture and Aquaculture Production 2011 - 2018

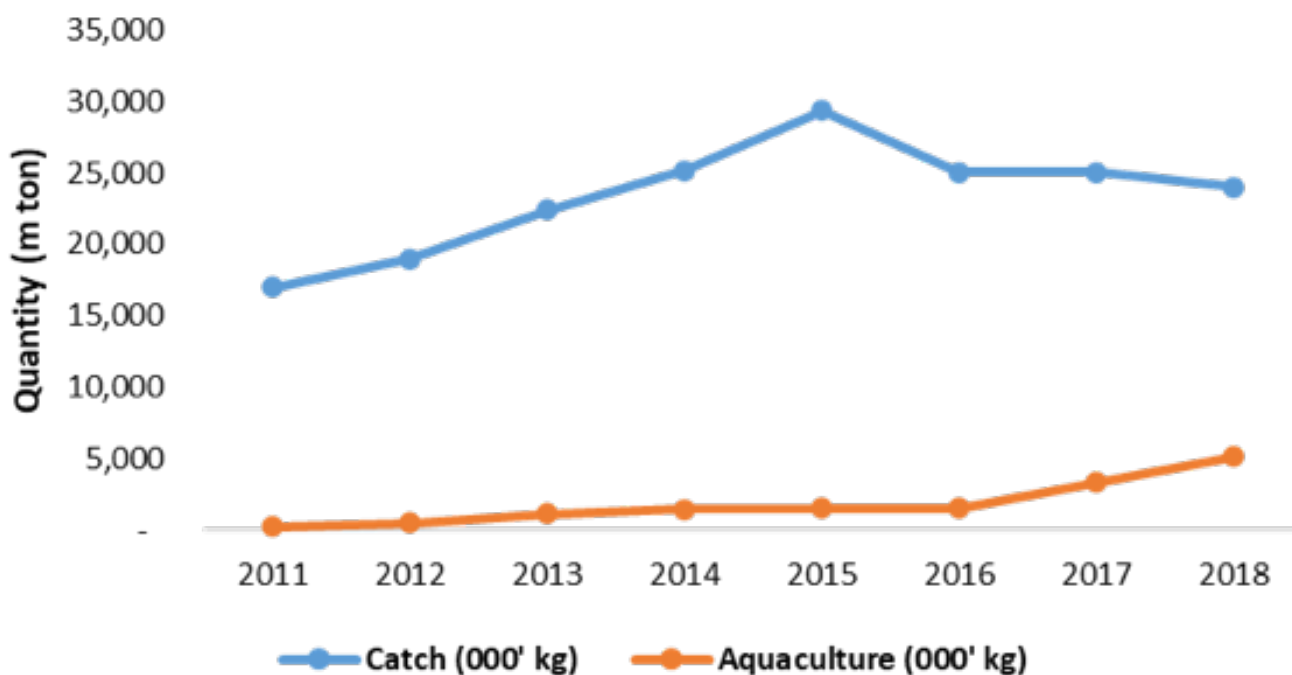


Figure 18: Trend of Capture and Aquaculture 2011 - 2018

Source: FAO 2020

#### Measures undertaken to promote Sustainable fisheries and aquaculture:

- by 2019 an estimated 1,424 fish ponds had been established, of which 731 are effectively productive, 569 are semi-productive and 125 currently not being utilized;
- In 2012 fifteen inland lakes were restocked with 3,500 Nile tilapia fingerlings by the Government of Rwanda, to enhance stock recovery;
- 25 engine boats were purchased to support

lakes surveillance in order to reduce malpractices in fishing including poaching and the use of illegal gears; and

- Rehabilitation of Kigembe aquaculture center was also done targeting to make it a modern hatchery for fingerlings production with an estimated annual capacity of 10 million fingerlings.

Of the measures proposed in the NBSAP, the following activities have been undertaken:

- Evaluation of the fish stocks in Lake Kivu has

been completed and the exercise will continue in other lakes (Rwanda Agriculture and Animal Resources Board). This is informing policies and interventions pertaining to issuance of fishing licenses to companies as well as the regulation of fishing thresholds. In addition, closed fishing periods have been implemented to allow for stock recovery;

- Re-introduction of native fish populations and selective fishing targeting invasive species: 650,000 fingerlings of *Limnothrissa miodon* fingerlings were collected from Lake Kivu and stocked in Bulera and Ruhondo lakes to enhance fish production. 100,000 *Tilapia* fingerlings have been stocked in Muhazi Lake to increase production. (RAB – Aquaculture and Fisheries Annual Report 2019/2020). This has increased production of *Tilapia* and catfish species from these lakes;
- Promotion of integrated management of watersheds around water bodies. Catchment management plans have been developed for several catchment areas (Rwanda Water Portal); and
- Tree planting (mainly agroforestry) for the protection of Nyabarongo catchment in Muhanga, Karongi, Ngororero and Muvumba watershed.

### Sustainable forestry:

Recognizing the important role forest play in national development and socioeconomic growth, the government committed to putting in place measures to curb and mitigate continued degradation of forest from various anthropogenic activities. It initiated forest restoration and rehabilitation programmes aimed at boosting the forest/tree cover to at least 30% of Rwanda’s total land area by 2020 (for more details, see section 2.2).

Forest management practices in Rwanda are unproductive, a problem that is exacerbated by illegal cutting of forests, uneven distribution of the forest resource over the country and limited space for plantations, low productivity of manmade forests, predominance of one species (*Eucalyptus*) and poor agroforestry practices. In addition, although Rwanda has attained the Vision 2020 target of 30% forest coverage, the quality and utility of these resources needs to be closely assessed within a sustainable forest management framework. As demand for wood increases over time, the deficit may increase leading to unsustainable exploitation. Maintaining the forest cover is at 30% of the Country’s total land area as indicated in NSTI (2018-2024) will require a concerted effort especially with regard to plantation forests (government and private sector) so as to provide for the needs of the population.

Forests degradation was remarkably reduced from 2009-2019, with analysis from the latest forest cover mapping indicating a net of 5% afforestation rate was achieved (see Fig. 16 on Forest cover change 2009 -2019). The analysis indicated that about 105,713 had suffered deforestation while 139,674 were afforested accounting for 15.7% and 20.7% respectively, within the same period (MoE, 2019).

Forest plantations have had a steady increase from 301, 500 ha in 2010 to 387,425 ha by 2019, representing an increase of 85,925 ha (28.5%), MoE, 2019). According to the 2019 forest cover mapping report, they accounted for 53.5% of the forested area. Tables 13 below shows plantation area in ha/province as well as the percentage area of plantations that is more than 2 ha in each of the 5 provinces while Table 14 shows increase in the area of plantation forests for 2013-2017 in hectares.

Table 15: Forest plantation by size per Province

Province Name	Forest plantation (ha)	Area greater than 2 ha	Between 1ha and 2ha	Between 0.5ha and 1ha	Between 0.25ha and 0.5ha	Less than 0.25ha	% FC area >2 ha
Kigali city	12,379	8,851	1,077	909	709	833	72
East	64,649	44,672	6,867	5,806	4,018	3,286	69
North	73,791	51,505	7,557	6,226	4,457	4,045	70
South	132,683	99,736	13,011	9,758	6,080	4,097	75
West	103,924	73,892	10,840	8,508	5,788	4,896	71
Total	387,425	278,656	39,352	31,207	21,052	17,157	72

Source: Rwanda Forest Cover Mapping, 2019.



Table 16: Forest plantation increase (Area in ha) 2013 - 2017

Year	2013	2014	2015	2016	2017
Forest plantation (Area in ha)	390,507	404,047	413,274	421,569	426,633
Percentage to the total National area	16	17	17.4	17.7	17.9

Source: RWFA, 2018 as cited in the Compendium of Environment Statistics, Rwanda, 2018

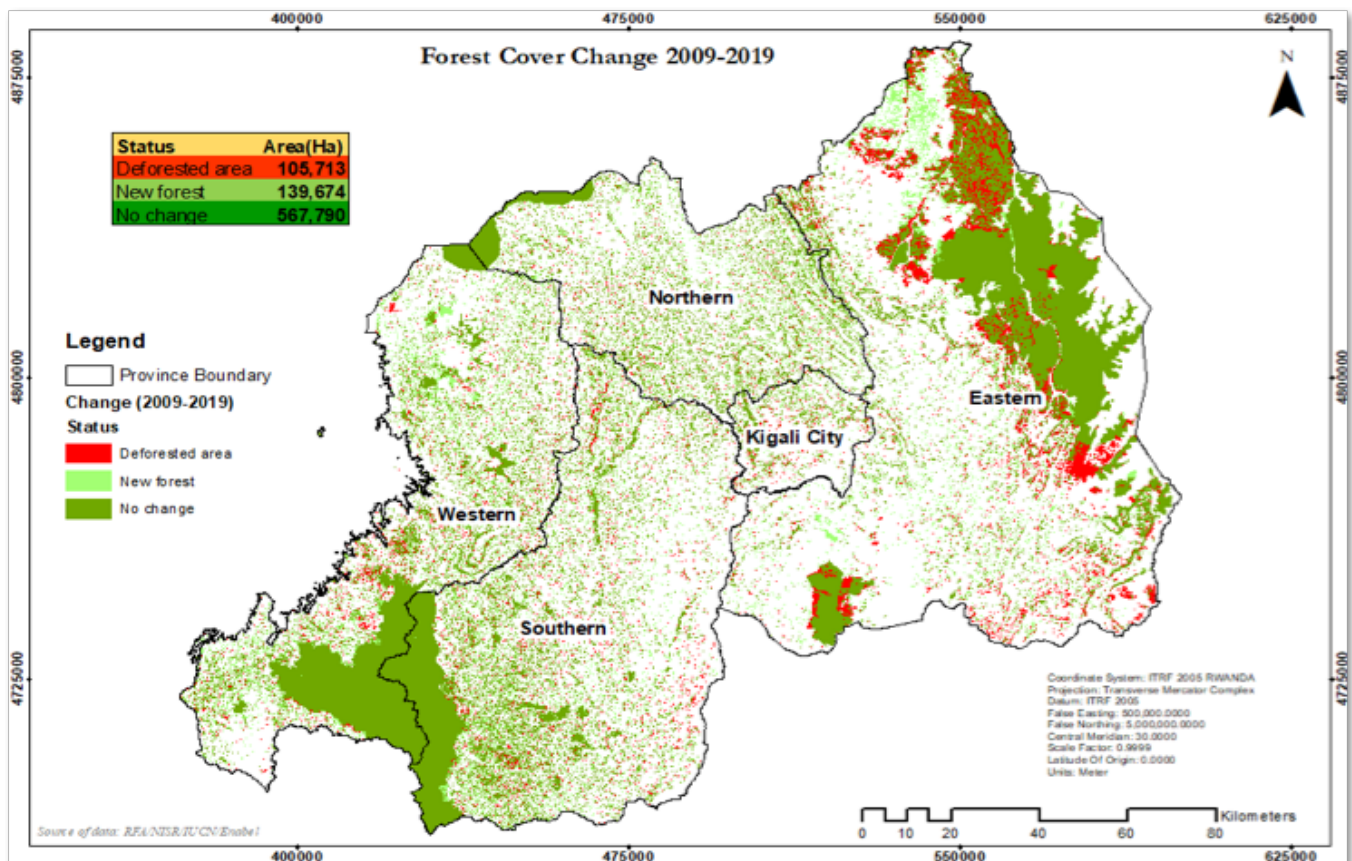


Figure 19: Forest cover change 2009 -2019

Source: Rwanda Forest Cover Mapping, 2019

Quantitatively, the forest cover has been achieved but qualitatively, there is still a long way to go in order to manage forests that are equally beneficial and habitats for a variety of species (MoE, 2018). Fishing still relies on exotic fish species so there is need for introduce more indigenous species into Rwanda's lakes.

#### Obstacles:

- The data used in this assessment is contained in various projects reports. It was therefore difficult to aggregate that data for an overall perspective, especially in the agricultural sector including agroforestry adoption; and

- Some discrepancies in the data reviewed for the same parameters were noted as reported by different sources: the expert has had to make personal judgement on which sources to work with.

#### Indicators used in this assessment

- Trends in land cover and land use change;
- Number of sustainable agricultural projects initiated, being implemented and completed;
- Trends in the type of agricultural inputs and the extent of their application;
- Trends in forest plantations and also agricultural land under agroforestry;

- Size of reclaimed, restores and rehabilitated forest areas;
- Trends of the capture and aquaculture productions quantities;
- Number of fish ponds established and also cages setup in lakes;
- Installation of fish preservation equipment and technologies;
- Fish restocking activities including location, types of fish restocked and quantities; and
- Water quality in the aquatic systems.

### Please describe any other tools or means used for assessing progress

Tools used in assessing progress towards achievement of this target were mainly: through literature review of project documents and progress reports, publications, research/Impact survey reports of various agricultural, forestry and fisheries sectors, and data collected from various materials available online, as reported/published by various stakeholders that include the Rwandan government, development partners, and research institutions among others.

**Relevant websites, web links and files** (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

- *Rwanda: State of Environment and Outlook Report 2015.*
- *Rwanda Forest Cover Mapping 2019*
- *Second Bonn Challenge progress report. Application of the Barometer in 2018.*
- *Forest Plantations and Woodlots in Rwanda. African Forest Forum, 2011*
- *RWANDA FOREST COVER MAPPING USING HIGH RESOLUTION AERIAL PHOTOGRAPHS 1, 2013*
- *Rwanda National Forestry Policy 2018*
- *Rwanda Seasonal Agricultural Survey - 2019 Annual Report*
- *Sustaining the future of agriculture in the land of a thousand hills: Rwanda*
- *Kagera Agro-Ecosystems: Sustainable Land Management (SLM) Rwanda*
- *Business case for fish meal production and aquaculture in Rwanda, 2015*
- *Country Programming Framework for Rwanda 2019 – 2023*
- *Rwanda Capture Fisheries: FAO Stats*
- *Rwanda Aquaculture Fisheries: FAO Stats*
- *Rwanda Compendium of Environment Statistics, 2018*

### Level of confidence of the above assessment

- Based on partial evidence

Please provide an explanation for the level of confidence indicated above.

Most of the data used in the analysis of progress towards addressing this target was not aggregated, and numerous gaps were identified especially in relation to the sustainable agriculture and fisheries. For the forestry sector, data discrepancies were noted as reported/published by different sources.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

- Sectoral evaluation reports were to be used as the main monitoring tools for this target.

### Relevant websites, web links and files

- *Republic of Rwanda. 2016. National Biodiversity Strategy and Action Plan. Kigali*

## 3.7 National Target 7

*By 2020, pollutants including those from excess nutrients are controlled and their harm has been brought to levels that are not detrimental to ecosystem function and biodiversity.*

### Category of progress towards the implementation of the selected target

- Progress but at an insufficient rate

### Date the assessment was done

July 2020

### Additional information

Pollution is still a major environmental issue in Rwanda attributed to the high population, conventional agricultural and industrial operations, and poor waste management. According to REMA (2018), air pollution in urban areas is mainly generated by motor vehicles while in the rural areas it is largely from fuelwood and open fires. In 2012, 2,227 deaths were attributed to ambient air pollution and in some cases, this was the leading cause of under-five mortality (REMA, 2018). A high incidence of long-term acute respiratory infections were also registered over the same period.

Although water resources in the country are still considered to be of relatively good quality (REMA, 2018), increasing pollution has been noted from sources such as agro-inputs (e.g. ammonia, nitrate, phosphate and pesticide residues) that are washed into water systems. Chemical fertilizers and pesticides use increased from 24% in 2006 to 29% and 31% in 2011 and 36.4 and 29.3 in 2014 respectively. The amount of chemical fertilizer applied to croplands increased from 6 kg/ha to 29 kg/ha between 2006 and 2012.

Ecosystem purification abilities are currently stretched compared to the rate of pollutants release. Other localized sources of pollution include high sediment loads, toxic and acidifying materials, including heavy metals from mining, and microbiological from untreated domestic waste) which have an adverse impact on human and ecosystem health. The high levels of heavy metals in water have been attributed to activities undertaken on riparian land (agriculture and human settlements among others) surface water runoff from urban areas and mining activities. In 2018, river Mugara and Mukungwa waters were contaminated with toxic wastes killing the fish in them. Farmers' ponds within the same locality were also affected. (Emmanuel Ntirenganya, New Times Daily, 2019).

## Pollution control and management progress:

### Air pollution control

- A new air quality management law 18/2016 governing the preservation of ambient air quality and prevention of related pollution was enacted. New standards have also been developed to enhance the regulation of air emissions. These include emissions standards for: non-road mobile machinery, thermal power plants and for the testing of motor vehicles, cycles and tricycles levels of exhaust emissions as part of environmental compliance;
- To enhance the governance and management of ambient air quality standards and emissions limits, the country has adopted the three East African Standards listed below:
  - » RS EAS 750 2010 –Emissions by Cement factories;
  - » RS EAS 751 2010 –Air quality specification;
  - » RS EAS 752 2010 Tolerance limits of emissions discharged to the air by factories.

- Emissions inspection is done for commercial and public vehicles twice per year, and annually for private vehicles;
- Two types of equipment for monitoring air pollutant emission have been procured and installed (one for measuring the levels/ concentration of pollutants to produce an air quality index; and another for measuring the composition of the particulates. This is used to deduce their potential sources and inform policy as well as mitigation measures as found necessary;
- Mobile and handheld emission inspection equipment for on-spot check (for hydrocarbons, carbon monoxide and opacity) have also been availed to the Traffic Police to enhance monitoring of vehicular emissions.

