PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

REPUBULIKA Y'U RWANDA

UBUMWE - UMURIMO - GUKUNDA IGIHUGU

Inclusive Green Economy Policy Stocktaking Study for Rwanda

UN environment programme

ILO International Labour Organization

UNDP

UNIDO

unitar United Nations Institute for Training and Research

International Labour Organization

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EXECUTIVE SUMMARY

This study conducts an in-depth analysis of the Rwandan socio-economic context, existing national plans, policies/strategies and processes, on-going activities, institutional and non-institutional stakeholders, and key green economy players, expected national outcomes and results, as well as risks and proposed mitigation measures. This analysis helps define and refine the country's progress and gap assessment on the green economy by mapping national and sectoral sustainability priorities, baselines, targets, and investment needs. In addition, the study defines priority areas of the United Nations Partnership for Action on Green Economy (PAGE) engagement over the next 5 years.

PAGE is a partnership between the UN Environment Programme (UNEP), the International Labour Organization (ILO), the UN Development Programme (UNDP), the UN Industrial Development Organization (UNIDO), and the UN Institute for Training and Research (UNITAR) supporting partner countries with their transition to an Inclusive Green Economy (IGE) through policy advice, assessments, capacity development and analytical tools. The IGE is critical to Rwanda's sustainable development as it allows the country to continue its socioeconomic development and meet the Paris Agreement goals. Rwanda joined the partnership in 2022.

Rwanda aspires to become a high-income country by 2050 and has developed and implemented a broad range of policies and strategies to promote its economic and social development, and IGE objectives through structural transformation. The main strategies guiding Rwanda's green development are its Vision 2050, the National Strategy for Transformation (NST-1), the revised Green Growth and Climate Resilience Strategy (GGCRS), and its Nationally Determined Contributions (NDCs). The revised GGCRS identifies the country's long-term green goals. These three strategies, developed in accordance with international initiatives and agreements such as the UN's Agenda 2030 and the African Union's Agenda 2063, form the backbone of Rwanda's development framework. A cohort of sectoral and sub-national development strategies exist that aim at localizing and translating the broader objectives set out in the strategies.

Existing strategies are interlinked and acknowledge the importance of sustainable development and work towards its achievement, never the less there are still some misalignments between the various development strategies. Examples include the omission of e-mobility from the Transport Sector Strategic Plan 2018- 2024 (TSSP 2018-2024) key objectives, and the omission of green priorities from the objectives and targets of the Water and Sanitation Sector Strategic Plan 2018- 2024 (WSSSP 2018-2024). **These inconsistencies arise from strategies having been formulated at different times and under different sustainability agendas. This gap is expected to be corrected with the development and implementation of the next development cycle** of the new National Strategy for Transformation (NST-2). This strategy is being developed under the same green agenda as the GGCRS, thus it is expected (and recommended) that previous inconsistencies will be eliminated.

Despite its robust policy framework and the implementation of a plethora of initiatives, certain socioeconomic development metrics such as energy coverage and inequality have not sufficiently improved. **The main challenges/ barriers behind these results are lack of capacity, lack of finance, and lack of coordination**. The evaluations of the GGCRS (2018) and the NST-1 (2022), show that key development indicators such as poverty reduction, electricity access, or access to clean cooking fuels have seen limited change over the strategy's implementation period (with figures far below the targets). Lack of capacity refers to Rwanda not having sufficient knowledge and skills required to effectively implement green growth and economy measures, while lack of finance refers to the limited financial resources available for the development and implementation of green initiatives. Finally, lack of coordination refers to the lack of cooperation and synchronization between implementing agencies which results in overlapping and incoherent independent initiatives rather than synergetic collaborations between implementing actors. This commonality means that these gaps/ barriers are ubiquitous across Rwanda's development facets, limiting the achievement of socio-economic goals, such as reduced

poverty or increased electricity access, while also limiting the achievement of green goals such as increased up-take of sustainable agriculture and green transportation.

The achievement of Rwanda's IGE goals will require considerable investment over the subsequent decades. To properly implement the GGCRS, a total of US$ 55.03 billion is required up to 2050, an investment of around US$ 2 billion annually. Financing will be achieved by private and public actors working together to mobilise the required resources. However, most of these funds will be provided by the private sector, expected to provide US$ 35.7 billion up to 2050. With the remaining US$ 17.6 billion are set to be provided by the public sector.

Rwanda needs to address these challenges to advance towards an IGE. Six reforms are most needed:

Reform 1: Further align all development strategies, plans, and initiatives with the country's IGE principles and goals. Within the ongoing design of the next cycle of development strategies, such as NST-2 and the sectoral strategies developed from it, including the Financial Sector Development Strategy, it is paramount that the initiatives and objectives put forward by these plans are aligned and contribute to the IGE transition. Such alignment is achieved by changing and greening financial institutions project screening criteria allowing them to evaluate the economic return these investments generate in addition to the environmental and social impacts of the investment. In other words, the project selection criteria of Rwandan financial institutions should incorporate Environmental, Social, and Governance (ESG) criteria into their decision-making process. The inclusion of such criteria will allow the institutions to develop a more holistic and complete picture of the true impacts of their investments in the country, in addition to knowing the returns it would generate for them.

Reform 2: Enhance green knowledge and skills development programs for students, entrepreneurs, policymakers, and workers in the public and private domains. The development and implementation of an overarching, systematic and integrated framework for capacity development, promoting green knowledge and skill development programs for students, entrepreneurs, policymakers, and workers in the public and private domains can help overcome the lack of capacity and coordination. Intragovernmental collaboration in addition to increased international and private sector engagement are required for the country to fulfill its potential.

Reform 3: Help increase access to capital resources in the country and overcome the lack of finance for example through a Green Fiscal Reform and the Green Taxonomy. An Environmental and Climate Change Fiscal Reform could include the establishment of new green taxes and levies, and the elimination of environmentally harmful subsidies. Implementing such reforms would allow the Government of Rwanda to increase revenue generation to be spent on green growth, and re-direct funds from polluting industries to activities furthering green growth. Moreover, tax reliefs that promote green investments in the industrial and agricultural sectors will contribute to increasing private sector engagement with the green economy. The Green Taxonomy, which can be used to develop standards for green bonds and loans, green budget tagging, insurance, and management of environmental risk, to develop new stock market products, and to ensure transparent ESG reporting, is also expected to unlock substantial green investments.

Other ways of greening the finance sector include the promotion of green capacities and knowledge building among financial sector workers to make them aware on the importance of such a transition, their potential role in it, and the benefits it can generate for them. Such initiatives educate financial sector workers on the impacts of the IGE and how to harness them and shows them the economic benefits investing in the IGE transition will have for them, in addition to the socio-economic and environmental benefits spilling over to the whole country.

Reform 4: Promote green development through community-based and localized interventions. For example, by implementing environmental and disaster risk reduction (DDR) and management programs well adapted to local settings. Such interventions will help Rwanda respond to specific community needs

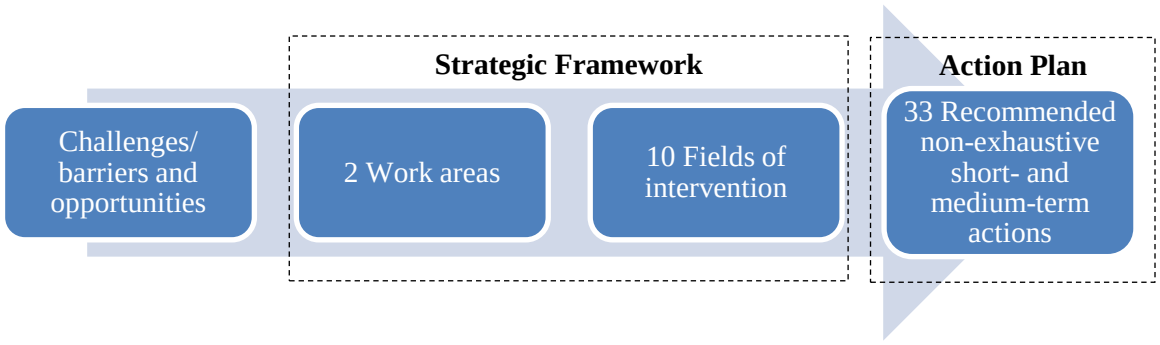
and opportunities allowing for accelerated IGE development through nuanced interventions. Recognizing that the path to an IGE is most effective when it aligns with the intricacies of local contexts, fostering a sense of ownership and empowerment among communities.

Reform 5: Promotion of small-scale green income generating projects. By emphasizing the creation and support of small-scale green ventures such interventions provide tangible economic opportunities for those most susceptible to poverty. Through fostering entrepreneurship, skill development, and community engagement, vulnerable groups will be equipped with sustainable means to break free from poverty. Moreover, by prioritizing the economic potential of vulnerable communities, it creates a more inclusive and equitable society.

Reform 6: Promotion of green development through increased emergency management and preparedness. In addition to fostering the IGE through climate action, Rwanda should also increase its national, community and sectoral resilience through investments in risk management and emergency preparedness. This includes investments in disaster risk reduction (DRR) mechanisms and comprehensive Early Warning Systems (EWS) to minimize the impacts of these climatic and environmental events and increase the country's capability to effectively respond to them.

Rwanda's partnership with PAGE will help the country to accelerate and foster upstream policy-making progress towards an IGE in the country through the collective expertise of five UN agencies, experiences from a wide range of stakeholders in current and alumni countries. PAGE is a unique UN partnership which can help Rwanda overcome the IGE challenges it currently faces and implement the required reforms, thus further promoting the principles of IGE. In accordance with key local stakeholder wishes, PAGE's mission in Rwanda should be to assist and support the government and other local stakeholders to operationalize and implement the strategic interventions proposed by the GGCRS. PAGE success in this mission is set out to be achieved through work around two work areas: (1) support high-quality strategic orientation, research, and technical and human resources capacity development, and (2) influence evolution of policy and regulatory environment supportive to IGE implementation. Under each work area, PAGE could work on different **fields of intervention** that will promote **concrete actions** that are aimed at minimizing and overcoming the identified barriers to green economy expansion and inducing the necessary reforms. The figure below shows PAGE's strategic framework (work areas and fields of intervention) and its action plan (non-exhaustive short- and medium-term actions).

ES Figure 1: PAGE Engagement – Strategic Framework and Action Plan



Source: Own elaboration

The key national governmental and international institutions that support the country's green socio-economic development and with whom PAGE needs to work over the next 4-5 years to make green changes happen are identified in the Revised GGCRS (Government of Rwanda, 2022). At the national scale, PAGE will need to work with the following, non-exhaustive, list of national agents responsible for the country's green growth: Ministry of Agriculture and Animal Resources, Ministry in charge of Emergency Management, Ministry of Education, Ministry of Environment, Ministry of Finance and Economic Planning, Ministry of Gender and Family Promotion, Ministry of ICT &

Innovation, Ministry of Infrastructure, Ministry of Justice, Ministry of Local Government, Ministry of Public Service and Labour, Ministry of Trade and Industry, Ministry of Youth, Cleaner Production and Climate Innovation Center, Energy Private Developers, Local Administrative Entities Development Agency, National Agricultural Export Development Board, National Council for Science and Technology, National Industrial Research and Development Agency, National Institute of Statistics of Rwanda, National Land Authority, National Women's Council, National Youth Council, Rwanda Agriculture and Animal Resources Development Board, Rwanda Development Board, Rwanda Energy Group, Rwanda Environment Management Authority, Rwanda Forestry Authority, Rwanda Green Fund, Rwanda Housing Authority, Rwanda Information Society Authority, Rwanda Meteorology Agency, Rwanda Standards Board, Rwanda Transport Development Agency, Rwanda Water Resources Board, Water and Sanitation Corporation, Development Bank of Rwanda, University of Rwanda, 250Start-Ups, Inkomoko, Rwandan Institute of Cooperatives, Entrepreneurship and Microfinance, Rwanda Greenpreneurs Network, Rwanda Private Sector Federation, BPN Business Owner's Association, Rwanda Bankers' Association, Rwanda Hospitability Association, Rwanda Environment NGO's Forum and its members, Rwanda Workers' Trade Union Confederation and its affiliates, District Disaster Management Committee, National Disaster Management Committee, National Platform for Disaster Management, Sectoral Disaster Management Committee, and the Joint Action Development Forum. In the international sphere, PAGE will need to partner with the following stakeholders: Adaptation Fund, African Development Bank, Climate & Development Knowledge Network, Foreign, Commonwealth & Development Office, Food and Agriculture Organization, Green Climate Fund, Global Environment Facility, Global Green Growth Institute, International Fund for Agriculture Development, KfW Development Bank, Least Developed Courtiers Fund, Sida, and the World Bank.

1. INTRODUCTION

The Government of Rwanda (GoR) has decided to invest in the efficient and sustainable use of its natural resources including efforts to combat climate change effects to guide on the back of a growing population and the demands stemming from its economic growth and development aspirations. As outlined in its Vision 2050, the country aims at becoming an upper middle-income country by 2035 and a low carbon and high-income country by 2050. In 2022, Rwanda updated its National Green Growth and Climate Resilience Strategy (GGCRS) and in 2020 it submitted its revised Nationally Determined Contributions (NDCs) under the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC).

Rwanda also joined the United Nations Partnership for Action on Green Economy (PAGE) in 2022, a UN programme that supports countries and regions to reframe economic policies and practices around the Inclusive Green Economy (IGE). The partnership will enable the country to accelerate the implementation of the national Vision 2050, National Strategy for Transformation, Green Growth and Climate Resilience Strategy, NDC, as well as National Economic Recovery Plan after the COVID-19 pandemic. PAGE has since commissioned this stocktaking of green economy initiatives in Rwanda to support improved collaboration and coordination of the country's IGE transition.

1.1 Objectives & Methodology

This stocktaking is one of the initial activities undertaken by PAGE in Rwanda. It seeks to inform PAGE on the critical areas it can support, what partnerships are required and the roles and responsibilities for various institutions and organizations to support the transition to a green economy that sustains green growth, ends poverty, increases decent jobs, promotes social and gender equality and equity, strengthens livelihoods and environmental stewardship, while contributing to addressing the root causes of the Triple Planetary Crisis (climate change, biodiversity loss, and pollution). In addition to this, the assessment helps to define priority areas of PAGE engagement over the next 5 years.

The study has been commissioned by the United Nations Development Program (UNDP) Rwanda under the Partnership for Action on Green Economy (PAGE) and is carried out by Metroeconomica, a consultancy company specialized in economic analysis, public policy, environment, climate change, and green finance. Its team of experts has extensive experience in the field of environmental economics, public policy, climate change and green finance. The report benefited from technical inputs from PAGE agencies (UNEP, UNDP, ILO, and UNITAR) as well as the UN Resident Coordinator's Office (UNRCO).

Although there are different definitions of a "Green Economy", as Rwanda's policy framework does not define the term, in this report green economy is understood using the UNEP definition of "*a green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcity"* (PAGE).

The content of the study has been developed after a thorough review of the primary information collected, and of relevant literature, existing national plans, policies/strategies and processes and other ongoing activities have been conducted, including one-on-one interviews with relevant experts. These interviews were directed at key institutional and non-institutional stakeholders. Furthermore, two stakeholder workshops have been held. The participating stakeholders included government ministries, international agencies, private sector representatives, civil society organizations, and academics. Moreover, the views expressed by the different stakeholders are representative of their interest groups.

The objective of these consultations was to inform the preparation of the project, specifically by identifying: (i) members' views on how current policies and strategic planning documents respond to green economy and what is needed for PAGE to support improvements towards national strategies to support and sustain their implementation; and (ii) views on institutional frameworks and their facilitation scenarios to coordinate implementation of PAGE.

The consultations generated ideas, insights and innovations and built stakeholder consensus on what is needed to effectively implement the 5-year project to fully integrate green economy in development planning and implementation in support of Rwanda's sustainable economic growth and development.

The GGCRS and updated NDCs acted as a guiding framework during the development of the stocktaking. These documents highlighted nine sectors as the most relevant for the green economy (see Table 1). Several of these sectors and their connection to the IGE have also been analysed in further detail. In addition, cross-cutting themes, such as green jobs, human capacity, and finance have also been investigated to understand their relationship to the inclusive green economy.

The outcome of this analysis has been the identification of the main opportunities and barriers for the green economy in Rwanda, and the identification of 33 potential non-exhaustive short- and medium-term actions PAGE can take to assist Rwanda in its IGE transition.

1.2 Context

Rwanda already has a considerable sustainability and green growth framework. This framework is encapsulated by the *Vision 2050*, the *Green Growth and Climate Resilience Strategy (2011-2050)* and the *National Strategy for Transformation (2017-2024)* (NST1)

These strategies highlight several **opportunities** to be exploited and promote further development in the country, such as its young and dynamic population, political and economic ties to the wider African continent, governance and socio-political stability, and the significant productivity gains from structural transformations, urbanization, and industrialization (Republic of Rwanda, 2017) (Republic of Rwanda, 2011). Despite these opportunities, there are also challenges facing the country that hinder its development. The main development challenges are climate change, oil dependence, population growth, unemployment, poverty, debt burden, economic growth, and education.

