REPUBLIC OF RWANDA

MINISTRY OF ENVIRONMENT

STRATEGIC PLAN FOR THE ENVIRONMENT AND NATURAL RESOURCES SECTOR 2018 – 2024

November 2017

Acronyms

AfDB : African Development Bank
ALPFG : Africa Land Policy Framework and Guidelines
BCC : Budget Circular Call
CBOs : Community Based Organisations
CPAF : Common Performance Assessment Framework
CSOs : Civil Society Organisations
DDPs : District Development Plans
DFID : Department for International Development
EAC : East African Community
EDPRS : Economic Development and Poverty Reduction Strategy
EESD : Environmental Education for Sustainable Development
EIA : Environmental Impact Assessment
EICV : Integrated Household Living Conditions Survey
ENR : Environment and Natural Resources
EWS : Early Warning System
FONERWA : National Climate and Environment Fund
GDP : Gross Domestic Product
GGCRS : Green Growth and Climate Resilience Strategy
GIS : Geographic Information System
IDP : Integrated Districts Plans
IWRM : Integrated Water Resource Management
LAIS : Land Administration Information System
LTRSS : Land Tenure Regularisation Support System
M&E : Monitoring and Evaluation
MoE : Ministry of Environment
MINAGRI : Ministry of Agriculture and Animal Resources
MINALOC : Ministry of Local Government
MINECOFIN : Ministry of Finance and Economic Planning
MINEDUC : Ministry of Education
MINILAF : Ministry of Lands and Forestry
MININFRA : Ministry of Infrastructure
MINIRENA : Former Ministry of Natural Resources
MoH : Ministry of Health
NAPA : National Adaptation Programme of Action
NBI : Nile Basin Initiative
NFC : New Forests Company
NGOs : Non-governmental Organisations
NLUDMP : National Land Use and Development Master Plan
PAIGELAC : Inland Lakes Integrated Development and Management Support Project
PEER : Public Environmental Expenditure Review
PNLP : National Malaria Control Programme
PSTA : Agricultural Sector Investment Plan
RDB : Rwanda Development Board
REMA : Rwanda Environment Management Authority
RNRA : Rwanda Natural Resources Authority
RSSP : Rural Sector Support Project
RwaMet : Rwanda Meteorological Training and Research Centre
SEI : Stockholm Environment Institute
SEA : Strategic Environmental Assessment

SIDA : Swedish International Development Agency
SMEs : Small and Medium Enterprises
SOER : State of Environmental Report
TIG : Community Service for Prisoners

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1. INTRODUCTION

1.1 2018-2024 Environment and Natural Resources Strategic Plan

Purpose. The following Environment and Natural Resources (ENR) Sector Strategic Plan (SSP) covers a period of six-years (2018/19-2023/24). The plan reflects sector contributions towards implementation of the first phase of the National Strategy for Transformation (NST-1), outstanding targets of Vision 2020 and emerging priorities for Vision 2050. The plan also aligns with strategic frameworks including the Sustainable Development Goals (SDGs) and Rwanda's Nationally Determined Contributions (NDC) to the Paris Agreement on Climate Change corresponding to Rwanda's Green Growth and Climate Resilience Strategy (GGCRS).

Methodology. The ENR SSP builds on a consultative revision and stocktaking process carried out in 2016 and reflects updated strategic planning and policy process across six core sub-sectors: Forests, Meteorology, Environment and Climate Change, Land, Mining, Petroleum & Gas and Integrated Water Resources Management (IWRM).[1] Sub-sectors submitted inputs based on MINECOFIN SSP guidance, which were further developed through iterative consultations including Thematic Working Groups (TWGs), and Sector Working Groups (SWGs). The strategy is intended to be a living document serving as a basis for monitoring results and NST-1 contributions.

Structure. The structure of the strategy consists of a sector-wide overview covering each of the six sub-sectors, implementation plans covering short, medium and long-term periods, monitoring, evaluation plans, and estimated costs and financing sources.

Key ENR innovations for NST-1:

Sector-level:

- **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.

- **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, etc.), with a focus on partnerships with priority secondary cities and private industry. This aims to highlight the triple-bottom-line benefits (economic, social, environmental) of green growth as Rwanda urbanizes and industrializes. For example, between 2009 and 2016, support from the Resource efficient and Cleaner Production Centre to Rwandan industry generated cost savings of approximate USD 7.4 million.[2]

- Scale up green investment through consideration of **green bonds and other innovative financial instruments in partnership with FONERWA, complimented by strategic policy and regulatory reforms and incentives** to finance investment in sustaining and increasing the productivity of Rwanda's natural capital, as well as its climate resilience.

- An operational Doppler weather Radar combined with automatic Stations network transmitting real time weather data which help in weather watch and early warning of weather and climate extremes in lead time,

[1] Rwanda's environment and climate change fund, FONERWA, was made an autonomous institution supporting green finance across key sectors. The Rwanda Natural Resource Authority (RNRA) was disbanded and replaced with the Rwanda Water and Forestry Authority (RWRA), Rwanda Land Management and Use Authority (RLMUA) and the Mining, Gas and Petroleum Board.

[2] REMA, 2017. Impacts of REMA's programmes/EDPRS II period & priorities for NST-1. Environment and climate change thematic working group meeting 24 August 2017.

- The climate web portal "maproom" as a collection of maps and other figures that monitor climate, malaria historical analysis and Agriculture conditions at present and in the recent past. The maps and figures can be manipulated and linked to the original climate data.

Sub-sector level innovations are detailed in figure 1 below, emphasizing the need to optimize management of Rwanda's natural capital to enable access to high quality, sustainable and productive resources.

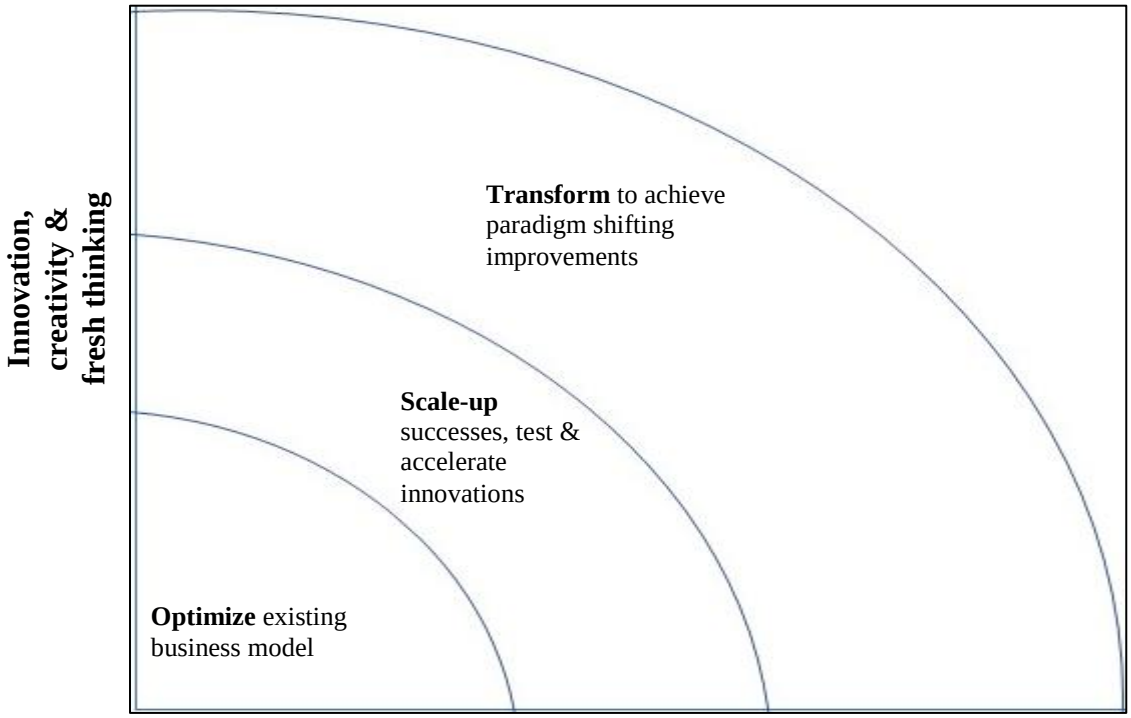

Figure 1. Strategic orientation of ENR sector.

ENR sub-sectors:	NST-1 (2018-2024)	SDGs + Vision 2050 + GGCRS (2030-2050)
1. Forestry	Establish and enforce national quality standards for SFM & agroforestry materials and management techniques to improve productivity.	SDG 15 (terrestrial ecosystems/forests/ land/biodiversity), SDG 7(energy)
2. Water	Optimize and scale-up Integrated Water Resources Management (IWRM) using a catchment-based coordination.	SDG 6 (water)
3. Land	Develop a holistic and integrated land management system to optimize productivity.	SDG 15 (terrestrial ecosystems/forests/ land/biodiversity)

4. Meteorology	Enhanced reliability of weather and climate information and services.	SDG 13 (climate change), SDG 17 (SD partnerships incl. technology access)
5. Environmental mgmt.	Safeguard environmental resources through optimized regulatory, monitoring & compliance for pollution and mainstreaming of E/CC issues.	SDG 11 (cities/settlements), SDG 12 (consumption/production), SDG 13 (climate change)
6. Mining	Catalyse the responsible development and improved performance of the mining, petroleum and gas sector.	SDG 15 (terrestrial ecosystems/forests/ land/biodiversity) SDG 12 (consumption/production)

Crosscutting SDG systemic issues:

- Policy & institutional coherence
- Multi-stakeholder partnerships (and coordination)
- Data, monitoring & accountability

Crosscutting inputs to optimize and increase:

- Human capacity
- Finance
- Technology

2. SECTOR OVERVIEW

2.1 Mandate of the ENR Sector

The mandate of the ENR Sector, is to ensure the protection and conservation of the environment and optimal and rational utilization of natural resources for sustainable national development. The ENR sector operates under this statutory mandate in global, regional and national contexts that have direct or indirect impact on its functions. Ministry of Environment (MoE) is the lead ministry in charge of protection of the environment and sustainable management of water resources in Rwanda. Ministry of Lands and Forestry (MINILAF) is the lead ministry in charge of the sustainable management of Lands and Forestry resources in Rwanda. MoE provides overall coordination in the preparation and implementation of the sector budgets and plans, as well as sub-sector resource mobilization.

2.2 Policy Context

ENR sector policies and strategies are aligned with an extensive range of national, regional and international policy frameworks. Rwanda's Vision 2020 and the emerging Vision 2050 provide the overarching vision of the country's economic growth and ambition to achieve middle, upper middle and ultimately high-income status by 2050. The global Sustainable Development Goals provide a holistic framework for ensuring Rwanda's growth is sustainable as it implements this vision. Equally, Rwanda's Nationally Determined contributions to the Paris Agreement on Climate Change commit Rwanda to a development pathway that is low-emission and climate resilient.

The objective of the ENR Sector Strategic Plan is to contribute to Rwanda's vision of sustainable economic development by safeguarding the natural capital that underpins it. The above national and international development frameworks provide important high-level guidance that is complimented from on-ground information and emerging needs across the six ENR sub-sectors and across related sectors, particularly agriculture and infrastructure, that in turn inform Rwanda's medium-term strategic planning in the form of NST-1 (2018-2024). With this background, the latest policy and strategic framework developments from the six ENR sub-sectors are summarized below.

Forestry. Rwanda's Forestry Policy and sub-sector strategy plan were both revised in May 2017. The aim of the policy and plan are to ensure sustainable forest management and the maintenance of a 30% forest coverage by establishing strong foundations for reliable domestic management and outsourced technologies in the forestry subsector.

IWRM. The guiding framework for water resources management in Rwanda is the National Policy for water resource management adopted in 2011. The overarching goal of this policy is to manage and develop the water resources of Rwanda in an integrated and sustainable manner to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders in decisions affecting water resources management. The policy highlights the importance of a catchment-based approach to management. Moreover, the major trans-boundary basins under which Rwanda belongs to are the Congo and Nile basins. To advance cooperation on the shared water resources within the two basins, Rwanda has contributed to the establishment and continues to support the operationalization of the Nile Basin Initiative (NBI) and ABAKIR (Autorite du Basin du Lake Kivu and de la riviere Rusizi).

Land. According to the Organic Land Law, land can be defined as a surface area with biodiversity, non-biodiversity like rocks, buildings, various infrastructures, rivers, lakes as well as the sub soil and its atmosphere. The land sub-sector is very wide in scope as it covers all natural resources and forms the basis of most other sectors including Agriculture, Infrastructure, Geology, Environment and others. According to the land law 2013, Land in Rwanda is categorized into two: Individual land and Public land. Land in Rwanda is predominantly individual land. The overall objective of the National land policy is to establish a land system that is secure for all Rwandans, land reforms that are necessary for good management and proper use of National land resources for a harmonious and sustainable development that ensures protection of the Environment.

Meteorology. The work of Meteo Rwanda is guided by its recently formulated 2018-2024 strategic plan to better deliver on its mandate to provide accurate and timely weather and climate information. The sub-sector also elaborated a Climate Data Policy in 2016 to define guidelines for both producers and users.