### Water and Soil Pollution control

A Water Information Management System has been developed for monitoring water quality among other functions. According to the water quality monitoring report of 2019, surface water pollution was mainly related to sedimentation/ siltation from soil erosion, and also from microbial contamination attributed to poor sanitation. Analysis of the results illustrated that most physical-chemical parameters (nitrogen/nitrates, phosphorous, total dissolved solids, pH and chlorine) were generally within acceptable limits. The same results also indicated that E. coli and fecal coliforms, total suspended solids, turbidity and dissolved oxygen levels exceeded the set acceptable limits for natural potable water. The most affected water systems were identified as Akanyaru River near the border with Burundi, Secoko River before discharging into Nyabarongo, Sebeya River at Musabike, Sebeya River at Nyundo Station, Akagera at Kanzenze bridge and the Nyabarongo River before receiving Mukungwa River.

Waste management has been improving especially in urban areas like Kigali but more needs to be done. In an effort to address solid waste management issues, various projects have been undertaken. The UNDP in Rwanda Office and the Government in 2009 partnered in the development of a comprehensive Waste Management Framework and related infrastructure to make waste management socially and environmentally more sustainable. Some best practices from this project include:

- Appropriate technology was adapted for application and implementation borrowing from the Fukuoka methods as recommended in the feasibility study for the Nyanza landfill;
- Capacity building and knowledge transfer was done for waste management practitioners to improve/ increase their awareness of potential hazards and impart the necessary skills;
- Civil society organizations (CSOs) were also involved in this project.

Waste Management for Environmental Safeguard. This is a project initiated in 2018 and being implemented by the Rural Development Interdiocesan Service (RDIS organization) as a contribution to tackling solid waste management. Immediate targeted beneficiaries are Church's training centers, guest houses, schools and health centers. Special training on waste management is given to key personnel e.g. managers of these institutions, including youth members from environmental protection clubs. They have also developed a waste management policy to be distributed to the communities and a three-compartment waste bin design that they are promoting to enhance waste segregation.

REMA in collaboration with other stakeholders has been devising strategies to enhance solid waste management at the district level. Implemented strategies include composting of organic wastes for use in agricultural fields, making of briquettes and in the generation of biogas where feasible.

REMA has been also promoting waste recycling (plastic, tires, electronic wastes).

A case study can be the electronic waste facility of Bugesera.

REMA has also developed an online system that will facilitate handling and management of toxic and hazardous waste in Rwanda.

## Wastewater management.

### Policy and Legislative measures

The following strategies, together with their respective sector policies and laws are geared towards addressing pollution among other sustainability issues across various sectors. Developed recently, they align with other national objectives all geared towards green growth. These include:

- Water and Sanitation Sector Strategic Plan 2018 – 2024;
- Strategic Plan for the Environment and Natural Resources Sector 2018 – 2024;
- Strategic Plan for Agriculture Transformation 2018-2024.

### Obstacles:

- Disaggregated data: Most of the data available is from reports on activities/projects in select areas or programmes and implemented by various actors. Consolidated data on all the achievements is therefore not available.

### Indicators used in this assessment

- Identification and classification of pollutants, and relevant limits setting;
- Profile of pollution sources i.e. point and non-point sources;
- Number of legislations put in place to govern pollution issues;
- Studies and research conducted on pollution matters;
- Projects implemented per sector to mitigate pollution;

### Please describe any other tools or means used for assessing progress

This assessment was largely based on literature review of pollution monitoring reports as well as interventions being undertaken to curb pollution such as watershed conservation and restoration. Sectoral progress reports, publications, research, impact survey reports, and available online materials, were also used in the analysis.

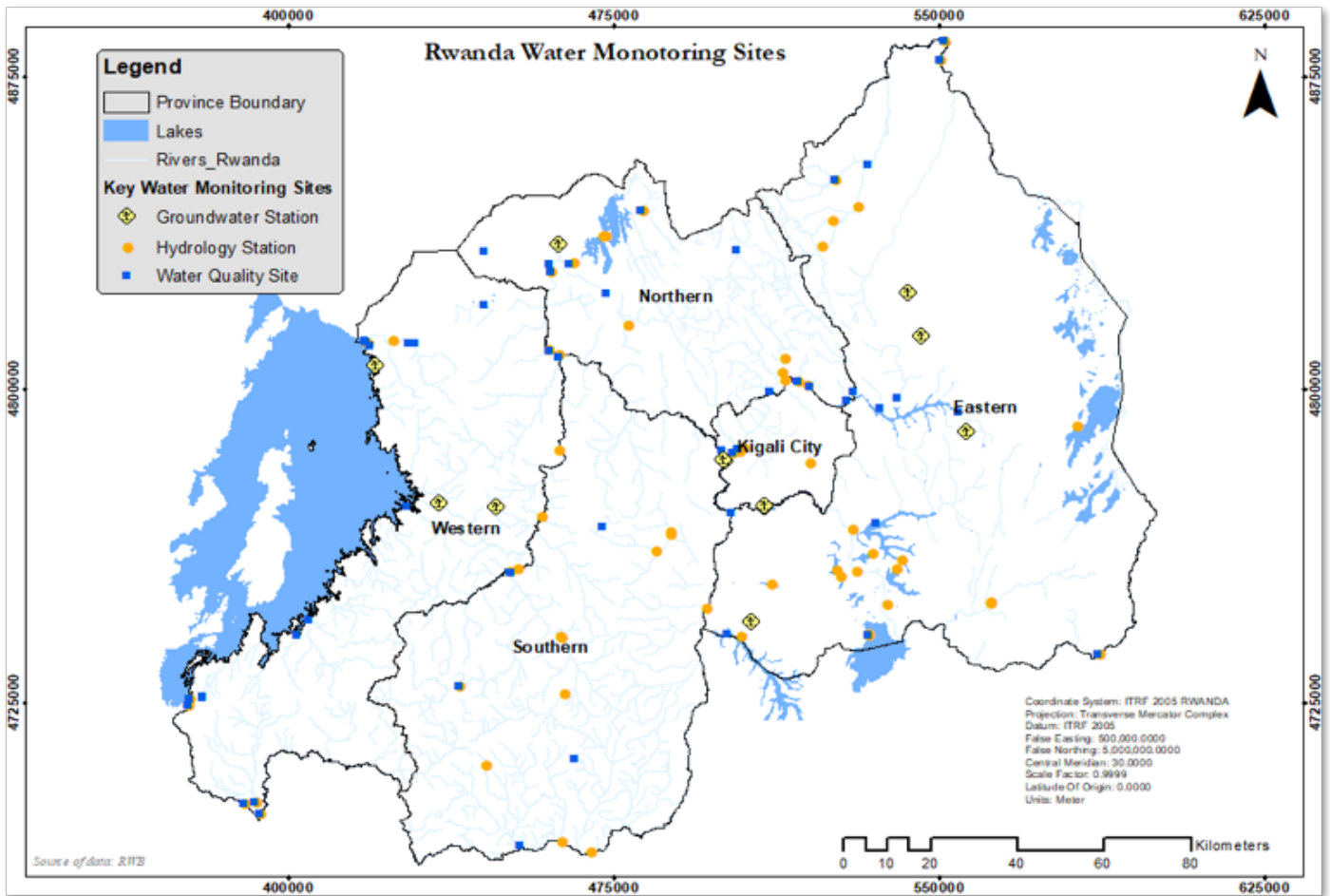


Figure 20: Rwanda Water Monitoring Sites

Source: IWRM Programme Rwanda Water Quality Monitoring

Relevant websites, web links and files (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

- Rwanda: State of Environment and Outlook Report 2015.
- Rwanda Compendium of Environment Statistics, 2018
- RDIS Waste Management for Environmental Protection in Rwanda, 2018
- Rwanda Water and Sanitation Sector Strategic Plan 2018 – 2024
- Environment and Natural Resources Sector Strategy 2018-2024.pdf
- Rwanda Strategic Plan for Agriculture Transformation 2018-24
- Rwanda National Water Resources Master Plan, 2015
- Air Emissions Control and Air Quality in Rwanda, 2019

- IWRM Programme Rwanda Water quality monitoring in Rwanda final report, 2019

Level of confidence of the above assessment

- Based on partial evidence

Please provide an explanation for the level of confidence indicated above.

There is evidence of various measures and approaches being implemented in the country but information relating to the same has yet to be aggregated to give a national perspective on the status of pollution, measure being implemented and the progress of such initiatives.

Adequacy of monitoring information to support assessment

- Monitoring related to this target is partial (e.g. only covering part of the area or issue)

Please describe how the target is monitored and indicate whether there is a monitoring system in place.

- There is evidence of sectoral monitoring strategies but the proposed indicators didn't comprehensively cover the target and related sectors.

#### Relevant websites, web links and files

- Republic of Rwanda. 2016. National Biodiversity Strategy and Action Plan. Kigali

### 3.8 National Target 8

By 2020, invasive alien species, their pathways, are identified and prioritized invasive alien species controlled or eradicated.

#### Category of progress towards the implementation of the selected target.

- Progress towards achievement of target: Progress but at an insufficient rate.

Date the assessment was done.

July 2020

#### Additional information

In 2016, REMA commissioned a study to assess the impacts of invasive alien species (flowering plants, fish and insects) in natural forests, agro-ecosystems, lakes and wetland ecosystems in Rwanda and develop their management plans. In this report, an analysis of the characteristics of IAS was done for plants, animals and insects in terms of invasiveness, impacts and distribution potential for 32 plant species with *Lantana camara* and *Eichhornia crassipes* (water hyacinth) being categorized as high in terms of invasiveness, impact and distribution potential. 5 plant species had a high impact while 2 had a high distribution potential. Overall, according to this report, 10 species of plants were highly invasive. 5 fish and 10 insect species (those that pose the highest risk to agriculture) were covered in the assessment (see classification in Table 15 below). A General Management Plan for IAS's was developed as part of this report and it has provided actions that need to be implemented to address the respective IAS.

Classification and Ranking of Invasive Alien Species in Rwanda

Table 17: Priority Invasive Alien Plant Species in Rwanda

No.	Scientific Name	Local Name	Invasiveness	Impacts	Distribution Potential
1.	<i>Lantana camara</i>	Totoro/ Maviyakuku	High	High	High
2.	<i>Eichhornia crassipes</i>	Amarebe	High	High	High
3.	<i>Mimosa pigra</i>	Umugeyo	High	High	Medium
4.	<i>Pistia stratiotes</i>	Amarebe	High	High	Medium
5.	<i>Solanum chrysotricum</i>	Igitovu	High	High	Medium
6.	<i>Acacia mearnsii</i>	Ibarakatsi	High	Medium	High
7.	<i>Acacia melanoxylon</i>	Kasiya	High	Medium	High
8.	<i>Caesalpinia decapetala</i>	Umufatangwe	High	Medium	High
9.	<i>Agave sisalana</i>	Umugwegwe	High	Medium	Medium
10.	<i>Tithonia diversifolia</i>	Ikicamahirwe/ Cyambazi	High	Medium	Medium

Source: Invasive Alien Species Assessment, REMA 2016

Table 18: Invasive Alien Fish Species

No.	Scientific Name	Local Name	Dispersal Ability	Catch Ratio	Nuisance level
	<i>Protopterus aethiopicus</i>	Imamba/ Mamba	Fast Spreading	Dominant/ High Impact	High
	<i>Lamprichthys tanganicanus</i>	Rwandarushya/ Pururu	Fast Spreading	Predictable dominant / Potential impact	High
	<i>Clarias gariepinus</i>	Kamongo / Karibambari	Fast Spreading	Dominant/ High impact	Medium
	<i>Cyprinus carpio</i>	Isangara	Fast Spreading	Not determined	Low
	<i>Ctenopharyngodon idella</i>	Isangara	Slow Spreading	Not determined	Low

Source: Invasive Alien Species Assessment, REMA 2016

Table 19: Invasive Alien Insect Species

No.	Scientific Name	Local Name	Invasive-ness	Impacts	Distribution Potential
1	<i>Prostephanus truncates</i>	Imungu	High	High	Medium
2	<i>Rhyzopertha dominica</i>	Imungu	High	High	Medium
3	<i>Thaumastocoris peregrinus</i>	Inda y'inturusu	High	Low	High

Source: REMA, 2016. Assessment of Invasive Alien Species in Rwanda.

### Mapping of Current Invasive Alien Species Distribution and production Integrated Cartographically Sound Thematic Maps

This same assessment also did map the distribution of the key IAS in the country indicating where they were present. Their distribution is overlain with Protected Areas and other important habitats such as lakes and Wetlands. The imagery used was Landsat Thematic Mapper (TM) of 30m x 30m spatial resolution. Other sources of data included the topographic map of Rwanda and orthophotos collected by RNRA. In addition, field data including GPS coordinates were also used to map the distribution of species identified in different surveyed ecosystems.

### Preparation of a 5 Year General Management Plan for IAS.

In addition, the same report articulates a 5-year General Management Plan (GMP) for the priority species identified (10 plants, 5 fishes and 3 insects). The main purpose of the GMP is to generate an effective, integrated, comprehensive, and science-based approach for addressing current and potential IAS problems in Rwanda. The plan will serve to guide initiatives and efforts to prevent, eradicate and control IAS as well as mitigate their impacts. The goals of the GMP are:

- Prevent the development of new IAS in Rwanda;
- Eradicate the most harmful IAS established in

Rwanda;

- Reduce IAS populations and mitigate their negative impacts in Rwanda;
- Develop public awareness on IAS' impacts and engage key stakeholders;
- Develop new laws and regulations or incorporate IAS issues into existing ones;
- Monitor the impacts and the implementation of the IAS management plan.

The plan is clearly articulated and provides management options for IAS that include eradication for species such as for Lantana camara and water hyacinth or reduction (for many IAS plant species in natural habitats); containment of fish species to prevent their spread to new areas among others. It also provides budgets, timeframes, implementing agency (Lead) and other stakeholders responsible for each of the measures. Implementation indicators are also provided for each of the measures.

### Legal Instruments for the control and eradication of invasive alien species.

- LAW N°48/2018 OF 13/08/2018 ON ENVIRONMENT. The Law contains the most explicit provisions for prevention of introduction of alien invasive species.
- Law N° 58/2008 of 10/09/2008 determining the organization and management of aquaculture and fishing in Rwanda. This Law provides for the regulation of introduction of aquatic species into Rwandan waters in Article 12 that stipulates "that permission for the introduction of organisms in waters, increasing them and introducing their pupae in Rwandan waters shall be applied for from relevant authorities". It also provides for penalties in Articles 29, 31, 32 and 33), but lacks specific penalties for illegal introduction of aquatic organisms in waters.

Control/eradication of IAS have been undertaken in Gishwati forest reserve, Akagera NP, and Cyohoha wetland.

### Indicators used in this assessment

- Introduction Pathways of IAS identified;
- IAS distribution mapping completed
- Invasive species identified and controlled;
- Legal instruments in place for regulation and control of IAS;
- Number of programs for the control of invasive alien species in place;
- IAS control action plans/General Management

plan developed;

- Area of land where measures to control alien invasive alien species are being implemented;
- Extent to which Priority IAS are controlled or eradicated; and
- Economic impacts of IAS assessed.

Please describe any other tools or means used for assessing progress

- *Literature review and especially through desk studies.*

Relevant websites, web links and files

- *Assessment of Invasive Alien Species in Rwanda, 2016*

Level of confidence of the above assessment.

- Based on partial evidence

Please provide an explanation for the level of confidence indicated above.

Although an assessment that led to identification of the AIS was undertaken successfully, there is little information about follow-up activities to facilitate their control and management.

### Adequacy of monitoring information to support assessment

Please indicate the adequacy of the national monitoring systems in place for this national target.

- Monitoring related to this target is partial.

Apart from the assessment and identification of AIS, there is minimal evidence of follow-up activities as proposed in the NBSAP.

## 3.9 National Target 9

*By 2020, at least 10.3 percent of national territory holding particular biodiversity and ecosystem services is protected considering the landscape approach in order to maintain biological diversity.*

Category of progress towards the implementation of the selected target

- On track to achieve target.

Date the assessment was done.

*July 2020*

The Government of Rwanda is at the forefront of safeguarding the diverse ecosystem in the country. According to the Environment and outlook report, 2015; by 2012, 10.13 % of the national territory was set aside as protected areas.



According to the Word Bank database, terrestrial protected areas are totally or partially protected areas of at least 1,000 hectares that are designated by national authorities as scientific reserves with limited public access. These include national parks, natural monuments, nature reserves or

wildlife sanctuaries, protected landscapes, and areas managed mainly for sustainable use. There are 4 fully protected areas in Rwanda covering 9.13% of the total surface area of the country as shown in the table below

Table 20: Protected Area and Size

No.	Protected area	Area /ha	Area / Km2	% achievement
1	Akagera National Park	112,193	1,121.9	
2	Nyungwe National Park	101,659	1,016.6	
3	Volcanoes National Park	16,021	160.2	
4	Rugezi-Burera-Ruhondo wetland complex	6,294	62.9	
5	Gishwati-Mukura National Park	4,420	44.2	
		240,587	2,405.9	9.13

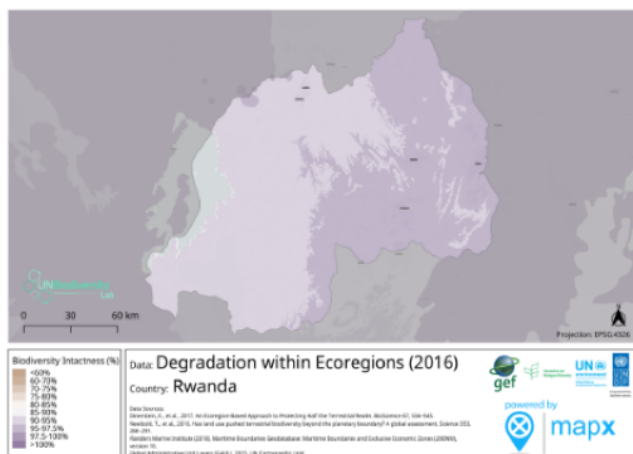
There are also a number of protected remnant natural forests.