Sustained economic growth over the past two decades has translated into improved wellbeing of citizens including increase of life expectancy to 69.6 years in 2022 from 51.2 in 2002, reduction in poverty, improved health, education, infrastructure and quality of services delivered across sectors among others. Specifically, the GDP per capita increased from US$ 235 in 2002 to US$ 1,004 in 2022 over the same period. However, challenges remaining, particularly in addressing poverty, and improving healthcare outcomes calling for increased investment in human capital, poverty reduction, and strengthening key sectors like healthcare, education, and water, sanitation, and hygiene.

Judging by the work done by PAGE across the African continent and the challenges and opportunities facing sustainable development in Rwanda, significant potential exists for the country to benefit from PAGE expertise and experience. to help Rwanda learn from. Rwanda's partnership with PAGE will be catalytic to help the country to work towards overcoming the challenges such as climate change, limited industrial and agricultural growth, while further promoting the principles of an IGE in the country and shaping its next generation of green growth and development policies and initiatives. It will enable Rwanda to accelerate the implementation of the National Strategy for Transformation, Green Growth and Climate Resilience Strategy, NDCs, as well as National Economic Recovery Plan after the COVID-19 pandemic.

2. BACKGROUND ANALYSIS

Rwanda is landlocked east-central African country. It has a total population of 13.2 million people in an area of 26,338 km^2, giving it a population density of 503 people per km^2 (National Bank of Rwanda (NBR), 2023) (Republic of Rwanda, 2021). The World Bank classifies Rwanda as a low-income country (Hamadeh, Van Rompaey, Metreau, & Eapen, 2022). However, in more recent years the country has experienced significant economic growth and social development (World Bank). Moreover, in the aftermath of the 1994 genocide against the Tutsi, the country has experienced considerable political stability (World Bank, 2022).

From 2000 to 2021, Rwanda's average annual temperature was 19.3ºC, while the average annual precipitation the country experienced was 1,206mm. The conditions mean that the country is mostly classified as having a tropical savannah climate, under the Köppen-Geiger classification (Climate Change Knowledge Portal).

2.1 Key economic sectors

Rwanda's future socioeconomic and green growth is underpinned by the sustained expansion and development of key economic sectors. This section looks at the productivity, trade patterns, and share of labour by gender and age (formal and informal) of key economic sectors (namely: agriculture, environment and natural resources, tourism, trade and industry transport, energy, mining etc). The key green economy sectors have been selected based on the sectors identified in the Green Growth and Climate Resilience Strategy (GGCRS) and the updated NDCs. See Table 1.

Table 1: GGCRS and NDC sectors

GGCRS Sectors	NDC Sectors
Agriculture, Forestry, and Land Use	Agriculture, Forestry, and Land Use
Energy	Energy
Industry	Health
Mining	Human Settlements
Transport	Industrial processes and product use
Tourism	Mining
Urbanisation and human settlements	Waste
WASH and waste	Water
Water resources	

Source: (Government of Rwanda, 2022) & (Republic of Rwanda, 2020)

Contribution to GDP

Data taken from Rwanda's 2022 GDP National accounts, shows that the largest aggregate contributor to the Rwandan economy is the Service sector, which accounts for between 47% to 50% of the country's GDP.

Within this aggregated sector there are several of the sectors or approximations to sectors identified in the table above. Hotels and Restaurants, used as a proxy for tourism, is seen to contribute between 1% to 2% to national GDP from 2017 to 2022. Transport services, used as a proxy for the transport sector, contribute between 4% to 6% of GDP over the analysed period. Finally, human health and social work, a proxy for the health sector, contributed between 1% to 2%.

Agriculture and its sub-sectors, are Rwanda's second largest GDP contributor, making up between 24% to 27% of the national GDP.

The industrial sector made up between 17% to 21% of Rwandan GDP from 2017 to 2022. Manufacturing is the largest of its sub-sectors, making up between 8% to 10%.

Table 2 below, shows the sectoral contribution to GDP of the Rwanda's main economic sectors and selected sub-sectors. Sub-sectors have been selected in accordance to their relevance and connection to the sectors identified in Table 1.

Table 2: GDP by main sectors and selected sub-sectors in 2022

Sector	US$ Bn. (current prices)	% of total
Agriculture, Forestry, and Fishing	**3.31**	**25**
Industry	**2.83**	**21**
Mining & quarrying	0.38	3
Total, Manufacturing	1.32	10
Electricity	0.06	1
Water & waste management	0.06	1
Construction	1.01	8
Services	**6.19**	**47**
Trade and Transport	2.17	16
Hotels & Restaurants	0.18	1
Financial services	0.36	3
Education	0.48	4
Total	**13.31**	**100**

Source: (National Institute of Statistics of Rwanda (NISR), 2022)

Trade patterns

Rwanda's 2022 total trade (the sum of imports and exports) is equivalent to 50% of country's GDP. In 2022, exports of goods and services reached US$ 1.3 billion (9.8% of total GDP) while imports amounted to US$ 5.3 billion (39.8% of GDP). Exports and imports have increased a 26% and 52% respectively compared to 2020.

Focusing on exports, in 2022 food and live animals was the country's largest export followed by crude materials (excluding fuels), mineral fuels, lubricants, and related materials, beverages and tobacco and animals and vegetable oils, fats & waxes. On imports, machinery and transport equipment was the country's most imported element, followed by manufactured goods, food and live animals.

Rwanda is currently a net importer. Going forward, the Government intends to increase its exports by prioritizing high export potential sectors, and sectors with good market perspectives, such as coffee, tea, horticulture, or leather. The expansion of the export sector is expected to stimulate job creation, increase women's formal and quality of employment, promote small business development and contribute to the expansion of a green economy (Ministry of Trade and Industry, 2010).

Imports and exports have different non-linear effects on green productivity. Regarding imports, studies have shown that they do not significantly affect green productivity in lower income countries, while they increasingly promote green productivity in high-income countries. On the other hand, exports gradually improve green productivity in high-income countries. Furthermore, both imports and exports promote green productivity more significantly through technological progress rather than efficiency improvements (Ying, Yamaguchi, & Kittner, 2022).

This relationship means that as Rwanda develops, its trade and green productivity relationship will change. As it increases its income level, both imports and exports will increase the country's

green productivity. Moreover, the expansion of the green economy will reduce Rwanda's reliance on expensive foreign fuel sources and provide it with higher value manufactured goods to export to foreign markets. Consequently, the growth and development of the green economy will also contribute to reducing Rwanda's trade deficit.

Labour force

According to the government's Labour Force Survey 2022, the country's labour force is made up of 4.46 million people, with a labour force participation rate of 56%. The employment to population ratio is 44.5% whilst the unemployment rate has reached 20.5%.

The results of the Labour Force Survey 2022 show that there are 3,221,612 employed persons in the informal sector, corresponding to 90.8% of total employment. Most of employees in the informal sector are men.

By sector, most employment is related to agriculture (46.8%). Other sectors, such as Wholesale, retail trade & repair of motor vehicles and motorbikes (10.5%), Construction (10.3%), Transport and storage (5.6%) and manufacturing (5.3%) employ far fewer Rwandans.

Disaggregating by sex, women account for 46.1% of the labour force in Rwanda. The overall female labour force participation rate is 48.8%, compared to 64.1% for males. The participation rate of women in the labour force is also much lower than that of men's when they are married or living together.

At present, Rwanda exhibits a pronounced gender-based segregation across its economic sectors. In sectors such as transportation and storage; electricity, gas, steam, and air conditioning supply; real estate activities; water supply & waste management; and construction men make up more than 85% of workers. Conversely, in sectors like education; manufacturing; and, financial and insurance activities, women's participation increases to approximately 45% of the workforce. Furthermore, in domestic work and housekeeping women account for 65% of the workforce.

The National Institute of Statistics of Rwanda (NISR) estimate that by 2032 the working-age population will increase to 9.8 million (Newfarmer & Twum, 2022). This trend means that 2 million jobs will have to be created by 2032. Work by Newfarmer & Twum estimates the labour demand in 2035 if the economy maintains an average annual growth rate of 8%.

In this scenario, employment will have an annual growth of 3%, with manufacturing substantially increasing its employment, however, agriculture will remain the sector with the largest share of employment.

This situation provides both opportunities and challenges for the green economy. The weight and relevance of the agriculture sector means that the implementation of climate-conscious and resilient practices is critical in protecting the livelihoods of a large portion of the country's population. The limited capital and capacities of agricultural households, especially smallholders, means that considerable government investment and participation, in addition to collaboration with the private sector will be required for farmers to access the capital, markets and enterprise and skills development requirements needed to implement many sustainable and climate-smart agriculture practices and related opportunities in the rural economy. However, the potential benefits of greening the agriculture sector are considerable, making such public investment necessary. For one, it contributes to increasing the country's food and water security, it makes the country's food supply more resilient to climate change and promotes responsible and efficient water use among farmers. Moreover, it has environmental and climate benefits, such as soil conservation, increased carbon sequestration and biodiversity conservation. Finally, a green agricultural sector has economic benefits for farmers who are able to increase their income through the implementation of such practices, also their income will be less vulnerable to the impacts of climate change. This increase in income is a consequence of reduced production costs stemming from for example more efficient fertilizer (which also has trade benefits) use and increased revenue from increased yields and the production of higher value agricultural crops.

Regarding youth employment, figures show that the youth population has higher levels of education than their adult counterparts (National Institute of Statistics of Rwanda, 2023). Nevertheless, the unemployment rate is higher among young people, at 25.6 % compared to 20.5% for adults. Similarly, youths are mostly affected by labour underutilization[1] at a relatively higher rate than other age population groups. Furthermore, in 2022 Rwanda also had a youth not in employment, education, or training (NEET) rate of 28.6% (27.3% for males and 29.9% for females) (ILO 2023, 2023). This figure is considerably higher than the figures of countries like Uganda (13.8%), Tanzania (14.4%), and Burundi (11.2%) (ILO 2023, 2023).

The higher labour underutilization rate for Rwanda's youth means that the country is not tapping into a large and more educated labour group yet, this higher level of education has benefits for the emerging green economy. Educated youths have the knowledge and skills or possess the capacity to quickly learn the skills required for green jobs, allowing them to participate and contribute to the green economy. Moreover, the perspectives, ideas, and skills of young people allows them to challenge the conventional norms and practices existing in the country. Thus, tapping into the youth population, not only provides Rwanda with a skilled workforce able to cover the demands of green jobs, but it also creates opportunities for young people to take a leadership role in the country's green transition.

2.2 Financial system

The National Bank of Rwanda (NBR) has played an important role by implementing reforms to ensure the soundness of the financial system, including the establishment of an efficient legal and regulatory framework, supervisory mechanisms, modern payment systems, and the entry of new banks into the market (Nyalihama, 2022). The structure of Rwanda's financial system is shown in Figure 1.

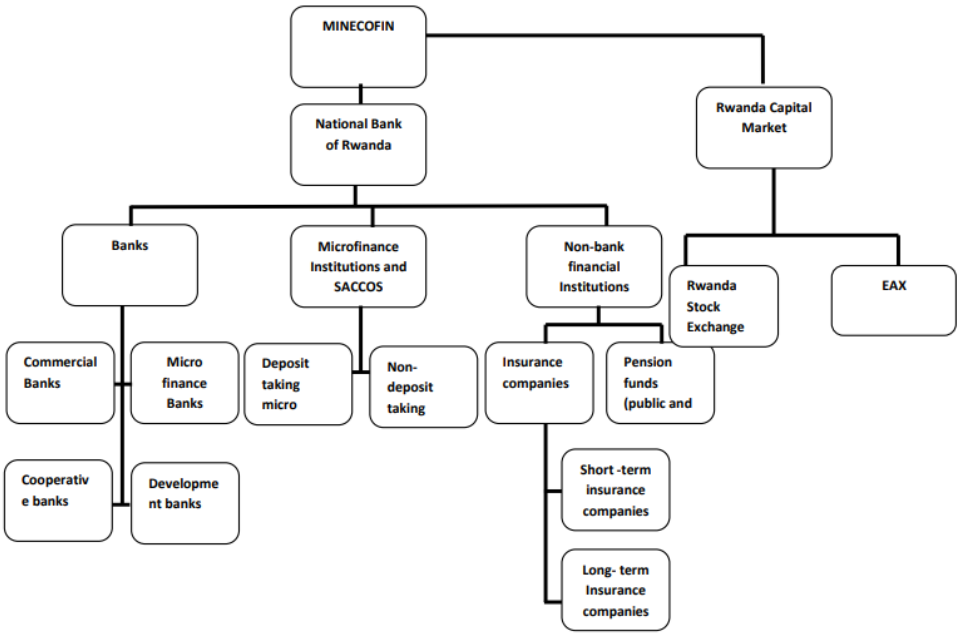
Since 2008, Rwanda's Ministry of Finance and Economic Planning (MINECOFIN) has been implementing the Financial Sector Development Program (FSDP), which is currently in its 2018-2024 version.

The government's priorities in this program have been mainly savings and investment, access to finance, financial inclusion, a modern payment system, capacity development, establishing, and maintaining Rwanda as an international hub for financial services. The main objective of the financial sector is to increase domestic credit to the private sector (FSDP, 2018). One example of interventions taken by the government is the regular issuance of bonds to deepen the capital market. Although it is still at an incipient stage, the FSDP has already begun to attract investments in important areas such as green and sustainable finance and FinTech (Rwanda Development Board).

The financial sector's link to the green economy is essential for mobilizing the necessary capital to drive sustainable initiatives, facilitate the transition to a low-carbon economy, and address pressing environmental challenges. By aligning financial practices with the principles of the green economy, the sector can contribute significantly to achieving Rwanda's green growth objectives.

[1] The labour force underutilisation rate is defined as the sum of the unemployed people and the underemployed ones.

Figure 1: Structure of Rwanda's Financial System



Source: FSDP, 2018

2.3 Economic development trends and challenges

Current trends

Rwanda's Vision 2050 outlines the country's goal of becoming an upper-middle income country by 2035 and a high-income country by 2050. This requires its GDP per capita to exceed US$ 4,036 and US$ 12,476 by 2035 and 2050 respectively.

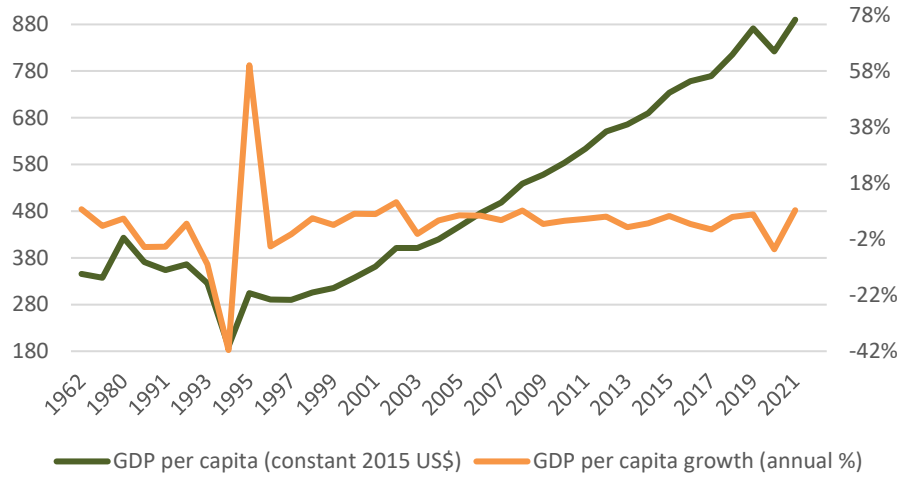
Since independence, Rwanda's GDP has gone from US$ 1.08 billion[2] in 1962 to US$ 11.98 billion[2] in 2021, with an average annual growth rate of 4.8%. GDP per capita has also grown over the period, from US$ 345.8[1] in 1962 to US$ 1,004 in 2022 with an average annual growth rate of 2.2% (see Figure 2).

The marked decrease in GDP per capita in 1994 is caused by the tragedy of the Rwandan Genocide against the Tutsi. The atrocities of 1994 mark an inflection point in Rwanda's economic development and growth. Since 1994, the country has experienced steady and consistent annual growth, on average growing 6% annually.

Although good progress has been made, the COVID-19 pandemic adversely impacted the economy which experienced a reduction of 3.4% in 2020 and affected the livelihoods of citizens. The economy is now recovering and rebounded with double digit growth of 10.9% in 2021 and 8.2% in 2022 through a combination of recovery measures and policies implemented in collaboration with all stakeholders.