Environmental management. Under supervision of the Ministry of Environment, from the Law n°63/2013 of 27/08/2013 determining the mission, organization and functioning of Rwanda Environment Management Authority (REMA), REMA reserves the legal mandate for national environmental protection, conservation, promotion and overall management, including advisory to the government on all matters pertinent to the environment and climate change.

Mining, petroleum and gas. This sub-sector has been undergoing a transition in Rwanda, recently culminating in the establishment of the Rwanda Mines, Petroleum and Gas Board by Law N 07/2017 to re-design the minerals sector to deliver higher-level results. The sub-sector aims to contribute up to 4% of Rwanda's GDP by 2050, and 3.6% by 2024; including through value addition activities and gas sector developments from Liquefied Petroleum Gas (LPG) in Lake Kivu. Towards this target, the mining sub-sector aims to earn USD 800 million by 2020 and USD 1.5 billion annually by 2024.

2.3 Institutional Overview

Ministry of Environment (MoE), is the lead ministry in charge of protection of the environment and sustainable management of water resources in Rwanda.
Ministry of Lands and Forestry (MINILAF) is the lead ministry in charge of the sustainable management of Lands and Forestry resources in Rwanda.
MoE provides overall coordination in the preparation and implementation of the sector budgets and plans, as well as Green Economy resource mobilization.

Implementation of sector priorities is undertaken by the five national agencies, which include the:

1) Rwanda Water and Forestry Authority (RWFA)
2) Rwanda Land Management and Use Authority (RLMUA)
3) Rwanda Meteorology Agency (Meteo Rwanda)
4) Rwanda Environmental Management Authority (REMA)
5) Rwanda Mining, Petroleum and Gas Board (RMPGB).

The newly autonomous environment and climate change fund, FONERWA, for which MoE is proposed as the supervising Ministry, will supplement the Ministry's effort in raising funds to support the SSP implementation.

Rwanda Water and Forestry Authority (RWFA)

The Rwanda Water and Forestry Authority was established under the Law N°06/2017 of 03/02/2017. RWFA's mandated to implement policies, laws, strategies research and programmes that improve the quality and productivity of water and forest resources.

Rwanda Land Management and Use Authority

Rwanda Land Management and Use Authority (RLMUA) is responsible for putting in place and operationalizing an efficient system of land administration, use and management that secures land ownership, promotes investment in land for socio-economic development and poverty reduction.

Rwanda Meteorological Agency (Meteo Rwanda)

Meteo Rwanda was established in November 2011, under law N°54/2011. Formerly within the Ministry of Infrastructure, Meteo was categorized under the Ministry of Environment in 2015. The purpose of Rwanda Meteorology Agency is to provide accurate weather and climate information services for safety of life and property and socio-economic development.

The Rwanda Environment Management Authority (REMA)

REMA is under supervision of the Ministry of Environment, from the Law N°63/2013 of 27/08/2013 determining the mission, organization and functioning of Rwanda Environment Management Authority (REMA), REMA is vested with the legal mandate for national environmental protection, conservation, promotion and overall management, including advisory role to the government on all matters pertinent to the environment and climate change. REMA is designated as the national competent authority for all international environmental treaties and agreements on environment. REMA is also the National Designated Authority (NDA) for Green Climate Fund (GCF).

Rwanda Mining, Petroleum and Gas Board (RMPGB)

The Rwanda Mines, Petroleum and Gas Board was established by Law N°07/2017 in February 2017 to re-design the minerals sector to deliver higher-level results. Accordingly, the RMB has responsibility to re-design the sector to transform mining resources into key drivers of Rwanda's growth during the NST-1 period and beyond.

2.4 ENR Sector Stakeholders

The ENR sector intersects with a wide-range sectors and sub-sectors, linking areas such as agriculture, energy, tourism, housing, health, macroeconomic management, gender and social development, among others. In this context, a key priority of the sector strategy is improved coordination among partners in terms of programming, activity implementation and funding. This will be done through strengthening Sector Working Group (SWG) and Thematic Working Groups (TWGs) approaches, including through results based management oversight and accountability frameworks. As such, SWGs and TWGs will continue to bring together Central and Local government institutions, development partners, the private sector and civil society engaged in the ENR sector.

At the Central Government level, key ministerial stakeholders include:

- Ministry of Agriculture, Animal Resources (MINAGRI) and affiliated agencies: Rwanda Agricultural Board (RAB) and National Agricultural Export Development Board (NAEB);
- Ministry of Infrastructure (MININFRA) and affiliated agencies: Water and Sanitation Corporation (WASAC) and Rwanda Energy Group (REG);
- Ministry of Trade and Industry (MINICOM);
- The Rwanda Development Board (RDB);
- Ministry of Local Government (MINALOC)
- Ministry of Health (MoH)
- Ministry of Education (MINEDUC)
- Ministry of Foreign Affairs and Cooperation (MINAFFET)
- Ministry of Disaster Management and Refugees Affairs (MIDMAR)
- Ministry of Finance, Planning and Economic Development (MINECOFIN)
- Rwanda Utilities Regulatory Agency (RURA) and Rwanda Bureau of Standards (RBS)

Given the majority of implementation takes place outside of central government, the ENR sector must coordinate closely with a wide-range of local government, private, non-governmental, development partner, academic and media stakeholders.

Local Government

The Ministry of Local Government (MINALOC) plays a central role in ensuring integration of environmental sustainability issues into the District Development Plans (DDPs) and on-ground implementation, in line with Rwanda's decentralized governance framework. District officials responsible for ENR sector coordinate with District Planning Units, and play a critical role in date collection and disseminate of information for evidence-based implementation and monitoring.

The Private sector

In accordance with the GoR's policy of private sector-driven economic development, the private sector plays a critical role in ENR sector strategic planning in the context of finance and implementation, with the Private Sector Federation (PSF) and Business Development Centres (BDS) as key partners. Productive sub-sectors of mining and forestry maintain private sector partnerships, including outsourcing activities. In the case of forestry, this provides an important supplement to sub-sector capacity limitations through co-management. REMA and IWRM work with the private sector through regulation and trainings and guidance for improved management, whilst FONERWA provides co-financing for green private sector projects.

Non-Governmental Organizations (NGOs)

Civil society organisations play an important support role in the ENR sector, particularly for enhancing capacity at the community level, as well as supporting programme design and implementation.

Financial institutions and Development partners

Financial institutions enable investors and entrepreneurs to access funding to start and expand their businesses in line with Rwanda's environmental regulations across ENR sub-sectors. Core development partners provide sector budget support in the form of priority projects and programmes. UNDP and SIDA (the Swedish International Development Cooperation Agency) co-steered the process of developing a Single Project Implementation Unit (SPIU) for the ENR sector, helping to mobilise other development partners who have made commitments. Core donor partners in the ENR sub-sectors include DFID, KFW, the Kingdom of the Netherlands, BTC, among others.

Research and Educational institutions

Research and educational institutions are key partners of the 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 ENR

sector. Research and technology institutions such as University of Rwanda (UR) identify and pursue research opportunities as well as innovative technologies to meet the challenges of Environment and Natural Resources priorities in their activities based on an MoU between MoE and UR.

The Media & Communications Platforms

The media plays a crucial role in raising public awareness of environmental and natural resources issues, identifying and reporting environmental damage, sharing crucial information such as climate and weather data and informing the public about services provided by sector institutions. The media in Rwanda can be an effective agent of change, since mass media (particularly radio) remains the main source of information for most Rwandans. As Internet connectivity increases, new forms of media including online news sites and social media platforms will become more relevant. The ENR sector will harness these and other innovative tools (e.g. Twitter) to communicate effectively, both in Rwanda and abroad.

3. ENR SECTOR ACHIEVEMENTS

This section describes the progress made against the EDPRS II priorities (Annex 2) and priority programmes under ENR sector (Annex 3). One key observations include that although much progress has been made, many areas of unfinished business remain. These areas will in turn inform future NST-1 and ENR SSP priorities addressed in Section 5.

3.1 ENR Contributions to EDPRS 2 progress and achievement highlights

Against EDPRS 2 Priority Area 5 thematic outcomes of pursuing a green economy approach to economic transformation through increased green investment, standards and innovations as well as urban development, notable points of progress include:

- Mobilizing over USD 90 million through Rwanda's environment and climate change fund, FONERWA, and successfully establishing 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.
- Although the goal of establishing a green city pilot was not completed in the EDPRS 2 period[3], important progress was made in 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.
- MoE's accreditation to the GCF and being the first such entity globally to secure Project Preparatory Facility (PPF) funds.
- Rwanda's selection for project development support under the Pilot Programme for Climate Resilience (PPCR) and Forest Investment Programme (FIP).
- The Rwanda Resource Efficiency and Cleaner Productions Centre (RRECPC) continues to provide capacity building for the adoption of greener production technologies in the industrial sector.
- Adoption of a model mine concept by 35 companies, and funding awarded for two model mines by FONERWA.

Against the EDPRS 2 thematic priority of integrated approaches to land use and rural settlements, highlighted achievements include:

- Modernizing Rwanda's land management through complete and systematic land registration, operationalizing an online land information system (LAIS) easily available to the public, construction

[3] EDPRS 2 Midterm Evaluation Report, 2017.

of 5 District Land Bureaus Offices and validation of 30 District Land Use Plans among other achievements.

- 388 out of 419 sector land managers (93.2%) covering all districts and zonal offices in land surveying modules were recruited and trained (achieved at 89%).

The status of overall ENR sector performance against EDPRS 2 priorities was mixed, with integrated approaches to land use and rural settlements meeting set goals while objectives of pursuing a green economy approach fell short of set goals although important progress was made. Going forward, significant unfinished work remains for ensuring green economy approaches are facilitated by the ENR sector which will be brought forward as part of the ENR 2018-2024 SSP.

3.2 ENR status and achievements against planned activities (2013/14 – 2017/18)

ENR sector progress against existing SSP activities have registered good results across most sub-sectors, with key highlights indicated below. Annex 3 further details the achievements on those areas. Moreover, the sector has largely achieved two main targets of Vision 2020. The target for percentage of land protected for biodiversity conservation (10.3 % for year 2020) was surpassed by 2015 with total protected areas equivalent to 10.13%. The target of 30% of Rwandan land area to be covered with forest by 2020 will be achieved by 2018, two years before the target date with the percentage covered equivalent to 29.8%.

Key highlights include:

- Against the target of increasing forest cover to 30% by 2018, 29.8% has been achieved to date.
- Against the target of ensuring security of land tenure for all land claimants through systematic land registration, 8.6 million titles have been printed and 7.2 million titles have been collected by owners.
- A National Water Resources Master Plan for Rwanda was initiated in 2013 and was approved by the cabinet in 2015.
- Watershed projects have been implemented in the last seven years, including the rehabilitation of Sebeya, Yanze, Kadahokwa, Upper Nyabarongo, Karago and Kinoni catchments. An estimated total number of 10,000 ha have been well managed with terracing, afforestation, trenches, etc.
- To promote green and climate resilient village model in the framework of VUP, a green village toolkit has been developed by REMA and piloted in Muyebe I and II and Rubaya, with Kabyaza, Rusizi, and Gashaki under construction.
- Against the target to develop projects to reduce vulnerability to climate change through the increase of adaptive capacity, 32 FONERWA Projects have been approved for funding including 10 National Government projects, 7 Districts projects, 8 private sector projects, 4 NGOs projects and 3 joint NGOs-Districts projects, all worth **Rwf 32.7 billion.**
- Geological surveys and exploration have in three selected Potential Target Areas (PTAs) (Bugesera II, III and Rulindo II) have been completed and recommended further and deeper exploration in thirteen Future Priority Areas on key minerals like Tin, Tungsten, Tantalum, Gold, Lithium, Rare Earth Elements, Nickel, Platinum Group Minerals and Base metal.
- Meteorological data management has been improved for better planning & decision making through the digitization of 3 synoptic stations and the establishment of a new weather radar.

4. CHALLENGES IN ENVIRONMENT AND NATURAL RESOURCES SECTOR

From the perspective of dynamic, macro-level exogenous factors influencing the ENR sector, the increasing pressure of a young, dense, growing and urbanizing population on Rwanda's natural resources poses a central a challenge and an opportunity for Rwanda. Key related challenges include that 96% of rural households rely directly on predominantly subsistance agriculture for their livelihoods,[4] working on fragmented plots of 0.24 ha on average[5]. Compared to 2012 levels, by 2032 the total number of households is expected to increase from 2.4 million to 5.3 million; over 100% increase. Within this 20 year period, urban populations are projected to quadruple from 0.4 million households to 1.6 million, with rural areas adding 1.7 million new households.[6]

Population growth along with other interrleated drivers of increased standards of living and economic development will add pressure to the already strained environmental capital resources (agricultural land, forests, wetlands, rivers, lakes, etc.), causing further land fragmentation and productivity contraints in rural areas as well as unplanned settlements and pollution if not properly anticipated and managed in expanding urban areas. Without management foresight, landuse planning and management challenges around rationalization of competing activities (namely agriculture, industrialization, urbanization, and natural ecosystems) will grow.