Biodiversity conservation and efficient use of natural resources is the key priority for Rwanda. The Government has increased the area of protected terrestrial and inland waters through dedication of 74% of wetlands that should be exploited under conditional use, 20% of wetlands to be totally protected (REMA 2015, PM Order 2017), the Ministerial Order No006/MINIRENA/2015 OF 18/06/2015 determining the management of protected State Forests not governed by special

laws, as well as most of remnant natural forests (forestry policy 2018). With this, the current total area dedicated to biodiversity conservation and sustainable natural resources management is 12,501 km2 (47% of the total surface area of the country) (see the National Land Use and Development Master Plan of May 2020), and according to the World Database on Protected Areas that tracks changes, 14.8% of the terrestrial and inland water areas are covered by protected areas since December 2016 (NLUDMP 2020).

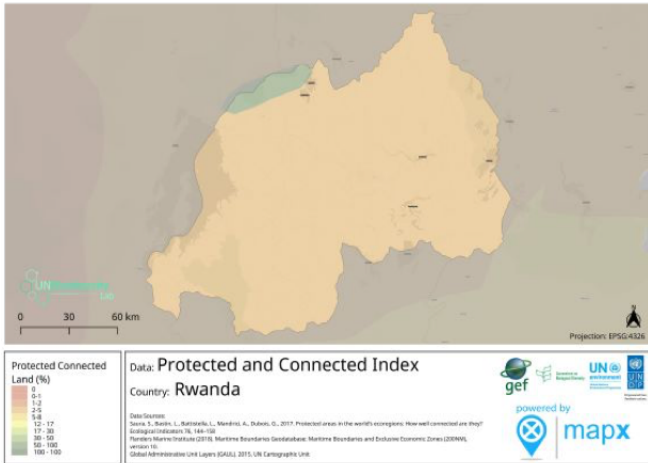
### Indicators from the Biodiversity Partnerships (BIP)

#### Biodiversity Intactness Index



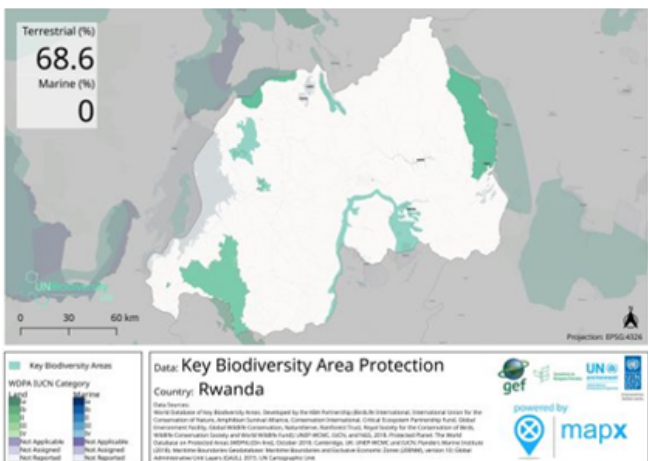
The Biodiversity Intactness Index in tropical and subtropical forest biomes for Rwanda was 0.3 in 2001 and 0.24 in 2012. During the period 2001-2012 the index changed at an annual rate of -2.49%. This signifies a loss over the period covered

Figure 21: Degradation within Ecoregions (2016) Rwanda



The Protected Area Connectedness Index for Rwanda was 0.312 in 2005 and 0.315 in 2019. During the period 2005-2019, the index changed at an annual rate of 0.0807%.

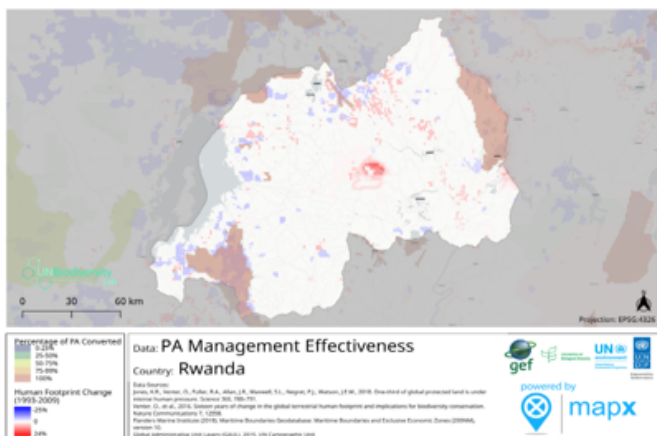
Figure 22: Protected and Connected Index Rwanda



### Key Biodiversity Area Protection Index

The score for Rwanda on the Key Biodiversity Area Protection Index is high. The indicator shows a continued increase in this index from 41.04% in 1980 to 45.67 in 2017 respectively.

Figure 23: Key Biodiversity Area Protection



### Protected Area Management Effectiveness

The Protected Area Management Effectiveness index score for Rwanda is high. This indicates that the management measure in place for protected areas have been effective.

Figure 24: Protected Area Management Effectiveness Rwanda

### Bioclimatic Ecosystem Resilience Index

The Bioclimatic Ecosystem Resilience Index for Rwanda was 0.227 in 2015. In 2005, it was 0.22. During 2005-2015, the index changed at an annual rate of -0.047%.

### Protected area representative index

The Protected Area Representativeness Index for Rwanda was 0.096 in 2016. During 2000-2016, the index changed at an annual rate of 0.53%.

### Red List Index

Red List Index of species survival for Rwanda, weighted by the fraction of each species' distribution occurring within the country. The index varies from 1 if the country has contributed the minimum it can to the global Red List Index (i.e. if all species in the country are classified as Least Concern) to 0 if the country has contributed the maximum it can to the global Red List Index (i.e., if all species in the country are classified as Extinct or Possibly Extinct). A downwards trend indicates declining aggregate survival probability of the country's species. The index is based on all mammals, birds, amphibians, reef-building corals and cycads native to the country (noting that not all countries support species in all these groups). During 1993-2020, the Red List Index changed at an annual rate equating to -0.002%.

### Indicators used in this assessment.

- Number of new protected areas designated
- Percentage of protected areas
- New laws, decrees and ministerial orders enacted related to new protected areas
- Wildlife law finalized and number of other sectoral laws revised and enforced;
- Biodiversity Intactness Index
- Protected area connectedness index
- Key Biodiversity Areas Protection;
- PA Management Effectiveness Index

### Please describe any other tools or means used for assessing progress

Progress has mainly been assessed based on the indicators mentioned above. The information is primarily based on the area of the newly created national park (protected area), the percentage of protected area against the total surface of the country, new laws and decrees and Ministerial Orders as well as information from the World Data Base on protected areas and the National Land Use and Development Master Plan 2020-2050. In addition, the BIP indicators have used.

Relevant websites, web links and files

- *Rwanda - Terrestrial Protected Areas*
- *Rwanda Bioclimatic Ecosystem Resilience Index: Biodiversity Indicators Partnership*
- *Rwanda Protected Area Connectedness Index: Biodiversity Indicators Partnership*
- *Protected Area Representativeness Index: Biodiversity Indicators Partnership*
- *Rwanda Red List Index: Biodiversity Indicators Partnership*
- *Rwanda National Forestry Policy 2018*

Level of confidence of the above assessment.

- Based on comprehensive evidence*

Please provide an explanation for the level of confidence indicated above.

*There is adequate information pertaining to the indicators in this assessment.*

Adequacy of monitoring information to support assessment.

- Monitoring related to this target is adequate.*

## 3.10 National Target 10

*By 2020, the extinction of threatened species is prevented, and their conservation status improved, particularly for those identified as "Alliance for Zero Extinction (AZE)*

Category of progress towards the implementation of the selected target

- On track to achieve target.*

Date the assessment was done.

*July 2020*

**To achieve the target, four priority actions have been identified by the NBSAP:**

- Conducting inventory of threatened species, especially those in danger of extinction and propose specific measures for their conservation;
- Re-introducing some lost species including the Black Rhinos and Lions for re-establishing ecological equilibrium;
- Identifying "Alliance for Zero Extinction (AZE)" sites and evaluate their degradation status; and
- Ex-situ conservation of Endangered or Critically Endangered Species.

## The Mountain Gorillas

With two isolated subpopulations in the Greater Virunga Landscape of Rwanda, Uganda, and the Democratic Republic of Congo (DRC), the mountain gorilla (*Gorilla beringei beringei*) is classified as Endangered by the IUCN Red List of Threatened Species ((Hickey et al 2018a). The northern subpopulation resides in the Bwindi-Sarambwe ecosystem of Uganda and DRC, whereas the southern subpopulation occurs within an approximately 451-km<sup>2</sup> area collectively referred to as the Virunga Massif that encompasses Volcanoes National Park, Mgahinga Gorilla National Park, and the Mikenos Sector of Virunga National Park. The survey and

results from fieldwork completed in 2015 and 2016 limited to the subpopulation in the Virunga Massif detected 604 individual gorillas comprised of 41 groups and 14 solitary males, reflecting the highest abundance of gorillas ever recorded in this subpopulation. The counts reflected an increase from the minimum count of 458 (or 480 with correction factors) gorillas in 2010 (Gray et al 2013).

Based on the last survey (2016), the trend in mountain gorilla population statistics is as follows:

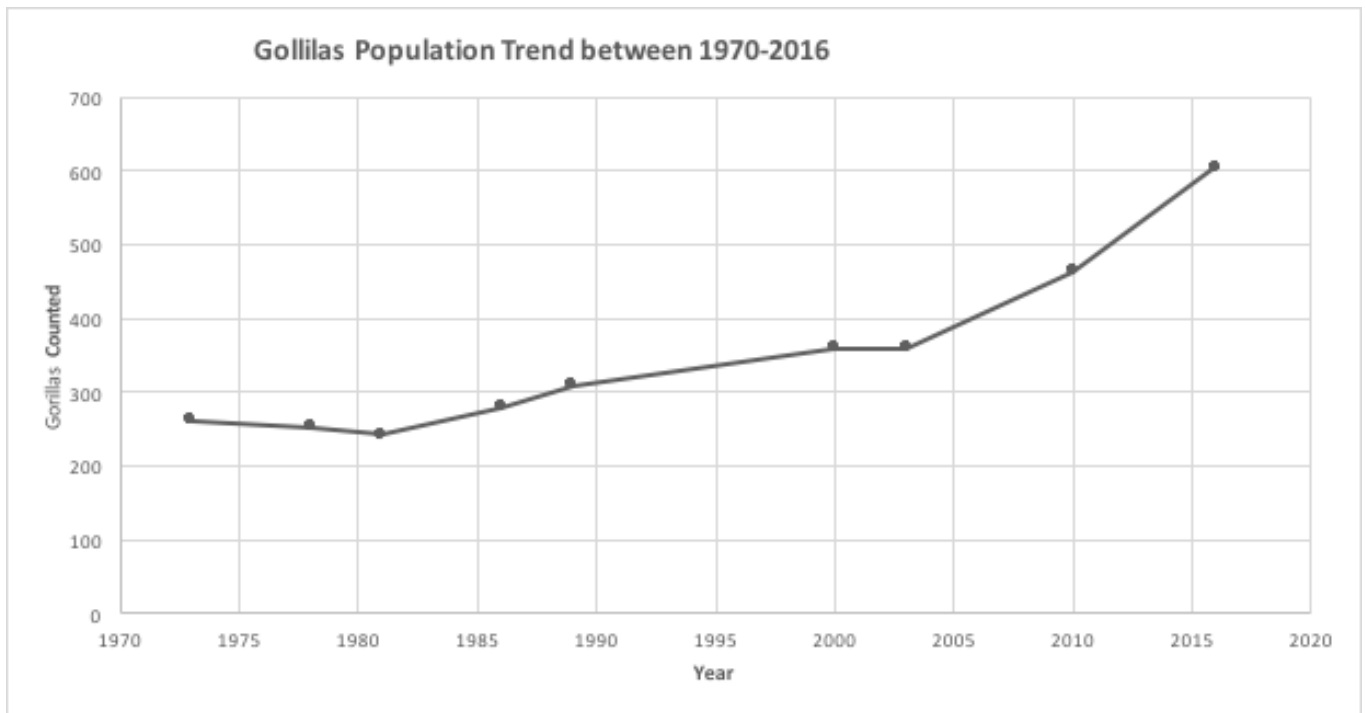


Figure 25: Virunga Massif Gorilla Population Trend between 1970 – 2016

Sources: Gorilla Population trend 1970-2016 (data from Granjon et al., 2020)

## The Grey Crowned Cranes 2017, 2018, 2019

The Rwanda Wildlife Conservation Association (RWCA) has been conducting the national survey for the Grey Crowned Cranes (*Balearica regulorum*) since 2017. The total recorded number of Grey Crowned Cranes in 2019 was 748, showing a significant increase compared to the previous two

years (459 in 2017 and 487 in 2018). The majority of sighting during the 2019 survey shows that of the crane population (over 50%) was found in agricultural areas (table below). The provisional results for 2020 survey show an increase of the population from 748 individuals in 2019 to 881 (RWCA Pers, comm).

Table 21: Grey Crowned Crane distribution by habitat type

REGION	Wetland	Water edge	Agriculture	Grassland	Other	Total
Nyabarongo wetlands & Lakes	0	0	11	0	2	13
Kigali city suburbs	3	0	14	0	6	23
Akagera National Park & surrounds	29	39	56	3	0	127
Eastern Province – Nyagatare	0	0	113	3	82	198
Rugezi marshland	89	4	37	0	4	134
Akanyaru wetland	11	0	83	0	60	154
Northern Province – Rulindo & Musanze	0	0	27	8	2	37
Western Province – Nyabihu, Nyamasheke, Karongi and Rutsiro	13	0	23	0	2	38
Southern province – Nyamagabe	0	0	18	0	6	24
<b>TOTAL</b>	<b>145</b>	<b>43</b>	<b>382</b>	<b>14</b>	<b>164</b>	<b>748</b>
	<b>19.4%</b>	<b>5.7%</b>	<b>51.1%</b>	<b>1.9%</b>	<b>21.9%</b>	

### Indicators used in this assessment.

- Population size (including age class) of threatened species, genetic analysis and growth rate (for the Mountain gorillas), Illegal activities, type of habitat and activity (e.g. breeding, nesting, foraging).

Please describe any other tools or means used for assessing progress

*The information is based on survey reports.*

### Relevant websites, web links and files

- *Saving the Endangered Grey Crowned Cranes; RWCA*
- *RWCA Grey Crowned Cranes Census Report 2019. pdf*
- *Virunga Massif Mountain Gorilla Census – 2010 Summary Report*
- *Virunga 2015–2016 surveys: monitoring mountain gorillas, other select mammals, and illegal activities*

### Level of confidence of the above assessment.

- Based on comprehensive evidence.*

Please provide an explanation for the level of confidence indicated above.

Regular and systematic monitoring for the target has been conducted. The Mountain Gorillas are tracked. Other species such as the Chimpanzees, the grey crowned cranes, the black rhinos and lions are closely monitored.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is adequate.

### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Regular monitoring is conducted for the Mountain gorillas and Grey crowned cranes, chimpanzees, rhinos, lions among others.

## 3.11 National Target 11

By 2020, the genetic diversity of priority cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

### Category of progress towards the implementation of the selected target

- On track to achieve target.

### Date the assessment was done

August 2020

### Additional information

Two complementary approaches are required for the preservation of plant and animal genetic resources of farmed crops and animals. These are:

- In situ conservation of wild plants and crop wild relatives (CWR). This ensures that they are protected in their natural environment;
- On-farm management of plant genetic resources. This approach is concerned with the use and maintenance of local crops and varieties grown in agricultural systems and home gardens.

The two approaches combined ensure that a genetically diverse portfolio is maintained. Through government efforts to conserve critical habitats for biodiversity in general (Akagera, Nyungwe and Volcanoes, Gishwati\_Mukura National Parks) Crop Wild Relatives (CWR) have been conserved In Situ. Each of these ecosystems bears a large array of different plant and animal species of which some are in danger of extinction or registered for special conservation status under CITES. In order to ensure the conservation of genetic diversity in these parks and other protected indigenous forests measures to contain fires, encroachments and poaching are being taken.

### Establishment of the National Gene Bank.

In order to conserve its plant and animal genetic diversity, Rwanda established a National Gene Bank under the Rwanda Agricultural Board (RAB) in 2009 for purposes of ex situ conservation of genetic diversity. Most of the ex situ collections are currently maintained through crop-based research programs at Rwanda Agriculture Board (RAB) as noted in the extract below. The gene bank conserves sorghum, maize, soybean, some indigenous vegetables, beans, cowpea, rice, peas, groundnut, sunflower, finger millet and wheat. It is also supporting conservation of field gene banks of banana, coffee, tea, sweet potato, cassava, Irish potato, and mulberry and fruit trees. With regard to animal genetic resources and in collaboration with the Livestock Research Program, the Gene Bank has initiated the collection and conservation of Inyambo semen, conservation of local livestock Inyambo and endangered local inkungu livestock.

**Promotion of Minor Crops and Underutilized Species:** Rwanda has a number of underutilized plant species that include Taro (*Colocasia esculenta*), Yam (*Dioscorea quadrata*), Pigeon pea (*Cajanus cajan*), finger potato and indigenous

vegetables such as the woolly nightshade (*Solanum villosum*), cow pea (*Vigna unguiculata*) and finger millet (*Eulesine coracana*). These crops are highly nutritious and their utilization could have huge benefits in terms of improving the nutritional and food security status of the Rwandan people as well be used for agricultural diversification and enhance potential for income generation. In this regard, the Government has put in place strategies to promote and maintain indigenous species through kitchen garden projects throughout the country. In addition, the RAB horticulture research program is also focusing on indigenous vegetables namely amaranths, egg plants, and nightshade while the East African Plant Genetic Resources Network project (EAPGREN) is also promoting indigenous vegetables in secondary schools in Rwanda.

### Challenges and Constraints with the Gene Bank

- Secure staff and funding for full operation of the Rwanda National Gene Bank;
- There is an urgent need for more skilled staff in ex-situ collections and conservation, particularly in the context of animal and forest genetic resources
- More equipment is needed in the storage facilities, and the facilities need to be strengthened with mechanisms for addressing the irregular electrical supply and natural disasters (including flood, pest and diseases);
- More knowledge about the existing genetic diversity is needed, including characters' variability and their patterns of distribution; The collaboration between scientists and policy makers at national, regional and international levels needs to be strengthened, and arrangements should be made for maintenance and duplication of samples with other gene bank facilities;
- On-farm management of PGRFA is still not yet formally organized at county level, and strategies for farmers to enhance on-farm management of local crops and varieties including landraces need to be established; and
- In addition, farmers are largely encouraged to use improved varieties, instead of landraces, especially with regards to the key food security crops.