[2] Measured as GDP and GDP per capita at constant 2015 US$

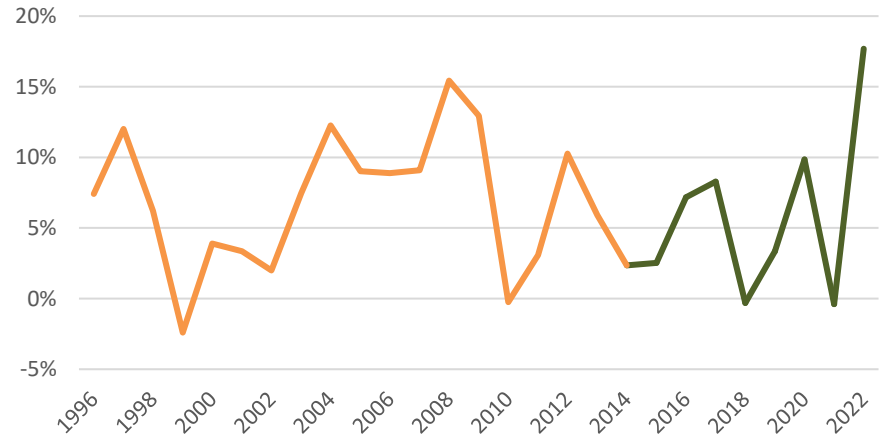
Figure 2: GDP per capita and GDP per capita annual growth rate from 1960-2021



Source: (World Bank, 2023)

Beyond economic growth, indicators such as inflation and employment give further insights into Rwanda's development. Focusing on inflation, as Figure 3 below shows, during the period of post-conflict sustained economic growth consumers have faced considerable price volatility. Since, 1996, average annual inflation has been above 6.5%. However, this hides shorter-term periods of sustained high inflation, such as from 2004-2009 when annual inflation averaged 11.3% or in 2022 when inflation almost reached 18%, the highest since 1991. By contrast during this period there were several years with far lower inflation rates and even four years of price deflation, such as 1999, 2010, 2018 or 2021. Since 2015, marked in green in Figure 3 inflation rates in the country remained volatile with 2022 recording a significant price increase. However, it is important to note that high inflation rates in 2022 are not exclusive to Rwanda.

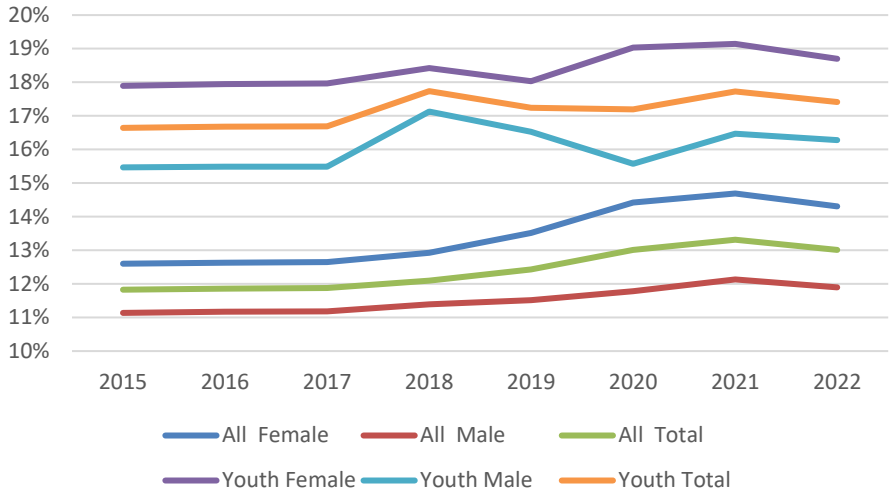
Figure 3: Annual inflation (consumer prices) 1996-2022



Source: (World Bank, 2023)

Looking at employment, figures show that from the early 1990s until the mid-2010s unemployment and youth unemployment in the country remained relatively constant at around 11-12% for the whole workforce and around 16% for young adults (15-24). Worryingly, over the past seven years these figures have slightly increased to around 13% and 17% respectively, as can be seen in Figure 4 below. As the figure also shows, there is a noticeable gender bias in the employment figures, with Rwandan females experiencing more unemployment than their male counterparts. This is also true for the youth demographic.

Figure 4: Total and youth unemployment 2015-2022 (ILO model)



Source: (World Bank, 2023)

Provincially, there are similar levels of unemployment across the country. The city of Kigali has the highest unemployment rate with 22.2%, and the North province has the lowest unemployment at 19.4%. The East province has the second lowest unemployment rate with 20.8%, followed by the South province with 21.2% and then the West province with a 21.7% unemployment rate. Looking at districts, the East province has both the district with highest and lowest unemployment rates in the country, Ngoma district has the lowest unemployment rate in the country with 13.8%, while Rwamagana district has the highest with 31.4% (National Institute of Statistics of Rwanda (NISR), 2021).

Future trends

Looking forward at the Rwandan economic development, *(Aikins & le Roux, 2023)* provide projections of the country's GDP growth over the coming decades in accordance with the adoption of certain development scenarios. Their analysis presents GDP and GDP per capita growth for 8 independent sectoral development scenarios and a combined scenario. In addition, it provides business as usual (BAU) projections used to compare with the different scenarios.

As can be seen in Table 3, although all the sectorial scenarios provide increased economic development over the BAU pathway, independently, none of them is able to increase GDP per capita sufficiently to meet the objective set out by the government. However, when undertaking a multisector development plan, exemplified by the combined scenario, the indicator exceeds the goal set in Vision 2050.

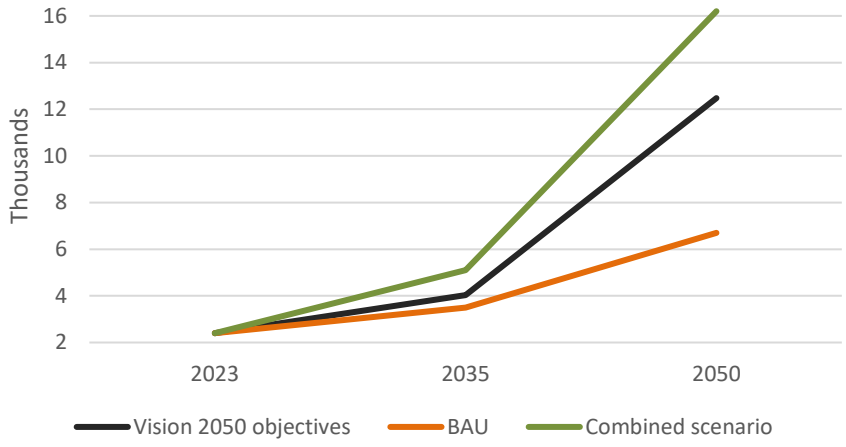
Table 3: GDP per capita (US$) in 2035 under different sectoral development scenarios

	2035
Vision 2050 objective	4,036
BAU	3,500
Governance scenario	3,900
Demographics & health scenario	3,700
Education scenario	3,600
Infrastructure and Leapfrogging scenario	3,800
Agriculture scenario	3,600
Manufacturing scenario	3,700
AfCFTA scenario	3,700
Financial flows scenario	3,600
Combined scenario	5,100

Source: (Aikins & le Roux, 2023) & (Government of Rwanda, 2020)

Economic growth for sectoral scenarios is projected by (Aikins & le Roux, 2023) up to 2043, while the combined scenario is projected up to 2050. Looking further forward to 2050 (Figure 5), on its current trajectory (BAU scenario) Rwanda will not become an upper-middle income or a high-income country in the time frame it proposes. Conversely, if the combined scenario is followed, the country is projected to exceed the goals it set out in its Vision 2050 and become an upper-middle- and high-income country ahead of time.

Figure 5: GDP per capita in 2035 and 2050 under different scenarios.



Source: (Aikins & le Roux, 2023)

Challenges

From 2013 to 2016, overall growth averaged 6.1% against a target of 11.5%, while agriculture averaged 4.1% versus its 8.5% target, industry averaged 6.5% compared to its 14% target and services grew 7.5% compared to a targeted 13.5% (Republic of Rwanda, 2017). Moreover, Rwanda's public debt has increased significantly in recent years. The country's reliance on large public investments (at 13% of GDP in 2019) has led to substantial fiscal deficits. External financing has been through grants and concessional and non-concessional borrowing. Consequently, the debt-to-GDP ratio rose to 67.1% in 2022 (from 19.4% in 2010) (IMF, 2023). Stronger private sector participation is needed to sustain high investment rates and accelerate growth.

2.4 Social development trends and challenges

In 2021, Rwanda received a Human Development Index (HDI) score of 0.534, classifying it as a country with "low human development". However, since 1995 Rwanda's HDI has grown continuously, showing the social development and increased quality of life enjoyed by Rwandans.

Education

Rwanda's education policies have resulted in an increased literacy rate. The literacy rate of Rwandan citizens over the age of 15 has increased from 58% in 1991 to 79% in 2022. Disaggregating by gender shows that literacy rates are higher among Rwandan men (81% literacy rate) than women (76.7% literacy rate). (MINECOFIN & NISR, 2023).

Literacy rates in the country show continuous growth over the years, especially since 2010, reflecting the government's commitment to develop the skills and knowledge of its population. However, education remains a driver of multidimensional poverty in the country. It contributes to 26.6% of the deprivation in dimension to overall multidimensional poverty in the country (UNDP, 2023).

Health

The Rwandan health system has been transformed and developed to treat the diseases that most affect the country's population. It has prioritized decentralization and integration of services, in addition to an increase in domestic funding for health (Binagwaho et al., 2014). Currently, Rwanda provides healthcare coverage for more than 90% of its population through the universal healthcare program[3].

An example of the success of the country's health sector initiatives is its life expectancy at birth has consistently increased over 15 years, reaching 69.6 years in 2022. Disaggregating by gender shows that the life expectancy in the country is higher for women (71.2 years), while men on average are expected to live three and a half years less, having a life expectancy of 67.7 years (MINECOFIN & NISR, 2023). However, health remains a driver of multidimensional poverty in the country. It contributes to 19% of the deprivation in dimension to overall multidimensional poverty in the country (UNDP, 2023).

Inequality

Rwanda's Gini index score shows that Rwanda has moderate levels of income inequality, with its latest verified measurement being 43.7 (World Bank, 2023). Focusing on gender equality, Rwanda ranks twelfth in the world with 79.4% gender parity. However, this overall ranking hide significant differences between the different indicators used to develop the overall gender parity score. For instance, although ranking 9th in the world for political empowerment, the country ranks 67th for economic participation and opportunity, 110th for educational attainment, and 55th for health and survival (World Economic Forum, 2023). As such, although its overall score highlights the advancements made by Rwanda on gender equality, the indicators used in the ranking also highlight some of the areas where significant further work is required.

Recognizing the sum importance of gender equity and equality, Rwanda has integrated gender equality and the promotion of women it its national development policy frameworks. An example of this is the Gender Monitoring Office (GMO) which monitors, tracks and updates gender data related to NST1 (GMO, 2019).

Poverty

The latest available data from the EICV 2016/17 indicates that 38.2% of people (and 44% of children) lived in poverty (down from 58.9% in 2001), with significant urban - rural disparities (highest at 47.1% in the Western Province where people rely mostly on rain-fed agriculture) (National Institute of Statistics of Rwanda (NISR), 2022).

With the impacts of local and global crises, the COVID-19 pandemic, inflation, regional instability and climate crises, the World Bank projects that poverty rates may have risen to 41.9% in 2020/2021 (World Bank, 2020).

Furthermore, the Multidimensional Poverty Index (MPI) shows that 48.8% of the population is multidimensionally poor, with 19.7% of the population in severe multidimensionally poverty and a further 22.7% of the population vulnerable to multidimensional poverty (UNDP, 2023).

Opportunities

On the back of these existing challenges lie opportunities for the green economy:

1. Increasing levels of education means that Rwandans have a higher capacity and have the skills required to transition into green jobs and become leaders and innovators in the space.

2.Increasing the participation of women taps into an underutilized community with new and innovative perspectives catalytic to promoting a green economy.

[3] Community-based health insurance program (or CBHI), Mutuelles de Sante (Mutual Health): https://www.innovationsinhealthcare.org/universal-health-coverage-how-rwanda-is-moving-forward-with-healthcare-for-all/

3. Increasing youth and women participation is also aligned with Rwanda's inclusion principles.

Overall, interventions towards the expansion of a green economy and green growth principles can thus promote poverty reduction and reduce income inequalities for the betterment of the most vulnerable groups as well as socioeconomic development of communities at large.

2.5 Environmental trends and challenges

Climate Change

Rwanda is committed to taking mitigation and adaptation measures to minimize the effects of climate change, which will undoubtedly continue to affect the country. This commitment is evidenced by its participation in the UNFCCC in 1995, the Kyoto Protocol of 2004, and the Paris Agreement of 2016.

Its commitment to the environment was reaffirmed with the adoption of the Green Growth and Climate Resilience Strategy (GGCRS). This strategy defines the country's actions and priorities on climate change in terms of mitigation and adaptation, in order to promote a low-carbon development of its economy. The actions set out in the GGCRS provide the basis for the development of the NDC that was revised in 2020 setting a path for an ambitious climate action.

These actions show that the government is taking ambitious measures to address the impact of climate change. Continuing to meet its green targets will ensure that the country's growth path will not be affected and will provide Rwanda with opportunities to further catalyse its development and growth.

However, Rwanda is facing the effects of climate change, with temperature and precipitation being the main affected aspects. According to the analysis conducted by the Ministry of Environment (MoE) (2018), the average temperatures between the period 1961-2016 showed an increasing trend. The largest increase, of 1.4°C to 2.56 °C occurred in the south-west and eastern regions of the country, while the northern highlands warmed at a lower rate, between 0.11 °C and 1.7 °C in 2016. In addition, the eastern region has also shown a stronger decreasing trend in rainfall intensity and frequency.

Other studies indicate that there is a high probability that the duration of heat waves will increase, cold waves will decrease, and temperatures will generally increase across the country, with a change in annual mean temperature of between 1.1ºC and 3.9ºC by the end of this century (WBG, 2021). Furthermore, an increase in annual precipitation is expected driven by increases in frequency and intensity of rainfall. However, some regions of the eastern and southern provinces are expected to experience frequent rainfall deficits.

Of particular concern is food security, as disasters can lead to crop failure, erosion, nutrient leaching, or fungal proliferation, which would limit the population's ability to produce food and lead to increased dependence on imports.

Moreover, the country's economy is highly dependent on the environment and its natural resources. In addition to the food and agriculture impacts of climate change, the country's water security is also threatened by the impacts of climate change. Warmer temperatures and droughts would lead to water shortages, heavy rains would increase sedimentation of rivers, lakes and reservoirs, and industrial, agricultural, and domestic sources would be polluted.

Air Pollution

In addition to GHG emissions, anthropogenic activities also emit large amounts of air pollutants such as Particulate Matter (PM) 2.5, PM 10, Ozone, Nitrogen dioxide, Carbon monoxide or Sulphur dioxide. In Rwanda the main air pollutant is PM 2.5, and the main sources of anthropogenic air pollution are road traffic, mines and quarries, the combustion of domestic fuels and industrial production, and the use of wood and charcoal for cooking (UNEP-GRID, n.d.).

The concentrations of pollutants in most of the country are slightly above or within national limits. However, they are above the WHO's indicative levels (REMA, n.d.). Air pollution is worse in

urban than in rural areas, and Kigali is the most polluted area of the country. The latest figures indicate that annual mean population weighted levels of PM 2.5 in Rwandan towns and cities was 36.2 μg/m^3, compared to the WHO guideline value of 5 μg/m^3 (UNEP-GRID, n.d.).

This level of air pollution has significant negative health impacts on the population. Air pollution is the second leading risk factor for death and disability in the country, with it causing more than 5,500 deaths in 2017 and reducing life expectancy at birth in the country by over 2 years. Most of this is driven by exposure to household air pollution (Health Effects Institute, 2019).

Water Resources and Quality

Although Rwanda's water sources are currently not facing water stress, As the country develops, its demand for water will increase. This will in large part be driven by increased irrigation which is set to more than double by 2025. Currently the main water usages in the country are for hydropower generation (84.76%), irrigation (9.11%), and domestic water supply (5.88%). As with irrigation, domestic water supply is set to increase over the coming years, with 13% of the population currently having no access to water. By 2024, the government wants all Rwandans to have access to safe and clean water. This increase in water use is combined with expected precipitation pattern changes associated with climate change, resulting in more water abstractions and less water recharge. Such a situation, over time, can lead to a depletion of water resources if not governed responsibly and sustainably (Rwanda Water Resource Board, 2020).

By contrast water quality is more of a problem in the country, with only 18.75% of water bodies having good ambient water quality. This is because indicators such as dissolved inorganic nitrogen, dissolved inorganic phosphorus, electrical conductivity, pH levels, are generally within the acceptable limits, while dissolved oxygen, E. coli, and turbidity are almost always outside the acceptable limits for natural potable water. The main cause of this is sedimentation and siltation of water bodies mainly from soil erosion and microbiological contamination linked to poor sanitation systems and practices (REMA, n.d.).

Soil Erosion

Soil erosion is the most serious environmental problem in many areas of Rwanda. Land under risk of erosion represents about 45% of total land. With 7% of the total risk areas under extremely high risk, 18% under very high risk, 28% under high risk, and 48% under moderate risk from erosion. The main factors affecting the amount of soil eroded include land use, vegetation cover, topography, soil, and climate (IUCN, 2022).

Land in the high-risk areas is mostly used for agriculture. This means that 745 thousand hectares of agricultural land in Rwanda are potentially eroded every year. In 2021, this would have meant a seasonal loss of above 3 million tonnes of crops (6 million tonnes annually). The total economic loss in agricultural productivity due to severe erosion is around 37.9 billion RWf (US$ 38.34 million) every season. Or around a 5.5% loss in the agriculture sector's contribution to GDP in 2021 (IUCN, 2022).