Moreover, future climate change is likely to lead to new risks: the negative impacts seen from today's climate variability are likely to become worse. Average annual temperatures will continue to rise, 0.9 degrees celsius to 2.2 degrees celsius by the mid-21st Century, relative to the period 1970 to 1999. Whilst changes in average annual rainfall or frequency of droughts are less certain, higher temperatures are likely to increase the intensity of rainfall events, contributing to flash flooding and erosion.[7]

Priority ENR Sector challenges to address in the 2018-2024 period:

1. **From an ENR sector management effectiveness perspective, the main barriers to achieving sector objectives include: weak human technical capacity including monitoring and evaluation and integrated management and information systems; issues coordinating cross-sectoral mainstreaming and engaging civil society and private sector actors; and inadequate and unpredictable finance.** These issues are crosscutting within sub-sectors of Forests, Meteorology, Environmental Management, Land, Mining and Water.

2. **High competition among forestry, land and water resource users.** These sectors experience high demand in terms of limited available land for agriculture, forestry and agroforestry purposes to support biomass needs, water for irrigation, industry and domestic needs, as well as related requirements to sustain regulatory and provisioning functions of critical ecosystems, e.g. wetland, lakes and rivers. For example, agriculture and high population pressure have led to cultivation on fragile land on slopes of 30 degrees or greater, which are intended to be used for forestry activities to stabilize soils in accordance with the National Land Use Master Plan.

3. **Unproductive forest management practices.** This is exacerbated by illegal cutting of forests, uneven distribution of forest resource over the country and limited space for plantations, low

[4] NISR, EICV4. Cited from Rwanda's Strategic Plan for Agricultural Transformation (PSTA 4).
[5] Ibid.
[6] Ibid.
[7] Add ref to GCF PPF feasibility work.

productivity of manmade forests, predominance of one species (Eucalyptus) and poor agroforestry practices. As a result, demand for forest products outweighs supply. According to EICV4, 99.3% of households utilise biomass energy for cooking, representing a dramatic shortfall against the Vision 2020 and EDPRS 2 target of 50%. In addition to this, wood remains the widely used material in construction of houses, where 40.7% of houses have their walls built of tree poles and mud. Moreover, although Rwanda has successfully almost reached its target for 30% forest coverage, the quality and utility of these resources needs to be closely assessed within a sustainable forest management framework.

4. **Weak land use planning across competing interests and high levels of land degradation resulting in non-optimal utilization of resources.** At present, national and District-level land use master plans are not aligned, and governance systems are not in place to rationalize, harmonize, monitor and enforce implementation. This is exacerbated by low levels of compliance with the national land use master pan. In addition, with 70% of incomes deriving largely rain-fed agriculture, Rwanda's land and soil resources are a cornerstone of its natural capital, but also one of the most critically degraded. Due to its steep and hilly topography, intensive farming, lack of fallowing and reduced mulching practices, land degradation in Rwanda has been a well-known phenomenon for decades. Berry et al. 2003 estimated the cost of land degradation in Rwanda at 3.5% of agricultural GDP.[8]

5. **Climate related impacts from floods, landslides and droughts result in economic losses, and undermine economic development gains.** This situation is further complicated by limited awareness, understanding of environmental, and climate change issues particularly in productive sectors. Scarcity of water resources adversely impact agricultural productivity and increases potential for rising epidemics and loss of life. Extreme weather events already negatively impact the economy and climate change could result in annual economic losses of just under 1% of GDP by 2030[9]. This vulnerability was illustrated by the prolonged dry season in the Eastern province in 2016 affecting 5 Districts (Kayonza, Gatsibo, Kirehe, Nyagatare and Ngoma).

6. **Inadequate solid and liquid waste management particularly in urban areas contributes to the spread of waterborne diseases and other hygiene related illnesses, hence increasing cost for ensuring public health**. As an example, in Kigali city, 60% of the population depends on shallow pit latrines and solid waste in dumped into open dumping sites. Rapid urbanization, as well as geographic and temporal disparities in water availability, makes it difficult to supply water to certain areas. Increased competition for water resources is compounded by weak coordination among sectors, and is evident in the planning and utilization of water resources. Cases of sectoral conflicts in water use have been reported at various levels, increasing the urgency for the implementation of a strong water governance framework. There is a need for the department in charge of IWRM to fast track some quick win projects proposed in the master plan that can improve in water resources management in Rwanda.

7. **The main source of water pollution in rural areas is the application of chemical agricultural inputs.** The proportion of households using chemical fertilizers and pesticides increased from 24% in 2006 to 29% and 31% in 2011 and 36.4 and 29.3 in 2014 respectively. The challenge is managing this pollution while simultaneously encouraging agricultural transformation and intensification for economic growth and sustainable livelihoods.

[8] L. Berry, J. Olson, and D. Campbell, 2003. Assessing the extent, cost and impact of land degradation at the national level: findings and lessons learned from seven pilot case studies.
[9] Stockholm Environment Institute, 2009. Economics of Climate Change in Rwanda.

8. **In mining, despite the current signs of revitalization, the sub-sector works far below its capacity, relying largely on small scale mining that is export oriented and contributes to the environmental degradation**. Limited systematic mapping has only recently begun after long quiescence (about 30 years). The current knowledge about the mineral resources potential largely depends on historical records. No major mining venture is currently operating based on known reserves. Key ongoing challenges and constraints for the development of the sector, which are the focus of ongoing reforms include: a) implementation of the legal framework, b) access to international and local finance, c) limitations in infrastructure and services (i.e. water and electricity supply), d) lack of mineral resource knowledge, e) lack of professionalism and capacity of the artisanal and small scale mining dominated sector, f) skilled-labour shortages, g) obsolete technology and processes, h) inadequate assessment and management of environmental impacts, i) occupational health and safety risks, j) limited social impact management and community development, k) volatility of commodity prices, l) limited government revenue streams and m) illegal mining and trading.[10]

9. **Emerging issues with urbanization and industrial development**, namely point and non-point pollution, including solid and hazardous/toxic waste management.

10. **Limited availability of modern meteorological infrastructure and competent personnel to facilitate rapid translation of weather and climate data and information into high-quality products tailored to user needs, guided by up-to-date research and monitoring that meets international standards**, e.g. forecasting and early warning programmes.

5. ENVIRONMENT AND NATURAL RESOURCES STRATEGIC FRAMEWORK

5.1 Mission and Objectives

Mission: Promote, coordinate and enable the sustainable management of Rwanda's natural resources to safeguard green & climate resilient growth and achieve high standards of living across generations.

Strategic Positioning: ENR's 2018/19 – 2023/24 sector strategic plan is anchored in the Government of Rwanda's development vision of a sustainable, high-income economy by 2050 ensuring high standards of living for all Rwandans.

The ENR sector will help enable Rwanda's transformation towards national prosperity through:

- Optimal management of natural capital (land, water, forests, environment).
- Full access to high quality, renewable, sufficient & affordable water and energy resources.
- Phase out of charcoal/wood as primary energy sources.
- Climate resilience across productive sectors, namely agriculture and energy.
- Healthy and environmentally friendly surroundings, with low pollution and high biodiversity and ecotourism, for national and international benefit.

[10] Earth Systems working draft, 2017. Strategic Environment Assessment for the Mining and Minerals Policy of Rwanda.

- Use the national climate finance momentum for resource mobilization to finance cross sector priorities in order to achieve robust climate and environment results.

Overall Objective (SSP 2018/-2024): **Optimize** and **scale-up** sustainable and climate resilient management of natural capital resources to **anchor** and **accelerate** achievement of Rwandan prosperity.

Specific Objectives:

1. **Establish and enforce national quality standards for sustainable forest management (SFM) & agroforestry materials and management techniques to improve productivity,** optimally maintaining forest cover at 30% and doubling land under agroforestry resulting in higher-quality, more suitable and sustainable sources of biomass and non-wood forest products.

2. **Optimize and scale-up Integrated Water Resources Management (IWRM) using a catchment-based coordination and planning approach for equitable, productive and sustainable use,** strengthening governance and equitable allocation frameworks for productive use of high-quality water resources, addressing issues of water balance/scarcity, storage, quality, and water use efficiency

3. **Identify innovative solutions to systemic and crosscutting issues** of quality standards of management, linkages to national priorities for job creation, investment and urbanization as well as improving policy and institutional coherence, multi-stakeholder partnerships and coordination, as well as data, monitoring and accountability.

4. **Quality weather and climate information and services**, upgrading observation networks and capacity to deliver real-time access to certified, high-quality weather and climate services for extreme events and user decision making needs.

5. **Safeguard environmental resources** through strengthened regulatory, monitoring and compliance systems for pollution control including hazardous/toxic wastes, rehabilitation of degraded wetland ecosystems, implementation of Rwanda's NDCs for climate change along with E/CC mainstreaming and capacity building activities.

6. **Catalyse the responsible development and improved performance of the mining, petroleum and gas sector** by de-risking private sector investment through exploration, modernization of techniques, consolidation of small concessions into District mining blocks meeting national quality standards ('model mine'), and emphasis on value addition and sustainable practices.

7. **Develop a holistic and integrated land management system to optimize productivity**, building on successes in land administration/registration and improve established land use plans and systems; ensuring integrated sectoral, District and national-level management that is participatory, reliable and sustainable.

5.2 High-Level Results Chain

The results chain of the SSP is presented in **Figure 2** with priority interventions across sub-sectors presented in **Table 2.** An elaborated logical framework including indicators and targets is presented in **Annex 5**.

Figure 2. ENR Results Chain.

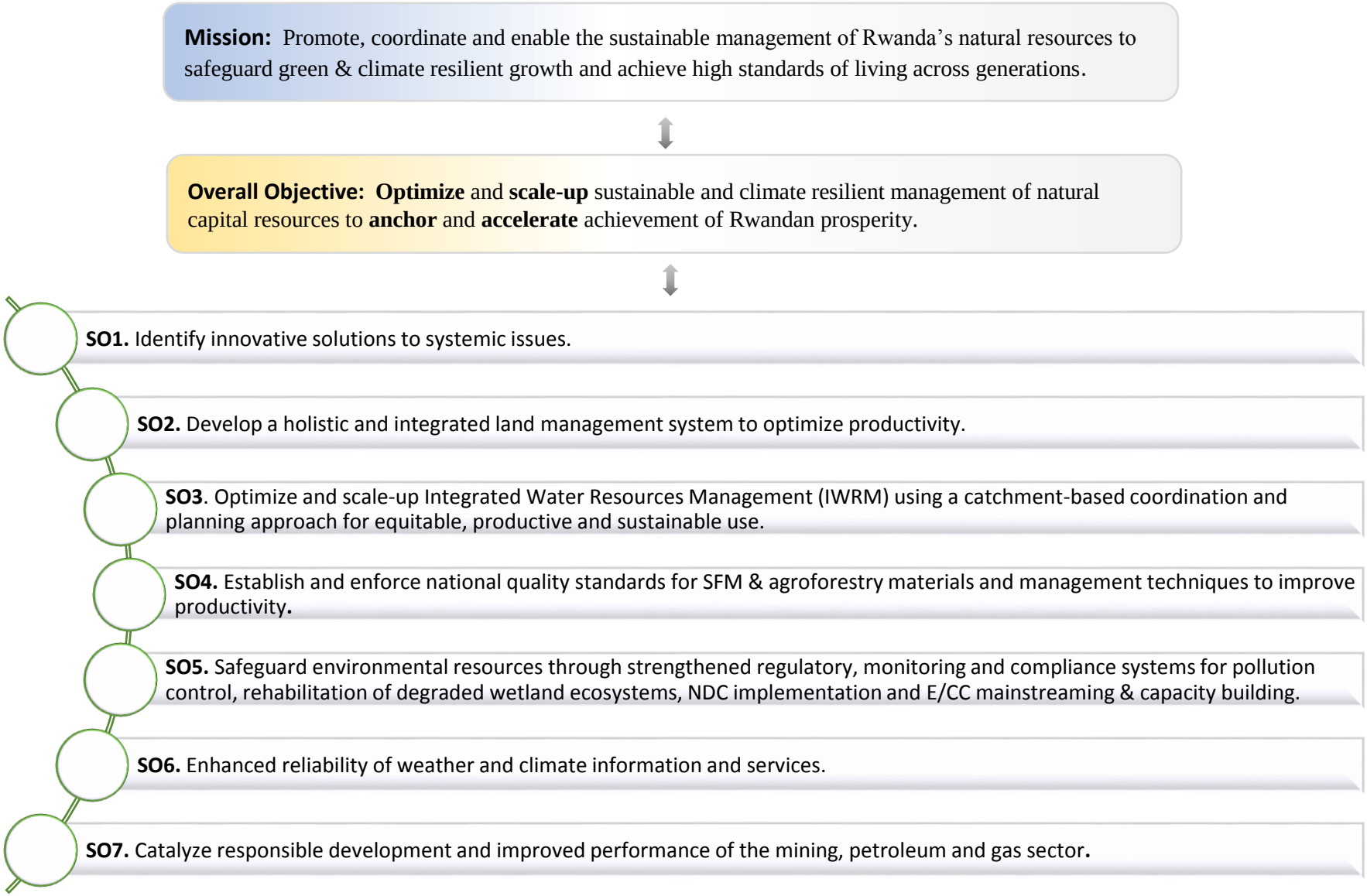

Table 2. Priority SSP interventions for ENR Sector.