## Description of the Ex Situ Conservation of Associated Biodiversity and wild Food Species in Rwanda (Extract from “The State of Rwanda’s Biodiversity for Food and Agriculture, 2016”).

As far as ex-situ conservation is concerned, there is a national genebank for the conservation of genetic resources mainly through Rwanda Agriculture Board. Most of the ex situ collections are currently maintained through crop-based research programs at Rwanda Agriculture Board (RAB). RAB is therefore responsible for most of the ex situ collections held at the genebank, field stations, experimental/regeneration sites, herbariums and botanical gardens in the country. In 2013, there was 1787 accessions in storage through these programmes, but the number of accessions that were actively stored in the key programmes was about 814. RAB maintains these collections for research, multiplication and dissemination purposes. Targeted and planned collections are being conducted in many rural areas of the country. In terms of species collection, more efforts have been concentrated on cultivated species, but RAB also maintains an arboretum where forest indigenous and exotic species are maintained. In the field of agrostology, RAB is also maintaining a good collection of fodder plants (at least 14 species) in two stations: Karama and Rubona. In addition to the collections maintained by RAB, germplasm is also conserved by other

national stakeholders. As an example, National Industrial Research Agency (NIRDA, former Institut de la Recherche Scientifique et Technologique (IRST)) is conserving one threatened species namely the finger potato, *Plectranthus esculentus* (Impombo).

Though it is difficult to calculate the exact number of accessions that have been collected in Rwanda and are conserved abroad, Rwanda has been partaking in international cooperation and networks of germplasm exchange. As examples, there has been collaboration between the RAB Bean Program and the International Center for Tropical Agriculture (CIAT) - Columbia, the RAB Irish Potato and Sweet Potato Program with the International Potato Center (CIP) - Peru, and the RAB Maize and Wheat Program and the International Maize and Wheat Improvement Center (CIMMYT) Mexico. The partnership is mainly based on germplasm exchange. There are therefore a number of accessions collected in Rwanda and stored at genebank facilities abroad. Totally 1040 accessions from 29 different species have been identified, and a complete table of these accessions can be found in Annex 3. (Jean Damascene Ndayambaje, 2016. Country Report: The State of Rwanda’s Biodiversity for Food and Agriculture.)

### Indicators used in this assessment

- Number of crop and animal resources collected and conserved Ex Situ.

### Please describe any other tools or means used for assessing progress,

This assessment has used desk studies mainly and documented, expert opinions.

### Relevant websites, web links and files

- *The State of Rwanda’s Biodiversity for Food and Agriculture*
- *Rwanda National Genebank (RNGB)*
- *The State of Plant Genetic Resources for Food and Agriculture in Rwanda Country Report*

### Level of confidence of the above assessment

- Based on partial evidence

### Please provide an explanation for the level of confidence indicated above.

While the 2016 Country Report on the State of Rwanda’s Biodiversity for Food and agriculture is main source of information, the Consultant has not used any data/information in preparing this report since 2016; therefore, there is a 3-year data gap.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is adequate

**Please describe how the target is monitored and indicate whether there is a monitoring system in place.**

There is a monitoring system in place.

### 3.12 National Target 12

*By 2020, the potential risks resulting from biotechnology use and placement on the market of its products have been minimized and/or eliminated.*

**Category of progress towards the implementation of the selected target**

Progress but at an insufficient rate.

July 2020

#### Additional information

Biotechnology is one of the modern technologies being used in Rwanda mostly in the form of tissue culture, where the Rwanda Agricultural Board (RAB) mainly focuses on the production and dissemination of in vitro – propagated disease-free planting materials. It also uses the technology to enhance crop productivity through the development of efficient disease diagnosis and / or characterization protocols. Other benefits of this technology include, plantlets (which have a short propagation period; don't need a lot of space; have higher survival rates; and result into significant yield increase (quantity and quality wise).

RAB is also using the technology for in vitro conservation of vegetative propagated germplasm to mitigate against genetic erosion of important crop varieties. The abandonment of local crop varieties and preference for hybrids has been noted especially in banana cultivation. This prompted the government to embark on a country wide collection of banana germplasms targeting seven local varieties namely nyiramabuno, inyamapfurisi, inzirabahima, umuzibwe, ingenge, igisukari and purari;

This technology is also being used for the development of disease cleaning protocols targeting indigenous crop varieties of good quality that are widely infected with diseases. Cleaning protocols are being developed for local passion fruit and tamarillo varieties, having been indexed for virus presence, to be subjected to thermotherapy.

In 2005, UNEP, through GEF, supported the government of Rwanda to develop the National Bio-safety Framework. The intention was to

facilitate the safe development and application of biotechnology and also guide its integration into other national development strategies; Alongside the Framework, other developed components included the:

- National Biotechnology and Bio-safety Policy was developed that highlighted how biotechnology fitted into the national development framework and the legal and administrative mechanisms needed to fast-track its development and bio-safety capacity;
- National Biosafety Bill and the Guidelines that operationalized the policy and provided a regulatory regime for ensuring that the development of biotechnology was safe for the people, environment and the economy; and
- Institutional Framework that stipulates the responsibilities of stakeholders, institutions and the human resource requirements for effective implementation of the policy and legal instruments.

In 2018 REMA embarked on developing a law for governing Genetically Modified Organisms (GMOs). Its objective is to ensure adequate level of protection in the safe transfer, handling and use of GMOs resulting from modern biotechnology. Additionally, it takes into account risks to human health, provides a transparent and predictable process for review and decision making on GMOs and related activities. This law will also operationalize the implementation of the Cartagena Protocol of which Rwanda is a signatory. There have been mixed reactions and perspectives about the adoption of GMO crops in Rwanda but by 2018 there were no records of their cultivation in the country.

- RAB has a post-harvest management and biotechnology division that promotes the use of biotechnology for seed variety improvement and disease diagnosis;
- Protocols are developed for crops that are to be mass produced and disseminated, especially for what the government consider to be priority crops;
- Laboratories specializing in biotechnology in the country include the:
- National Quality Testing Laboratories division of Biotechnology Laboratories Unit; and
- University of Rwanda Biotechnology Laboratory opened in 2015.



Rwanda;

### 3.13 National Target 13

By 2020, all ecosystems that provide essential services to human well-being and contribute to health as well as livelihoods are restored and safeguarded, taking into account the needs of women, local communities especially the vulnerable groups.

#### Category of progress towards the implementation of the selected target

On track to achieve target.

#### Date the assessment was done

August 2020

#### Additional information

This target sought to restore ALL ecosystems that provide critical services to human well-being. When evaluated on the basis of all, then the rating could vary, however, the country has made great strides in protecting and restoring critical ecosystems such as the Nyungwe montane forest, Volcanoes NP, Akagera and Gishwati Mukuru National Parks and several other watersheds. These are likely to ensure full restoration as the planted and regenerated forest patches reach maturity and the threats that caused the loss are kept at bay. In areas outside protected areas (national parks and forest reserves), catchment restoration efforts are only in the degraded areas which are yet to be fully restored. This continues to impact wetlands, lakes and rivers. In addition, wetlands are not yet fully restored.

#### Indicators used in this assessment

- Number of socio-economic activities involving poor and vulnerable groups (this is the only indicator provided in the NBSAP).

#### Other indicators that respond to the achievement of this target should have included:

- No of ecosystems fully restored;
- % area of each ecosystem restored
- % reduction in sediment loads in rivers, lakes in restored ecosystems.
- % reduction in water quality indicators (TDS, BOD, COD etc.);
- Number and type of restoration measures implemented and area covered by each type of measure.

#### Please describe any other tools or means used for assessing progress

Tools used include desk review of projects/ activities implemented.

#### Indicators used in this assessment

- Number of trained people in biotechnology risks assessment;
- Modern and accurate laboratory. equipment for GMOs and overall biotechnology control in place
- Number of policies and regulations on Bio-safety elaborated and enforced.

#### Please describe any other tools or means used for assessing progress

Tools used in assessing progress towards achievement of this target included literature review of the National Biosafety Framework for Rwanda, publications, research, and online available materials relating to biotechnology and genetically modified organisms.

#### Relevant websites, web links and files

- *Rwanda Third National Report on the implementation of the Cartagena Protocol on Biosafety*
- *Biotechnology Laboratories in Rwanda*
- *Rwanda Biotechnology*
- *The National Biosafety Framework for Rwanda, 2005*

#### Level of confidence of the above assessment

Based on partial evidence

#### Please provide an explanation for the level of confidence indicated above.

Analysis of progress made towards achievement of this target focused on the investments made towards enhancing the capacity to sustainably adopt and apply biotechnology. It also reviewed the available legal and institutional facilities developed to manage and govern the biotechnology sector.

Adequacy of monitoring information to support assessment

Monitoring related to this target is comprehensive.

#### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Based on the assessment of available data, it seems that the country is currently developing and initiating mechanisms for the implementation of the Cartagena Protocol and related programmes.

#### Relevant websites, web links and files

- *Republic of Rwanda. 2005. The National Biosafety Framework for Rwanda. Ministry of Lands, Environment, Forestry, Water and Mines. Kigali,*

### Relevant websites, web links and files

- *Rwanda Forest Cover Mapping 2019*
- *Rwanda: State of Environment and Outlook Report 2015.*
- *Landscape Approach to Forest Restoration and Conservation Project 2018*
- *Second Bonn Challenge progress report. Application of the Barometer in 2018.*
- *Volcanoes National Park: a success story for Rwanda's communities and conservation*
- *Saving the Endangered Grey Crowned Cranes: RWCA*
- *Rwanda National Parks*

### Level of confidence of the above assessment

- Based on partial evidence

### Please provide an explanation for the level of confidence indicated above.

Certain indicators such as increase in forest cover has been consistently tracked and confirmed in the 2019 Mapping report which was a follow up to the 2012 forest cover mapping which showed an increase to 30.4% of the Country's total land area. . However, the area included in this does not necessarily include ALL ecosystems as indicated in the target. The extent to which the vulnerable population including women were included is also not clear and what percentage of this target group was covered.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is partial.

### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

Target was monitored by documenting status of project/activity implementation by various actors that is then consolidated. For forest cover,

mapping has been undertaken in 2019 at the national level while at the project implementation level by various actors, mapping has also been undertaken.

## 3.14 National Target 14

*By 2020, the ecosystem resilience and the contribution to carbon stocks has been enhanced through increase of forest cover up to 30% of the country and restoration of other ecosystems thereby contributing to Climate Change adaptation and Mitigation*

### Category of progress towards the implementation of the selected target

- On track to exceed target.

### Date the assessment was done

Based on the 2019 Forest Mapping report

### Additional information

The current status of Rwanda's forest cover as per the Forest Mapping Report (2019) is 724,695 ha (30.4%) of Rwanda's total land area) - see section 11 on Measure to increase forest cover by 30% of Rwanda's total land area). This Survey was a follow up to a 2012 Mapping Report. As of the time the target was set in Vision 2020, the forest cover was 24.5% of the country's total land area. The increased forest cover has also increased the carbon storage and sequestration potential in the country (see map below).

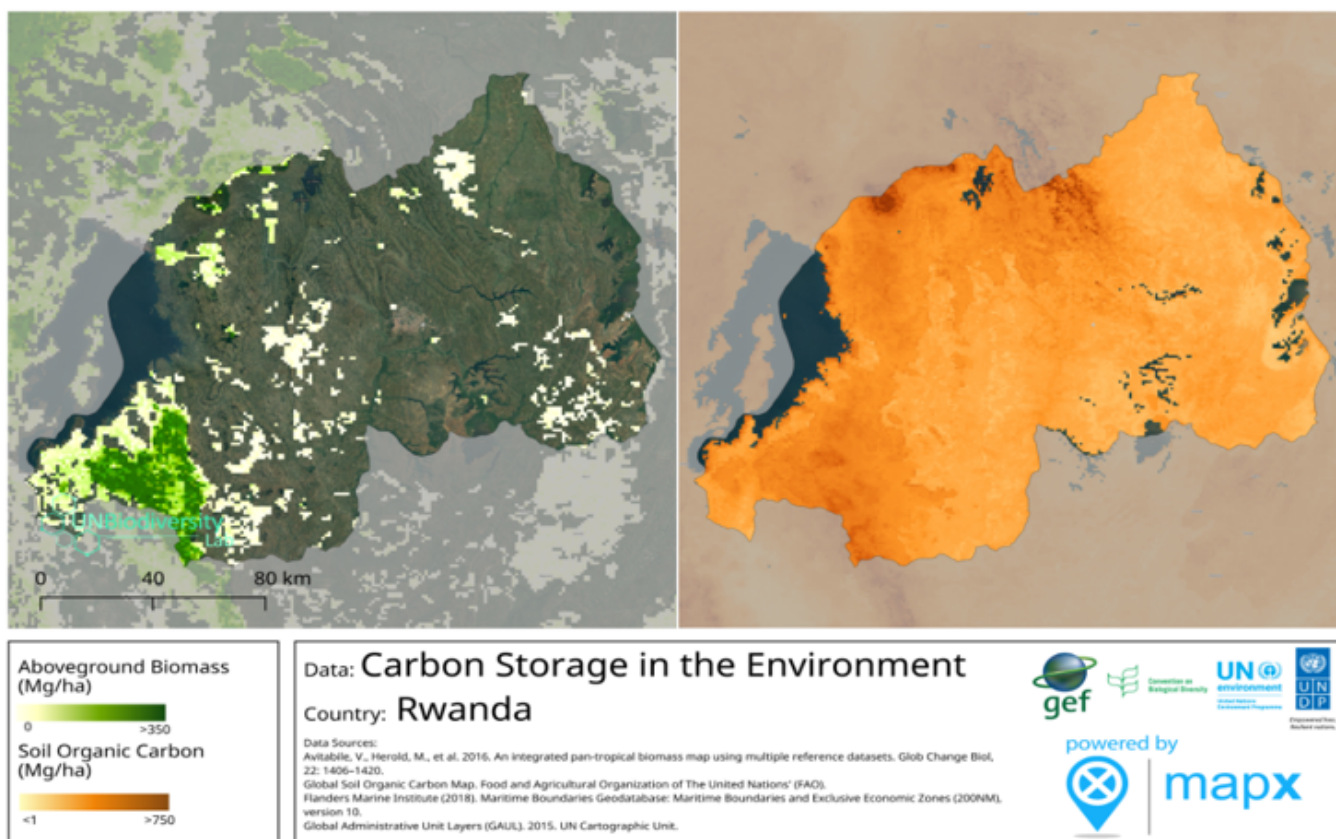


Figure 26: Rwanda Carbon Storage in the Environment

### Indicators used in this assessment

- Area afforested;
- Percentage of forest cover of the country;
- Appropriate forest management plans and systems in use;
- Percentage cover of each ecosystem type;
- Number of laboratories equipped, seed banks and/or tree nurseries developed by communities.
- Carbon sequestration potential;

### Please describe any other tools or means used for assessing progress

Mapping of forested areas in Rwanda (2012 & 2019). Please refer to the measure 2.2 (Increasing forest cover to 30% of the Country's total land area)

### Relevant websites, web links and files

- *Rwanda Forest Cover Mapping 2019*
- *Rwanda Compendium of Environment Statistics, 2018*
- *Rwanda National Forestry Policy 2018*

### Level of confidence of the above assessment

- Based on comprehensive evidence

### Please provide an explanation for the level of confidence indicated above.

This is based on the 2019 Forest Mapping Report which was comprehensive enough in approach and methodology used. It was aligned on the same parameters used in the last mapping report done in 2012.

### Adequacy of monitoring information to support assessment

- Monitoring related to this target is adequate.

### Please describe how the target is monitored and indicate whether there is a monitoring system in place.

### 3.15 National Target 15

By 2017, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is integrated into national legislation and administrative practices and enforced.

#### Category of progress towards the implementation of the selected target

On track to achieve target

#### Date the assessment was done

July 2020

#### Additional information

Rwanda was among the first countries to ratify the Nagoya Protocol in 2012. UNEP (2018) noted that Rwanda had been slow in implementing the Protocol due to country specific challenges for instance lack of local access and benefit sharing experts. In recognition of the challenges, UNEP pledged to support Rwanda to establish legal and institutional frameworks to aid in the effective implementation of the Protocol. These include:

- Ministerial Order governing access to genetic resources and the fair and equitable sharing of benefits arising from their use (this is pending approval);
- Law No. 70/2013, which governs biodiversity; and
- Law No. 31/2009, which enforces protection of Intellectual Property Rights.

There is a UNDP-GEF Global ABS project being implemented aimed at supporting the review and harmonization of the various legal and institutional instruments intended to enhance their capacity for implementation of the Protocols on ABS. Efforts are also focusing on strengthening partnerships and coordination among the various stakeholders; as well as their technical and institutional capacities. To secure needed support, including political goodwill, the project is also facilitating advocacy, awareness creation and mobilization of resources for the project activities. Expected outcome of this project are:

- Establishment of a comprehensive database, information and monitoring systems for genetic resources and traditional knowledge; and
- The establishment of benefit sharing mechanisms for agro-ecosystems production in the country.

The government of Rwanda through REMA in partnership with UNDP have developed and published Rwanda's ABS Guideline and Toolkit. This toolkit and guideline for access and benefit sharing related to traditional knowledge associated with genetic resources in Rwanda has been informed by national laws, policies and regulations, stakeholder input and the Nagoya Protocol. It documents the steps and procedures used to manage the access permit process and the follow up steps post-access when commercialization is involved.

Rwanda has established a clearing house mechanism to facilitate data and information exchange.