Biodiversity

Rwanda has diverse, unique habitats and ecosystems that range from humid montane forests to savannahs, lakes, rivers, and wetlands which support a wide range of biodiversity. It is home to 402 mammal species, 1,061 bird species, 293 reptile and amphibian species and 5,793 higher plant species. It is primatologist paradise with species like the Mountain gorillas, chimpanzees and other endemic primates all found in the country (REMA, 2021).

The latest reports indicate that large mammal population in the country have declined due to poaching and habitat loss. By contrast, mountain gorilla, chimpanzee and other primates have seen their numbers increase over the last years. Bird protection and conservation has also had significant success in the country over the past years (REMA, n.d.).

Currently, 9.11% of the country's total area is protected. This figure is set to increase to 27% by 2030 and 37.7% by 2050 (REMA, n.d.). This is because Rwanda's development framework

acknowledges the crucial and central significance of biodiversity and natural resources in fostering the nation's economic advancement, sustaining livelihoods, and providing essential ecosystem services like water, soil erosion and flood control, and climate change mitigation. Consequently, the preservation of the environment and natural resources has been woven into the fabric of the country's development plans.

3. REVIEW OF INTERNATIONAL AND NATIONAL ECONOMIC DEVELOPMENT STRATEGIES AND POLICIES

This chapter is a review of Rwanda's medium and long-term climate, environment and development objectives and strategies. The review focuses on existing international and regional commitments, national and sub-national frameworks, strategies, policies, and initiatives relevant to the development and expansion of an IGE and as a response to the Triple Planetary Crisis. Furthermore, the chapter identifies policy gaps and areas requiring more attention and explores Rwanda's national and institutional capacities to coordinate and implement these policies at both a macroeconomic and sectoral level.

3.1 Macroeconomic level analysis

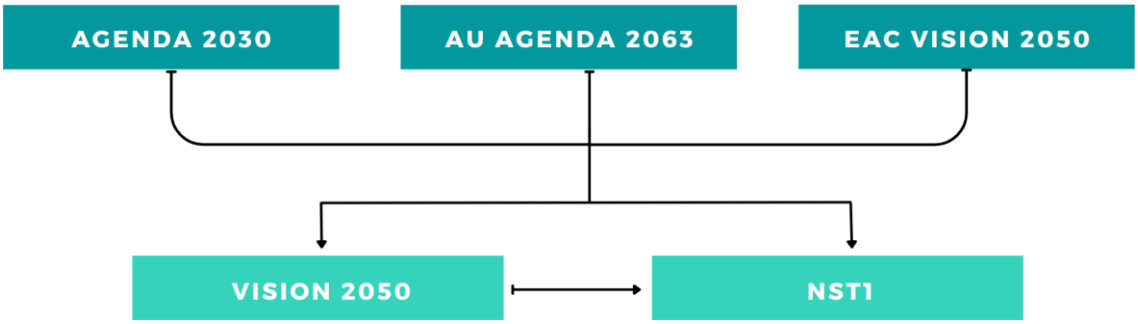
3.1.1 Existing policy frameworks, processes, national strategies, and policy visions

International frameworks

Rwanda is an active member of the international community and party to several global and regional initiatives covering climate action and sustainable development. At the international level, it is party to the Kyoto Protocol, the Paris Agreement, the SENDAI Framework, the Montreal Protocol and its amendments, and the Kunming-Montreal Global Biodiversity Framework. Its development is further guided by Agenda 2030 and the Sustainable Development Goals. Additionally, it is a member of the Global Alliance on Circular Economy and Resource Efficiency (GACERE).

At the regional level, Rwanda's sustainable development efforts are guided and influenced by the African Union (AU) Agenda 2063, the East African Community (EAC) Climate Change Policy, the EAC Climate Change Master Plan, the EAC Vision 2050, and its membership to the African Continental Free Trade Area (AfCFTA) and the African Circular Economy Alliance (ACEA). See Figure 6 for interlinkages and graphical presentation of the frameworks.

Figure 6: International frameworks linkages to national strategies



Source: (Government of Rwanda, 2020)

National policies

To fulfil its aspirations and international commitments, Rwanda has developed a comprehensive legal, policy and strategic framework regarding sustainable development and green growth. The country's development is guided by its Vision 2050. All strategies, policies, and initiatives below it contribute to achieving the socio-economic goals it sets out over the medium and long-term. Consequently, the elements within the framework are interrelated, in so far as they have a common objective, and cover both the strategic and tactical steps the country wants to take to achieve its environmental, climate and socio-economic objectives up to the middle of the 21st century.

Vision 2050

Vision 2050 guides Rwanda's long-term objectives and ambitions towards "*the Rwanda we want*". This vision for Rwanda is encapsulated by the two overarching socio-economic objectives, making Rwanda a upper middle-income country by 2035 and a high-income country by 2050. These growth goals are combined with aspirations of improving the quality and standards of living in the country.

The vision sets out five pillars through which the country's mid-century ambitions are channelled. These are: **human development**, **competitiveness and integration**, **agriculture for wealth creation**, **urbanization and agglomeration**, and **accountable and capable state institutions** (Government of Rwanda, 2020).

Vision 2050 acts as the essential framework for planning and policymaking, steering the endeavours of various stakeholders involved in Rwanda's development. (Government of Rwanda, 2020).

National Strategy for Transformation (NST1)

The National Strategy for Transformation spanning over 2017 – 2024) is a mid-term development strategy designed as a vehicle towards Vision 2050.

The strategy is built on three pillars driving change and development namely: **economic transformation**, **social transformation**, and **transformational governance**. In addition to these three areas of intervention, the strategy highlights several cross-cutting areas in which action is required to attain inclusive and sustainable development. These are: capacity development, HIV/AIDS and non-communicable diseases, disability and social inclusion, gender and family promotion, regional integration and international positioning, disaster management, environment, and climate change.

Although NST1 is a vehicle for Vision 2050, it is itself implemented through Sector Strategic and District Development plans.

Green Growth and Climate Resilience Strategy (GGCRS)

Published in 2011 and revised in 2022, the GGCRS is a long-term framework designed to implement and promote green growth in the country by fostering economic development while ensuring that natural assets continue to provide resources and environmental services the county and its population. Furthermore, it guides Rwanda's low carbon and climate resilience development.

In 2018 an evaluation was conducted to determine the key achievements, shortcomings, and lessons learned in implementing the GGCRS 2011. The evaluation showed significant progress having been made over the first implementation period for programmes related to industry and the private sector, forestry and agroforestry, and disaster management and disease prevention. Other programs, such as those related to agriculture, water use management, transport, and urbanisation also experienced progress over the seven-year implementation period, but further modifications and alignments were required to fully catalyse their green growth (Ministry of Agriculture and Animal Resources (MINAGRI), 2018). Finally, despite significant progress having been made in some respects, others still required considerable attention and work.

These learnings were incorporated into the revised GGCRS published in 2022. The new version was aligned with multiple international agreements such as Agenda 2030 and Agenda 2063, as well as Vision 2050 to make sure that Rwanda's socioeconomic development harnesses low-carbon and green economic innovations and pushed the country's climate resilience.

The GGCRS has three main strategic objectives: (1) to achieve energy security and a low carbon energy supply, (2) to achieve sustainable land use and water resource management, and (3) to ensure social protection, improved health and disaster risk reduction.

To achieve this, the plan identifies four thematic programme areas, each of which having two programmes of action. These are comprised of several Strategic Interventions that balance action between green growth, mitigation, and adaptation (see Table 14) (Government of Rwanda, 2022).

The implementation of the revised GGCRS is estimated to require an average of US$2 billion annually, of which US$700 million will come from the government.

Nationally Determined Contributions (NDCs)

As a party to the Paris Agreement, Rwanda is required to submit its NDCs every five-years to the UNFCCC. These outline the climate action to be undertaken in the country over the following five years.

The NDCs proposed mitigation interventions are said to reduce GHG emissions by 16% with only domestic support, and up to a further 22% with international support and funding. **From 2020 to 2030 a total of US$ 5.67 billion would be required**, US$ 2.01 billion from domestic sources, and US$3.67 billion from international sources (Republic of Rwanda, 2020).

National Biodiversity Strategy and Action Plan (NBSAP)

Rwanda's NBSAP develops a framework for conservation, sustainable use, and equitable sharing of benefits from biodiversity use and ecosystem services. Moreover, it provides a framework for maintaining the necessary environmental conditions to reduce poverty, ensure sustainable development and food security in the country (Republic of Rwanda, 2016).

It outlines four major policy objectives, (i) to improve environmental stability for natural ecosystems and their biodiversity, (ii) to restore degraded ecosystems and maintain equilibrium among biological communities, (iii) to establish an appropriate framework for access to genetic resources and equitable sharing of benefits arising from biodiversity use and ecosystems services, and (iv) to improve policy, legal and institutional framework for a better management and conservation of national biodiversity. To effectively direct, design and implement actions contributing to the achievement of these four objectives, the plan set out 19 specific targets to be achieved during the implementation process (Republic of Rwanda, 2016).

Sectoral policies

Although the above-mentioned strategies compose the main strategic documents guiding Rwanda's green development up to 2050, the country also has several sectoral policies which regulate and govern key IGE sectors in the country. Listed below are several key sectoral policies:

National Policy on Environment and Climate Change (2019): Its goal is to ensure that Rwanda maintains a clean and healthy environment capable of withstanding climate variability and change, thereby fostering a high quality of life for its society.

Land Policy (2019): Its aim is to ensure mid and long-term efficient land use, planning, management, and administration for sustainable development. Furthermore, it ensures equal land rights and security on land tenure.

Agriculture Policy (2018): It aims to ensure food and nutrition security for Rwandans by leveraging modern agribusiness technologies, professionalizing farmers in production, commercializing outputs, and fostering a competitive agricultural sector. It is also committed to increasing the resilience of agricultural livelihoods and of the production system to climate variability.

Forestry Policy (2018): It aims to govern and regulate the country's forest resources to contribute to the country's development goals of sustainable, low-carbon and climate resilient livelihoods for present and future generations.

Wildlife Policy (2013): Its aim is to sustain and maintain wildlife resources in a healthy ecosystem that benefits a dynamic and vibrant economy for communities and the country.

National Disaster Risk Reduction and Management Policy (2023): It aims to build a country resilient to disaster risks and proficient in emergency management, through enhanced capacities at national and local levels for minimizing disaster risks and ensuring effective response and recovery.

National Industrial Policy (2011): Its aim is to promote the industrial and advanced services sectors, pushing for increased off farm jobs. It also aims to increase domestic production for local consumption, improve export competitiveness and create and enabling environment for industry.

Revised National Gender Policy (2021): Its aim is to ensure that gender gaps across sectors are addressed through accelerating effective gender mainstreaming, gender responsive interventions, and gender accountability mechanisms. It also aims to increase women's access to economic resources and opportunities and ensuring that women and men are free from any form of gender-based violence and discrimination.

National Policy for Water Resources Management (2011): Its aim is to effectively manage and develop Rwanda's water resources in an integrated and sustainable manner to secure and provide sufficient quality water for the present and future generations.

Water Supply Policy (2016): Its aim is to ensure sustainable, equitable, reliable and affordable access to safe drinking water for all Rwandans, as a contribution to improving public health and socio-economic development by planning, building and operating water and sanitation services in a sustainable, efficient and equitable manner.

National Urbanization Policy (2015): It sets the framework for the governmental, non-governmental and private interaction in the country's urbanization process in support of sustainable development. It sets the principles for coordinated strategies and actions supported by urban planning documents, development of urban areas at high density, inclusive urban areas providing quality of life and conditions for economic growth.

Housing Policy (2015): It strives for universal access to sustainable housing in Rwanda, irrespective of income or location. It promotes private sector involvement to meet growing housing demand affordably and supports residents' purchasing power through savings and accessible financing models. Emphasizing efficient land use, the policy integrates land use and urban planning principles into housing development.

Pandemic recovery policies

In 2021 the Government of Rwanda unveiled two major initiatives designed to support the economy and Rwandan's out of the post-COVID crisis (Government of Rwanda, 2021).

Initiative 1: Economic Recovery Fund (ERF). The ERF managed by the National Bank of Rwanda, supports the recovery of businesses hardest hit by COVID-19 so that they can survive, resume operations and safeguard employment, thereby cushioning the economic effects of the pandemic. Moreover, it promoted the expansion of domestic production of essential goods during the pandemic and in the post-COVID period thereafter.

Initiative 2: Manufacture and Build to Recover Program (MBRP). The MBRP was developed to boost the post-COVID recovery of the manufacturing, agri-processing, construction, and real estate development sectors in Rwanda. The program's main objective is to reduce set up and operational costs for existing and new companies. This reduction cost is achieved by providing specific fiscal incentives to eligible companies in these sectors.

3.1.2 Social and employment projections, investment needs, and key national and international institutions

Social and employment projections

Over the two main periods of the Vision 2050, up to 2035 and up to 2050, Rwanda's population is expected to increase to 18.04 million and 23.03 million respectively. Moreover, crude birth rates are projected to drop considerably from 2023 to 2035 and 2050, while life expectancy increases up to 72 years by 2050, up over 2 years from its 2022 level (MINECOFIN & NISR, 2023). The forecasted reductions in births and the increased life expectancy indicate Rwanda's plans to develop and improve the social and living conditions of its population, further buttressed by the country's objectives to eradicate poverty by 2050.

One of the main ways of both reducing poverty and increasing social development is by promoting gainful, decent employment among the population. Although projections up to 2050 have not been found, (Newfarmer & Twun, 2022) indicate that by 2035 Rwanda will have added 4 million new jobs at an annual employment growth rate of 3%. The sectors expected to grow most are construction and tourism. Importantly, however, in addition to increasing the number of jobs, the skill level of these jobs is also set to increase. Higher skill level jobs provide opportunities for higher earning for workers. Consequently, not only will more Rwandan's be employed in 2035, but – with the right foundations in place such as effective social dialogue –their employment conditions and income generation is also set to improve (Newfarmer & Twun, 2022). To achieve this shift towards higher income generating jobs small businesses need to be supported as labour markets transform and entrepreneurial activity strengthens. Policies should reflect and respond to the diversity of new companies, in terms of size, structure and sector. Moreover, access to finance should be made easier and the right conditions created to allow enterprises to flourish. Working conditions should be improved and MSMEs helped to move to the formal economy (ILO).

This shift towards higher income generating jobs is critical to the achievement of SDG 8. Decent Work and Economic Growth, moreover, putting job creation at the heart of economic policy-making and development plans, we will not only see increasing decent work opportunities but also more robust, inclusive, and poverty-reducing growth. Job-centred economic growth creates a virtuous circle that is as good for the economy as it is for people and one that drives sustainable development (ILO).

Investment needs

Rwanda's investment requirements to fully harness its green growth potential and act to deal with the impacts of climate change have been estimated in the revised GGCRS. Table 14 in Annex 1 highlights the strategic interventions set out by the GGCRS. The GGCRS indicates that Rwanda will require an investment of over US$ 55 billion up to 2050 to effectively implement the strategic interventions it recommends.

Throughout its development plans and strategies, Rwanda stresses the primary and driving role played by the private sector in transforming and pushing socioeconomic development in the country. Unsurprisingly, the investment requirements presented by **the GGCRS also call for the private sector to be the leading source of investment**. The public sector is expected to provide one third of the required funds (US$ 17.6 billion), with the private sector providing the rest (US$ 35.7 billion; 67% of total investment).

The US$ 55 billion indicated above covers green growth and climate action. Disaggregating this figure between the different elements (i.e., adaptation, mitigation, and green growth) shows the investment requirements for each element up to 2050. Interventions only promoting green growth will require a total investment amount of US$ 10.3 billion (see Table 4). While interventions promoting green growth and any climate action category (adaptation [US$ 3.6 billion], mitigation [US$ 2.9 billion], or both [US$ 4 billion]) require a further US$ 10.5 billion. Consequently, **green growth-related interventions in Rwanda will require a total investment of US$ 20.8 billion up to 2050**.

Table 4: Investment requirements by type of action (US$ million)

	Amount	% of total investment
Adaptation	9,167	17%
Mitigation	7,210	13%
Green Growth	10,329	19%
Adaptation + Mitigation	17,817	32%
Adaptation + Green Growth	3,565	6%
Mitigation + Green Growth	2,911	5%
Climate action + Green Growth	4,029	7%

Source: (Government of Rwanda, 2022)

Key national and international institutions

The GGCRS also highlights the main national and international institutions working towards Rwanda's green growth and economy objectives.

The strategy highlights the work of 8 government ministries coordinating green growth interventions and a further 20 public and private agencies responsible for their implementation. Table 11, see Annex 1, indicates the key national institutions as identified by the GGCRS. The Development Bank of Rwanda has been added to this list.

Rwanda has received international financial and technical assistance to achieve its climate action and green development objectives. Table 12, see Annex 1, shows the **funding and technical partners** highlighted in Rwanda's Biennial Update Report, and examples of the initiatives they have provided funds for.

The main point of collaboration between Rwanda and the international community is funding. As all of Rwanda's climate and green growth strategies and policies indicate, the country requires significant investment to achieve its climate and green economy goals. This financial support requirement is further shown by the GGCRS, which references international agencies that provide climate action and green growth funding. The GGCRS identifies over 30 international climate funds accessible to Rwanda to achieve the strategies' goals.