	Optimization	*Scale-up*	*Transformational objective*
Forestry	• Establish/enforce SFM & agroforestry quality standards for materials & management techniques • Unlock productivity of degraded/ unproductive forest plantations • Implement high-quality agroforestry models	• Pilot results-based payments grant scheme for micro/small holders in partnership with FONERWA/FIP	**Sustainable and productive forest & agroforestry management.**
Water	• Strengthen governance structures for IWRM at catchment, national and trans-boundary levels • Ensure equitable, efficient & productive water allocation • Establish national standards for ambient water quality	• Implementation of catchment management plans • Scale-up of water harvesting & multi-purpose dams • Partnerships with major users (agriculture, energy, industry)	**Sustainable and productive integrated water resource management.**
Land	• Develop holistic & integrated land management system • Rationalize/harmonize land use master plans (national/District) & sector strategic plans	• Build on LAIS platform as basis for INRMIS & optimal land use mgmt.	**Sustainable and productive integrated land management.**
Meteo	• Upgrade weather observation network • Promote real-time access to certified, high-quality weather/climate information & services • Revive ENAM into National Met Training & Research Center	• Open-access to weather/climate data & information (fee-based) for PPP applications Establishment of regional center	**Quality weather and climate services.**
ERM	• Develop strong regulatory, monitoring & compliance system for point and non-point pollution, hazardous/toxic waste. • Characterize & rehabilitate degraded wetlands. • Develop environmental MIS platform	• Implementation of Rwanda's NDCs (GGCRS) • E/CC mainstreaming & capacity development	**Safeguard environmental resources.**
Green Economy	• Quality standards of management • Natural Capital Accounting Integrated natural resource management information system (INRMIS)	• Green investment • Green job creation • Support of Green/SMART settlement (urban/rural)	**Optimize** and **scale-up** sustainable and climate resilient management of natural capital resources to **anchor** and **accelerate** achievement of Rwandan prosperity.
Mines	• De-risk & attract private investment through GoR investment in exploration of mining resources	• Consolidation of ASM concessions into District mining blocks • Promotion of value addition	**Catalyze responsible development of mineral/gas/petroleum resources.**

5.3 Contributions to NST-1

Sustainable and climate resilient natural capital underwrites Rwanda's present and future prosperity. This underscores the value addition of the ENR sector to the medium-term goals of NST-1 and longer-term goals of Vision 2050. Moreover, **a high-income economy with high-quality of life and standards of living in-turn requires access to high-quality natural capital resources and services (regulation, provisioning)**.

However, as traditional measures of wealth (namely GDP) do not account for the natural assets that underlie it, the depletion (or replenishment) of these natural assets is not adequately captured at present in Rwanda. Given that positive and negative externalities related to high-quality or poor-quality natural capital management are not systematically monitored and reported across ENR and other sectors, they represent unquantified benefits and costs in the equation for Rwanda's future growth and prosperity.

Table 3 below aims to relate NST-1 drivers and enablers of Rwanda's economic growth to examples of value addition from high-quality natural capital resource management in practical terms.

Table 3. Contributions to NST-1 Thematic Areas/Priorities.

NST-1 drivers/enablers	ENR SSP linkages (& value addition)
Employment generation	Green (and off-farm) jobs, e.g. ecotourism service industry, renewable energy industry, wood and non-wood forest products
Cost savings/ higher IRR for industry	Cleaner production through efficient & effective technologies & NRM
Access to renewable energy (hydro) and improved energy (gas, ICS) supply; Reducing biomass as primary energy source	Sustainable and productive forestry/agroforestry increasing sustainable biomass; i) Provide Certificates based on standards of green charcoal production,(ii) set guidelines of Green charcoal production, (iii) Raise awareness on adoption of alternative sources of energy
Avoided losses from weather/climate risks	Quality weather and climate forecasting and EWS
Benefits from water storage capacity	Wetland/watershed protection thus reducing siltation; Renewable water resources for irrigation, energy (hydro) & high-quality water supply
Ecotourism and diversification as source of foreign exchange and alternative income	Creation/maintenance of protected areas; potential of developing wetland ecotourism
Contributions to GDP and export revenues	Development of mining resources; water and forestry resources supporting tea/coffee exports

1. The strategic importance of natural capital resources is accepted in Rwanda at the highest levels. However, for the country **to achieve transformational economic growth, equivalent transformations are going to be needed in the ENR sector to enable these ambitions**, particularly in the context of growing population pressures and uncertainties of climate change. Rwanda will have to continually position itself in accessing climate finance to effectively address

climate impacts and secure the development gains across sectors such as Agriculture, urbanization, industry and energy. These constitute critical priority areas in the Nationally Determined Contributions (NDCs) and poised to attract climate finance through the Paris agreement mechanism. To mobilize these climate resources at scale will require featuring FONERWA in the resource mobilization chapter of NST-1 and highlighting its role as a vehicle for green investment across productive sectors (agriculture, energy, ENR, etc).

5.4 ENR Sector-level priorities and innovations towards NST-1

5.4.1 New Priorities and Innovations

To support NST-1 and wider Vision 2050 objectives, the following ENR sector-level and sub-sector priorities and innovations are proposed within the framework of optimization and scaling-up of high-quality and productive natural capital management.

- **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, etc), with a focus on partnerships with priority secondary cities and private industry. This aims to highlight the triple-bottom-line benefits (economic, social, environmental) of green growth as Rwanda urbanizes and industrializes. For example, between 2009 and 2016, support from the Resource efficient and Cleaner Production Centre to Rwandan industry generated cost savings of approximate USD 7.4 million.[11]

- Scale up green investment through consideration of **green bonds and other innovative financial instruments in partnership with FONERWA, complimented by strategic policy and regulatory reforms and incentives** to finance investment in sustaining and increasing the productivity of Rwanda's natural capital, as well as its climate resilience.

5.4.2 Priority sub-sector level interventions towards NST-1:

Outcome 1. Sustainable and productive forest and agroforestry management.

Forest and agroforestry related natural capital resources represent some of the highest in demand in Rwanda as most people rely on wood and charcoal for energy needs. Despite growing existing and projected future demand, the productivity of Rwanda's public and private plantations are low. This is a function of natural

[11] REMA, 2017. Impacts of REMA's programmes/EDPRS II period & priorities for EDPRS III. Environment and climate change thematic working group meeting 24 August 2017.

factors (steep slopes, acidic soils, variable water availability, etc.) and management (limited and poor genetic quality of tree species, site-species matching and care).

Despite there being 29.8% of the country with forest cover, more than one-third of this is shrubland, and only 10% consisting of dense cover in well protected national parks. The large shrubland is the type currently under the greatest threat of conversion to agriculture or other uses, and the greater part of planted forests comprised of limited Eucalyptus species of poor genetic quality. As a result, important attempts have been made to include trees within farming systems, and these are prominent in the landscape as a result. Nevertheless, the species base is limited and the quality and growth capacity restricted.[12]

Optimization: To maximize the services and sustainability of Rwanda's forest plantations and agroforestry systems, quality standards of tree seeds and management techniques will be established and enforced based expert guidance for appropriate site-species matching and seed sourcing. Compliance standards will unlock productivity of degraded and unproductive forests through private and community-based models and enhanced technical extension capacity.

Scale-up: Due to growing land use demands, the forestry sub-sector will scale-up implementation of optimal, high-productivity agroforestry models in partnership with MINAGRI and farmers, in addition to optimizing plantation productivity. In the period 2018 to 2024, an innovative results-based payment grant scheme will be piloted in partnership with FONERWA in order to incentivize compliance with new national quality standards for tree cycle management; the strategy to implement this has been developed.

While addressing the above issues of productivity of supply, parallel efforts need to be scaled up in partnership with MININFRA and others to concomitantly reduce demand for biomass through promotion of alternate (namely LPG, solar) and improved technologies (ICS). For example, this may involve identification of innovative solutions to tackling growing charcoal demand (particularly in urban areas) through scaling up of more efficient transformation technologies and imposing higher taxes on the largely informal and inefficient charcoal industry.

Outcome 2. Integrated and sustainable water management to maximize reliable, efficient and productive investments.

Since 2011, Rwanda has made considerable progress to institutionalize integrated water resource management at national and sub-national levels. This includes laying the policy and regulatory frameworks and integrated catchment-level management planning and permitting process for major users.

Optimization: Going forward, the water sub-sector will optimize IWRM governance structures at catchment (committee), national and trans-boundary levels to ensure improved coordination for equitable, efficient and productive water allocation. The issue of ambient water quality will also be prioritized through establishment of national standards, monitoring and enforcement. High-quality and renewable water resources are a key enabling natural capital resource for Rwanda's growth goals, particularly NST-1 priorities for increasing land under irrigation and expanding hydropower electricity generation, among others.

Scale-up: Implementation of catchment management plans will be scaled-up to ensure efficient and effective management including completion of water permit issuance and establishing close partnerships with major water users (agriculture, industry, energy) and ministries (MINAGRI, MININFRA), watershed

[12] Rwanda Forest Investment Programme, draft chapter August 2017.

rehabilitation to reduce siltation, water harvesting will be enhanced and multi-purpose dams will be constructed to increase water storage and the destructive flooding in the volcanoes region will be addressed. The work will be implemented through establishment of functioning catchment-level water resource management committees and implementation of adaptive management plans and related allocation frameworks among major user groups for all major catchments by 2021/22.

Outcome 3. Integrated and sustainable land management to maximize reliable, efficient and productive investments.

Rwanda has met a major development milestone in fully completing its land registration process. This was complimented by detailed surveying and mapping exercises, establishment of a use-friendly information portal and strengthened administrative decentralization for enhanced service delivery. Included in these efforts was development of national and District land use master plans. These are critical to Rwanda's plans for transforming into a high-income economy with 50% urbanization.

Optimization: Going forward, priority optimizations for the land sub-sector are to ensure the rationalization and harmonization of national and District-level land use plans through development of a holistic and integrated land management system based on principles of sustainable land use management and administration. This improved system will focus on establishment of an effective (good) governance and interdisciplinary management processes across stakeholders and promote private sector engagement.

Scale-up: To support optimal land use and administration, the Land Administration Information System (LAIS) will be scaled-up, bringing together data and information from rationalized and harmonized land national and District land use plans, along with sector strategic plans and implementation monitoring. The LAIS system will form the basis of a sector-wide Integrated Natural Resource Management Information System (INRMIS), as land management and planning is the foundation of natural capital management and development planning in Rwanda. This will be supported by development of development of an improved incentive/sanction mechanism to address currently low levels of compliance.

Outcome 4: Enhanced reliability of weather and climate services and products for Rwanda's socio-economic development

As a function of Rwanda's high level of exposure[13] and sensitivity[14], and low levels of adaptive capacity[15] to weather and climate related events, the country is in critical need of quality weather and climate services. Given the costs of current risks are already significant, most recently illustrated by the 2016 drought, such services are critical tools for mitigating and avoiding weather and climate related losses and adapting to uncertain changes in rainfall in particular with increasing climate change which jeopardize 2050 prosperity goals. Cost-benefit analysis of drought and landslide related forecasts alone analysis results in a benefit-cost ratio of 4:1. Moreover, for every 1 RWF the project invests in improving the services of Meteo Rwanda,

[13] Involving change in temperature, rainfall amount and start date of the rainy season, drought episodes, flooding and windstorm events, heat waves and thunderstorms with lightening.

[14] Involving change in soil erosion and landslides, soil fertility, changes in the natural environment, household size, extent of irrigation used, water catchments, the extent of reliance on income from farming and non-farming resources, and change in income levels.

[15] Involving a composite indicator on awareness of climate variability and change, access to hazard alerts and weather information, change in surplus production, agricultural practices, and household practices following extreme weather events.

at least 4.1 RWF worth of value are potentially created, generating social and economic value far beyond its costs.[16]

Optimization: Rwanda will prioritize real-time access to certified, high-quality weather and climate information and services for extreme event warning through tailored products for major user groups as well as the public. This will be enabled by upgrading the country's weather observation network through maintenance of existing infrastructure and adoption of new technologies, meeting ISO-9001 and World Meteorological Organization (WMO) standards.

Scale-up: In line with the above, capacity to deliver higher-quality weather and climate services will be scaled up by increasing Rwanda's scientific skills-base through reviving Rwanda's Ecole Nationale de l'Aviation et de la Meteorologie (ENAM) into a National Met Training and Research Centre. This centre will also focus on regional collaborations and innovative public-private partnership (PPP) applications through fee-based open-access to Rwanda's weather and climate data and information.

Outcome 5: Enhanced Environmental management and resilience to climate change

Rwanda's leadership in environment and climate change management has elevated national and international awareness of the key challenges facing this cross-cutting sub-sector, but also home-grown solutions. From banning single-use polyethylene plastic bags, to piloting green and climate smart villages, Rwanda's Environmental Management Authority has been at the forefront of issues facing the country.

Optimization: As a relatively young sub-sector, strengthening regulation, monitoring and compliance systems for point and non-point source pollution, including hazardous and toxic wastes, is a key optimization priority, particularly considering growing consumption, urbanization and industrialization. An environmental management information system as well as network of laboratory testing facilities will enable the efficient and safe implementation of these priorities. Linked to this, critically degraded wetlands which act as 'kidneys of Rwanda's landscape' in terms of water and soil regulation as well as waste assimilation, will be characterized and rehabilitated to optimize their productive functions.