A Special Guarantee Fund was established in 2012 aimed at insuring against wildlife damages among other functions. Between 2013 and 2017 this facility compensated a total of 5,189 claims and an additional 2,470 claims in 2018, related to wild animals' damages that included cases of crops destroyed, livestock killed as well as people injured or killed. A total of FRw 580,106,575 million was settled as compensation for wildlife related claims in the period 2016 to 2018.

#### Obstacles:

- Limited data: at the moment there is little information available to the general public about the progress made in implementing the Nagoya Protocol.

#### Indicators used in this assessment

- Number of legal and administrative tools to aid the implementation of the Protocol;
- Review, revisions and harmonization legal and institutional instruments with other national strategies to facilitate the implementation of this Protocol;
- Number of access permits;
- Number of benefits sharing agreements;
- Number of awareness and training workshops;
- Number of socio-economic infrastructures and income-generating projects initiated through Revenue Sharing (RS) around Protected Areas; and
- Number of people compensated for damages caused by wildlife.

#### Please describe any other tools or means used for assessing progress

Tools used in assessing progress towards achievement of this target included literature review on the Nagoya and ABS activities reports.

Sectoral progress reports, publications, research, impact survey reports, as well as available online materials, relating to biodiversity and genetic resources were also used to analyze the progress in addressing the Protocol.

**Relevant websites, web links and files** (Please use this field to indicate any relevant websites, web links or documents where additional information related to this assessment can be found).

- *Rwanda: State of Environment and Outlook Report 2015.*
- *Rwanda Compendium of Environment Statistics, 2018*
- *Guideline and Toolkit for Access and Benefit Sharing of Traditional Knowledge Associated with Genetic Resources in Rwanda, 2019*
- *Special Guarantee Fund: Annual Activity Report 2016 – 2017*
- *Special Guarantee Fund: Annual Activity Report 2017 – 2018*
- *Special Guarantee Fund: Annual Activity Report 2018 – 2019*
- *Pan African Workshop on ABS for Sustainable Development in Rwanda, 2018*
- *ABS Country Brief Rwanda, 2018*
- *Implementation of the Nagoya Protocol in Rwanda*

**Level of confidence of the above assessment**

- Based on partial evidence

**Please provide an explanation for the level of confidence indicated above.**

Available data at the time of review may not have adequately captured comprehensively all the efforts that have been and/or are on-going towards addressing this target.

**Adequacy of monitoring information to support assessment**

- Monitoring related to this target is partial (e.g. only covering part of the area or issue)

**Please describe how the target is monitored and indicate whether there is a monitoring system in place.**

Available data demonstrates that there are efforts towards the implementation of the Protocol but the expert could not authoritatively ascertain that monitoring mechanism were being implemented fully and effectively.

**Relevant websites, web links and files.**

- *Rwanda Environment Management Authority. 2019. Guideline and Toolkit for Access and Benefit Sharing of Traditional Knowledge Associated with Genetic Resources in Rwanda: Information for*

*Providers, Users, and Regulatory Institutions. Kigali, Rwanda.*

### 3.16 National Target 16

*By 2016, Rwanda has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated National Biodiversity Strategy and Action Plan (NBSAP).*

**Category of progress towards the implementation of the selected target**

- On track to achieve target

**Date the assessment was done**

July 2020

**Additional information**

By the end of 2016, Rwanda had already revised and updated their NBSAP identifying five key goals and nineteen national targets to be pursued towards addressing the CBD Strategic Plan for Biodiversity, 2011 – 2020 as well as the Aichi targets.

The process of preparing the NBSAP and adopting all the national targets was coordinated by REMA, the national Focal Point for the CBD through a project Steering committee. Due to the cross-cutting nature of biodiversity issues, Stakeholders from Government and related agencies (central and local Government levels), the private sector and NGOs involved in the conservation and management of biodiversity were engaged through three national workshops. To facilitate the work, a technical working group with broad representation from the various actors was constituted. In total, about 70 persons were consulted during the process with a representation from stakeholder (directly and indirectly involved in biodiversity conservation).

The NBSAP was adopted in December of 2016 by the Cabinet and implementation commenced. The actions and targets in the NBSAP were mainstreamed into the various sectoral/agency work plans and budgets (setting of national targets was guided by the amount of available budgets largely)

**Indicators used in this assessment.**

- NBSAP revised and aligned to the CBD Strategic Plan for Biodiversity 2011- 2020 through a participatory process;
- NBSAP adopted by Government;
- NBSAP implementation commences;

- NBSAP implementation plans developed and validated;
- Monitoring and evaluation reports highlighting the implementation status of the NBSAP implementation prepared.

**Please describe any other tools or means used for assessing progress**

Tools used to assess progress include review of literature from different sectors with responsibilities for implementing certain actions; published reports and surveys/evaluations pertaining to certain targets, expert opinion, and stakeholder consultations. Questionnaire responses and a stakeholder workshop provided preliminary analysis of actions implemented and potential contact persons who can provide informed opinions or reports.

**Relevant websites, web links and files**

- *Rwanda National Biodiversity Strategy and Action Plan 2016*

**Level of confidence of the above assessment**

- Based on partial evidence

**Please provide an explanation for the level of confidence indicated above.**

There is a fair amount of information available with regard to most of the targets.

**Adequacy of monitoring information to support assessment**

- Monitoring related to this target is partial
- (Comprehensive information about all targets not available).

**Please describe how the target is monitored and indicate whether there is a monitoring system in place.**

Relevant websites, web links and files

- *Rwanda 5th National Report to the CBD*

### 3.17 National Target 17

*By 2020, values of traditional knowledge, cultural heritage and practices of local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of local communities, at all relevant levels.*

**Category of progress towards the implementation of the selected target**

- Progress but at an insufficient rate.

**Date the assessment was done.**

August 2020

**Additional information.**

Local people have always interacted with nature drawing from and managing biodiversity resources and ecosystems to support their livelihoods. The many years of interaction led to an accumulation of traditional knowledge which over time was integrated into their cultures with some being beneficial for conservation. However, the traditional knowledge, values and cultural practices have not been recognized and integrated into policies, laws biodiversity management programmes. This target seeks to bridge this gap.

Not much has been undertaken to integrate traditional knowledge in the management of biodiversity. Activities such as the Kwita Izina Which borrows from the cultural naming practices has yielded benefits in terms of conserving the Gorilla. In the case of Buhanga Sacred Forest (now part of Volcanoes national park) a study published in July 2016 indicates that cultural norms/beliefs and values associated with the forest had protected it against exploitation and therefore helped conserve it. In a survey of this forest, Ecological information about ethno-medicinal and traditional practices were collected using a structured questionnaire that targeted eight traditional healers and three focus group discussions. One of the Key values of the forest is that it is a source of medicinal plants used in healing traditionally. The same study recommends that besides conserving the traditional local knowledge for biocultural motives, there is need to train traditional healers on how to domesticate some valuable indigenous tree species as a conservation measure to avoid over harvesting. Such a measure can also be implemented through community participation, the study concludes.

There are a lot of publications on traditional knowledge dating from many years back. These however need to be synthesized and integrated into conservation policies and laws. REMA developed a Guideline and Toolkit for Access and Benefit Sharing of Traditional Knowledge Associated with Genetic Resources in Rwanda.

**Indicators used in this assessment**

- Number of published papers on traditional

knowledge and practices relative to biodiversity conservation;

- Curricula that include traditional knowledge related to biodiversity conservation;
- Number of national policies and legislations revised accordingly

**Please describe any other tools or means used for assessing progress**

Desk studies, expert opinions and internet searches.

**Relevant websites, web links and files**

- *Assessment of traditional ecological knowledge and beliefs in the utilization of important plant species: The case of Buhanga sacred forest, Rwanda 2016*
- *Environment and Natural Resources Sector Strategy 2018-2024.pdf*
- *Rwanda Training Manual on Environment & Climate Change for Environmental Organizations, 2014*

Level of confidence of the above assessment

- Based on limited evidence

**Please provide an explanation for the level of confidence indicated above.**

There is limited information in key Government documents (Policies, laws and strategic plans) in the environment in the natural resources management sector that have captured any intent on the mainstreaming of traditional and indigenous knowledge. In addition, there is very little published information on indigenous knowledge and its integration into conservation measures.

**Adequacy of monitoring information to support assessment**

- No monitoring system in place

**Please describe how the target is monitored and indicate whether there is a monitoring system in place.**

There is no activity implementation and therefore no monitoring is in place.

### 3.18 National Target 18

*By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, applied and reflected in the implementation of the NBSAP.*

**Category of progress towards the implementation of the selected target**

- Progress towards target but at an insufficient rate.

**Date the assessment was done**

August 2020

**Additional Information.**

**National Stock Taking and Assessment.**

This was done as part of the step towards preparation of the NBSAP. It identified the status, threats, and drivers of biodiversity loss and challenges in the conservation and management of biodiversity.

**Capacity Building**

The University of Rwanda started a 2 years MSc program in Biodiversity Conservation and Natural Resource Management, located in the College of Science and Technology, School of Science. The program has on average enrolled 15 students annually since 2015. In 2017, the University of Rwanda jointly with the University of Koblenz-Landau, Germany created a dual degree program between the Biodiversity Conservation and Natural Resource Management Master's program at UR and the Biogeosciences Master's program at University of Koblnz-Landau (Germany). Since 2018, the CoEB and University of Rwanda Conservation Biology Programs collaborated with Bisate Lodge on a unique approach to building capacity for tropical forest restoration. BSc students will develop and implement research and monitoring projects with Bisate Lodge staff to evaluate the progress of the restoration efforts on the Lodge property. Student participation in these projects will provide an excellent learning opportunity on how to conduct research, how to implement environmental restoration projects and how to monitor impacts of management actions on biodiversity and the ecosystem. Two top performing students will be selected each year to collect data on the forest restoration project for their final research projects. Bisate Lodge will provide these two students with lodging and food while they are completing their projects as well as transportation costs.

Other achievements towards strengthening/building of technical capacity reported under the 2013 -2017 EDPRS are:

### **Conducting researches and evidence-based analyses on land and ensuring their dissemination.**

- 395/416 (94.6%) Sector Land Managers recruited and trained in GIS; and
- Training in land administration; Handbook 3: Coaching for development: Seven simple steps (CIDT&RNRA, 2014).

### **Efficient and sustainable mineral exploration and exploitation promoted.**

- 25 five staff were trained in different areas such as Geological Field Mapping and mining cadastre;
- 50 small scale mining companies and cooperatives were trained in mining techniques and managerial skills according to their respective districts;
- Adoption of a model mine project by 35 companies, and funding awarded for two model mines by FONERWA.

### **Improved meteorological data management for better planning & decision making.**

- Weather kits distributed in 20 schools;
- Daily forecast provided to general public by different media channels such as Twitter, Facebook, Website and YouTube;
- SMSs on prevailing weather conditions; radios, Televisions and newspapers;
- Climate data for 3 synoptic stations were digitized;
- A new radar was installed and staff were trained to operate it.

Local leaders (840) were trained to enhance environmental law enforcement around Rugezi wetland (questionnaire response on the Conservation of the crowned crane)

### **Rwanda National Herbarium**

To improve expand knowledge base and build capacity of students by means of research in the country, the National Herbarium of Rwanda (NHR) was established. The CoEB is managing the National Herbarium of Rwanda and has taken on the task of digitizing the +18,000 specimens in the herbarium collection and creating a web portal to make this information on plant species distribution and taxonomy available publicly. The web portal will launch by the end of 2020 and it is anticipated that this portal will promote more botanical research and conservation work in Rwanda

### **Studies, Biodiversity Assessments and Survey.**

Various assessments and surveys have been undertaken for important biodiversity areas especially national parks and wetlands which are informing decision making.

#### **Indicators used in this assessment**

- Stocktaking report encompassing all this information;
- Published documents on status of biodiversity;
- Number of research projects elaborated and executed;
- Number of research programs developed;
- Volume of scientific production accumulated.

#### **Please describe any other tools or means used for assessing progress**

This assessment has used desk studies and expert opinion.

#### **Relevant websites, web links and files**

- *Economic Development and Poverty Reduction Strategy 2, Rwanda 2013*

#### **Level of confidence of the above assessment**

- Based on partial evidence.

#### **Please provide an explanation for the level of confidence indicated above.**

There is a fairly good amount of information on what has been done.

#### **Adequacy of monitoring information to support assessment**

Please indicate the adequacy of the national monitoring systems in place for this national target.

- Monitoring related to this target is partial.

#### **Please describe how the target is monitored and indicate whether there is a monitoring system in place.**



### 3.19 National Target 19

*By 2020, at the latest, the mobilization of financial resources for an effective implementation of NBSAP from all potential sources, and in accordance with agreed process in the strategy for resource mobilization, is reinforced and increased substantially from the current levels.*

#### **Category of progress towards the implementation of the selected target**

- Progress but at an insufficient rate

#### **Date the assessment was done.**

July 2020

The government of Rwanda has developed a national resource mobilization strategy in the framework of updating and implementing NBSAP with the following objectives:

- Gather information base on biodiversity conservation funding needs, set financial priorities and propose appropriate mechanisms for national and international resources mobilization;
- Identify potential sources of funding and elaborate resource mobilization plan.

The resource mobilization for NBSAP implementation identified 8 focal areas below and deals with the implementation responsibilities of different sectors involved in biodiversity conservation, so that our country becomes self-reliant on raising resources needed for the purpose:

- Mainstreaming biodiversity conservation into development sectors
- Biodiversity conservation and its sustainable utilization
- Agricultural biodiversity and biotechnology
- Biodiversity use and ecosystem services delivery into national economic system
- Improving population welfare through fair and equitable sharing of benefits
- Traditional knowledge and cultural heritage preservation
- Scientific knowledge management and capacity building
- Resource mobilization for NBSAP implementation

As part of the Biodiversity Finance Initiative (BIOFIN), a global programme initiated by the international community in response to the urgent global need to generate significantly more financing from all possible sources towards global and national biodiversity goals, four reports were produced by the government of Rwanda:

**1) Biodiversity Finance Policy and Institutional Review (PIR):** Analysis of the policy and institutional architecture for biodiversity finance and existing finance mechanisms.

**2) Biodiversity Expenditure Review (BER):** Analysis of public and private expenditures towards sustainable biodiversity management.

**3) Financial Needs Assessment (FNA):** Estimates of the investments required to implement current national biodiversity plans and achieve national biodiversity targets and results.

**4) Biodiversity Finance Plan (BFP):** Analysis of options to optimize current and expand future investments (public, private, national, international, traditional and innovative) in biodiversity management.

The finance needs for implementing the NBSAP II Goals were estimated over two timelines; 2018/19 to 2023/24 for NST 1 and 2018/19 to 2029/30 for the SDGs. The aggregate finance needs for the NST 1 and the SDG planning period were estimated at between RWF 37.5 and 41.01 billion (equivalent to \$44.3 and 48.4 million) and RWF 82.6 to 91.2 billion (equivalent to \$97.5 and 107.7 million), respectively.

**Summary of estimated financial needs for NBSAP II**  
(Time periods: 2018/19 – 2029/30 and 2018/19 – 2023/24)

Goals		Total (2018/19 - 2029/30) million RWF	Average (2018/19 - 2029/30) million RWF	NSTI total (2018/19 - 2023/24) million RWF
1. Mainstream biodiversity conservation in the decision making process across all governmental, private and civil society's development programmes	High	10,270	856	4,824
	Low	9,116	760	4,283
2. Reduce multiple anthropogenic pressures on biodiversity and promote sustainable use of all renewable resources	High	14,208	1,184	6,471
	Low	13,068	1,089	5,963
3. Improve the status of national biodiversity by expanding and safeguarding priority protected ecosystems and maintaining biological communities in equilibrium state	High	19,069	1,589	8,562
	Low	17,638	1,470	7,926
4. Ensure equitable sharing of benefits arising from the use of biodiversity and ecosystem services	High	28,651	2,388	12,791
	Low	26,933	2,244	12,013
5. Enhance NBSAP implementation through biodiversity knowledge management, participatory planning and capacity building	High	18,978	1,582	8,357
	Low	15,889	1,324	7,282
<b>Total</b>	High	91,175	7,598	41,004
	Low	82,644	6,887	37,468

Figure 27: Summary of Estimated Financial Needs for Rwanda's NBSAP II

Source: Rwanda Biodiversity Financial Needs Assessment, (BIOFIN, 2018)

The Biodiversity Expenditure Review (BER) indicated that funding for biodiversity management in Rwanda is derived from government subventions through government budget to ministries and agencies, non-government expenditures including funding from bilateral donors, Global Environment Facility (GEF) funded projects, non-governmental organizations (NGOs) and the private sector. Government biodiversity expenditures increased from RWF 10.17 billion in 2011/12 to RWF 11.5 billion in 2016/17, representing a cumulative growth rate of 2.5 percent annually. Similarly, expenditures by non-government implementing entities increased annually for 4.6 billion RWF to 5.7 billion RWF annually between 2011/12 and 2016/17 (REMA, UNDP and Global BIOFIN 2017).

Financial mechanisms supporting biodiversity in Rwanda were identified in the Rwanda BIOFIN Finance Policy and Institutional Review (2018). The review shows that the country has identified various financial mechanisms and different opportunities for finance solutions in Rwanda including:

- Generating increased biodiversity revenues through tourism; Effectively assessing and capturing water resources values;

- Expanding FONERWA's focus towards biodiversity;
- Rationalizing and streamlining environmental fines and penalties; and
- Increased bioprospecting through the access and benefit sharing mechanism.

The government has also developed a range of innovative solutions including:

- The outsourcing of park management to a private management company, reducing direct costs to the government and provides strong incentives for good management of the area.
- The existence of Rwanda's Environmental Fund – FONERWA – as a vehicle for direct financing of a range of climate and environmental programmes and projects creates valuable institutional capacity that could be expanded in the future.
- Environmental fiscal reforms should be implemented to harmonize and rationalize the full range of national fees, fines, and penalties.