Importantly for PAGE, **three of its five UN partner agencies (UNDP, UNEP and UNIDO) already provide both financial and technical assistance to Rwanda to promote its green development**. Important for any future work is that **these institutions already have open and working channels which can be further utilized and taken advantage of to further promote inclusive green growth in Rwanda**.

In addition to the international and governmental actors identified by the GGCRS, Table 11 also highlights key civil society organizations and academic institutions to be engaged in the IGE transition. Organizations include employer and workers organizations and the University of Rwanda.

3.1.3 Policy misalignments

The interconnection between all of Rwanda's development policies means that green growth priorities have been integrated into all of Rwanda's development strategies, not just the GGCRS. As such, the NST-1 and the strategies derived from it all integrate green growth priorities into their actions and activities. However, it is important to note that these policies were developed in 2017, and as such the green growth needs and agenda in Rwanda has changed over the last six years, meaning that the initiatives and objectives set out in the strategies and plans may not be up to date or misaligned with current green growth priorities.

Below are two examples of misalignments across the sector strategic plans.

Another example involves the Transport Sector Strategic Plan 2018- 2024 (TSSP 2018-2024), which does not include any mention of e-mobility among its key objectives, despite both the GGCRS and the NDCs including e-mobility as cornerstones to greening the transport sector, one of the country's largest GHG emitters.

A final example involves the Water and Sanitation Sector Strategic Plan 2018- 2024 (WSSSP 2018-2024) which does not include green priorities in its objectives and targets. The objectives and targets set out by the plan focus on increasing access to both water sources and sanitation facilitates in the country, both critical steps in Rwanda's socio-economic development. Unfortunately, this focus omits green priorities related to the water sector such as those presented in the GGCRS and the NDCs.

Despite these misalignments and omissions of green priorities by and large NST-1 and the strategies and plans that derive from it properly integrate the country's green growth priorities. The main problem is that these plans were developed in 2017 and as such have not been able to evolve and adapt to Rwanda's changing green growth and economy needs and agenda.

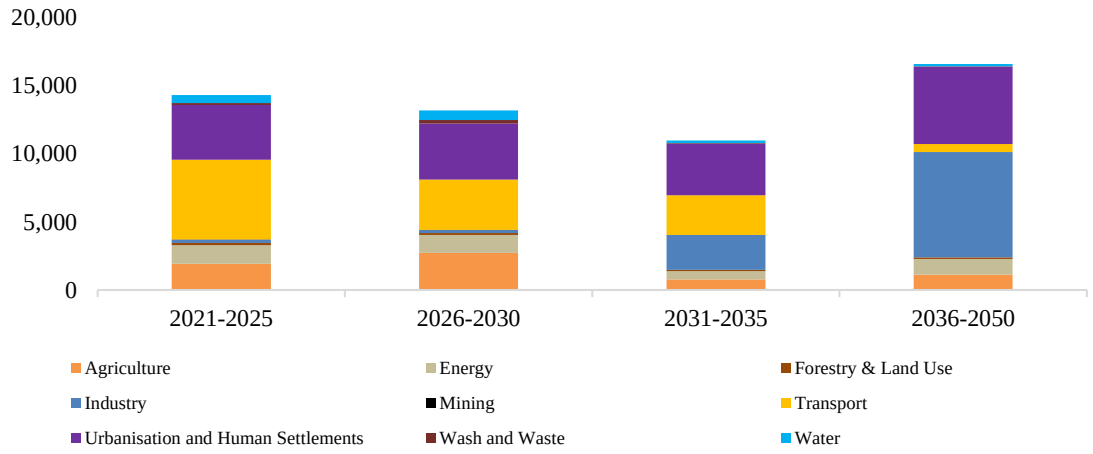
Importantly, however, policy and decision makers in Rwanda have recognized these misalignments and divergences between the current strategies and the country's present green priorities. And, as a result, have called for the next development strategy cycle, starting in 2025 and running to 2031, headlined by the National Strategy for Transformation 2025 – 2031 (NST-2), to further integrate green growth priorities into the new national strategy and to further align NST-2 with the revised Green Growth Climate Resilience Strategy (GGCRS).

The next cycle also provides an opportunity to align the next UN Sustainable Development Cooperation Framework (UNSDCF) for Rwanda commencing in 2024/2025 with the NST-2. This will ensure that the next UNSDCF integrates the country's green growth priorities and contributes to the realization of the Sustainable Development Goals (SDGs).

3.1.4 Spending allocation mechanisms to the green economy: progress and gaps

The ambitions set out across Rwanda's **green development framework** requires considerable investment. For example, **for all GGCRS initiatives to be implemented a total of US$ 55.03 billion is required up to 2050** (see Figure 7). **The public sector is expected to provide US$ 17.6 billion, with the private sector providing US$ 35.7 billion**.

Figure 7: Spending required per sector to implement GGCRS initiatives (in US$ million)



Source: Own elaboration using (Government of Rwanda, 2022) *data*

In the 2013-14 financial year public investment in the environment and climate change amounted to around US$ 2.4 billion (FRW billion 1,651.2). Over the subsequent six years, this investment increased to US$ 3.05 billion (FRW billion 2876) (REMA, 2022). **These investment figures are far from what the public sector must invest up to 2050 (i.e. US$ 17.6 billion) if the country wants to achieve its green growth goals**.

Table 5 below, highlights the annual and seven-year average proportion of total public expenditure towards adaptation, mitigation, and environmental interventions. The data shows that adaptation received the most amount of public investment over the seven-year period. While environment also received more than mitigation. Interestingly, the COVID-19 pandemic had little impact on government spending on the environment and climate change. The increase in mitigation expenditure in 2014-15 was caused by government investment in geothermal resource development (REMA, 2022).

Table 5: Disaggregated expenditure on climate change interventions as a % of national government expenditure

Financial Year	Adaptation	Mitigation	Environment	Total
2013-14	1.6	0.7	1.7	4.0
2014-15	1.1	2.5	1	4.6
2015-16	1.1	1.2	1.3	3.6

2016-17	3.3	0.2	1.5	5.0
2017-18	2.7	0.3	1.1	4.1
2018-19	3.0	0.5	1.5	5.0
2019-20	1.9	0.3	1.9	4.1
Average	2.1	0.8	1.4	4.3

Source: (REMA, 2022)

Table 13 in Annex 1 disaggregates the public investment into ECC by government institutions. Unsurprisingly, **institutions related to climate and the environment spend the highest proportion of their funds on environment and climate change**. Interestingly, however, organisations such as the Rwanda Mines, Rwanda Mining Board (RMB), the Ministry of Emergency Management (MINEMA) or the Rwanda Land Management and Use Authority (RLMU) are among the lowest proportionate spenders on the environment and climate change despite their activities being related to the area.

A further relevant national actor is the National Fund for Environment and Climate Change (FONERWA), designed to mobilize and disburse climate funding to public, private and community organizations. **In the 2020-21 financial year, the fund had a budget of around US$ 14.03 million**. US$ 3.07 million was distributed to project implementation partners to expediate project implementation. Of this money, 47% went to Government of Rwanda projects, 11% went to district projects and 42% went to civil society organisations, with the private sector not receiving any funding from FONERWA. **The fund has also been able to mobilize considerable international climate finance, with development partners committing a total of US$ 217 million from 2013 to 2021**. Of these funds, FONERWA has received US$ 133 million, and it has disbursed US$ 122.9 million (FONERWA, 2021). **More international climate finance needs to me mobilized to make a real contribution to the green investment needs estimated in the GGCRS**.

Comparing resources required with resources mobilized shows that Rwanda has a 95% adaptation funding gap (REMA, 2022). This lack of funding and finance has also been identified by stakeholders as one of the main barriers to green economy growth in the country. Rwanda needs to look to establish new and innovative ways to finance and distribute its climate and green growth activities, helping to overcome its considerable financial gap.

3.1.5 Progress and gaps towards an inclusive green economy

Over the last decade, **Rwanda has made considerable progress in its development of its IGE and using green growth as a vehicle for further socio-economic development**. However, **most of the targets defined in the main policies driving Rwanda's green economy development have not been met**.

In 2022, the **NST-1 Mid-Term Review** was published. This document assesses the progress made up to the end of 2021 towards the targets set out in the strategy. Table 15 in Annex 1 highlights the progress made over the first 4 years of implementation across the NST-1's outcomes. As is shown in the table's final column, **most targets for 2021 have not been met**.

The level of progress and target completion showed by the review raises concern for the remainder of NST-1's implementation period, and its successor strategies as current development is significantly off track from where it should be. If the country's socio-economic aspirations are to be materialized then these trends will need to be reversed starting in the years up to 2024 and then further corrected with the implementation of the NST-2 starting in 2025.

The NST-2, which is currently being developed needs to learn from the lessons of NST-1. Consequently, it is important for policy and decision makers to not only focus on the indicator results but also on the reasons why the strategy has not been able to achieve the expected development. Using this information, policy and decision makers will need to design and implement NST-2 in such a way to overcome its predecessor's constraints. Using this information and adapting NST-2 accordingly, **Rwanda can use NST-2 to get its development process back on track**.

Furthermore, **the development of the new strategy gives Rwanda the opportunity to further integrate Rwanda's inclusive green growth priorities into the new strategy**, in addition to increasing its alignment to the GGCRS.

The 2022 Global Gender Index ranks Rwanda 9th in the world. However, it is ranked 79th in the world when ranking economic participation and opportunity. **Women still face significant economic participation and opportunity gaps**. Despite the fact that Rwanda's women are as active as men in the labour market, their income and wages remain significantly lower (23.7% and 38.9%, respectively) compared to men (World Economic Forum, 2020). Moreover, **youth unemployment** is 26.5% compared with over 35's whose unemployment rate of 15%. Comparing incomes, youths also earn considerably less than their elder counterparts. (National Institute of Statistics of Rwanda, 2023). Although historically people with disabilities have faced chronic underdevelopment in the country, the Government of Rwanda has tried to integrate the development and empowerment of Rwanda's disabled population in its development agenda (Ministry of Local Government, 2021).

The data shows that although there has been significant work both in the development of policies and frameworks and the implementation of these to foster an IGE in Rwanda, the outcomes of these policies seem to not have advanced the socio-economic standards of all in the country. Inclusion metrics show that there are still significant gaps between different groups in the country. **Although Rwanda is developing a green economy, it is important for future endeavours to make sure that this development improves the lives and standards of living of all Rwanda's**.

3.1.5.1 Select SDGs: further progress needed

To localize the overall Agenda 2030 set out by the UN, the GoR integrated the SDGs into the national development agenda. Consequently, there is considerable **alignment between the action areas and objectives set out in these national or sub-national development strategies and the SDGs**. However, **progress towards the achievement of the SDGs has been lack lustre.**

Table 6: Alignment of NST1 Priority Areas against SDGs

SDG	NST1 Priority Area
Goal 1. End Poverty in all its Forms Everywhere	Promote Resilience and Enhance Graduation from Poverty and Extreme Poverty
Goal 2. End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture	Modernize and increased productivity of agriculture and livestock Eradicating Malnutrition
Goal 3. Ensure Healthy Lives and Promote Well-Being for All at all Ages	Enhancing the Demographic Dividend through Ensuring Access to Quality Health for All
Goal 4. Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All	Enhancing the demographic dividend through improved access to quality education Establish Rwanda as a globally competitive knowledge-based economy
Goal 5. Achieve Gender Equality and Empower all Women and Girls	Gender equality and family promotion as a cross cutting area of NST1
Goal 6. Ensure Availability and Sustainable Management of Water and Sanitation for All	Promote sustainable management of the environment and natural resources to transition Rwanda towards a green economy
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	Moving towards a modern Rwandan household
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Create 1,500,000 decent and productive jobs for economic development Promote industrialization and attain a structural shift in the export base to high-value goods and services
Goal 9. Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation	Promote industrialization and attain a structural shift in the export base to high-value goods and services with the aim of growing exports by 17% annually
Goal 10. Reduce Inequality Within and among Countries	Rwanda continues the integration pathway to regional integration and international positioning

	through promoting intra Africa and global trade by advocating for elimination of Non-Tariff Barrier; and further mobilization of resources to implement joint infrastructure flagship projects to facilitate trade
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	Moving towards a modern Rwandan household. Accelerate sustainable urbanization 35% by 2024 from 18.4% in 2016/2017 Promote sustainable management of the environment and natural resources to transition Rwanda towards a green economy
Goal 12. Ensure Sustainable Consumption and Production Patterns	
Goal 13. Take urgent action to combat climate change and its impacts	
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Reinforce Rwandan culture and values as a foundation for peace and unity Enhanced peace and security Strengthen justice, law and order
Goal 17. Strengthen the means of Implementation and Revitalize the Global Partnership for Sustainable Development	Increase domestic savings and position Rwanda as a hub for financial services to promote investments Strengthen diplomatic and international cooperation to accelerate Rwanda and Africa's development Strengthen capacity, service delivery and accountability of public institutions Increase citizens' participation, engagement and partnerships in development

Source: (Republic of Rwanda, 2023)

Rwanda's progress towards the 2030 SDG targets has mostly stagnated in the last three years resulting in a global ranking of 126 out of 166 countries. Of the 16 domesticated SDGs, four show moderate improvement including: Gender Equality; Infrastructure and innovation; climate action, and affordable clean energy. Only one, SDG 8: decent work and economic growth shows a decrease. The remaining nine SDGs are stagnating. This low progress presents high to moderate risk of impact of the low achievement of the SDG targets. The low performance is mostly attributed to the volatile and unpredictable environment in the last three years that have severely impacted Rwanda's developmental progress trajectory and call for concerted efforts that address the root and persistent causes of stagnation, develop robust early warning systems that ensure preparedness, timely and responsive action

Looking specifically at several SDGs related to IGE, Rwanda's green economy, development and growth situation can be further evaluated.

4. Quality Education

SDG 4. **Quality Education aligns with the social transformation pillar outlined in the NST1**. Moreover, it is related to the cross-cutting areas included in the strategy (Republic of Rwanda, 2023). According to (Sachs, Lafortune, Fuller, & Drumm, 2023), the achievement of SDG 4 is facing major challenges in Rwanda. Consequently, its progress towards its 2030 targets have stagnated or are increasing at less than 50% of the required rate.

8. Decent Work and Economic Growth

SDG 8. Decent Work and Economic Growth aligns with the economic transformation pillar outlined in the NST1. Moreover, it is related to the cross-cutting areas included in the strategy

(Republic of Rwanda, 2023). According to (Sachs, Lafortune, Fuller, & Drumm, 2023), the achievement of SDG 8 is facing major challenges in Rwanda, and worryingly the indicators measuring progress are showing a worsening situation in the country, this is all working against the achievement the SDG by 2030.

9. Industry, Innovation, and Infrastructure

SDG 9. **Industry, Innovation, and Infrastructure aligns with the economic transformation pillar outlined in the NST1** (Republic of Rwanda, 2023). According to (Sachs, Lafortune, Fuller, & Drumm, 2023), the achievement of SDG 9 is facing major challenges in Rwanda, however, indicators measuring progress are showing moderately improving conditions in the country. This means that progress is being made, but the goal is not on track for 2030.

12. Responsible Consumption and Production

SDG 12. Responsible Consumption and Production aligns with the economic transformation pillar outlined in the NST1 (Republic of Rwanda, 2023). According to (Sachs, Lafortune, Fuller, & Drumm, 2023), challenges to the achievement of SDG 12 remain in Rwanda but these challenges are not significant. However, the values shown by the progress tracking indicators show that progress towards the achievement of the goal have stagnated or are increasing at less than 50% of the required rate.

13. Climate Action

SDG 13. **Climate Action aligns with the cross-cutting areas included in the NST1** (Republic of Rwanda, 2023). According to (Sachs, Lafortune, Fuller, & Drumm, 2023), SDG 13 is the only SDG to have been achieved by Rwanda.

17. Partnerships for the Goals

SDG 17. **Partnerships for the Goals aligns both with the economic and governance transformation pillars outlined in the NST1** (Republic of Rwanda, 2023). Moreover, it is related to the cross-cutting areas included in the strategy. According to (Sachs, Lafortune, Fuller, & Drumm, 2023), the achievement of SDG 17 is facing significant challenges in Rwanda, because of this the indicators are showing only moderate improvements in the country. This situation is preventing the country from achieving the targets set out by the goal by 2030.

3.1.6 IGE learning opportunities

As Annex 2 shows, sectoral stakeholders have identified learning points from the previous policy development cycle which they have implemented in the current policy development process.

The main learning opportunity in Rwanda relates to **capacity development**. The analysis has shown that although Rwanda has the intent to implement an IGE it does not possess the capacity to effectively develop one. This lack of capacity is manifested in institutions and at the individual level.

The country has historically had few sustainable development education programs. The latest initiative was launched in 2010, and ran up to 2015, when REMA developed the Environmental Education for Sustainable Development strategy to raise awareness and promote education to encourage participation in sustainable environmental initiatives, develop the capacity of future leaders to ensure commitment to sustainable development, integrate environmental and sustainability issues into school curricula, enhance media capacity to report on sustainable development, and improve the quality and relevance of higher education to address local sustainable development challenges (REMA, 2010). However, problems with the implementation of the strategy meant that it had limited success, and few Rwandans were able to develop their green capabilities.