Scale-up: Implementation of Rwanda's Nationally Determined Contributions (NDCs) to mitigate and adapt to climate change will be scaled up through establishment of a National Adaptation Planning (NAP) process and Green economy initiatives in partnership with key productive sectors and FONERWA. This will be complimented by mainstreaming and capacity development for implementation of Strategic Environmental Assessments (SEA), strengthening execution of Environmental Impact Assessments (EIAs) for public and private projects as well as scaling up of support for resource efficiency and cleaner production in partnership with the private sector.

Outcome 6. Vibrant, efficient and responsible mining spurring sustainable economic development.

The Mining sub-sector has recorded 2% of National GDP against 5.27% targeted in EDPRS 2 while export earnings amounted USD 161 million compared to USD400 million targeted. Considering untapped mineral, gas and potentially petroleum resources, including processing and diversification opportunities for employment generation, the subsector is well place to catalysing responsible development of Rwanda's

[16] Mariam, S. and Weatherhead, M., 2016. Forecastive cost benefit analysis of the 'strengthening meteo Rwanda's weather and climate services to support development' project (FONERWA).

subterranean natural capital. By 2020, the sub-sector aims to contribute 2.5% of Rwanda's GDP (USD 800 million) and 3.6% of GDP by 2024 (USD 1.5 billion).

Optimization: The mining sub-sector will continue optimizing its business model by de-risking private sector investment (foreign/local) through GOR investment in pre-feasibility stage exploration of mining resources, prioritizing Prospective Target Areas (PTAs) and certification of data on resource quantity and quality. This will be enabled by the professionalization of Rwanda's mining industry, building on model mining standards based on sustainable industry practices, access to improved data, equipment and finance as well as establishment of a skills development programme targeting artisanal and small miners (ASM) which dominate the sector (70%).

Scale-up: The sub-sector will aim to scale-up revenue streams and sector efficiency through consolidation of ASM concessions into targeted District mining blocks (large concessions) in compliance with 'model mining' quality standards. Expanding value addition potential will be explored through feasibility of processing plants (refineries, smelters), methane gas applications and development of gemstone cutting and polishing hub, re-capturing revenue across value chains, spurring industrial development and job creation.

5.5 Cross-cutting areas

The ENR SSP will address cross-cutting areas prioritized under the NST. Priority indicators are in turn harmonized with the ENR SSP M&E framework.

Key cross-cutting areas (CCAs)	Priority Indicators	Lead
1. Disaster management	1.1. % of occurred extreme weather events for which advanced warning is provided at least 30 minutes in advance 1.2 % of Floods control investment measures implemented	METEO Rwanda And RWFA
2. Environment & Climate Change	Almost all ENR indicators contribute to ECC, Emphasis is put on the following: 2.1 Number of sectors with approved Strategic Environmental Assessment (SEA) and compliance with SEA recommendations. 2.2 % of Nationally Determined Contributions (NDC) programmatic targets achieved	REMA
3. HIV & non-communicable diseases	3.1. % of air quality monitoring stations with a) Good (0-50), b) Moderate (50-100), c) Unhealthy (101-150) AQI annually 3.2. %of hazardous/toxic waste safely handled	REMA
4. Gender & family promotion	4.1. % of Public forest plantations allocated to private operators (% of men & women) 4.2. % of improved seeds provided to farmers (at least 30% women farmers)	ENR

	4.3. % of charcoal produced by certified "green" charcoal companies / cooperatives (at least 30% women) 4.4. % of Catchments with management committees/Task Forces (at least 30% women involved in the committees) 4.5 % of compliance of land use development plans to the NLUDMP (50% women involved) 4.6. % of hazardous/toxic waste safely handled (30% women involved) 4.7. Initiatives undertaken to engage private sector (men & women involved)	
5. Regional integration & international positioning	5.1. % of Rwanda's Nationally Determined Contribution (NDC) programmatic targets achieved 5.2 Number of shared basins/catchments with transboundary cooperation frameworks	REMA
6. Capacity Development	6.1. Implementation of the 6 year CD plan that was developed alongside the ENR SSP.	ENR

CCA 1. Disaster management. Socioeconomic impacts of extreme weather events such as heavy rainfall events and accompanied flooding and landslides, as well as droughts and changing seasonality affect all aspects of Rwandan's livelihoods. Between August and October 2017 alone, MIDIMAR reports that 20 people were killed and 57 injured from the impacts of torrential rain, along with over 24,000 houses, over 100 classrooms and over 1,500 hectares of crops countrywide.17 The need for improved quality and accuracy of weather forecasts is a cross-cutting priority to improve the advanced warning and planning for extreme events.

CCA 2. Environment and Climate Change. Environmental services are the foundation upon which sustaining Rwandan industrialization and urbanization will be possible. Adoption and implementation of recommendations of Strategic Environmental Assessments (SEAs) among productive sectors, particularly monitoring of capital and resource intensive activities including mining, will ensure the safe and sustainable productive use of Rwanda's natural resources. Achievement of Nationally Determined Contributions (NDC) programmatic targets by 2030 will be the focus.

CCA 3. HIV & non-communicable diseases. Exposure to high levels of outdoor and indoor air pollution is a leading cause of death: 6.5 million deaths in 2012 (11.6% of all global deaths) with nearly 90% of air-pollution-related deaths occur in low- and middle-income countries. 18 Acute lower respiratory infections (ALRIs) are the leading cause of death in Rwanda. In 2010, four percent of Rwanda's children under-five had symptoms of acute lower respiratory infections (ALRIs), which are exacerbated by exposure to air pollution, particularly the burning of unimproved cooking fuel and poor ventilation.19 Efforts to address respiratory illness linked to air pollution is a top priority of the ENR SSP, reflected in investments in

[17] L. Muvunyi, 22 Oct 2017. Why the rain will continue to beat Rwanda for a long time. The East African.
[18] World Health Organization, 2016. WHO releases country estimates on air pollution exposure and human health. Press release 27 September 2016.
[19] J.M. Hareimana et al., 2016. Social, economic and environmental risk factors for acute lower respiratory infections among children under five years of age in Rwanda. Arch Public Health, v.74.

establishing a national air quality index (AQI), air quality monitoring stations and public awareness campaigns and access to improved cooking fuels and technologies. Additionally, exposure to toxic and hazardous wastes pose a growing threat as Rwanda urbanizes, industrializes and intensifies use of agrochemicals, underscoring the need for sensitization and enforcement safe management practices.

CCA 4. Gender and family promotion. Equal opportunities for women and men can help stimulate economic growth, create higher-level jobs, support communities, raise productivity and reduce poverty. As major users of Rwanda's natural resources, women are central to effective ENR policy and planning considerations. The SSP will prioritize development of an ENR gender action plan for mainstreaming gender across the sector's activities. This action plan will be informed by a gender assessment of the sector and supported by a dedicated logical framework for gender mainstreaming. Important norms to be taken up will include a focus on gender-sensitive stakeholder engagement in planning processes, activity implementation and monitoring and evaluation, as well as ensuring a gender balance across management and leadership positions with a focus on water, land and forestry sub-sectors.

CCA 4. Regional integration and international positioning. Under the Paris Agreement on Climate Change, Rwanda has committed to Nationally Determined Contributions (NDCs) drawn from its National Strategy for Climate Change and Low Carbon Development Strategy (GGCRS). Rwanda's NDC are cross-cutting and based on 14 programmes of action ranging from sustainable intensification of agriculture, expanded ecotourism, integrated water resources management, sustainable forestry and agroforestry, disaster management to efficient transport, green industry and promotion of small-scale energy installation. These NDC objectives underscore key priorities of NST-1 and Rwanda's vision 2050. The ENR sector will strengthen systems for supporting the planning, implementation and monitoring of NDCs across sectors during the SSP period, including establishing strategic partnerships for implementation.

CCA 5. Capacity development. Capacity development to ensure achievement of ENR SSP objectives will be strengthened through investment in data and information management systems and training in the form of an integrated natural resource management information system (INRMIS). This will both empower the sector and its partners with a one-stop-shop for accurate data and information about the status of Rwanda's natural resources, as well as track progress made to inform management decisions and corrective actions. The INRMIS will be integrated with the ENR results based management (RBM) system to support SSP M&E.

6. IMPLEMENTATION OF THE ENR SECTOR STRATEGIC PLAN

6.1 Sequencing of interventions

Implementation of the ENR SSP and NST-1 2018-2024 will follow the sequence of priority interventions summarized in Table 2 (see Section 5). Accordingly, interventions indicated under the 'optimization' category are recommended to be addressed prior (or in parallel to) 'scaled-up' interventions. The rationale for this sequencing is that the majority of ENR sub-sectors have fundamental quality management optimizations that need to be addressed before investment in expanded activities is made. This is to ensure efficient, effective and sustainable management of natural capital as a foundation for growth and prosperity.

6.2 Institutional Roles and Responsibilities

The Ministry of Environment (MoE) will lead implementation of overall ENR Sector Strategic Plan, and cross-cutting priority interventions. In line with related NST-1 priorities, the Ministry will provide overall policy oversight, guidance in the preparation and implementation of planning, budgeting, reporting and

resource mobilization processes. Accordingly, **the Ministry of Lands and Forestry (MINILAF)** will play the lead role in facilitating coordination of sub-sector agencies (RLMUA and RWFA) with each other as well as key sector ministries, local government, development partners, civil society, private sector and academic and research institution partners to ensure sector targets are tracked and national priorities achieved. Sensitization of inter-ministerial and inter-institutional activities will be carried out in a systematic approach and utilizing innovative communication approaches. Furthermore, MoE will coordinate international processes ensuring Rwanda's commitments are met.

RLMUA will lead implementation of integrated land use and administration management, focusing on improved coordination for rationalization and harmonization of national, District and sectoral land use plans and priorities. This will be done in partnership with national and sub-national land commissions, ENR sub-sectors and key productive sector ministries including MINALOC, MINAGRI, MININFRA and MINICOM, as well as strategic partners including the Nairobi-based Regional Centre for Mapping of Resources for Development (RCMRD) and key civil society organizations. Moreover, the importance of ensuring the active participation in land use planning and management at the sub-national level cannot be overstated. Private companies directly involved in land surveying, urban planning, land valuation and conveyance need to be engaged as key partners, and subject to proper regulation. Given the scale and complexity of land use planning process, development partners such as DFID, SIDA, EU and the Netherlands will continue to play important supporting roles in terms of financial and technical support for priority interventions.

RWFA will lead coordination of both IWRM and forest related priority SSP interventions in line with NST-1 priorities. For IWRM, and analogous to the land sub-sector, integrated management approaches across diverse user groups will be required. This will involve the strengthening of catchment committees and close engagement of major water users for permit issuance compliance monitoring within agreed allocation frameworks, and in partnership with the Rwanda Utilities Regulatory Agency (RURA).

For the forestry sub-sector, implementation will require strong national and sub-national coordination mechanisms to improve the quality and capacity for sustainable and productive forest and agroforestry activities. In relation to forest plantation management, priorities for concessions and co-management of public plantations to enhance productivity will require enforcement of compliance will national quality standards. Innovative partnerships with small-scale private plantations to form Forest Management Units (FMUs) will be required to pool resources and revitalize degraded resources with improved materials and management. Regarding agroforestry, RWFA will oversee establishment of a strengthened coordination mechanism between MINILAF, RWFA, MINAGRI, MINALOC and other relevant civil society, private and academic institutions working on agroforestry promotion. A primary aim of this coordination will be to harmonize implementation arrangements across actors to ensure high-quality agroforestry materials and techniques that will achieve targets of doubling land under agroforestry by 2024, from 190,000 ha to 400,000 ha. Lastly, innovative partnerships will be needed to explore the feasibility of commercialization of Rwanda's charcoal sector as a key step in phasing out widespread and inefficient production (and ultimately use).

REMA will lead implementation of SSP and NST-1 priority interventions safeguarding environmental resources with its mandate of regulation, monitoring and compliance, as well as mainstreaming and awareness raising of environment and climate change issues. These functions include continuing capacity development initiatives across productive sectors and educational institutions, joint work with the Rwanda Development Board (RDB) supporting EIA quality assurance and compliance, innovative partnerships with MINICOM and the private to support resource efficiency and production, among others. Establishment of Rwanda's National Adaptation Planning (NAP) process will be led by REMA to ensure mainstreaming of climate resilience and institutionalization of adaptive management approaches.

METEO will lead implementation of SSP and NST-1 priority interventions for quality weather and services. This will feature initial baseline work to understand the needs of major user groups to inform tailored product development, i.e. agriculture, energy, infrastructure, etc. Strengthened collaborative frameworks to mitigate and avoid losses from extreme events will be prioritized in partnership with MIDIMAR, charged of disaster management and refugee affairs. Innovative collaborative partnerships will be critical to achievement of priorities. These include working with regional and academic institutions to strengthen scientific skills-base of Rwanda's meteorological services, media and telecom companies for improved communication and dissemination and the private sector for production of innovative applications for public and private benefit.

RMPGB will lead implementation of SSP and NST-1 priority interventions to catalyse responsible development of mineral, gas and petroleum resources. This will feature continued close engagement with private sector actors to attract investment for exploitation and value addition, as well as artisanal and small miners and Districts to consolidate concessions and form more productive management approaches meeting national quality standards. Key activities to attract private sector investment in mineral processing include development of a strategy for gemstones processing and trading, establishing a hub for mineral processing and trade (3TG) and gemstones as well as processing plants and rehabilitation of existing old mining infrastructure at different concessions and introducing modern washing stations. In addition, significant initiative will be taken to build the capacity of ASMs and professionals including Rwanda MSc and PhD degree holders in relevant fields.