**Indicators used in this assessment.**

- Number of people trained and skilled in Resource mobilization
- List of potential sources of funds and resources mobilization strategy established through NBSAP implementation plan
- Types of innovative financing mechanisms proposed, accepted and utilized

**Please describe any other tools or means used for assessing progress**

Rwanda Biodiversity Finance (BIOFIN): <https://www.biodiversityfinance.net/rwanda>

**Relevant websites, web links and files**

- *Rwanda Biodiversity Finance (BIOFIN)*
- *Rwanda Biodiversity Finance Initiative Biodiversity Finance Policy and Institutional Review, 2017*
- *Rwanda The Biodiversity Finance Initiative (BIOFIN) Biodiversity Expenditure Review, 2017*
- *The Biodiversity Finance Initiative (BIOFIN) Rwanda Biodiversity Financial Needs Assessment, 2018*
- *FONERWA Investments*
- *Rwanda Green Fund Factsheet, 2019*

**Level of confidence of the above assessment.**

- Based on comprehensive evidence

**Please provide an explanation for the level of confidence indicated above.**

- There is adequate information and system for tracking progress on this indicator.

**Adequacy of monitoring information to support assessment**

- Monitoring related to this target is adequate.

**Please describe how the target is monitored and indicate whether there is a monitoring system in place.**



Communities planting indigenous trees around Muhazi lake (Photographer: Olivier Nsengimana-RWCA)



Elephant in Akagera National Park (Photographer: Jordi Van Oort)

# SECTION IV: DESCRIPTION OF NATIONAL CONTRIBUTION TO THE ACHIEVEMENT OF EACH AICHI BIODIVERSITY TARGET

## 4.1 Aichi Biodiversity Target 1

*By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.*

Description of How and to what extent has Rwanda contributed to the achievement of this Aichi Biodiversity Target?

Rwanda has made strides towards increasing awareness on the values of biodiversity across the country through the following mechanisms: Through World Environment Day (WED) done annually since the year 2012. These have been well organised and targeted for different audiences in the education system such as lower levels (primary schools), Secondary, middle level and institutions of higher learning. The approach used for each category of stakeholders varies, for example, public lectures are held for Institutions of higher learning while songs and dance are used for lower levels. At the national level, press conferences and engagement with the media provides publicity for the theme of the year and other issues that Government considers priority for the Country with regard to conservation. The events are also cascaded to the Districts where various activities are undertaken through the Umuganda framework to sensitize the general public about the selected themes and other environmental matters.

**People are Aware of the values of Biodiversity:**

### **World Environment Day (WED) 2017:**

- Public lectures were given to 15 institutions of higher learning reaching 2,753 students drawn from across the country. This was, a great milestone in terms of creating awareness for this particular target group; and
- Awareness raising activities were undertaken throughout the week including at the district level.

### **World environment Day 2016:**

- A press conference and Radio talk show were undertaken at the national level followed by a series of activities countrywide in each of the districts in the 4 provinces;

- Public lectures to students in 12 institutions of higher learning in each of the 4 provinces of Rwanda that reached 1,377 were done;
- A national campaign to use environmentally friendly bags was conducted;

**Kwita Izina Annual Events:** The Kwita Izina was initiated in 2005 and has continued to draw attention of the Rwandese people as well the international audience to the plight of this endangered species. It was reported to have been attended by 65,000 persons in 2019. People around Volcanoes have benefited immensely from Gorilla conservation (see national target 1 in section III) for more details.

### **Campaign on the plight of the Grey Crowned Crane:**

This campaign was focused on the conservation status of the crane and the illegality of holding them in captivity. It was conducted nationally with great success which led to their release by those holding them in captivity and their eventual release into the wild. The campaign was conducted through radio talk shows through a radio station with national coverage;

### **Other initiatives:**

- Many other programs have been held in areas important for biodiversity such as Nyungwe, Gishwati-Mukura NP, Akagera (Akagera NP has a radio programme with almost a 65% national coverage that educates and creates interest to the general public about the park);
- Through implementation of the Bonn Challenge using the Forest Landscape Restoration Approach (FLR) which has a national coverage, people especially the general public/land owners have been reached in terms of the need to restore forest cover as well as how to do it.

### **People know the steps they can take to conserve biodiversity and use it sustainably.**

- The people reached also know the steps that they can take to conserve biodiversity. The aggregated numbers of those reached and those implementing various actions geared

towards environmental/biodiversity are not available, however it can be concluded that the reach is wide. The gap that exists is with regard to full implementation.

- Government commitment towards biodiversity conservation is also a major strength with regard to actualisation of this goal and fully integrating it into national policies and sectoral strategies.

Contributions towards support to the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

For both SDG 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development... & SDG 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable and lifestyles in harmony with nature.

Rwanda is implementing the Education for sustainable Development Programme as well as using other mechanisms to promote sustainability. This has helped create a constituency for environment/biodiversity conservation and management including creating a sense of responsibility for care of the Mother Earth. In addition, Rwanda has furthered the goal of reaching people everywhere with information and knowledge on the need for sustainable development through the promotion of sustainability in agriculture, land utilisation, sustainable urbanisation, sustainability in use of biomass energy and the need to provide alternatives sources of energy other than wood fuel, including the exemption of taxes on LPG and gas cookers as an incentive to reduce the use of traditional cooking methods, in particular firewood and charcoal which put a strain on the country's biomass.

## 4.2 Aichi Biodiversity Target 2

*By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi

Biodiversity Target?

Integration of Biodiversity values into:

### **National and local development and poverty reduction strategies.**

Biodiversity values were integrated into Vision 2020 implemented through EDPRS II (2008 -2012) & EDPRS II (2013 -2018). From 2017, Rwanda is implementing Vision 2050 through the 7 Years Government Programmes: National Strategy for Transformation (NSTI), 2017-2024. The role of Environment and natural resources and its importance is captured under the Economic Pillar, Priority 7: "Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a green economy". Key activities to be implemented under this priority are: Increasing the number of terraces; increase and maintain a sustainably managed forest cover at 30%; half the number of households depending on wood fuel for energy; develop a project to manage water flows from Volcanoes for purposes of reducing flood disasters and for improved water resources management (NST1, 2017 – 2024).

Conservation of biodiversity and the environment in general has also been recognised as a vehicle for reducing poverty in the Country. In addition, the National Land Use Masterplan recognizes the important role land and land-based resources play in national development and has measures to ensure that land and land-based resources such as catchments and wetlands among others are used sustainably. Sectoral strategies as well as urban and district plans have also integrated biodiversity conservation.

### **Kigali City Master Plan for example proposes to:**

- Strengthen the existing natural drainage systems and wetland network to improve the quality of the downstream water;
- Encourage afforestation in steep slopes more than 40%;
- Manage watersheds and slopes;
- Provide variety of public parks and open spaces; and
- Develop variety of attractive parks and recreational features such as themed botanic gardens, bio-diversity parks, eco -bird park,

horticulture park, etc.

### **National and local planning processes**

For national planning (see above text).

#### **District Planning:**

The planning process at the District level has integrated biodiversity conservation measures. Districts are the mechanism through which Government programmes are implemented, and therefore national priorities are captured in the sector strategies that are then cascaded to the District Development Strategies. The District administration also plays the role of mobilising communities to participate in the Government programmes and agenda.

#### **National accounting systems**

- Rwanda has been participating in the WAVES programme and has developed national capital accounts for water, land and mining (see sections 2.1 & 3 for more details). Preliminary ecosystem valuation accounts have also been developed and work is ongoing; and
- Natural capital accounts are going to be mainstreamed in the national standard accounts.

#### **National reporting systems**

This is achieved through thematic working group meetings and joint sector review.

Description of other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional).

Rwanda, by conducting NCAs under the WAVES programme in collaboration with development partners is contributing to the valuation of key ecosystems and biological resources of global significance e.g. establishing the carbon sink capacity from the forest cover.

Contributions to support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

#### **SDG 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts:**

This SDG is being implemented through the implementation of ABT 2.

### **4.3 Aichi Biodiversity Target 3:**

By 2020, at the latest, incentives, including

subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

*Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.*

This target is aligned with the National target 3.

#### **Positive Incentives Created.**

Positive incentives for conservation such as the Tourism Revenue sharing, development of community ecotourism enterprises (Sabyinyo eco lodge) and integration of conservation and development activities in areas adjacent to National parks has had a positive impact with regard to ensuring conservation of critical ecosystems such as the Nyungwe National Park and Volcanoes NP among others. For example:

- 90% of the respondents in an evaluation to assess the effectiveness of the TRS program around Nyungwe NNP published in 2019 noted that the programme had a positive impact on decreasing illegal activities around the Park as well as contributing towards community ownership of Park; which had helped reduce conflicts. In addition, the TRS had helped increase food availability; health care (access increased from 58% prior to TRS to 92% with TRS); education (All children went to school from 10% prior to TRS to 52% with TRS); improvements in income went up by 23%.
- Still in another evaluation titled "The Effectiveness of Rwanda Development Board Tourism Revenue Sharing Program towards Local Community Socioeconomic Development: (A Case Study of Nyungwe National Park)" undertaken in 2015, the results indicated that the programme had a positive impact. Overall, 2,563 (2527 were members of the beneficiary community) respondents were interviewed; and 80% and more of them either strongly agreed or agreed that the programme had positive impacts with regard to improvements in health, education, water accessibility, housing, agricultural activities, local employment, sustainable use of natural resources and development of local enterprises. Around the other national parks



(Akagera, volcanoes), similar activities have been implemented and are bearing the same results (see National Target No. 3 in Section 3) for more details.

### **Special Guarantee Fund.**

- This fund was established in 2012 for purposes of insuring people against wildlife damages among other functions. Between 2013 and 2017 this facility compensated 5,189 claims and an additional 2,470 claims in 2018, related to wild animals' damages that included cases of crops destroyed, livestock killed as well as people injured or killed. A total of FRw 580,106,575 million was settled as compensation for wildlife related claims in the period 2016 to 2018. This has helped compensate communities living adjacent to Parks, thereby reducing resentment of wildlife that results to killing and other adverse activities on wildlife.

Incentivising conservation has therefore been successful in ensuring conservation of critical habitats and biodiversity; as well as mitigating the drivers and threats that impact conservation negatively.

### **Harmful Incentives Reformed.**

Under BIOFIN, a study on "Impact of the current range of agricultural subsidies and incentives on Rwanda's ecosystems" was conducted and policy recommendations provided

### **Contributions that support implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.**

Positive incentives in the Rwanda NBSAP were focused on communities living adjacent to protected areas and not the fisheries sector.

## **4.4 Aichi Biodiversity Target 4:**

*By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.

### **Sustainable Gorilla and Chimpanzee based Tourism in Volcanoes and Nyungwe National Parks.**

- Rwanda promotes high-end low impact

tourism particularly for the primates trekking packages that limits human access and traffic that may interfere with the natural behavior of wildlife especially of the vulnerable gorilla and chimpanzee populations, enhancing their preservation.

### **Mitigating negative impacts on forests and woodlands.**

- Rwanda is promoting sustainable charcoal production and use at the household level;
- As an incentives to make more households use LPG the Government has provided tax exemptions on LPG and gas cookers;
- Rwanda is in the process of acquiring a lab that will help standardize cookstoves that are resource efficient;
- In September 2018, the New Forests Company (NFC) that manages the Buffer Zone Concession area in Nyungwe was certified by the internationally recognized Forest Stewardship Council (FSC) and awarded the Forest Management Certification. This certification is an indication that NFR manages the forest assets in a manner that complies with international, national and local laws as well as best practices; maintains community relations and worker's rights; manages and limits environmental impacts; and generates multiple benefits from the forest assets.

### **Promotion of Sustainable Mining.**

A major threat to the biodiversity of Mukura forest reserve (before being upgraded to national park status in 2015) was illegal and unsustainable mining. The Government has laid the ground work for sustainable mining and has identified 2 companies who will pilot test sustainability in mining. They have also received the requisite training.(For additional information on the actions being implemented towards this ABT, please refer to National target 4 in section III.)

Promotion of cleaner production and resource use efficiency. The government has developed Resource Efficient and Cleaner Production (RECP) investment guidelines for industries aimed at the reduction of wastes and their negative impacts on the environment; as well as enhancing resource efficiency through the application of cleaner production technologies and techniques.

Rwanda Resource Efficient and Cleaner Production Centre (RRECPC) now Cleaner Production and Climate Innovation Centre under the Ministry of Trade and Industry (MINICOM) has focused its

priorities on reducing water pollution, enhancing best practices, improved technology and training for behavioral change. Over the last three years, Tea Factories have reduced the amount of firewood used for energy from 3.7 m<sup>3</sup> to make 1 ton of tea to 2.2.m<sup>3</sup>/ton.

*Contributions to support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.*

#### **SDG 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production.**

Rwanda through the implementation of its green growth strategy has laid the ground work for enhancing resource use efficiency and production which will ensure long term conservation of biodiversity and environment.

#### **SDG 9.4 Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies.**

Compulsory EIA/EA administration for various projects and Strategic Environmental Assessments (SEAs) that integrate biodiversity concerns have been proposed as a means of ensuring sustainability. Key outcomes expected out of these processes are reduction in pollution (air, water, land) and adoption of alternative and more sustainable resource efficient technologies. For example, major investments are being implemented in the energy sector to increase power generation from renewable sources such as solar, hydro, geothermal and also generation from wastes landfills.

#### **SDG 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.**

Implementation of Rwanda's green growth strategy ensures that socioeconomic development is firmly anchored on the sustainable management and utilization of available natural resources to enhance resilience to environmental dynamics, especially climate change and its implication.

### **4.5 Aichi Biodiversity Target 5:**

*By 2020, the rate of loss of all-natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi

Biodiversity Target.

Over the reporting period, natural habitats found in national parks have not suffered any losses. In fact, the habitats have improved through restoration efforts which involved planting native trees on degraded sites or by allowing for assisted regeneration. In addition, the Gishwati Mukura forests were upgraded to national park status thus enhancing their protection (see section 2.3 and 2.8 for more information on what has been achieved to date).

Contributions that support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

#### **SDG 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.**

- Through the development of sustainable forest management plans and their implementation; promotion of sustainable use of wood fuel, forest loss has been avoided to some extent. In addition, the massive afforestation initiative using the forest landscape approach and other programmes promoting agroforestry and sustainable management of small private forest plantations is providing alternative sources of timber, wood fuel and other forest products (See section III, National target 6 on what has been done on sustainable forestry).

#### **SDG 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.**

- By rehabilitating and restoring forests and wetlands wetland ecosystem, Rwanda is also promoting the preservation and conservation of biodiversity. Up to 2019, Rwanda had managed to increase forest cover to 30% of its total land area. Afforestation efforts are still continuing and the Country has committed to maintain the 30% forest cover into the future.
- The Ministerial Order No006/minirena/2015 of 18/06/2015 determining the management of protected state forests not governed by special laws is also a milestone in terms of protecting natural forest resources previously not under legal protection.

## 4.6 Aichi Biodiversity Target 6:

*By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target. (This target is also aligned to the national target 6)

Rwanda's strategy of ensuring that fish stocks in natural ecosystems are not depleted is promotion of aquaculture which reduces reliance on capture fisheries. While the production of fish from aquaculture increased from 265 metric tons in 2011 to 5,128 metric tons in 2018 according to FAO, this is still very low compared to about 25,000 metric tonnes for the same year from capture fisheries. Capture fisheries production also had a slight decline from 2015 to 2018 (FAOSTAT, 2018). The Government is still implementing programmes to combat invasive alien fish species which have led to serious declines in fish stocks through introduction of predators. Overall, Rwanda remains a net importer of fish (for more details, see section 3.6)

*Contributions that support implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.*

**SDG 14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics**

Effective enforcement of fishing activities has not been achieved nationally and fishers are still using under size mesh nets. (REFER TO SECTION 3)

## 4.7 Aichi Biodiversity Target 7:

*By 2020 areas under Agriculture, Aquaculture and Forestry are managed sustainably, ensuring conservation of biodiversity. (Aligned to national target 6)*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.

This target is aligned to national target 6.

### **Sustainable Agriculture**

Sustainable land management (land is the resource base that supports agriculture) activities have been implemented across the Country through various programmes. Some of the activities being promoted are: agroforestry, soil fertility improvement, construction and maintenance of terraces, construction of rain water harvesting dams, practicing appropriate agronomic techniques, and integrating livestock keeping with crop production. The current Strategic Plan for Agriculture Transformation (PSTA4) emphasizes "alternative land management to complement terracing with comprehensive climate smart soil and integrated watershed management", activities that will build up on the achievements of the previous strategy (for more details, see section 3.6).

### **Sustainable Forestry**

While forest cover has increased since 2010, the quality of wood stocks in plantation forests especially among the small private sector players may be wanting. Under production has also been noted as an issue especially among the small private sector players. In addition, the sector is also dominated by eucalyptus tree species stands. (MoE, 2018) Agroforestry especially around key natural forest resources is intended to offer sustainable production and supply options. In doing so, this will relieve the pressure on natural forest ecosystems enhancing their preservation and conservation; as well as the species they host e.g. the gorillas and chimpanzees (see section 3.6 for more details).

### **Fisheries and Aquaculture**

Aquaculture development is intended to relieve pressure from natural ecosystems; however, this is still on a limited scale. No information is provided on whether the little aquaculture being undertaken is being sustainably done or not.

Contributions that support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

**SDGs 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems,**

**that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.**

Agricultural intensification that is more focused on high value crops (horticultural crops) supported by an efficient irrigation system is what Rwanda aspires for. Resilience is being built into agriculture through improved land management, soil and water conservation, catchment/watershed protection, agroforestry, and promotion of smart agriculture to mitigate against climate change. There is also an Early Warning System that provides weather forecasts thus informing farmers what to expect. The Strategic Plan for Agriculture Transformation 2018-2024 is promoting intensification of agriculture supported by efficient irrigation systems and technology to increase production while at the same time protecting the environment.

**SDGs 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.**

Sustainable production and consumption within these three sectors (agriculture, forestry and aquaculture) will enhance the conservation, preservation and protection of key ecosystems as well as biodiversity.