Addressing and overcoming this lack of capacity is the base from which the other two main barriers (lack of funding and lack of coordination) for the expansion of an IGE can be overcome. As such, the country needs to look at past and present capacity development initiatives it has

implemented and assess their results and understand why these results were as they are. From there they will be able to separate the programs strengths from their weaknesses, thus allowing them to learn from previous mistakes and replicate successes in future policy developments.

Rwanda should also look at how other countries and international actors are addressing capacity issues related to an IGE and how the lessons learned in those contexts can be applicable to Rwanda. Learning how best to increase green capacity across intuitions and across the population not only contributes to overcoming of one of the main green growth barriers in the country, but also contributes to overcoming the other major barriers in Rwanda: lack of funding and lack of coordination. Increasing community and institutional knowledge and know-how surrounding the green economy allows actors to distribute resources more efficiently, as they will be able to identify priorities and the most impactful investments. Moreover, a similar thing happens with coordination, building capacity allows for more efficient and effective coordination systems to be developed, one which recognizes and promotes synergies between sectors, departments and actors but prevents overlaps between them. Given the fundamental and cross-cutting nature of green capacity development, the construction of a comprehensive and systematic green capacity development strategy will ensure that all actors are aligned and contribute to a shared vision and objectives.

Building individual and community capacity has the added benefit of educating and preparing the Rwandan workforce on the topics and skills related to an IGE. As a result, IGE capacity development initiatives tailored to the citizens will allow for the Rwandan workforce to have the skills and knowledge necessary to gain employment and excel in the expanding national green economy.

Learning from its own experiences and those of other countries will allow Rwanda to develop capacity development programs based on its own and foreign best practices, thus maximizing the impact of the initiatives. The outcome of such programs has manifold benefits for the country and its development of an IGE. Most importantly, it helps overcome the three main barriers and constraints to the development of an IGE in the country, while also providing the population with the skills and knowledge Rwanda required over the coming decades.

3.2 Sectoral and thematic level analysis

This section provides a detailed analysis of key thematic aspects and sectors in the IGE transition in Rwanda. These themes and sectors have been selected based on their contribution to national GDP and employment, their contribution to the country's GHG emissions, their green growth potential and based on their trans-sectoral relevance for the IGE transition.

3.2.1 Thematic analysis

3.2.1.1 Green jobs in the IGE transition

The ILO defines green jobs as "*decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency*" (ILO, 2016). Green jobs help improve energy and resource use efficiency, reduce GHG emissions, reduce waste and pollution, protect, and restore ecosystems, and support adaptation to climate change (ILO, 2016).

There is a **lack of data on current green jobs in Rwanda** (GGGI, 2022). This means that exact estimates for the number of green jobs in the country are unavailable, although the Rwanda Green Fund (FONERWA) indicates that its investments have created 176,188 green jobs since its establishment in 2012 (FONERWA, n.d.). In 2021-2022, investments made by the fund created 23,158 green jobs (FONERWA, 2023).

The **growth potential of green jobs** in Rwanda is shown by (Grafakos, Senshaw, Quezada, & A., 2020), (GGGI, 2022), and (World Bank, 2023). As part of their program in Rwanda, the GGGI is expected to invest US$ 34 million from 2017-2030. This investment into the urbanization sector

and its corresponding sub-sectors is expected to create 15,417 green jobs over the implementation period (GGGI, 2022).

(Grafakos, Senshaw, Quezada, & A., 2020) look at the employment generation capacity of renewable energy investments in line with the achievement of Rwanda's original NDCs for 2030. The report assesses the jobs created by investments in renewable energy under two scenarios. The authors indicate that under the low ambition scenario the achievement of the original NDCs unconditional target would create a total of 14 thousand direct jobs by 2030. Under the high ambition scenario, this figure increases to 31 thousand direct jobs created by 2030. 69% of this employment will be created in the construction and installation of renewable technologies and a further 22% from their operation and maintenance.

Finally, (World Bank, 2023) indicates that the Rwandan tourism sector has significant green employment potential. The report indicates that tourism and more specifically nature-based tourism has the potential to further drive Rwanda's socio-economic development. Nature-based tourism has grown rapidly in the country, with it offering unique biodiversity and wildlife. Nature-based tourism has a high employment generation capacity: for every US$ 1 million that nature-based tourism activities inject into the Rwandan economy 1,328 new jobs are created.

A study by (Newfarmer & Twun, 2022) estimates that 9.8 million Rwandan's will be under employment by 2035. This means that an additional 6 million jobs will be created in the country over the following 12 years (starting 2023), meaning that on average half a million new jobs will be created in Rwanda up to 2035. **The sectors with largest annual growth rates over this period are ICT, agro-processing, and tourism**. Using the sectoral GDP annual growth rates and the sectoral women employment elasticity provided by (Newfarmer & Twun, 2022) the main growth sectors for female employment are agriculture and agro-processing, tourism, formal trade, and manufacturing. Furthermore, the study indicated a **marked shift away from low skilled to skilled labour**.

Recognizing the importance of the expansion of decent work in the country, the Government of Rwanda in collaboration with the ILO developed the **Decent Work Country Programme**, which ran from 2018 to 2022. This programme worked towards promoting decent work in Rwanda, this concept is defined as "*the aspirations of people to build an environment in which every woman and man exercises his/her right to work in conditions of freedom, equity, security and human dignity*" (ILO, 2018). To achieve this the programme has three overarching priorities: Employment promotion for Youth, Women and PwD, Social Protection for All, and Promotion of Social Dialogue and Rights at work. To achieve these priorities the programme aimed at developing and implementing skills development programmes for youths, women and PwD, establishing a sectoral minimum wage guarantee, strengthening labour market institutions and increase engagement with social partners to support effective social dialogue and sound industrial relations, increasing protections of workers' and workers' rights representatives in the workplace, among several other outcomes (ILO, 2018).

Furthermore, the Government of Rwanda also launched the **National Skills Development and Employment Promotion Strategy (NSDEPS) 2019-2024**. This strategy aims at developing and increasing the employability of Rwandans while simultaneously promoting increased employment in the country.

In addition to promoting demand-driven skills, enterprise, and employment schemes, and pushing for significant private sector involvement, the strategy makes a key point of accessing all sectors of society with this plan. With both women and rural communities in Rwanda traditionally having less formal education and training and less access to the labour market, the NSDEPS supports inclusive growth by ensuring that marginalized communities can also access these programs and reap their benefits.

In June 2023, the Resolution[4] adopted by 111th Session of the International Labour Conference (ILC) has endorsed the ILO ***Guidelines for a just transition towards environmentally sustainable economies and societies for all***[5], which provides central reference for policymaking and a basis for action. Their implementation should be accelerated and scaled up through a reinvigorated framework for action consisting of four interrelated and mutually supportive elements namely: (i) promoting inclusive, sustainable, and job-rich economies; (ii) advancing social justice; (iii) managing the process of just transition; and (iv) financing a just transition. A **just transition** is central to delivering sustainable development in its economic, social, and environmental dimensions and to addressing the linkages between them. It is instrumental in taking ambitious action on environmental and climate change and pursuing the realization of the goals and commitments of the Paris Agreement and, as appropriate, other international environmental agreements relevant to a just transition. Ensuring a just transition is important for all countries at all levels of development, and for all economic sectors, the formal as well as the informal economy, and should be in line with national development priorities.

It promotes environmentally sustainable economies in a way that is inclusive, by creating decent work opportunities, reducing inequality and by leaving no one behind. Just transition involves maximizing the social and economic opportunities of climate and environmental action, including an enabling environment for sustainable enterprises, while minimizing and carefully managing challenges. It should be based on effective social dialogue, respect for fundamental principles and rights at work, and be in accordance with international labour standards. Strong social commitment and consensus is fundamental. Social dialogue must be integral to policymaking and implementation.

3.2.1.2 Human capacity in the IGE transition

Although the development of a systematic assessment of green capacitates required for the IGE has not been undertaken in this study, the Government recognizes that to achieve an IGE an educated and skilled population is required. **In Vision 2050, the government identified human development as one of its areas of work**, including access to quality education, which is expected to be universal by 2050. The scope and quality of education is an important foundation that will allow the country to develop the equitable and sustainable economy it hopes for.

Institutions play a key role, as facilitators in the process of transmitting and raising awareness of the strategies and knowledge on these issues. Environment for Development (EfD) is one such organization. It is a global network of research centres in 13 countries, through which it develops solutions to the most pressing environment and development challenges, contributing to the effective management of the environment and the development of policies to reduce poverty and the effects of climate change. Through its IGE program, launched in 2020, it aims to strengthen capacity in East Africa, focusing on increasing knowledge and skills on IGE and developing and applying economic policy instruments to achieve a just green transition (EfD, 2023).

The IGE program implemented by local teams, made up of an IGE lead, a policy engagement specialist and a research fellow, comprises five distinct work packages. The first involves aligning IGE policy needs with scientific evidence. The second focuses on IGE in-service trainings, enhancing skills and knowledge within the workforce. The third fosters peer-learning to implement IGE effectively. Social inclusion, acceptance, and accountability of green economy reforms form the core of the fourth work package. Lastly, the fifth package aims at building an IGE professional network, creating a vibrant community of practice at the local and regional levels (EfD, 2023). The program focuses primarily on **training public officials and agents of national government ministries and agencies**. In 2021, it had reached and engaged with 50 senior civil servants in Ethiopia, Kenya, Rwanda, Tanzania, and Uganda, with the programme now having been expanded and extended for a further 5 years (EfD, 2022). Such work and training

[4] ILC.111/Record No. 7A (ilo.org): https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_885375.pdf

[5] https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_432859.pdf

is important for Rwanda, as a key implementation barrier is the lack of training and expertise of actors involved in the implementation of initiatives. This prevents a coordinated and effective implementation of the green goals. The program's work in the country is conducted through MINECOFIN with the support of the EfD (EfD, 2023).

The Country Strategic Opportunities Program (COSOP) of the International Fund for Agricultural Development (IFAD) covers an action plan for the period 2019-2024 in Rwanda, which has been prepared in accordance with PSTA 4. It proposes that by developing the capacities and skills of rural men, women and youths, it will contribute to the transformation of the agricultural sector and enhance its resilience.

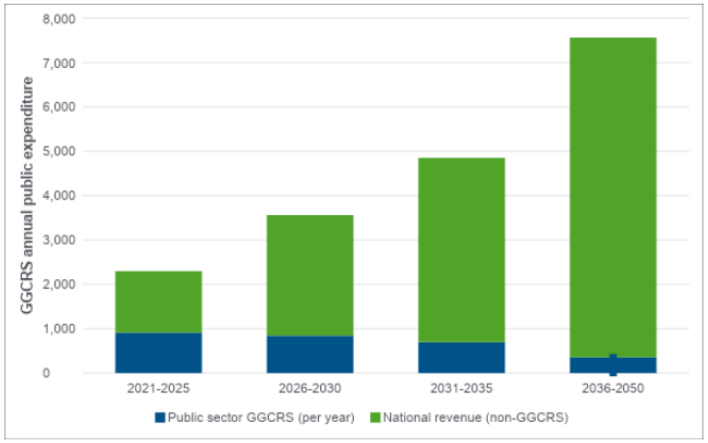
3.2.1.3 Financing for a Green Economy transition

The GGCRS provides guidance on the actions to be taken by the government to achieve low-carbon development and economic growth that ensures the conservation of the country's natural resources and environmental services.

Implementing the GGCRS will require an average annual investment of US$2 billion. As discussed in Section 3.1, the implementation of the GGCRS requires the implementation of eight action programmes, which together will transform Rwanda into a climate-resilient, low-carbon economy by 2050. Financing will be achieved by private and public actors working together to mobilise the required resources (Republic of Rwanda, 2022).

Figure 8 shows the proportion of public expenditure required to implement the GGCRS as a proportion of the annual public budget. About US$700 million will need to come from the government.

Figure 8: GGCRS spending as a share of annual public revenue



Source: Republic of Rwanda (2022)

To mobilize financial resources, in 2012 the Government of Rwanda established the National Fund for the Environment (FONERWA) through the Ministry of Environment. FONERWA is a central mechanism for managing cross-sectoral funding to contribute to the achievement of environmentally sustainable and climate conscious economic growth. Its main areas of investment include biomass substitution, green cities, sustainable transport, waste, water, renewable energy, and sustainable agriculture.

The Fund's achievements so far in supporting Rwanda's transition to green growth are as follows (Rwanda Green Fund, 2023):

- 247 million US$ mobilized
- 176.188 green jobs created
- 88.327 households with improved access to off-grid clean energy
- 126.014 tons of avoided carbon dioxide emissions
- 31.226 hectares of watershed and water bodies protected

To increase contributions to and from the private sector, FONERWA has created the Rwanda Green Investment Fund (RGIF) in partnership with the Rwanda Development Bank (RDB) and with the idea of creating a "green bank". The objective of this fund is to catalyse financial flows to private sector projects related to the green economy, which are rigorously screened to ensure that the return on investment contributes to Rwanda's climate resilience. Initial support for the RGIF was provided by the World Bank, and the fund has been structured with a capitalization of **US$50 million until 2022**. The RGIF has identified a need for over US$330 million to further support green projects (FONERWA, 2022).

In addition, this year the Government of Rwanda, together with Agence Française de Développement (AFD), the European Investment Bank (EIB), Cassa Depositi e Prestiti (CDP) and the International Finance Corporation (IFC), unveiled a cooperative approach to mobilize and facilitate public-private partnerships in the country, scale-up climate finance and attract private climate investments, making available **EUR 300 million** to build climate resilience in Rwanda. These funds complement the **US$ 319 million** provided to the Government of Rwanda by the Resilience and Sustainability Facility (RSF) of the International Monetary Fund (IMF) (IMF, 2023).

The GGCRS further highlights certain areas of work to increase funding for green initiatives. One is related to increasing domestic revenues, where the strategy calls for an **Environmental and Climate Change Fiscal Reform**. This reform is aimed at operationalizing the Environment/Climate change budget statement and at increasing government resources allocated to green initiatives. The fiscal instruments mentioned by the GGCRS include environment-related user fees, tourism levies, international payments (such as debt-for-nature swaps), environmental taxes, and a portion of other major and non-environmental taxes. **Such Fiscal instruments have already been adopted in different policy areas worldwide**. To mobilize these instruments and their potential funds, Rwanda must develop legislation and institutional and regulatory frameworks to increase coordination between MINECOFIN, RDB and FONERWA, and increase funds earmarked for FONERWA.

3.2.2 Sectoral analysis

3.2.2.1 Energy in the IGE transition

The availability and access to reliable green energy is a major factor in Rwanda’s green growth and its development of a green economy. Currently, Rwanda has relatively **deficient access to electricity**, with 72% of Rwandan households having access to electricity in 2022 (REG, 2022), This constitutes a significant barrier to economic development in the country.

Recognizing the importance of electricity access, the country’s Energy Sector Strategic Plan 2018/19-2023/24 (ESSP) placed increased electricity access as one of its main priorities. **The government’s objective is for 100% of households and productive users to have access to electricity**. Moreover, it calls for increased electricity generation to cover the increased demand. However, **the country is likely not going to achieve its energy access goals by 2024**.

The ESSP prioritizes investment in the development of renewable energies in the country to meet electricity demand. The plan indicates that Rwanda aims for up to 52% of its electricity mix to be renewable in 2024. In 2020, 63% of all electricity generated already came from renewable sources, mainly hydro power (IRENA, 2022).

Looking at its capacity utilization, the percentage of an energy source’s maximum potential output that is being produced, hydro-power utilization rate is 51% while solar is a mere 17%. This shows that there is still considerable growth capacity from both sources, meaning that Rwanda has the potential to cover large parts (if not all) of its energy demand using renewable sources.

Another objective of the ESSP is to halve the number of households using traditional cooking technologies. This objective is also present in the UN’s Agenda 2030 under SDG 7: Affordable and Clean Energy. Traditional cooking techniques involve the burning of firewood and biomass on an open flame. Given the gendered nature of household activities in most Rwandan households

it is women who are most exposed to the negative impacts of collecting and burning firewood on an open flame (Ministry of Infrastructure, 2017).

Progress towards reducing the use of traditional cooking techniques, has been very slow. Although no official progress monitoring is available, access to clean cooking fuels and technology can be used a proxy to assess the progress toward SDG 7. According to this indicator, **only 5.4% of Rwandan's had access to clean cooking technologies in 2021**, up from a mere 1% in 2015 (IEA, IRENA, UNSD, World Bank, WHO, 2023), but still far short of the objectives set out by the Government of Rwanda for 2024.

The cross-cutting nature of the energy sector means that it is important that its growth and development is aligned with both Rwanda's green and inclusion objectives. And although, the sector has certain key strengths to be taken advantage of by the country's green economy, such as its renewable energy dominance, more work by both the public and private sector needs to be done to promote and achieve the other energy objectives laid out by the ESSP.

3.2.2.2 Agriculture in the IGE transition

Given its importance in the national economy, the agricultural sector has a crucial role to play in the transition to a green economy. The sector will need to keep contributing to the national economy and ensuring the country's food and nutritional security. Production and productivity will need to be increased sustainably along with the improved living conditions of the Rwandan population.

As part of Rwanda's NTS-1, the Strategic Plan for Agricultural Transformation Phase 4 (PSTA 4) has been developed and implemented. PSTA-4 aims to transform agriculture from a subsistence sector to a value-added sector through the sustainable use of natural resources and the implementation of environmentally friendly development options (MINAGRI, 2018).