Local government. Strengthening MINRENA and ENR sub-sector coordination with the Ministry of Local Government (MINALOC) and Districts is critical to ensure priority SSP and related NST-1 interventions are harmonized with and embedded in District Development Plans (DDPs) and activities. District officials responsible for ENR sector (water, environment, forestry, lands and mines) will be supported to coordinate implementation and day-to-day follow-up of the planned activities. The District Planning Units will be strengthened to coordinate decentralised planning and budgets for environment and natural resources management, as well as collect, analyse and disseminate information for evidence-based implementation and monitoring. The latter data and information collection will be facilitated by training in the use of the planned Integrated Natural Resource Management Information System (INRMIS).

6.3 Mechanisms for coordination and information sharing

The ENR sector will work to build on established mechanisms for coordination and information sharing, recognizing that this was a key challenge noted in the previous SSP and EDRPS 2 period. Attention needs to be given to cases in which multiple institutions (within and outside of ENR) are carrying out the same or similar activities. For example, land use planning, watershed/wetland rehabilitation, agroforestry, support for green settlement and water resource monitoring, among others, may require special additional measures to ensure clear divisions of labour and delivery coordination.

Regular means of coordination will be strengthened including the Sector Working Group (SWG) and Thematic Working Groups (TWGs) approach, bringing together Central and Local government institutions, development partners, the private sector and civil society engaged in the ENR sector. Members of the ENR SWG include: the Lead Ministry, the Lead Donor, Prime Minister's Office, the Ministry of Finance and Economic Planning (MINECOFIN), a Representative from each Ministry, a Representative from each Province and Kigali City, Development Partners, Civil Society Organizations and Private sector institutions. There are six ENR sub-sector Thematic Working Groups (TWGs) falling under the six ENR sub-sectors i.e. Environment and Climate Change, Land, Forestry, IWRM, Mining and RMA.

Backward and forward-looking Joint Sector Reviews (JSRs) will provide critical biannual checkpoints for ENR sector progress and opportunities for corrective actions, to be discussed further in the next section.

Integrated National Resource Management Information System. The development of an INRMIS is a direct response to the challenge of data and information availability for evidence-based decision making across all levels of the ENR sector and relevant external stakeholders more broadly. The proposed system will work to harmonize and track priority data and information for which the six ENR sub-sectors are custodians. One of the primary objectives of building such an integrated MIS is to ensure coordination of activities and tracking sub-sector progress against performance targets. Further development of the INRMIS concept and prototype will be prioritised for the SSP period, using LAIS (land) as a starting point, and building on Natural Capital Accounting work underway.

7. MONITORING AND EVALUATION

7.1 Results-Based Monitoring & Evaluation (RBME)

As a support tool for implementing the ENR SSP and NST-1 priorities, the M&E logical framework was developed through a highly participatory approach starting from the consideration of Vision 2050 goals to achieve high-income, quality of life and standards of living for all Rwandans, corresponding NST-1 priorities to address unfinished business of EDPRS 2 and take on emerging priorities derived from revised sub-sector strategic plans and innovative programmes in the case of ENR. These priorities will in turn be appropriately aligned and harmonized with District Development Plans (DDPs).

The ongoing Result Based Management (RBM) Project will continue to update and improve the existing M&E system and it is expected that by 2018, ENR sector will have a computerised M&E system linking all ENR sub-sectors including the Districts in data collection, treatment, report and evaluation. The system has 165 indicators and metadata for reporting.

7.2 Key Performance Indicators and Policy Actions

1. Promotion of green urbanisation
   - ✓ Green City Pilot developed

2. Level of finance for Green Investments increased
   - ✓ Sustainable and equitable finance supports national programmes and private sector initiatives to address climate and environment priorities

3. Increased Exports through value Addition of Minerals and Forestry resources sustainably assured
   - ✓ Mineral production and value addition increased
   - ✓ Value addition technologies to wood and non-wood forest products and services promoted

7.3 Logical Framework

Annex 5 contains the logical framework, which will guide the monitoring and progress reporting across the ENR sector.

8. COST AND FINANCING OF ENR SECTOR STRATEGIC PLAN

This Chapter outlines the costing and proposed financing for the Sector's priority actions:

8.1 Funds Available

Annex 3 below contains the Budget expenditure for 2015-2018 and Project funds for the ENR Sector 2016/2017. It shows the MTEF from 2015 to 2018 that considers projected funding available to the sector drawing on projected financing sources from central government and the macro framework showing budget ceilings in the medium term.

8.2 Costs

Annex 4 below shows the Results Based Costing Matrix that uses the EDPRS sector costing guidelines, it shows the cost of the programs of the sector; line Ministries, Districts and Semi-Autonomous Agencies. Its main components are the NST-1 Priority Area and the ENR Outcome aligned by the Key Strategic Interventions / Activities. The table below is a summary of *Annex 4.*

ENR SSP 2018-2024 COST BY OUTCOME

S/N	OUTCOME	COST (RWF)
1	Sustainable and productive forest and agroforestry management.	31,356,000,000
2	Integrated and sustainable water resources management to maximize reliable, efficient and productive investments	260,783,980,000
3	Integrated and sustainable land management to maximize reliable, efficient and productive investments	10,715,615,800
4	Enhanced reliability of weather and climate services and products for Rwanda's socio-economic development	11,554,280,000
5	Enhanced Environmental management and resilience to climate change	32,366,242,611
6	Vibrant, efficient and responsible mining spurring sustainable economic development	54,666,000,000
TOTAL		**401,442,118,411**

8.3 Funds to be mobilized

This is the costs minus available funds. Where the difference is positive, it means there is a funding deficit. The ENR sector under the guidance of MINECOFIN has a resource mobilization strategy that is being implemented by FONERWA.

9. ANNEXES

Annex 1: Progress in implementation of the EDPRS 2 Priorities.

Thematic Priority	Thematic Outcome	EDPRS II Interventions	Current Progress	Rank
Rwanda pursues a 'green economy' approach to economic transformation.	Increased level of "green" investment and environmentally sustainable urban development that exploits 'green' economic opportunities.	Build the case for green urbanization in Rwanda	Guidelines, framework and road map for a pilot green city available. Green growth principles were incorporated into Urbanization and housing policies. The Green building council was Launched.	
		Reform policies to support green urban development.	Analysis report of ENR policies is available and it is being used to influence the revision of other policies based on green growth principles (which policies have been greened (www.environment.gov.rw)	
		Develop a pilot 'green' city.	(i) Guidelines for green city toolkit developed (ii) Roadmap for Green City development (iii) Road map for Green city officially launched (iv) A draft Green City Conceptual Master Plan that will serve as a resource mobilization tool and Identification of potential partners is available (v)Proposal for green city financing has been submitted to the GCF.	
	High environmental standards and sustainable green innovations in the industrial and private sectors incentivized	Establish an institutional structure – a Centre of Excellence- to promote and develop green urban areas and technologies.	The Terms of Reference for preparation of the Business Plan for the Centre have been approved and a study to assess the required human resources capacity and the suitable institutional structure of the Centre is underway. A strategy for generation and dissemination of knowledge has been prepared. A consultant to determine the institutional set-up is done. The right candidate has been recruited	
		Develop an Environment and Climate Change Innovation Centre;	The Scoping review report was presented to the FONERWA management committee on the 16th September 2016 and the board provided inputs that would be incorporated into the final report. On the basis of report recommendation, the decision was taken not to go forward with the Centre	
		Pilot promising 'green' technologies.	(i)MoE in conjunction with MINICOM through resource efficient & Cleaner production Centre awarded 6 industries for using green technologies for good housekeeping, change technology, Process control, input substitution, equipment modification which increase productivity while reducing environmental degradation	

Thematic Priority	Thematic Outcome	EDPRS II Interventions	Current Progress	Rank
			(ii)FONERWA committed funds to 27 Projects totalling RWF 28.9 billion including GoR at national level (10 projects), Districts (7), the private sector (8) and NGOs (4) and NGOs with Districts (3) worth	
		Pilot model mine.	(i) A baseline study was carried out on 35 companies selected under the model mine to benchmark the level of compliance with the concept requirements, and therefore identify the area of support. 16/35 companies comply with the concept and mineral recovery standards. The adoption of model mine concept will be done by all 35 companies in 2016/2017FY. (ii) Two model mine projects have been approved by FONERWA	
Integrated Approach to Land Use and Rural Settlements	Enhanced rural settlements which facilitate access to basic services, farm and off-farm economic activities through integrated district land-use plans.	Layout plans of villages designed through consultative process and construction of one model village of 200 houses in Kabyaza/ Nyabihu.	(i) Green village tool kit has been elaborated and trainings of Engineers and Planners are ongoing. (ii) New villages created & completed (Rusizi all targeted 17semi-detached houses completed, Gashaki with 45 out of 56 twin houses completed. In Kabyaza Green village 200 houses with rooftops are completed. (iii) Gacaca Green village (on going), 4 houses (four in one) to resettle 16 families from Ruhondo Lake islands are at cleaning level. The progress of activities is at 70% Rugarama green village: 38 semidetached houses to resettle 76 families from Burera lake islands are at 90% of completion	
	Improved land rights & land administration	Securing land tenure for all land claimants through systematic land administration	(i) Land registration was completed; Land Administration Information System (LAIS2) developed and in use in all 30 districts. (ii) So far 372/416 sector land managers covering all districts and zonal offices in land surveying module were trained (Achieved at 89%). (iii)"One step one day" procedure to transfer commercial and industrial land in Kigali City is being implemented. (iv)Land information is now accessed by the land owners on mobile phone application ***651# followed by UPI.**	
		Rational land use ensured through comprehensive land use plans and adequate mapping	(i) 30 Districts land use master plans approved. (ii) LAIS web portal on land use was launched with legal and geo-data.	

Thematic Priority	Thematic Outcome	EDPRS II Interventions	Current Progress	Rank
			(iii) A technical team composed of Members from MINILAF, RLMUA, RHA and RDB to monitor LAND compliance and implementation of land use plans has been established.	

Annex 2. Environment and Natural Resources Sector progress against planned activities (2013-2017).

Subsector	Policy actions	Progress to date	Rank
Forests and nature conservation			
Ecosystems and forest resources increased and sustainably managed to optimise the economic and ecological functions	Increasing forest cover to 30% by 2018	✓ Forestry cover has reached 29.8 %	
	Increasing the contribution of forest and nature conservation to the national GDP	✓ USD 3.84mn generated by forest activities in 2016/17, creating 23,227 jobs	
	Rehabilitating degraded river banks and lakeshores to restore ecological functions	More than 230 ha have been rehabilitated on different rivers	
Lands and Mapping			
Optimized land utilization and improved land administration system	Ensuring security of land tenure for all land claimants through systematic land registration	✓ 11.4 Million Titles registered, ✓ 8.6 million titles printed and 7.2 million (79 %) titles collected by owners	
	Ensuring sustainable and rational land use in Rwanda through comprehensive land use plans and adequate mapping	✓ National land use master plan developed and approved ✓ 30 districts master plans in place to guide national investments ✓ 30 urban development plans developed in partnership with RHA ✓ 5 District Land Bureaus established (100% target)	
	Maintain and sustain the national land registry by strengthening land administration institutions	✓ 30 districts are connected to LAIS and all district land officials were given access to LAIS (credentials) and integration to LAIS 2 is done in all 30 districts. Processing of application is done through LAIS in 27 districts.	
	Updating the legal and policy framework	✓ Land policy dated 2004 was assessed to identify the gaps for the preparation of a new land policy. The new one will be prepared in 2016.	