#### **4.8 Aichi Biodiversity Target 8:**

*By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity (aligned to National Target No. 7).*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.

Pollution mitigation in Rwanda is anchored on awareness creation/sensitization about environmental issues, monitoring of various anthropogenic activities and enforcement of punitive legal actions on potential polluters. Review of various legal instruments has been ongoing to enhance environmental governance and related matters. These include: Law N°48/2018 of 13/08/2018 on Environment; Law No. 18/2016 of 18 May 2016 on Air Quality and Law N° 57/2008 of 10/09/2008 relating to the prohibition of manufacturing, importation, use and sale of polythene bags in Rwanda.

Additionally, various water shed projects have been implemented across the country to mitigate

siltation and erosion covering an estimated 10,000ha (see section 3.7 for more details).

Description of other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)

Rwanda as a member of the East African Community (EAC), through the lake Victoria Environment Management programme (LVEMP) did rehabilitation work on the catchment of Nyabarongo river, one of the 2 rivers that drain into Lake Victoria. This was intended to address the issue of siltation and other pollutants emanating from farmlands.

The KAGERA Transboundary Agro-ecosystem Management Project (FAO: 2010\_2014) has also contributed towards reduction of pollution levels in the river.

*Contributions that support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.*

#### **4.9 Aichi Biodiversity Target 9:**

*By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.*

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target (see national target No. 8 for more details).

**SDG 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive species on land and water ecosystems and control or eradicate the priority species.**

Activities to remove IAS have been implemented in Akagera National Park and several other wetlands, however, the reach is still very limited.

#### **4.10 Aichi Biodiversity Target 11:**

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.

Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.

To date Rwanda has managed to put under state protection a total of 240,587 ha of land covering 4 national parks and a wetland accounting for 9.13% of Rwanda's total land area. Recently there have been measures undertaken to protect wetlands national as well as small patches of remnant forests (see sections 2.6 & 2.7 for more details).

*Contributions towards achievement of the Aichi Biodiversity Target at the global level (optional)*

- Rwanda's conservation efforts in Volcanoes national park which is part of the Virunga massif, the last remaining refuge of the mountain Gorilla (endangered) contributes to the global efforts to conserve this species.
- Rwanda conservation efforts and protection of Nyungwe national park and the Gishwati-Mukura National Parks that are home to the critically endangered chimpanzees contribute to the global efforts in the conservation of this species.
- The Albertine Rift is also home to many endemic species of plants and birds. These has remained fairly well protected thus preserving this biodiversity.

#### **SDG 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.**

Protected areas in Rwanda enhance the preservation of important natural heritage, ecological and cultural values.

### **4.11 Aichi Biodiversity Target 12:**

*By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained (aligned to national target No. 10)*

*How and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target?*

No species have been recorded to have gone extinct since the adoption of the Strategic Plan for Biodiversity 2011-2020, however, Rwanda has many species of plants, birds and mammals that are listed as threatened under the IUCN Red list. Rwanda's conservation efforts have resulted into increasing areas under protection slightly; intensifying wildlife security; mitigating against encroachments that lead to loss of land area for conservation; rehabilitating and restoring ecosystems; and reintroduction of species (black

rhino and lions) into Akagera National Park; while healthy Grey Crowned Cranes previously held in captivity were also released into the same park thus reducing the risk of species extinction. By 2019, 13 lions, 23 black rhinos and 167 grey crowned cranes had been reintroduced into Akagera NP. While 241 grey crowned cranes had been rescued from captivity. The efforts have also facilitated population recovery and growth of endangered species such as the cranes and mountain gorillas, as well as the stabilization of the endangered eastern chimpanzees and golden monkey populations. The conservation status of the Mountain Gorilla improved from Critically Endangered to Endangered in 2018, thanks to collaborative conservation efforts across country boundaries and positive engagement from communities living around the Mountain Gorilla habitat (<https://www.iucn.org/news/species/201811/fin-whale-mountain-gorilla-recovering-thanks-conservation-action-iucn-red-list>).

Poaching and human wildlife conflicts have been noted to be on a decline, however, the threats are still there as indicated by incidences of snaring for example (Nyungwe National Park had 13,000 snares removed in 2016) <https://www.rwandawildlife.org/wp-content/uploads/2018/10/Rwandas-IWT-Symposium-Summary-Resolutions.pdf>.

*Contributions to the achievement of the Aichi Biodiversity Target at the global level.)*

Rwanda is a refuge for several threatened (especially the critically endangered) as well as endemic species. The conservation of these species contributes to the global efforts of conserving biodiversity and especially those that are critically threatened or endangered.

#### **SDG 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.**

Conservation efforts have reduced the rate of ecosystems degradation thus mitigating adverse impacts on species as demonstrated by species population abundance and increase (refer to section 2.3, 2.4 and 3.10 of this report).

#### **SDG 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.**

Enhanced wildlife security measures and community centred conservation efforts have

significantly mitigated poaching and illegal wildlife activities.

## 4.12 Aichi Biodiversity Target 13

### Safeguarding genetic diversity

*Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity (aligned to national target No. 11)*

Conservation of ecosystems is promoting in-situ preservation of wild varieties of various crops and plants. Farmers are also being encouraged to cultivate certain crop varieties to enhance their production thus conservation. On the other hand, the use of biotechnology and establishment of a national Gene bank promotes ex-situ conservation of a variety of indigenous plants' and animals' resources e.g. by collecting and storing seeds, germplasms as well as animal sperms. Development of an ABS Guideline and Toolkit is expected to further enhance community led preservation of plant and animal varieties.

*Description of other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional).*

Rwanda through Rwanda Agricultural Board (RAB) collaborates with international partners on germplasm exchanges. The collaborating institutions include:

- International Center for Tropical Agriculture (CIAT) – Columbia on a Bean Program;
- International Potato Center (CIP) – Peru on an Irish Potato and Sweet potato Program; and
- International Maize and Wheat Improvement Center (CIMMYT) Mexico on a Maize and Wheat program.

**SDG 2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels...**

Programmes are in place that are promoting in-situ and ex-situ conservation of plants and animal varieties, while the recently developed ABS guideline and toolkit is aimed at ensuring accrued benefits are appropriately shared.

## 4.13 Aichi Biodiversity Target 14:

*By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and*

*safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable (aligned to National Target No. 13).*

*Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description.*

There has been a gradual increase in the size of protected area and also in the area under natural resources conservation and management. This can be attributed to reduced encroachment into ecosystems as well as rehabilitation and restoration programmes like designating Gishwati-Mukura into a national park, as well as the rehabilitation and designation of Rugezi wetland as a RAMSAR site. The number of local people engaging in conservation and related enterprises as a livelihood option, has also been on the rise further enhancing the preservation of key ecosystems, their products and services. Some of the groups involved in this include: BIOCOOP (Nyungwe), RWCA (Rugezi and other wetland close to Kigali) who have been working with communities in conservation with great success in the restoration of eastern lakes (Cyohoha, Rweru) by removing the water hyacinth. This has increased fish production, at least for Cyohoha (Ref.: LDCFII project)

For instance, in 2014 the monetary value of benefit from Nyungwe NP and Rugezi wetlands were estimated at 4.80 billion USD and 374.32 million USD respectively. A Total Economic Valuation (TEV) of Mukura Forest was estimated at a total of 981,266,600 FRW equivalent to 1,443,039 USD per year while its monetary benefits are estimated at US\$803 per hectare per year.

*Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional)*

Through the conservation of key ecosystems, Rwanda has contributed to the conservation of global ecosystem services in addition to the preservation of important species and increasing carbon sequestration thereby combating climate change.

**SDG 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.**

Conservation efforts have been implemented leading to the rehabilitation and restoration of different forests and wetlands within the country

e.g. Gishwati-Mukura forest and Rugezi and Rweru wetlands.

**SDG 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.**

Ecosystem services have been realized as demonstrated by wildlife population abundance and also increase in the carbon sequestration capacity, from the conservation of key Ecosystems such as the Nyungwe national park and the Gishwati Mukura NP, both mountain ecosystems.

#### **4.14 Aichi Biodiversity Target 15:**

*By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification (aligned to national target No. 14).*

*Please describe how and to what extent your country has contributed to the achievement of this Aichi Biodiversity Target and summarize the evidence used to support this description.*

Rwanda's forest cover has increased to 724,695 ha (30.4%) of the country's total land area thus contributing to the cumulative sequestration of 27,860,228 tCO<sub>2</sub>e of GHGs between 2011 and 2018. Rwanda is one of the countries that joined the Bonn challenge in 2011, an initiative of the Global Partnership on Forest Landscape Restoration that sought to increase forest cover by 150 million hectares by the year 2020 and 350 million ha by 2030. The Government of Rwanda made a pledge to restore 2million hectares of its degraded and deforested landscapes by the year 2030, the highest as a proportion of the total land area of participating countries. As of 2018, the country had accomplished 35% of its pledge.

In addition, the country in NST1 has committed to maintain the forest cover at 30% through sustainably managed forests. On farmlands and other open spaces including those in urban areas, restoration activities have been undertaken through planting of agro forestry tree species in the catchment areas, terracing on hill slopes, construction of anti-erosion infiltration ditches, protection of riparian areas on rivers and lakeshores as well wetlands through legal mechanisms as well as their restoration and creation of explicit

buffer zones among others. These are significant contributions to the efforts on combating Climate Change and enhancing the national resilience to climate change.

*Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional).*

Over this decade Rwanda has significantly contributed to the increase of natural carbon sinks capacity through increased forest/tree cover and conservation of critical ecosystems e.g. wetlands.

**SDG 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.**

Rwanda has been implementing various rehabilitation and restoration programmes targeting key natural ecosystems like forests, savannah, wetlands, rivers and lakes guided by the various sector strategies.

**SDG 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.**

Various sustainable land management programmes e.g. watershed rehabilitation and restoration have been implemented to mitigate serious land degradation problems that not only lead to continuous loss of soil but also frequent flooding.

#### **4.15 Aichi Biodiversity Target 16:**

*By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation (aligned to national target No. 15)*

*Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.*

Rwanda ratified and started domestication of this protocol in 2012, so far, the legislative framework is being developed for its implementation, an ABS guideline and toolkit has been prepared and an ABS valorization strategy is being finalized.

<https://absch.cbd.int/search/nationalRecords?schema=absNationalReport>

*Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional).*

Nothing to report.

**SDG 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.**

Capacity to facilitate the implementation of necessary actions are being put in place e.g. development of the ABS guideline and toolkit.

#### **4.16 Aichi Biodiversity Target 17:**

*By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plans plans (aligned to national target No. 16).*

The following indicators have been achieved.

- Rwanda completed and submitted its NBSAP to the CBD Secretariat;
- NBSAP has been adopted as a policy instrument;
- NBSAP implementation is going on satisfactorily.

For more details, refer to section III on the extent to which national targets have been achieved.

*Please describe other activities contributing to the achievement of the Aichi Biodiversity Target at the global level (optional).*

Nothing to report.

**SDG 15.9 By 2020, Integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.**

Ecosystem and biodiversity values have been fairly integrated into government development strategies EDPRS 1 & II and the NST1. (see section II & III of this report for more details).

#### **4.17 Aichi Biodiversity Target 18:**

*By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with*

*the full and effective participation of indigenous and local communities, at all relevant levels plans (aligned to national target No. 17).*

*Description of how and to what extent Rwanda has contributed to the achievement of this Aichi Biodiversity Target.*

Traditional/indigenous knowledge is guided by the Rwanda's Intellectual Property Law and Policy that also safeguards the right of the resource persons and also a key component in the recently developed ABS guideline and toolkit. A few conservation efforts have borrowed from traditional knowledge and culture such as the Kwita Nzina (gorilla baby naming ceremony) while cultural norms/beliefs have been attributed to the conservation of Buhanga Sacred Forest. One area of the knowledge that local communities hold in the area of Ethnomedicinal values would benefit a lot from having a mechanism in place that preserves, perpetuates and protects it as well integrates it into other systems of medicine.

#### **4.19 Aichi Biodiversity Target 19:**

*By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends and the consequences of its loss, are improved, widely shared and transferred and applied (aligned to National Target No.18)*

Rwanda has made great strides in terms of enhancing knowledge on biodiversity conservation in general. Key achievements under this include the carrying out of biodiversity surveys for important species and ecosystems. Several inventories have also been undertaken in this regard and they have informed key decisions by Government that have helped enhance biodiversity conservation (see section 2 & 3 for more details).

#### **Aichi Biodiversity Target 20**

*4.20, By 2020, the mobilization of the financial resources for effectively implementing the strategic plan for biodiversity 2011-2020 from all sources, should increase substantially (aligned to national target 19).*

Rwanda has made significant progress in mobilizing financial resources for implementation of the NBSAP and other activities that contribute to the achievement of its objectives (see section II on resource mobilisation and National target 3.19 for more information. This has helped the Country implement its NBSAP.





Savannah of Akagera National Park (Photographer: Jordi Van Oort)

## SECTION V (VII): RWANDA UPDATED BIODIVERSITY PROFILE

### *Biodiversity Facts:*

#### **Status and trends of biodiversity, including benefits from biodiversity and ecosystem services.**

Rwanda has diverse ecosystems that range from humid montane and planted forests to savannahs, water resources and wetlands. Rwanda's Atlas of a changing Climate refers to the country as a "biodiversity storehouse" which is habitat for 402 mammals (which accounts for 40 per cent of the entire continent's mammalian species); 1061 bird species, 293 reptile and amphibian species and 5,793 higher plant species (RoR/ REMA 2009). The most important of the species found in Rwanda is the Mountain Gorilla (*Gorilla beringei* ssp. *beringei*) that is classified as endangered and only found in 2 other countries globally namely the Democratic Republic of Congo and Uganda; the Chimpanzee, another critically endangered species with about 500 individual troupes estimated at as many as 500 individuals and many others. There are many other primates including rare ones that have made Rwanda to be referred to as a primatologist's paradise in the Atlas (REMA, 2011) – "Atlas of Rwanda's Changing Environment: Implications for Climate Change Resilience".

The Country is endowed with an abundance of water resources distributed in a very dense hydrological network consisting of 101 lakes and covering 149,487 ha, 860 marshlands covering a total surface of 278 536 ha and 861 rivers with a combined length of 6,462 km (REMA 2008) cited in the Atlas of a changing Climate. 67% of Rwanda's national territory lies in the Nile basin which drains 90% of the Rwandan waters through Rivers Nyabarongo and Akagera into Lake Victoria. These marshlands support a lot of avian biodiversity including many endemic species (REMA, 2011).

Rwanda is also part of the Albertine Eco region, characterized by high endemism with about 27 bird species recorded.

#### **Biodiversity Status and Trends**

- Large mammals (elephants, giraffe, buffaloes) have had significant declines owing to poaching pressure and loss of habitats.

- The black rhino population became extinct in Rwanda, however, a total of 21 animals have been reintroduced since 2016 (16 in 2016 and 5 in 2018). One of the rhinos is reported to have calved while one of the translocated rhinos died.
- Rwanda's forest cover has increased to 30.4% of the Country's total land area. A significant increase of this through agroforestry (on farms, steep slope, road sides).
- The Mountain Gorilla population has continued to increase and is stable. According to the most recent surveys of its population, it is estimated that there are now at least 1,004 individuals (Hickey et al. 2018). Robbins and Robbins (2004) demonstrated that about 60% of the population is likely mature based on a combination of data from known habituated Gorilla groups and population simulations from an agent-based mode (Hickey et al. 2018).
- There four National parks that are a refuge for biodiversity: These are:
  - Akagera National Park (with an area of 111, 193 ha);
  - Nyungwe National Park (101,659 ha);
  - Volcanoes National Park (16021 ha);
  - Gishwati-Mukura National Park (3,427.5 ha).
- The increase in the number of primate troops and ungulate populations in Akagera National Park from 1998 to date as well as in the number of the mountain gorillas in the Virunga Mountains from 1971 to date.

#### **Valuation of Biodiversity and Ecosystem Services in Rwanda.**

Despite the numerous services they provide, Rwanda ecosystems are under pressure from human activities. The new Environment and Climate Change policy (2019) makes provision for institutionalization, piloting and upscaling Payment for Ecosystem Services (PES) as well as regularly conducting an inventory of degraded ecosystem and prepare restoration development plans.

Agriculture is the mainstay of the Rwandan economy and contributed 29% to the Country's

GDP in 2018. The sector also employs most of the Rwanda people.

Nature based tourism concentrated in protected areas, particularly in national parks is a major revenue earner for the Country and still has enormous potential for growth. The tourism sector is estimated to have generated USD 293.6 million in 2013 and 1.4 Billion in 2018 contributing 14.9% of the GDP and providing 410,000 jobs which was 13% of the population in formal employment. In 2013, the Government of Rwanda, through the Ministry of Trade and Industry, developed the Rwanda Protected Areas Concessions Management Policy to attract private-sector investments in tourism based in protected areas. Rwanda has currently positioned itself as a high-end tourist destination, especially in regard to the Volcanoes National Park which is home to the mountain gorillas.

While valuation of biodiversity and ecosystem services have not been comprehensively undertaken for most, the following are the values of some of the ecosystems that have been assessed to date:

- The value of Nyungwe National Park was 4.80 billion USD in 2017. This valuation was done in 2017 (Pankal, Lal et. Al, 2017);
- Total monetary value (TEV) of Rugezi wetlands was 374.32 million USD in 2014 (ARCOS, 2014);
- The Total Economic Value (TEV) of Mukura Landscape was estimated at 981,266,600 FRW equivalent to 1,443,039 USD per year (ARCOS, 2014). The monetary benefits from the Mukura landscape translate into a value of US\$803 per hectare per year; which is comparable to the most productive forest landscapes.

Valuation of Mukura landscape informed the adoption of the Law establishing Gishwati-Mukura National Park by the Cabinet of Ministers.