In addition to the government, international organisations are also supporting the country agricultural sector. For example, the Country Strategic Opportunities Program (COSOP) of the International Fund for Agricultural Development (IFAD) has an action plan in Rwanda for 2019-2024. This plan is aligned with PSTA 4.

COSOP in Rwanda aims to sustainably increase agricultural productivity of priority food and export value chains, improve post-harvest processes, and strengthen market linkages; as well as work in cross-cutting areas such as access to finance, improved nutrition, women and youth empowerment, and natural resource and climate change management (IFAD, 2019). Its main target group are at least 350,000 households, mainly in rural areas that are poor, food insecure and have economic potential.

Rwanda's implementation and support for its sectoral and social strategies, and its continued growth and development, is working to attract action and investment from international actors promoting the continued strengthening of its agriculture sector in a responsible and environmentally sustainable way. Furthermore, by looking at agriculture holistically and supporting value addition and enterprise development activities, as well as linkages between climate-smart agriculture and related value chains and sectors such as water, waste, and green power generation, it can further boost incomes, employment, and livelihood opportunities in the rural economy.

3.2.2.3 Transport in the IGE transition

The transport sector is key to Rwanda's socio-economic development as it connects people, goods, and services. The transport system in Rwanda consists of three modes comprising: roads, air, and lake transport. Road transport is the predominant form of transport, catering for over 90% of freight traffic and passenger travel (Ministry of Infrastructure, 2018).

The transport sector is one of Rwanda's leading emission sources. In 2015, the sector emitted 686 $GgCO_2e$ (13% of Rwanda's total emissions). As an independent category, only enteric fermentation and manure management contributed more GHG emissions (Republic of Rwanda,

2020). In addition to GHGs, the transport sector is a major source of air pollutants such as Ozone (O_3), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Particulate Matter (PM) especially PM 10, Sulphur Dioxide (SO_2), among others. Globally these gases contribute to climate change and the exacerbation of its impacts, while locally these gases contribute to decreased air quality, which has severe health impacts for the Rwandan population. Furthermore, the construction of new transport infrastructure can have significant negative environmental impacts if not designed and undertaken responsibly and sustainably (Ministry of Infrastructure, 2018).

Given the important role the sector plays to Rwanda's socio-economic development and the sector's significant climate and environmental impacts, it plays a pivotal role in the development and achievement of Rwanda's vision for a green economy and growth. This relevance is reflected in the attention paid to the sector throughout the country's green development framework, with the NDCs, the GGCRS and the NST1 all calling for the greening of the sector.

As a result of the sector's carbon intensity, many of the initiatives put forward by the different strategies to green the sector promote e-mobility, non-motorized modes of transport and expansion of public transport. Moving away from private internal combustion engine vehicles has the potential to significantly reduce GHG emissions in Rwanda.

The implementation of these initiatives requires significant investment from both the public and the private sector. Up to 2050, the GGCRS estimates that the public sector will need to invest US$ 7.62 billion to implement its transport sector measures, while the private sector will need to mobilize a further US$ 5.42 billion. A further combined US$ 258 million will have to be spent annually on operational expenses (Government of Rwanda, 2022).

Despite the high costs, benefits and opportunities derived from greening the transport sector are significant. Not only will such changes reduce sectoral GHG and pollutant emissions (Republic of Rwanda, 2020), the positioning of Rwanda as an e-mobility hub in Africa has significant economic potential for the country. The country already houses international OEM EV production facilitates and has EV startups working and manufacturing in the country. Scaling up its EV manufacturing has the potential to contribute to the reduction of transport emissions and the greening of the whole economy, by expanding green jobs and investments in the country. Section 4.1 explores this further and postulates that Rwanda should further assess its capacity and potential benefit derived from increasing EV manufacturing.

3.2.2.4 Urbanization in the IGE transition

The NST 1 indicated that in 2017 18.4% of Rwanda's total population lived in urban areas (Government of Rwanda, 2022), the government intends to increase this figure to 70% by 2050 (Government of Rwanda, 2022). The significant urban growth and development expected by the government and its environmental and land use impacts, in addition to the socio-economic perspective of such growth means that the country is looking to develop green, sustainable, resource efficient cities, which sustain a diverse and inclusive green economy that offers high quality employment by 2050.

This is reflected throughout the country's development framework with the Urbanisation and Rural Settlement Sector Strategic Plan calling for the settlements to be *developed strategically and holistically as part of the national land use and development planning framework, mitigating negative effects to environment and society, and offering increasing socio-economic opportunities for all* (Ministry of Infrastructure, 2018), while the GGCRS also highlights the importance of recognizing the relevance of urbanization in developing and inclusive green economy and development scenario. Much of the weight of greening Rwandan cities falls to the governance and compliance systems put in place to ensure inclusive, green, and sustainable building practices. Moreover, many greening initiatives from other sectors contribute to urban greening. For example, transport initiatives promoting e-mobility in cities and increased public transport, reduces GHGs and other air pollutants emitted in cities improving their habitability. In addition, WASH initiatives such as providing universal access to clean water and sanitation facilities also contribute to the inclusivity and sustainability of urban settlements.

With the expected growth of cities and influx of new residents in addition to promoting the greening and increased climate friendliness of cities, Rwanda's development strategies also stress the importance of ensuring the inclusivity of these urban spaces. Rapid mass urban development can often lead to the growth of informal settlements (i.e., slums) where the population lives in precarious situations disconnected from municipal services. As part of its inclusive green development Rwanda has stressed the importance of improving the living standards of these communities providing them with more permanent and resilient homes which are connected to essential services such as electricity and water.

The urbanisation sector will play a key role in developing Rwanda's inclusive green economy because it will determine the living conditions of most of the country's population. Climate action within the sector will contribute to reducing GHGs but will more importantly improve the habitability of the urban areas and the living standards of the citizens. This rapid development if not governed properly can lead to the growth of disconnected slums, consequently the inclusivity urban development is paramount to ensure that the benefits of its development are widespread.

According to the GGCRS, to achieve inclusive green growth within the urbanisation sector Rwanda will require the government to invest US$ 4.62 billion up to 2050, while the private sector will need to invest a further US$ 11.17 billion up to 2050 (Government of Rwanda, 2022).

3.2.2.5 Industry in the IGE transition

Rwanda's industrial sector is one the country's key drivers of green growth and economy. It currently contributes around 20% to national GDP but is earmarked as one of the key growth sectors for Rwanda to expand its green economy by the middle of the century (National Institute of Statistics of Rwanda (NISR), 2022) (Government of Rwanda, 2022).

The sector presents both one of the biggest opportunities and largest risks to green growth and climate resilience, needing to balance progressive planning and industrial growth, while ensuring secure development that is sustainable, appropriately shielded from aggravated natural disasters, and contributes to resilient livelihoods and green job creation.

Across Rwanda's development strategies this dichotomy is present with initiatives promoting increased industrial development and output for both the domestic and international markets while also pushing for the inclusive green development and growth of the sector through the promotion of energy efficacy or circular economy, among others. Importantly for the sector's green aspirations the two objectives are complementary with green practices such as increased energy use and resource efficiency or circularity capable of increasing industrial production and reducing production costs.

Although planned initiatives include the establishment of special economic zones, and the promotion of entrepreneurship through green capacity development and collectivization, the main area of focus for green industrialization in Rwanda is increasing energy efficiency in the production process (Government of Rwanda, 2022). Moreover, industrial initiatives can have significant synergies to other sectoral initiatives or objectives, for example the growth and expansion of e-mobility in the country and internationally, provides an opportunity to develop and grow electric vehicle (EV) manufacturing capacity, allowing Rwanda to become an EV hub in Africa. Section 4.1 below, dives deep into the potential for industrial growth and international positioning provided by establishment of Rwanda as an Electric Vehicle (EV) manufacturing hub in Africa and postulates that Rwanda should further assess its capacity and potential benefit derived from increasing EV manufacturing.

Given the growth potential and importance of the industrial sector to the green economy the capital investment required up to 2050 is substantial. However, given the structure of the sector the majority of the funds are set to be provided by the private sector. Up to 2050, the private sector will need to invest US$ 10.15 billion to implement the initiatives proposed by the GGCRS, while the public sector will provide an additional US$ 566 million (Government of Rwanda, 2022).

3.2.2.6 Micro, Small and Medium Enterprises (MSMEs) in the IGE transition

One of the key hallmarks of Rwanda's green socioeconomic development is the driving role given to the private sector. Within the county's development framework, the private sector is set out as the main catalyst to achieve the aspirations set out in its Vision 2050. Within the private sector, Micro, Small, and Medium Enterprises make up most businesses and significantly contribute to employment. The MSMEs' contribution and compliance with the country's green growth and green economy objectives is therefore critical.

Their main area of activity in the country is wholesale and retail trade, repair of motor vehicles and motorcycles with 58% of all MSME's working in the sector. Another significant activity is **accommodation and food service activities** which account for around 20% of all MSME activities. Finally, manufacturing also has a noteworthy presence among MSMEs. These general trends hide differences in activities between micro, small and medium enterprises. Micro enterprises have a very similar distribution to the aggregate. This is unsurprising as they are the largest grouping. Small enterprises in addition to the sectors identified in the general trends also have significant activities related to education. Finally, most medium enterprises work in education, with the other relevant sectors coinciding with the general trends, however, to a much lower proportion (NISR, 2021).

Recognizing the importance of MSMEs in the economy and in support of and in an attempt to accelerate growth and development in the private sector, the Government of Rwanda has created a supportive and enabling environment for MSMEs to thrive. The main policy regulating MSME development is the country's *Small and Medium Enterprises (SMEs) Development Policy*. The opportunities identified by the policy are the creation of significant private sector non-agricultural employment opportunities, increasing tax revenue, contribute to increasing export of value-added exports and reducing the country's trade imbalance (Ministry of Trade and Industry, 2010). These opportunities have the potential to significantly contribute to Rwanda's green economy and green development, especially increased non-agricultural employment.

For this development to be consistent with Rwanda's green and inclusion goals the SMEs Development Policy and the GGCRS cannot be seen as independent from one another, rather the achievements in one must be reflected in the other. For example, the development of the MSME sector must be consistent with the Green Industrialization and Trade thematic programme presented in the GGCRS.

Making sure that as the sector's sustainability metrics and objectives are not subordinated to the economic objectives of MSME development is critical in the further growth and expansion of Rwanda's green economy and development.

The same is true for equality and inclusion, the country cannot disregard the inclusion and equality principles it includes in its policies in the search for economic growth. The prosperity related to MSME development needs to be available to all in the country. Moreover, both women and the youth are key figures in the sector's development as they represent large population groups with untapped potential for entrepreneurship and business development (Ministry of Trade and Industry, 2010).

3.2.2.7 Digitalization in the IGE transition context

Rwanda is strategically positioning itself to emerge as a prominent African ICT Hub, playing a pivotal role in driving ICT-led development, particularly in the context of green growth and climate resilience. The country is at a point where it can bypass outdated technologies and development paths, instead constructing a green economy that can withstand the challenges posed by a changing climate. Prioritizing resource efficiency and the adoption of cleaner production methods, facilitated by green technologies and operational practices, remains a top national agenda. These efforts align with the NDCs and the SDGs, necessitating sustained, long-term commitment.

A successful digital transformation will be marked by the establishment of reliable, real-time, and integrated data and information systems that underpin responsive development and management planning, fostering economic growth and climate resilience. Technological innovations will empower Rwanda to take great strides in both rural and urban economic applications.

Furthermore, Rwanda boasts a well-equipped pool of ICT skills capable of seizing new employment opportunities in data collection and management, system operation and maintenance, and the development of impactful applications, all made possible by robust ICT infrastructure.

Recognizing the importance of digital transformation, both NST-1 and the GGCRS highlight the digital transformation. The GGCRS establishes digital transformation as one of the strategy's four enabling pillars. These are pre-requisite and cross-cutting arrangements of resources and capabilities, necessary for the effective implementation of the actions outlined by the strategy.

Across the programmes of action proposed by the GGCRS, the digital transformation and innovation priorities to be established and developed for effective implementation of interventions is presented in the table below.

Table 7: GGCRS digital transformation priorititesTable 7: GGCRS digital transformation prioritites

Programme of Action		Digital Transformation and Innovation priority
Green industrialisation and trade	Low-carbon, climate-resilient energy, and transport networks	Use of GIS and sophisticated energy usage data should drive a data driven approach to demand side management for a resource efficient energy sector
	Green industry and private sector participation	Initially focus on developing application of data to support finance, industry, and logistics, while developing long-term capabilities in knowledge economy
Green urban transition and integration	Low carbon and smart urban infrastructure and services	Data-led management pivotal to promote efficient public transport networks and to achieve smart integrated planning for municipal services
	Integrated and resilient urban landscapes	Use of GIS data for monitoring green space development and the successful delivery of densification according to city master plans
Sustainable land use and natural resource management	Adaptive and resilient land use management and spatial planning	ICT led adaptive capacity building will require innovations in remote sensing, satellite monitoring and imagery, and responsive data management and sharing
Vibrant resilient green rural livelihoods	Sustainable agriculture, forestry, and conservation	Digital applications to disseminate information to farmers, underpin agri-insurance, high-res GIS data on soil quality and typology, efficiency in logistics planning
	Green and climate resilient rural settlements	Larger role of ICT in the long term, in particular for managing household expenditures related to utilities. Important for smart green villages, focus after 2030.

Source: (Government of Rwanda, 2022)

Furthermore, the development of the country's ICT infrastructure is critical in the development of intra-African digital trade based on extended deployment of renewable energies, as indicated by the AfCFTA. Such a development would facilitate the export of renewable energy from Rwanda across the continent and increasing the demand for Rwandan energy. Thus, boosting its trade, growing its green economy, and contributing to increasing reliable green energy access across Africa.

Unfortunately, data provided by the NST-1 mid-term review shows that the digital transformation in Rwanda is advancing slower than expected (Government of Rwanda, 2022). These deficiencies are due to **infrastructure problems, lack of awareness and digital literacy, and lack of investment**. Regarding infrastructure, lack of network connection to end users outside of Kigali is preventing the expansion of internet penetration in the country. Furthermore, lack of maintenance of digital infrastructure, and lack of electricity penetration are further constraining

digitalization in Rwanda (Government of Rwanda, 2022). Other constraints include lack of access to ICT devices, the population's lack of awareness of the productivity and socio-economic welfare improvements provided by ICT, and lack of investment in the ICT sector (Government of Rwanda, 2022).

As Rwanda strives to transition towards a modern, knowledge-based, and IGE, it is imperative to chart a course for digital transformation. This transformation is essential to seamlessly integrate data, information, science, technology, and efficient digital systems into the fabric of its green development pathway. Leveraging its human capacity and development aims, Rwanda has the capacity to transform itself in an ICT and digital hub in Africa, using these technologies to catalyse, promote and expand green growth and development initiatives aimed at improving the country's socio-economic status while protecting and promoting the environment and climate action.

3.2.2.8 Trade in the IGE transition

Trade has been identified by the Rwandan government as an important driver of sustainable socio-economic development. To this end, Rwanda's trade policy aims at growing a range of high-quality, sustainable products to facilitate local, regional, and international trade. This is intended to increase job opportunities, increase incomes, and improve the country's living standards.

Rwanda is a net importer. However, the country aims at maintaining its trade deficit at below 15% of GDP (Ministry of Trade and Industry, 2010). To achieve this, Rwanda is looking to expand its export sectors with both traditional sectors with high export potential such as coffee or tea and non-traditional sectors with promising market perspectives such as horticulture, leather, or essential oils being prioritized. The growth and investment into these export sectors is expected to create significant employment opportunities, expand women's formal and decent employment opportunities, promote small businesses, and contribute to the green economy (Ministry of Trade and Industry, 2010).

Globally, the relationship between trade and the environment has sparked calls for sectoral reform and for the greening of the trade sector. For example, UNEP argues that advancing green trade necessitates fundamental reframing of the discourse on the environment and trade, and the implementation of a forward-looking Environment and Trade 2.0 agenda. This agenda encompasses safeguarding and fortifying ambitious environmental policies both nationally and internationally. It emphasizes utilizing trade and associated policies as tools to incentivize and propel a green economic transformation, while simultaneously working to reduce the negative environmental impacts of international trade. Moreover, the agenda advocates for the support of sustainable, resilient, and equitable international supply chains and addresses the broader sustainable development priorities of developing countries, championing a just transition. Finally, it underscores the importance of aligning national trade policies with environmental goals and priorities, and calls for democratic, transparent, and accountable processes in the formulation of trade policies (Deere Birkbeck, 2021). Regionally, the AfCFTA is conducting an assessment into the environmental and sustainability considerations to include in the protocol. Two opportunity areas are in the renewable energy market, with greater inter-connection allowing for greater energy and electricity penetration, this is especially important for Rwanda, which has renewable energy growth capacity and could connect itself to the broader African energy market. Moreover, studies have shown that the AfCFTA will contribute to improving air quality in African cities (Mold, 2022).