Subsector	Policy actions	Progress to date	Rank
	Conducting researches and evidence-based analyses on land and ensuring their dissemination	✓ 395/416 (94.6%) Sector Land Managers recruited and trained in GIS; ✓ Training in land administration; Handbook 3: Coaching for development: Seven simple steps (CIDT&RNRA, 2014).	
Environment and Climate change			
Improved environment management and increase resilience to climate change	Identification and development of demonstration sites that promote green and climate resilient village model in the framework of VUP	✓ Development of a green village toolkit piloted through a consultative process in Muyebe I and II and Rubaya, with Kabyaza, Rusizi, Gashaki under construction	
	Developing projects to reduce vulnerability to climate change through the increase of adaptive capacity	✓ 32 FONERWA Projects approved: National Government (10 projects), Districts (7), the private sector (8) and NGOs (4), NGOs with Districts (3) worth **Rwf 32.7 billion.** ✓ Gibumbi District feasibility study funded by GCF (USD 500,000) ✓ Green City Pilot feasibility study underway for Cactus Green Park in Kinyinya. ✓ National Adaptation Plan (NAP) technical assistance concept note approved (UNEP, USD 6mn)	
	Conducting greening activities in schools	✓ 191 schools have been greened ✓ Greening schools guideline and checklist developed; training initiated	
	Enforcing regulations related to effluent discharge stands for industries and commercial buildings	✓ 60% of projects with EIA conditions monitored and compliance enforced. ✓ 44 projects environmental Audits conducted	
Integrated Water Resources Management (IWRM)			
Water resources managed in a sustainable, equitable and integrated manner	Ensuring effective governance and capacity development for IWRM	✓ Catchment management plans are being undertaken and community management committees are being set up. ✓ The process for Lake Kivu Gas Management Framework review is underway (expression of interest already done) and the Lake Kivu Management Authority is being strengthened to make it more operational.	
	Setting up an equitable water allocation and utilization framework	✓ The existing decree is in process of being amended ✓ Hydrological equipment for 16 stations have been procured	

Subsector	Policy actions	Progress to date	Rank
	Reducing water related disasters and climate impacts	✓ 180ha have been planted with Agro-Forestry trees ✓ Bench terraces have been established on 150 ha. ✓ 25.5 ha have been planted with bamboo ✓ 400 M^3 Of Ponds Excavated To Manage Storm Water ✓ 1000 Check dams established ✓ 404 water tanks have been installed. 2,443 loan applications submitted, discussions with GT bank and other banks and SACCOS, 74 SACCOs signed MoU with RNRA	
	Enhancing water security through improving water storage per capita	✓ By 2015, 404 plastic tanks had been installed through the RWH loan and subsidy scheme and 220 low-cost (artisan) tanks have been constructed for poor rural families. A feasibility study for Muvumba river multi-purpose dam which has 38 m height with a storage capacity of 73 Million Cubic Meters has been completed and the dam design is under way.	
Geology and Mining			
Efficient and sustainable mineral exploration and exploitation promoted	Knowledge of National Mineral Potential	✓ The report on geological surveys and exploration in three selected Potential Target Areas (PTAs) (Bugesera II, III and Rulindo II) has been completed and has recommended further and deeper exploration in thirteen Future Priority Areas on key minerals like Tin, Tungsten, Tantalum, Gold, Lithium, Rare Earth Elements, Nickel, Platinum Group Minerals and Base metal.	
	Geological And Mining Capacity Development	✓ 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.	
	Sustainably raise Mineral Productivity	✓ The 2014/15 target was 290 M USD, while actual total revenues generated came to USD 210 million in 2014 and USD 149 million in 2015. Revenues declined further due to international price volatility, yielding USD 139 million in 2016.	
Meteorology			
Improved meteorological data management for better planning & decision making	Access to information on weather and climate to general public	✓ Weather kits distributed in 20 schools; daily forecast provided to general public by different media channels such as Twitter, Face book, Website and Youtube, SMSs on prevailing weather conditions; radios, Televisions and newspapers.	

Subsector	Policy actions	Progress to date	Rank
	Design, Produce and Verify Weather and Climate Information And Products, Based On Sound Science	✓ Climate data for 3 synoptic stations were digitized. ✓ A new radar was installed and staff were trained to operate it.	

Annex 3: Budget expenditure for 2015-2018 and Project funds for the ENR Sector for FY 2016/2017
(See attached PDF file)

Annex 4: Results Based Costing Matrix for ENR SSP 2018-2024
(See attached excel file)
Annex 5: ENR SSP logical framework.

Economic Transformation Pillar											
Priority area	**Outcome**	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
1.7 Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a Green Economy	**ENR SSP Outcome 1: Sustainable and productive forest and agroforestry management.**										
	Output 1.1: Forest cover increased and maintained	**Output indicator:** % level of forest cover	29.8%	30%	30%	30%	30%	30%	30%	RWFA Report Aerial and ground survey	(i)Meeting national standards of SFM that are linked to SDG 15.1.1
	Output 1.2: Land under agro-forestry Increased	**Output indicator:** number of ha of land under agro forestry	230,000 (25.2%)	297,500 (32.5%)	365,000 (40%)	432,000 (47.2%)	500,000 (55%)	567,500 (62%)	635,000 (70%)	RWFA report Ground survey	(i)Establish and enforce national standards for agroforestry; (ii)Implement optimal (quality, suitability) and high-productivity agroforestry models in

											partnership with MINAGRI
	Output 1.3: Public forest whose management is transferred to private operators	**Output indicator:** % of public forest plantations allocated to private women and men operators	25 % of Public forest plantations private women and men operators	35% of Public forest plantations allocated to private women and men operators	45% of Public forest plantation allocated to private women and men operators	55% of Public forest plantation allocated private women and men operators	65% of Public forest allocated to private women and men operators	75% of Public forest plantations allocated private women and men operators	80% of Public forest plantation allocated to private women and men operators	RWFA report Contracts/ MoU	(i)Establish and enforce SFM standards focusing on quality of materials, management techniques & extension capacity (ii)Willingness of private operators to invest in the management of public forest plantation
		Output indicator: number of ha of small natural forests under participatory management	0Ha	1000Ha	2500Ha	4000Ha	5500Ha	7000Ha	8000 Ha	RWFA reports MoUs	(i)Organise communities into cooperatives and provide incentives for managing and protecting small natural forests under public private partnership (PPP)
	Output 1.4: Improved tree seed species provided to farmers	% of improved seeds provided to women and men farmers	52 %	56 %	60%	64%	68%	72%	75%	RWFA reports	(i)Rehabilitate the National tree seed centre with the adequate infrastructure for seed testing and storage. (ii)Conduct species adaptability studies

											(iii) Elaborate seed quality guidelines and research standards
	Output 1.5: Wood biomass energy is reduced through use of improved efficient technologies**.**	% of charcoal produced by certified "green charcoal" of women and men's companies and cooperatives	0%	10%	25%	40%	60%	70%	80%	MINILAF and RWFA reports	(i) Certificates provided based on standards of green charcoal production (ii) Guidelines of Green charcoal production to be in place (iii) Awareness on adoption of alternative sources of energy
	Output 1.6: Degraded forests rehabilitated	**Output indicator:** Number of Ha of degraded forests rehabilitated	4379	5579	6779	7879	9079	11179	12379	RWFA reports	(i)Un-lock productivity of degraded and unproductive forest plantations through private concessions and community partnerships to meet quality standards
Priority area	**Outcome**	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
1.7 Sustainable Management of Natural Resources and Environment to	**ENR SSP Outcome 2: Integrated and sustainable water resources management to maximize reliable, efficient and productive investments**										
		Renewable water resources availability per capita per annum (m^3/capita/	670	N/A	N/A	N/A	N/A	N/A	1,000	WRM reports	(i)Increase in renewable water resources availability will mainly result from catchments protection/

Transition Rwanda towards a Green Economy Priority area		annum									conservation and water storage development
	Output 2.1: Effective governance of water resources at Catchment, National and Transboundary level	% of catchments with management committees Task Forces of women and men	35%	50%	100%	100%	100%	100%	100%	WRM reports	(i)Establish WRM committees in all 20 level two catchments and ensure their sustainability.
		Number of shared basins/catchments with cooperation frameworks	2	2	2	2	3	3	4	WRM reports	Contribute to: (i) the strengthening of NBI and ABAKIR (ii) the establishment and operationalization of a framework for the management of the shared Muvumba and Akanyaru catchments.
		Percentage of implementation of approved catchment management plans	0	20%	40%	60%	70%	80%	90%	WRM reports	Implement all the proposed measures under the 4-catchment plans.
	Output 2.2. Water related disasters	Percentage of degraded	Map of degraded	30 %	50%	60 %	70 %	80 %	90%	Reports from	(i)Rehabilitate the identified

	mitigated and degraded catchments rehabilitated	areas in 4 priority catchments rehabilitated	areas in 4 priority catchments							WRMD/REMA/MINAGRI/FONERWA and Districts	degraded areas in 4 priority catchments (Upper Nyabarongo, Lower Nyabarongo, Muvumba and Sebeya) in close coordination with key partners (REMA, MINAGRI, FONERWA and Districts). (ii)Develop National standards for ambient water quality and strengthen monitoring system; (iii)Implement floods control measures in the volcano area
		Percentage of water bodies with ambient water quality	15%	20%	25%	30%	35%	40%	45%	WRM/ REMA / WASAC reports	
		Percentage of Floods control investment measures implemented	Volcano floods control study	20%	40%	50%	70%	80%	100%	WRM reports	
	Output 2.3 Equitable Water Allocation and Efficient Water Utilization	% of women and men water users with water permits	8%	50%	100%	100%	100%	100%	100%	WRM reports	(i)Ensure that all the registered existing water users obtain water permits (ii)Develop and implement water allocation plans in all catchments (iii)Ensure water use efficiency

											while allocating water use permits (iv)Raise awareness on water productivity
	Output 2.4: Enhanced water storage	Artificial water storage per capita [20]	6.8m3/ capita	N/A	N/A	N/A	N/A	N/A	10 m3/ capita	WRM reports	(i)Promote water storage development with emphasis on multi-purpose dams and small scale water storage
		Proportion of households with RWH systems	5% [21]	15%	30%	50%	60%	70%	80 %	Survey (EICV), National census	(i)Upscale the RWH loan and subsidy scheme (ii)Monitor RWH through EICV and National population census
	Outcome	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
1.7 Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a Green Economy	**ENR Outcome 3: Integrated and sustainable land management to maximize reliable, efficient and productive investments.**										
	Output 3.1 Integrated and harmonized land information in a paperless land register for an optimized land management	**Indicator** : Number of Sector and district land plans (Cumulatively) integrated into a paperless Land register	**Baseline:** LAIS, NLUDMP &30 DLUDMP and 8 Sector plans	a) 4 plans integrated (3 Districts of Kigali City and Agriculture sector)	10 plans (6 Secondary Cities master plans)	2,158 plans (2148 rural settlement plans)	2,179 plans (21 urban development plans)	2,182 plans (3 ENR sector, utilities - energy and water master plan)	2,190 Plans (8Tourism Transport, industry)	Integrated land administration information system	(i)Strong coordination with key Institutions (District, MINIFRA, RHA, Kigali City, RDB, MINAGRI..) (ii)Data availability, (iii) system Development a

[20] Water storage capacity in dams, valley dams and large ponds (in m3) divided by the total population
[21] Baseline Estimation based on FONERWA RWH funded project in 9 districts

		Indicator: Percentage completion of operationalization for a paperless and self-financing land register for better service delivery	**Baseline:** LAIS	20% (Feasibility study and legal framework in place)	40% (Development of a digitalized land register)	60% (Initialization of a paperless land register)	70% (Operationalization of a paperless land register)	80% (block chain technology in land administration piloted)	100% (Zero trip zero paper on 5 transactions)	A paperless register in place	(i)Feasibility study (ii)legal framework reviewed, (iii)strong awareness and sensitization in all institutions
		Indicator : % of Land use plan harmonized with NLUDMP	**Baseline:** NLUDMP &DLUP, Cok, LUDP	NLUDMP updated	40% Land use plan harmonized with NLUDMP	50% Land use plan harmonized with NLUDMP	70% Land use plan harmonized with NLUDMP	90% Land use plan harmonized with NLUDMP	100% Land use plan harmonized with NLUDMP	DLUP, LUDP, CoK harmonized to NLUDMP	(i)Strong coordination with Districts and different Sectors, (ii) A revised NLUDMP Financial support and (iii) Technical assistance facility
		Indicator: Number of administrative entities with annual reference prices and market value integrated	0	0	30 Districts	30 Districts	30 Districts	30 Districts	30 Districts	Integrated land administration information system	(i)Integrate Annual reference prices (ii)Coordination with the institute of property valuers
	Output 3.2 Efficient implementation and monitoring of land use plans to	**indicator** % of compliance of land use developmen	**Baseline:** 25% Assessment report on	30%	60%	80%	90 %	100%	100%	Assessment report on implementation of district land	(i)Strengthening land use monitoring and development of incentive/sanction

	ensure sustainable development	t plans to the NLUDMP	implement ation of district land use developm ent master plan							use developmen t master plan	mechanism for compliance (ii)Capacity building to One stop Centre staff (iii)Collaboration with District and Rwanda Housing Authority
		Indicator : % of agriculture and premium land protected	**Baseline:** NLUDMP &DLUP	20% (identifica tion and mapping of agriculture and premium land)	30% ((identific ation and mapping of agriculture and premium land)	40% (mapping , review of regulator y framewor k on modalitie s for land use change)	50% (Strength ening land use monitori ng to enhance complian ce)	60% (categoriz ation and lodge annotatio n on agricultu re and premium land in LAIS to prevent land use change)	100% of agriculture and premium land protected	Assessment report on implementat ion of district land use developmen t master plan	(i)Guideline on land use change (ii)Strong coordination with key Institution (iii)Prevention of land use change mechanism in place iv)Involvement of stakeholders
	Output 3.3 Mapping and surveying tools Modernized and operationalised	**indicator** % of increased coverage in surveying and mapping	**Baseline:** 8 CORs with 50%of coverage	100% of increased coverage in surveying and mapping	100% maintaine d	100% maintain ed	100% maintain ed	100% maintain ed	100% maintained	CORS Rwanda geo net platform	(i) Increasing CORs station from 8 to 12 stations (ii)To develop a business model to generate income from the users (iii)To sensitize the private sector to use the CORs
		Indicator : % of National	**Baseline:** Geo-spatial	20% (legal framewor k in place,	30% Feasibility study(nee	40% (setting up NSDI	60% (setting	80% (NSDI data	100% (NSDI in place and	NSDI platform in place	(i)Strong coordination with