The Government of Rwanda has also developed natural capital accounts for water, land and minerals as well as ecosystem services. This will eventually shed light on the actual value of natural capital in Rwanda. Currently, the Natural Land Accounts are being used in apportioning land for various land uses in the Country.

### Main pressures on and drivers of change to biodiversity (direct and indirect).

The main driver of biodiversity loss is the burgeoning population. With Rwanda having

the highest population density in Africa, which is largely dependent on agriculture for livelihoods; there is an acute land hunger in the Country. This has led to encroachments to land previously rich in biodiversity and draining of wetlands to create space for cultivation. Over the years, biodiversity has been subjected to various threats causing loss to species richness, population size and ecosystem degradation. The main threats include: poaching, agricultural encroachment into important biodiversity areas and habitats; fires (intentionally started owing to resentment of protected areas and accidental ones started by honey harvesters; alien invasive species of plants and fishes, gastropods and crop insect pests which are displacing indigenous vegetation and fishes and affecting agricultural productivity; predation, deforestation (to create land for farming, land use change, illegal mining and grazing, human-wildlife conflict around the national parks although this has been declining, damming of rivers leading to drops in water levels, poisoning of lions and other predators by pastoralists/livestock keeper, over fishing/using the wrong mesh size nets and destruction of fish breeding grounds, Inadequate regulations/weaknesses in the implementation of existing laws and regulations; infrastructure development that leads to habitat fragmentation and encroachments into ecosystems such as wetlands , Over abstraction of water; over harvesting of useful plant species (those with a high commercial value or other values such as medical plants) drainage of wetlands outside parks, plant and animal diseases transmissible from livestock to wildlife, lack of connectivity and climate change.

### Measures to Enhance Implementation of the Convention Implementation of the NBSAP

Rwanda developed its first NBSAP in 2003 after identifying the major threats to biodiversity conservation. The document targeted the following five major outcomes: i) improved conservation of protected areas and wetlands; ii) sustainable use of the biodiversity of natural ecosystems and agro-systems; iii) rational use of biotechnology; iv) development and strengthening of policy, institutional, legal and human resource frameworks; and v) the equitable sharing of benefits derived from the use of biological resources. This 1st NBSAP was revised in 2016, a process that was preceded by the carrying out of a national stock taking and assessment exercise to identify the status and trends of biodiversity in the

country; the drivers, pressures/threats leading to biodiversity loss as well as appropriate response mechanisms. National targets were then set to address the threats and challenges identified in order to stem off biodiversity loss. Target setting was also largely influenced by each respective Sector budgetary allocations avoiding inclusion of many activities that could not be funded.

### Actions taken to achieve the 2020 Aichi Biodiversity Targets.

These include:

- Policy and legislative review. This has been undertaken over the reporting period whenever key issues/actions needed for biodiversity conservation were required (for example the Revised Environment and climate change policy, Orders on wetlands Conservation, Forests, Pollution control, strategic environmental assessment etc.);
- Adoption of Vision 2050 which has very strong provisions on the conservation of environment, natural resources and biodiversity;
- Adoption of the Forest Landscape Approach nationally as a mechanism for increasing the Country's forest cover. In addition, the Government commitment/ pledge to the Bonn challenge was a major boast to the achievement of the national target on increasing forest cover to 30% of Rwanda's total land area;
- Development of Rwanda's National Climate Change and Low Carbon Development Strategy (2011) and a strong Government commitment to implement the Strategy. This has been cascaded to the 5year EDPRS 11 and the NST1; and subsequently to the sectoral strategies. As a result, sustainability has been in built in all Sectors of the economy;
- Adoption of Green cities guidelines which are under implementation;
- Continued efforts supporting the conservation of Rwanda's biodiversity resources found in the national parks and forest reserves. This ensured the conservation of the country's rich biodiversity resources including some of the threatened species such as the Mountain Gorilla (*Gorilla beringei ssp. beringei*), 1903 and the Eastern chimpanzees among others;
- Rehabilitation and restoration of the Gishwati and Mukura forest reserves; flood control in the degraded Gishwati forest due to rehabilitation efforts;
- Gazettement of Gishwati-Mukura forests as National Parks in 2015 which has enhanced their protection;
- Continued provision of incentives to local communities living around protected areas through the Tourism Revenue sharing programme not only helped reduce the threats and negativity towards wildlife but also poverty, a key driver of biodiversity loss through the implementation of many social economic projects;
- Awareness raising among various constituencies was undertaken with great success. The medium used included: Radio talk shows, press conferences especially during major events such as the annual World Environment Day, Kwita Izina events, Conversation on conservation conferences public lectures, competitions in songs and dances followed by Awards;
- Ratification of the Nagoya Protocol which is on track. The Country is to develop an enabling legal and institutional framework for the implementation of the Protocol;
- Capacity-building efforts to increase communication, education and public awareness (CEPA) have been implemented through, among other means, newsletters and television and radio broadcasting;
- Establishment of a National Clearing House Mechanism (CHM) which is now operational;
- A process on genetic resources valuation is ongoing;
- Operationalization of the national gene bank that will contribute to the conservation of neglected landraces and local breeds;
- Promotion of a Sector Wide Approach (SWAP) for mainstreaming environmental (including biodiversity) sustainability into all development processes; and
- Fund raising for biodiversity conservation initiatives especially through FONERWA (established to raise funds for the Green growth programmes) and other sources such as GEF.

Since 2006, synergies have been identified with regard to projects related to implementing the 3 Rio Conventions (UNFCCC, CBD, and UNCCD)

Support mechanisms for national implementation (legislation, funding, capacity-building, coordination, mainstreaming, etc.)

### **Policy and Legislative Framework**

Both the Vision 2020 and EDPRS identified environment and natural resources as cross cutting issues and set targets to be achieved, key among them the need to increase forest cover to 30% of the country's total land area by the year 2020. Another important target was "to reduce the percentage of people using wood fuel from 95% to 50% by the year 2020. These and others were cascaded to the EDPRS 1 & 2. Currently, Rwanda is implementing Vision 2050 through the National Strategy for Transformation 1 (a 7-Year Government programme) covering the period 2018 -2024). Targets pertaining to environment and natural resources management have been captured at the highest level of this implementation framework.

Overall, the high-level Government commitment has paved the way for the development of the requisite policy and legal framework for achievement of the goals of environmental conservation and sustainable management. In 2019, Rwanda Environment and Climate Change Policy was adopted with the overall goal for "Rwanda to be a nation that has a clean and healthy environment, resilient to climate variability and change that supports a high quality of life for its society." The Policy proposes 7 policy objectives:

- Policy objective 1: Greening economic transformation;
- Policy objective 2: Enhancing functional natural ecosystems and managing biosafety;
- Policy objective 3: Strengthening meteorological and early warning services;
- Policy objective 4: Promote climate change adaptation, mitigation and response;
- Policy objective 5: Improve environmental well-being for Rwandans;
- Policy objective 6: Strengthen environment and climate change governance; and
- Policy objective 7: Promote green foreign and domestic direct investment and other capital inflows.

Rwanda adopted a Biodiversity Policy in 2011 and a Biodiversity Law in 2013. The Government of Rwanda has also been guided by the National Climate Change and Low Carbon Development Strategy (2011) with 14 programmes of action to promote sustainable land and natural resources use, food security, preservation of biodiversity, social protection, improved health and disaster risk reduction.

In addition, a number of new key policies, laws and strategies have been adopted. These include: Rwanda Wildlife Policy (2013), Rwanda Protected Areas Concessions Management Policy (2013), National Forestry Policy (2018) and National Agroforestry Strategy and Action Plan 2018–2027, National Policy for Water Resources Management (2011), National Energy Policy (2015) and National Biomass Energy Strategy (2017), National Industrial Policy (2011), Forestry Law (2013), Protected Areas Law (2013), New Land Law (2013), Law establishing the Rwanda National Climate and Environment Fund (FONERWA) (2012). Decrees for the protection of biodiversity and Preparation of a regulatory framework on Payment for Ecosystems Services (PES) have also been made. Regarding the rational use of biotechnology, the following instruments have been developed (with their adoption pending): National Biosafety Strategy and Biosafety Law.

### **Strengthening Rwanda's institutional framework for implementation of the Convention.**

This has been done through the establishment of various institutions/agencies over the reporting period that work alongside other government agencies that include: the Rwanda Environmental Management Authority (REMA); Rwanda Forest Authority (RFA); Rwanda Water Board (RWB); Rwanda Agricultural Board (RAB); and the Rwanda Development Board (RDB). Local Authorities play a critical role in that they are the mechanism through which government programmes are implemented. In addition, they mobilize local communities for participation as well as facilitate the process of identifying local communities' priorities for integration into Government programs.

Name of Institution	Mandate & Responsibilities
Rwanda Environmental Management Authority (REMA)	Established under Law N°63/2013 of 27/08/2013 as the authority in charge of supervising, monitoring and ensuring that issues relating to environment are integrated in all national development programs.
Rwanda Forestry Authority (RFA)	No. 72/2019 of 29/01/2020 Law establishing Rwanda Forestry Authority (RFA) with the mandate to ensure growth of forest resources, their management and protection for sustainable development purpose
Rwanda Water Resources Board	No. 71/2019 of 29/01/2020 Law establishing Rwanda Water Resources Board (WRB) with the mandate to ensure availability of enough and well managed water resources for sustainable development.
Rwanda Fund for Environment (FONERWA)	The National Fund for Environment established under Law No. 39/2017 of 16/08/2017 with the mandate to mobilise and manage resources used in financing activities aimed at protecting and preserving the environment and natural resources, climate change. FONERWA plays the lead role and focal point for raising funds in support of green growth.
Centre of Excellence in Biodiversity and Natural Resources Management.	The Centre has the mandate of coordinating and monitoring all activities relevant to biodiversity conservation and management. Serves as a clearing house for data and information on biodiversity and natural resources for Rwanda;  A hub for capacity building and knowledge generation on biodiversity/natural resources management in the country in Rwanda.
Rwanda Development Board (RDB)	Rwanda Development board was established by Law No 46/2013 of 16/06/2013 with the mandate to fast track development activities and facilitate the Government and private sector to undertake an active role.
Rwanda Agriculture and Animal Resources Development Board (RAB)	RAB has the mission of developing agriculture and animal resources through research, agricultural and animal resources extension in order to increase agricultural and animal productivity as well as their derived. It was established by Law N° 14/2017 of 14/04/2017

### Mechanisms for Monitoring and Reviewing Implementation of NBSAP

NBSA monitoring is done through a national Result Based Monitoring and Evaluation System (RBM&E System) under the Monitoring and Evaluation System of the Environment and Natural Resources Sector of Rwanda whereby each sector report

on annual achievements. Regular participatory review is done through the Environment and Climate Change Sector Working Group, involving different government, civil society actors in the country, under the Ministry of Environment and REMA.

## Conclusions and Recommendations

Rwanda has demonstrated commitment to the conservation of biodiversity resources and the ecosystems that support it which has been captured at the highest Government policy level (Revised Vision 2020 and EDPRS II which set clear targets for the following:

- » Increasing forest cover to 30% of the Country's total land area;
- » Reducing use of biomass fuel from 95% to 50% by 2020.

Similarly, Vision 2050 and the NST1 (2017-2024) continues with the same commitment with an emphasis on biodiversity and ecosystem management, pollution control and waste management. In addition, the Government committed to maintaining forest cover at 30% of the country's total land area going forward.

While the Country has made a commendable achievement in increasing the forest cover to 30% of its total land area, there is need to look at the quality and not just the quantity of the forest resources in terms of their usability. This will ensure that forests provide for the needs of the country and its people. The Strategic Plan for Environment and Natural Resources Management Sector (2018-2024) highlights and recommends the need to improve silvicultural practices especially among the small scale plantation farmers. This would lead to increased productivity of better quality wood. There is also need to diversify the type of species grown currently dominated by Eucalyptus.

Various sectors have mainstreamed environmental conservation which has been trickled down to lowers levels of Government. A consistent and targeted approach to creating environmental awareness on different topical issues of concern to the Country was noted. This needs to be continued, however, alternative livelihood options and technologies such as fuel efficient energy cook stoves, improved farming technologies and on farm husbandry practices, efficient irrigation systems and improved/efficient charcoal production kilns) among others need to be intensified. This will help address some of the threats that lead to biodiversity loss.

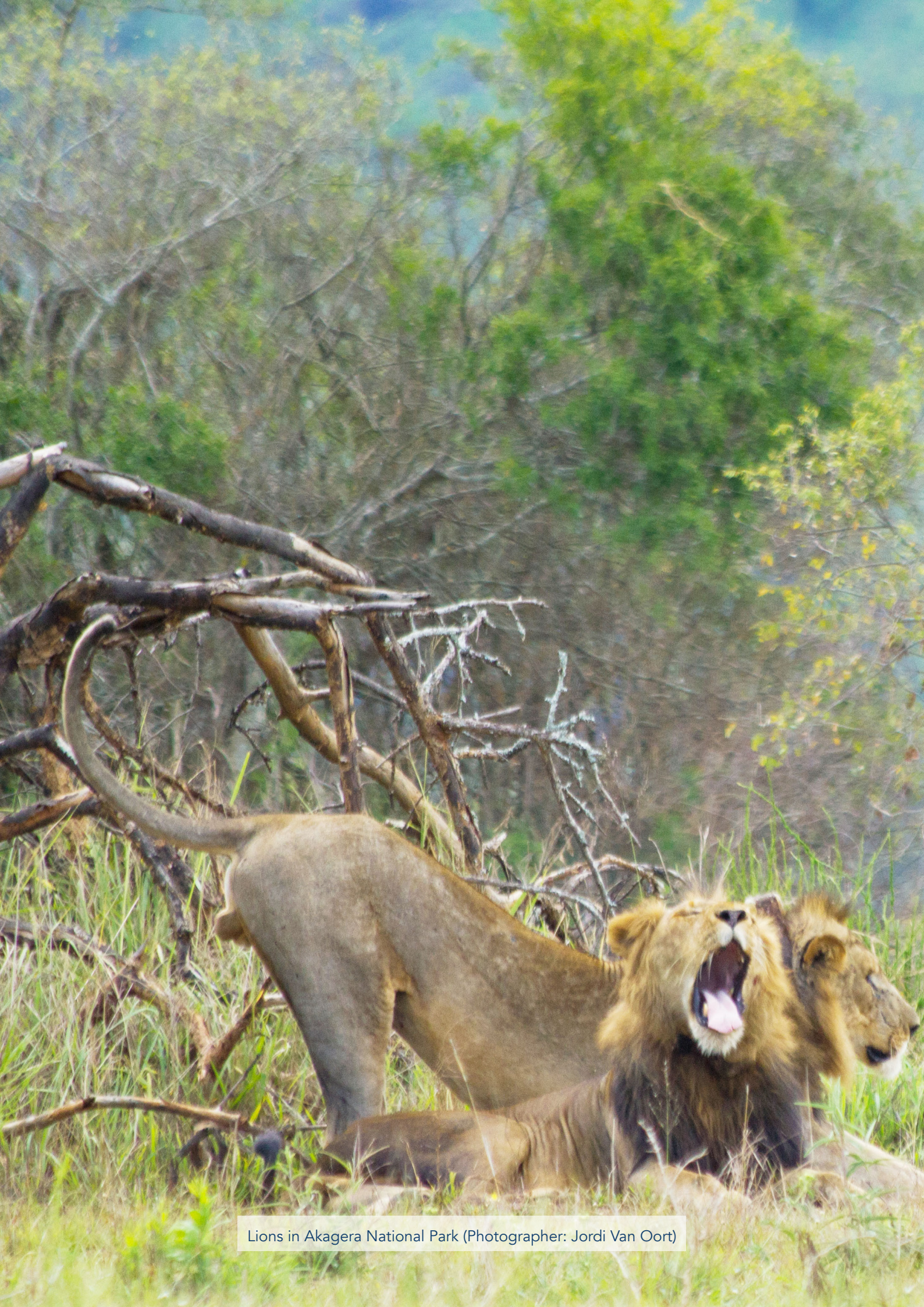
Poverty is one of the key drivers of environmental degradation and biodiversity loss. While there has been a positive impact arising from the Tourism Revenue Sharing programme in areas where it

has been implemented, increased efforts towards poverty reduction countrywide will go a long way in addressing many of the threats to biodiversity conservation. Achievement of the targets set in the NST1 of reducing the percentage of those living below the poverty line from 38.2% in 2016/2017 (baseline) to 17% by the year 2023/24; and the population of those living below extreme poverty from 16% in 2016/2017 (baseline) to <1% by the year 2023/2024 will have a significant positive impact on biodiversity conservation in general. Poverty reduction initiative should therefore be seriously implemented countrywide.

While significant efforts have been made in promoting sustainable agriculture and especially agroforestry in agricultural landscapes, care should be taken in implementing the NST1 targets with regard increasing area of land under irrigation under the Integrated Water Resources Management (IWRM) Framework. Irrigated agriculture if not carefully implemented can lead to soil fertility loss, increased soil erosion, and sedimentation of water bodies leading to water pollution. Over abstraction of water (ground and surface) is also another potential impact. However in the same NST1, the Government has continued its commitment towards erosion control and use of land optimally (has set a target on Area of land under erosion control measures and used optimally). The necessary safeguards must therefore be put in place to ensure that agriculture (irrigated and rain fed is undertaken sustainably.

Reintroduction of native fish species and selective fishing of invasive alien species needs to be scaled up. In addition, aquaculture which provides an alternative to capture fisheries should also be intensified. Although growth was noted, fish production from aquaculture is still very low. Lack of transportation facilities for some of the fingerlings from one lake to another was noted as an obstacle in the exercise, therefore adequate resources need to be provided.

There is need to strengthen monitoring in the various institutions implementing various programmes. The 2<sup>nd</sup> Bonn Challenge Barometer report notes that although Forest Landscape Restoration (FLR) projects were implemented in 8 key biodiversity areas, "the exact information for the type or amount of restoration taking place in these areas of conservation importance is not yet available".



Lions in Akagera National Park (Photographer: Jordi Van Oort)