		Spatial Data Infrastructure established and operational	platform in place	stock taking of existing spatial data from different institutions)	ds assessment and methodology)	hard ware	up NSDI software)	harmonization of and uploading	request for international accreditation process)		other institutions is needed (ii)Availability of spatial data in a standardized form
Priority area	**Outcome**	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
1.7 Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a Green Economy	**ENR SSP Outcome 4: Enhanced reliability of weather and climate services and products for Rwanda's socio-economic development**										
	Output 4.1: Improved safety of life and property through better application of weather and climate warnings and forecasts	Number of weather and climate products and services timely produced and disseminated by major type of channel	Warnings included in routine weather forecast templates by June 2018	1(Warning of Rainfall)	2 (Warning of Rainfall and thunderstorms)	3 (Warning of Rainfall and Thunderstorms and winds)	4 (Warning of Rainfall and Thunderstorms, drought, winds)	5 (Warning of Rainfall and Thunderstorms, drought, winds and fog)	5 weather warning product templates available and used (Rainfall, thunderstorms, winds, drought, and fog)	QMS Audit report	(i)Forecasting systems working properly
		% of occurred extreme weather events for which advance warning was provided at least 30 min in advance	70% occurred extreme weather events are warned in lead time by 2017	80% occurred extreme weather events were warned in lead time	85% occurred extreme weather events were warned in lead time	85% occurred extreme weather events were warned in lead time	90% occurred extreme weather events were warned in lead time	93% occurred extreme weather events were warned in lead time	95% occurred extreme weather events were warned in lead time	Feedback for various platforms and internal forecast verification	(ii)Operational feedback platforms
	Output 4.2: Improved access and use of weather and climate	% of polled women and men users	Agriculture: 30% Health:20 %	Agriculture:35% Health:25 %	Agriculture:37% Health:27 %	Agriculture:40% Health:30%	Agriculture:45% Health:40%	Agriculture:50% Health:50%	Agriculture: 70% Health:60 %	Annual sector Satisfaction report	(i)Proper communication of quality of weather and Climate

	information by key sectors and actors (domestic and foreign) for improved socio-economic sustainable development	of weather & climate information from Meteo Rwanda who are satisfied or very satisfied with the service	Infrastructure: 50%	Infrastructure: 55%	Infrastructure: 57%	Infrastructure: 60%	Infrastructure: 65%	Infrastructure: 68%	Infrastructure: 70%		products and services (ii)Increase in uptake and use of weather and climate products and services
		A functioning Rwanda Meteorological Training and Research Centre (RwaMet)	Venue for the centre is available but old	(i)Renovation of Old building (ii)Development of curriculum, (iii) Organise trainings	Resource Mobilization for RwaMet and Conduct different trainings	Start construction of new building and conduct different trainings	Continue construction and conduct trainings	Continue construction and conduct trainings	(i)Commission the RwaMet new building; (ii)Start of Degree level courses	Meteo Reports	(i)Implementation of the RwaMet Structure, and (ii)construction of training infrastructure.
	Output 4.3: Improved availability and accessibility of quality weather information and climate data and advisories for research, planning and decision making	Number of research reports/studies and policy advisory documents produced	2 Draft documents (Meteo Rwanda data policy and the CBA)	Cost benefits of weather and climate information for farmers	Rwanda Climate Normals	Customer satisfaction on survey report	Uptake and use of weather and climate information	Contribution of weather and climate information on growth of productive Sectors	Climate change and climate patterns in Rwanda	Report documents	(i) Involvement of stakeholders
		% of demand of Meteo Rwanda weather data by channels	Online forms for data requests, CLIMSO	Build weather data security and	Develop platform for real time access of	Integrate the weather Radar data into	30% of each station data are accessibl	40% of each station data are accessibl	60% of each station data are accessible in real time	Climate Data requests served	(i)Maintenance of weather observation network done effectively and on

			FT and the Maproom	archive capacity	climate data	the databank	e in real time	e in real time			timely and its high efficiency (ii)Real time access to the climate Databank
		% of forecasts by level of accuracy	80% (Good)	83%(Good)	85%(Good)	85%(Good)	87%(Good)	87% (Good)	90% (Very Good)	Forecast verification report	(i) operational models and Trained staff
Priority area	**Outcome**	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
1.7 Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a Green Economy	**ENR Outcome 5: Enhanced Environmental management and resilience to climate change**										
	Output 5.1: Environmental, education, awareness and mainstreaming sustainably improved	% of sectors' policies, plans and programmes (concerned by SEA legal instrument) undertaking SEA	1.SEA Legal instrument 3 sectors with SEA	1.Development of portfolio 2.Review of SEA guidelines and Capacity building of 4 sectors	25%	50%	75%	100%	100%	Annual reports	(i) Dissemination of the SEA legal instrument (ii)Review SEA guidelines (iii)Build capacity on the use SEA guidelines.
		Number of sectors with approved SEA monitored	0	Monitoring of 3 sectors with SEA recommendations	All SEA developed within 4 priority sectors with SEA recommendations	All SEA developed within 4 priority sectors with SEA recommendations	All SEA developed within 4 priority sectors with SEA recommendations	All SEA developed within 4 priority sectors with SEA recommendations	All SEA developed within 4 priority sectors with SEA recommendations	Annual monitoring reports	(i) Develop a sector specific checklist of parameters to be monitored for each SEA (ii)Assess how recommendations have been implemented by the sectors

											(iii)Develop policy recommendations
	Output 5.2: Pollution Control and environmental compliance effectively enhanced	% of approved EIA and EA certified projects in compliance (75% or above) with EIAs, EAs Studies and Conditions of approval	Not Available	EIA certified capital project identified and compliance tools developed	50%	60%	70%	80%	90%	REMA reports	(i)Identify the capital projects to be monitored (ii)Develop tools to check the compliance (iii)Monitor compliance with EIA conditions (iv)Conduct enforcement activities
		% of hazardous/toxic waste safely managed	National Implementation plan related to hazardous waste available	National strategy of hazardous/ toxic waste management available	30%	40%	50%	60%	70%	REMA reports	(i) Raise awareness on hazardous & toxic waste management (ii)Establish priority hazardous and toxic waste to be monitored (iii) Put in place new regulatory tools for hazardous and toxic waste management (iv)Conduct enforcement of safe management of hazardous and toxic waste
		Number of circular economy	1 (e-waste facility)	2	3	4	5	6	7	REMA, FONERWA	(i) Identify Potential implementers of

		initiatives supported								and MoE Reports	the circular economy (ii) strengthen their capacity (iii) support in fund mobilization
		% of air quality monitoring stations with: a) Good (0-50) b) Moderate (50-100) c) Unhealthy (101-150) Air Quality Index	None	a)50 % b)30% c)20%	a)55 % b)27% c)18%	a)60 % b)25% c)15%	a)65 % b)22% c)13%	a)70 % b)20% c)10%	a)75 % b)18% c)7%	Station readings; REMA reports	(i)Monitor air quality on stations (ii)Undertake enforcement measures for air quality (iii)Develop proposals of new regulations or policy measures for air quality improvement
		Number of degraded wetlands ecosystems rehabilitated (focus on fully protected wetlands and complex wetlands)	1 wetland	Rehabilitation plans developed	1st wetland rehabilitated at 50 %	1st wetland rehabilitated at 100 %	2nd wetland rehabilitated at 50 %	2nd wetland rehabilitated at 100 %	3rd wetland rehabilitated at 50 %	REMA and RWFA reports	(i)Develop rehabilitation plans (ii)Conduct rehabilitation activities
	Output 5.3: Vulnerability to climate change reduced	% of Nationally Determined Contributions (NDC) programmat	NDC programmatic target implementation strategy for	10%	15%	20%	30%	40%	50%	NDC monitoring report	(i) Establishment of MRV framework for implementation of programmatic target

		ic targets achieved	Rwanda is available								(ii)Training on domestic MRV and tracking NDCs
	Output 5.4: Private sector mobilized to implement Green/SMART city pilot	Initiatives undertaken to engage private sector	Joint Program for green economy in place	Framework conditions developed	A green bond set up	Projects for a green bond identified	Projects for green city financed	Projects for green cities financed	Projects for green cities financed	ENR reports	(i)Private sector involvement (ii)MoE to coordinate greening aspects/approaches (iii)REMA to provide regulatory framework (iv)FONERWA to mobilize green and climate resources for green city pilot.
	Output 5.5: Cumulative volume of finance [US$ millions] mobilized for climate and environment purposes.	Volume of Finance Mobilised (in USD Millions)	99	126.5	141.68	156.82	171.98	202.5	217.78	Financing agreements	(i)Legal and Regulatory measures for domestic resources mobilization established in order to accelerate external resources flow to Rwanda. (ii)Framework for natural capital accounting strengthened.
Priority area	**Outcome**	**Outcome Indicator**	**Baseline 2017/18**	**Target 2018/19**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**Target 2023/24**	**Means of verification**	**Key Interventions**
	ENR Outcome 6: Vibrant, efficient and responsible mining spurring sustainable economic development.										
1.4 Promote Industrialization and	**Output 6.1:** Support exploration of	Increased knowledge of the	Existing data and identified	Resource appraisal completed	(i)Investment study for setting	Discovery of other economic	Feasibility studies in all	Determined and categoriz	Determined and categorized	RMPGB reports	(i)GoR invests in exploration

attain a Structural Shift in the export base to High-value goods and services with the aim of growing exports by 17% annually	minerals, petroleum and gas	available minerals, petroleum and gas in the country	prospective potentials areas from the past and recent explorations campaigns	in 6 identified strategic geographical areas	laboratory facilities developed (ii)Resource appraisal completed in other 6 identified strategic geographical areas	deposits of other minerals like Base Metals, Iron, Rare Earth, Lithium, Berylliu m, Gemstones	strategic geographical areas	ed mineral potentials across the country	mineral potentials across the country		to attract foreign and local investors in the exploration of potential sites
			Seismic and more geophysical data acquired and processed.	Phase 3 of petroleum exploration completed	Updated petroleum exploration data is Packaged for investment attraction.	Marketing for Petroleum investment	Marketing for Petroleum investment	Marketing for Petroleum investment	Marketing for Petroleum investment	RMPGB reports	(i)Government invests in exploration Attract foreign and local investors in the exploration over potential sites
			Quantity, uses, transport and distribution of methane gas confirmed	Feasibility study for Lake Kivu Methane commercialization available		Gas products available in the whole country	Gas products available in the whole country	Gas products available in the whole country	Gas products available in the whole country	RMPGB reports	(i)Government invests in exploration Attract foreign and local investors in the exploration over potential sites
	Output 6.2 Increased productivity of mines through Consolidating small mines into big mining blocks	Value of Annual contributions of mining sector to export	250 M USD	600 M USD	800M USD	1000M USD	1,200 M USD	1,400M USD	1500 M USD	RMPGB Reports	(i) Invest in education and training and laboratory facilities

	to meet best practices	revenues in USD ($).									(ii)Establish mineral development fund (iii)Introduce the appropriate modern mining Equipment (iv)Package mining projects for attracting strategic investors (v)Demonstrating the best practices /technology in the mines (vi) Promote regional and international cooperation in mineral trading and processing/smelting
	Output 6.3 Mineral and quarry Value addition increased	Level of grade for exported Minerals.	Minerals are exported in raw materials form	(i)Comprehensive study on mineral processing and grading (ii)Strategy for Gemstone promotion developed (iii)Processing and smelting	(i)Published investment study on mineral processing and value addition. (ii)Set guidelines on mineral recovery and tailings manageme	(i)Grade level of all minerals exported increased to 10%. (ii) on site loss of minerals reduced to 70% (iii)Three advanced	(i)Grade level of all minerals exported increased to 20%. (ii) on site loss of minerals reduced to 60%	(i)Grade level of all minerals exported increased to 30%. (ii) on site loss of minerals reduced to 50%	(i)Grade level of all minerals exported increased to 40%. (ii) on site loss of minerals reduced to 40% (iii)Rwanda is a hub for regional	RMPGB Reports and grade reports of exported minerals	(i) Conduct feasibility study for processing plants (refineries and smelters) (ii) Develop gemstones cutting and polishing hub (iii) Establish mineral development fund

				strategy established	nt	gemstones cutting and polishing facilities established			mineral processing and trade (3TG) and gemstones		
	Output 6.4: Mining standards compliance (Environment protection and Occupational health and safety) increased	Number of mines complying with environmental and modernized practices	(i)Model mine concept has been developed (ii)Mining standards developed (iii)Report of Strategic environment assessment for mining (iv)EIA required for each mining license	(i)Mining standards are disseminated to all mining areas (ii) Training conducted for the use of mining standards	In All mines: (i)water is treated using washing machines to reduce contamination (ii) use of personnel with required mining related skills.	In all mines: (i) accidents are reduced by 90% (ii)Each mine has trees plantation in its surrounding	All mining operators use sedimentation ponds for water use and recycling on mining sites	(i)All mines apply Mine Waste and Water Management guidelines (ii)All mines apply Mine Site Restoration and Closure guidelines	All mines are complying with environmental and modernized practices	RMPGB and REMA Reports	(i)Monitor mining standards compliance (ii)Enforce implementation of standards, guidelines and regulations. (iii) Give incentives to the performance of environment friendly practices

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