With the AfCFTA Rwanda's international trade is set to increase, both in terms of exports and imports. Studies indicate that imports and exports have different non-linear effects on green productivity. Regarding imports, they do not significantly affect green productivity in lower income countries, while they increasingly promote green productivity in high-income countries. For their part, exports gradually improve green productivity in high-income countries. Furthermore, both imports and exports promote green productivity more significantly through technological progress rather than efficiency improvements (Ying, Yamaguchi, & Kittner, 2022).

The relationship between trade and green productivity means that as Rwanda develops socio-economically its trade and green growth nexus will also experience change. At present Rwanda is a net importer of goods, however as it is also currently a low-income country these do not promote green productivity. As the country develops and attains higher income status, imports will promote green productivity. The same is true for exports, as Rwanda develops and achieves greater socioeconomic status, exports will improve the country's green productivity.

4. POTENTIALITIES AND CONSTRAINTS FOR A FAIR AND GREEN ECONOMIC TRANSFORMATION

4.1 Opportunities

Over the last decades, Rwanda has promoted and pushed for the expansion of its green economy as one of the main pillars of its socioeconomic development, intended to make it a high-income country by 2050. This positioning has had several successes and has contributed to increasing the country's living standards without subordinating its environment and climate and achieving its international climate action commitments.

However, there is still significant areas of growth and development within the green economy to be explored and taped for continued sustainable, fair, and green growth in Rwanda. This expansion must do both with the potential expansion of high impact sectors and the further involvement of currently underrepresented communities in the green economy. Rwanda's development policies highlight the driving role of the private sector in its socioeconomic development. This is also true for its green growth objectives. **Currently, private sector involvement is defiant and incentivizing and catalyzing its further participation in the green economy is critical**.

Two **highly impactful and high growth potential sector** in the country which can be used to promote private sector participation and funding of the country's IGE are **nature-based tourism and electric vehicle manufacturing**.

Nature-Based Tourism

Rwanda is positioning itself as a prime tourism eco-destination, leveraging its environment and biodiversity as attractions for foreign visitors (Visit Rwanda, n.d.). The expansion of eco-tourism has numerous benefits for multiple stakeholders. Nature-based tourism is centered in rural areas, such as in and around national parks and conservation areas. Consequently, the expansion of these activities provides rural communities with the possibility of moving away from climate vulnerable agricultural activities to more stable and economically viable tourism services. Moreover, the number of visitors to the country looking for nature-based tourism activities means that national and international tourism companies (i.e., travel agents, hotels, and airlines) have a vested interest in the protection and conservation of Rwanda's natural environment and biodiversity. Consequently, as their revenue is dependent on the wellbeing of these environments, companies will be more willing to contribute financially to the conservation and protection of these areas and ecosystems. Thus, **by promoting eco-tourism in the country the government is also promoting increased private sector participation in the funding of its green and sustainability objectives.** Finally, positioning itself as a unique destination on the international tourism market and the increased number of foreign visitors associated with this means that there will also be a greater influx of foreign currency into the country aiding the availability for use on the international market.

The expansion of the eco-tourism sector has both direct **socioeconomic benefits** for the country's rural communities, who are able to work in higher income generating sectors that directly benefits the economic development, and **environmental benefits** as it fosters increased investment to and consciousness around the country's conservation efforts (Sabuhoro, Wright, Munanura, Nyakabwa, & Nibigira, 2017).

Electric Vehicle (EV) Manufacturing

Transportation is one of Rwanda's largest emitters of GHG emissions, as a result both the NDC and the GGCRS call for the increased electrification of the transportation sector. However, as it currently stands such an increase in EV's would have significant trade consequences for the country as it would require the large-scale importation of EVs. To overcome this, the need of transport electrification can be combined with the GGCRS' promotion of green industrialization, meaning that Rwanda becomes an EV producer, not just a consumer.

Such initiatives would have significant socio-economic benefits for the country. For one, the expansion of its automotive production facilitates would increase demand for skilled well-paying jobs in the automotive industry. As such, investment in EV production would provide green and higher income jobs to Rwandan's. Moreover, the consumer demand is there, Rwanda needs EVs, consequently, transforming Rwanda into an EV hub will allow these vehicles to be tailored to the needs of the country. Also, it would have positive trade impacts, not only would it reduce the importation of vehicles and fuels, but Rwanda could also export EVs to other parts of Africa further contributing to the balancing of its trade. Finally, the development of this sector will also contribute to increasing foreign investment in the country.

There are two routes the country can take with its EV sector. It could either promote and provide investment to local EV companies (e.g., Ampersand) or partner with existing OEMs to develop production facilities in the country such as the Volkswagen factory already operational in the country. The pathways are not mutually exclusive. In fact, they are quite complementary as the presence of foreign companies will provide experience and knowledge to Rwandan's who can then start their own enterprises, while the presence of local companies acts as a pull factor in the attraction of international OEM investment. Regardless of the path taken, the development of Rwanda as an EV hub has significant green economy benefits while also contributing to the mitigation of one of the country's main emission sources.

Given the potential benefits associated with such a green industrial expansion, PAGE can assist the Rwandan government in assessing its EV manufacturing capacity and the opportunity it provides, moreover, such an analysis should explore the different sectoral development routes and the costs and benefits of greening the transport sector through national manufacturing.

A major issue for the expansion of electrified mobility and other technologies is the country's low electrification rate. As previous sections have analyzed, Rwandans have limited access to stable and reliable electricity. Consequently, as the country looks to develop increased electricity penetration becomes paramount. The country has the right environment and climate to make sure that this expansion is covered by renewable energy sources, namely hydro and solar energy. Investing in universal electrification from renewable sources has significant benefits for economic development and for the utilization of new and digital technologies. Furthermore, reduction in fossil fuel demand also has positive trade impacts on the country, allowing it to import fewer fossil fuels, contributing to the reduction of its trade deficit.

Key Energy Sector Opportunities

For Rwanda, to meet its mitigation objectives it is critical for this increased electricity demand to be met through renewable means. Consequently, increased investment in renewable energies is required. Outside of hydropower, other renewables account for just 6% of total electricity generation, this is despite Rwanda having considerable solar and bioenergy potential (IRENA, 2022). Off-grid solar systems, that is those independent and disconnected from the traditional centralised power grid, are especially relevant for Rwanda. These systems are cheaper to implement as they do not require large scale electricity infrastructure to be build, rather each building has its own solar power generation system capable of providing electricity to the connected building. Such a system is especially useful and cost-effective method of electrifying rural areas as no large infrastructure projects are required for homes to gain electricity coverage.

Mobilizing further investment into renewable energy and diversifying these sources will allow all Rwandans to access clean and stable sources of electricity, promoting their socioeconomic development. Furthermore, such investments will allow the country to achieve its climate change mitigation goals by reducing the carbon intensity of its energy sector.

Key Agriculture Sector Opportunities

Apart from rice paddy, most crops in Rwanda are rainfed, meaning that they depend on rainfall for irrigation. This makes them more vulnerable to impacts of climate change such as increased drought severity.

The government is already trying to minimize these impacts by increasing the country's irrigated area, and it is expected that all irrigable land will be under irrigation by 2025 (RDB, n.d.). This increase in irrigation means that harvests and, thus, farmer incomes are less dependent and vulnerable to changing and unpredictable weather conditions. Moreover, it allows farmers to have continuous crops and increase their production and by extent their income. This increase in income contributes to improving their socioeconomic condition. Other climate informed, conscious, and smart agriculture techniques include increased and more efficient use of bio-fertilizers (that should substitute chemical fertilizers), crop rotation, conservation agriculture, crop diversification and improved soil conservation techniques (World Bank; CIAT, 2015).

These practices have income benefits for farmers in addition to environmental benefits for the country. At the farmer level, these practices make farmers less vulnerable to the impacts of climate change, while also increasing their yields and reducing their input costs, overall, this means that they receive a higher and more secure and stable income from their economic activities. While at the national level, such practices have environmental benefits as they reduce the sectors GHG emissions while also increasing the lands carbon sequestration capabilities, food security benefits as there is more availability of national food supplies, and trade benefits as both agricultural input imports and food imports may be reduced, while agricultural exports could be increased, thus contributing to better balancing the country's trade balance.

The agricultural sector is Rwanda's most important economic sector, especially in terms of the number of Rwandan's it employs. Consequently, **greening the sector and making it more climate resilient will not only expand the green economy but also allow a considerable number of Rwandans to benefit from increased economic prosperity this greening provides**.

Demographic Opportunities

For fair and inclusive development, it is critical for all communities to have the opportunity to meaningfully contribute to, participate in and benefit from the country's green transition. Thus, it is important that large communities and groups such as women and young people mobilize and catalyze in the expansion of the green economy. Policies promoting their participation and success in the different aspects of the green economy opens a vast new set of human capital able to contribute to the growth and innovation of Rwanda's green economy, making sure it covers and promotes development for all.

Table 8: Rwanda's key IGE opportunities

Sector	Opportunity
Tourism	Expand nature-based tourism
Manufacturing	Assess potential to become an EV manufacturing hub in Africa
Energy	Expand and diversify renewable energy generation
Agriculture	Expand crop irrigation and resilience to climate change
Population	Tap into youth and female potential

4.2 Constraints

Despite the growth potential of Rwanda's green economy, the country faces significant constraints which need to be overcome to maximize the outcomes and impacts of green growth strategies. These are lack of capacity, deficient infrastructure, lack of finance, and lack of coordination.

Table 9: Rwanda's key IGE constraints

Sector	Constraint
Energy	Lack of or deficient infrastructure
Cross-sector	Lack of capacity
	Lack of finance
	Lack of coordination

To maximize the impacts of the potentials presented above, the Rwandan government and its partners need to act on, eliminate or minimize the presence of these constraints, thus allowing the country's green economy to expand and diversify increasing the country's, its populations, and its environments prosperity and contributing to the realization of the vision the government has for the country.

Lack of or Deficient Infrastructure

Improving the country's infrastructure is critical to meeting the country's green development needs. Especially relevant to the potentialities presented above is the country's low electrification.

Furthermore, and as has been presented previously, the low electrification rate in Rwanda is a large development barrier in the country. Lack of access to stable and reliable electricity means that modern, digital, information and communication technologies cannot be used and taken advantage of in the country. As a result, companies and individual producers are prevented from modernizing their operations due to lack of technology use. Solving this issue of electrification in a green manner, will allow Rwandan businesses and individuals to operate more efficiently through the implementation of modern production, information, and communication technologies.

The final three are lack of capacity, lack of finance and lack of coordination. All three of these barriers were extensively mentioned by stakeholders as the main barriers to green growth expansion in Rwanda, see Table 16 in Annex 2.

Lack of Capacity

Rwanda at both an institutional and individual level does not have sufficient knowledge and technical capacity to implement green growth and green economy initiatives effectively and efficiently. Currently there is limited information on the impacts of climate change on the country and how best to adapt to this changing climatic condition, lack of knowledge and information of these topics means that policies aimed at greening and increasing resilience in the country are not best informed. Thus, the most adequate, effective, and efficient measures to both promote green growth and limit climate impacts may not be identified by the policies developed. Moreover, in situations where these policies are well adapted and impactful both public and private sector actors do not have the knowledge and know-how to implement these initiatives properly.

Furthermore, Rwanda, as many developing countries, has historically suffered from brain drain, meaning that **qualified and highly skilled individuals and professionals have emigrated** out of the country in search of more prosperous and lucrative opportunities. This flight of skilled, experienced, and knowledgeable individuals has further exacerbated the lack of capacity in the country, as these individuals, who do have the capacity to contribute to the development and implementation of the green economy in the country, see their future outside of Rwanda.

An example of Rwanda's lack of capacity was provided through consultations with government ministries in the stakeholder workshops conducted. There is currently very limited macroeconomic modeling being done in Rwanda, participants indicated that this is because although there is a willingness and interest in developing a sophisticated General Equilibrium Model, there is insufficient national capacity to undertake such a development. Consequently, stakeholders suggested the development of international research exchange program with leading

international institutions to allow them to learn from leading experts in the field and transfer the knowledge, skills, and contacts necessary to develop such a sophisticated model for Rwanda.

The promotion of the development of such macro-economic models to assess the medium and long-term macroeconomic impacts (output, employment and distribution, and public finances) of the transition to an IGE in Rwanda. The establishment of such tools provides knowledge and projections of the implications of the transition to IGE for (1) public finances in Rwanda, both in terms of revenues and expenditure and long-term debt sustainability, (2) the re-distribution of employment and frictions in the labour market and the ability to adjust skills to the needs of a green economy, and (3) the changes in GDP of the necessary increase in the aggregate investment needs.

Another capacity development example proposed in Interview 4 of the stakeholder consultations (See Annex 2) was the development of a Student Champion Program where education and training systems and institutions can act as catalysts and support a shift to a more green and sustainable society. Initiatives proposed under this program include integrating green growth and environmental issues in the curriculum of formal (Primary Schools, Technical and Vocational Education and Training (TVET), and Higher/University) and informal education. And, providing green capabilities to several institutions to have champions in different organizations. This works by selecting key university departments and collaborating with them so that they can start to provide courses on environmental issues. For further details on the proposals, see interview 3 in Annex 2.

Lack of Finance

Another major barrier highlighted by stakeholders is the lack of funding and finance designated towards green growth and the green economy. Rwanda's development policies highlight the driving role of the private sector in the country's socio-economic development, however, at present the country has not been able to mobilize widespread private sector involvement in the green economy. Consequently, funding is only provided by the public sector which has limited resources at its disposal to fully cover green growths investment needs.

Underinvestment from the private sector and limited public resources means that the country requires significant international assistance to implement its green growth initiatives. However, the county is unable to access all types of foreign aid, such as loans, only being able to access international grants. The lack of international financing increases the burden on public funding which is required to finance most green growth programs. Limited public finances, numerous projects and bureaucracies means that this funding also often arrives late impacting and delaying project implementation. When analyzing the growth sectors for the green economy, the tourism and the EV production sectors have been identified as sectors which promote increased private sector involvement in the green economy.

Lack of Coordination

Finally, the progress of Rwanda's green economy advancement has been further hampered by insufficient collaboration both within the governmental apparatus and among the government, private sector, and civil society. Despite the comprehensive and multi-sectoral nature of the green economy, Rwanda's inadequate coordination efforts have led to a disjointed and dispersed approach to promoting environmentally sustainable growth. Consequently, this scenario has led to the disconnection of budgetary allocations for green economy projects and the isolated emergence of redundant initiatives. The absence of effective inter-sectoral coordination has culminated in the inefficient utilization of resources and has impeded the holistic and unified development of a green economy within Rwanda.

5. RECOMMENDATIONS ON FORWARD-LOOKING STRATEGIES AND POLICIES

In order to maximize the growth potential of its green economy, at both policy and strategic levels, Rwanda must promote and implement actions and interventions designed to maximize its green growth potential while also contributing to social inclusion and overcoming the main barriers it currently faces to effective and efficient expansion of its green economy.

The assessment carried out in this report has highlighted certain features and circumstances which Rwanda needs to either correct or capitalize on in order to make sure that its economic growth and development trajectory is green, fair, and all encompassing.

Firstly, it is critical that in subsequent development planning cycles **all development strategies, plans, and initiatives be aligned with and consider the country's inclusive green economy (IGE) principles and goals**. The green economy is trans-sectoral, meaning that all economic sectors are affected by and need to contribute to it. As such, to maximize its potential for sustainable and equal growth and development opportunities all of Rwanda's development policies need to be coherent and aligned with the country's IGE principles and objectives. Moreover, provisions related to the IGE need to be integrated into the agendas of all line ministries in addition to promoting closer collaboration and communication between these ministries. The discrepancies between certain development initiatives and the country's green growth objectives and principles, such as those presented in Section 3.1.3 need to be eliminated, thus ensuring that all development actions taken in the country are working in unison to maximize the country's fair, green and all-encompassing development designed to achieve the vision set out by the government by 2050. To be wholly effective, these considerations need to be made across throughout the policy process, the policy development, implementation and monitoring and evaluation and reporting processes all need to align with, consider and contribute to the country's inclusive green growth priorities.

Subsequent and future **strategies and policies need to also work on overcoming the capacity deficiencies** currently experienced by the both the country's public and private sectors. These capacity development programs need to address both knowledge and technical capacity problems currently being faced. The development of these initiatives should be headed by engaging in social dialogue and collaborating with labour market and environmental actors to identify and review the skills required and the alignment of potential skills development initiatives with the country's IGE principles, thus allowing for supply and demand of skills to be matched. Furthermore, these initiatives need to promote equal access to opportunities for skills acquisition, with a particular focus on youth populations and women (ILO, 2015).

Capacity and knowledge development programs should include **investment and promotion into the research on climate change, environmental degradation, pollution, biodiversity loss and their impacts on Rwanda**, providing insights into both the physical and socio-economic impacts of climate and environmental change on the country. Moreover, the government should also promote the research and development into the most efficient and effective solutions to these impacts. Developing such information will show decision makers in Rwanda's public and private sectors how climate and environmental change will impact their operations and revenue and show them ways of minimizing these impacts through the expansion of an IGE.

Specifically for the private sector, the government should provide targeted business information and advice on green business practices, eco-innovation, and regulatory systems and on how to achieve compliance, with particular attention to MSMEs and in easily accessible formats such as user-friendly toolkits. Moreover, it should provide enterprises with technical support, advice, and services to establish environmental management and compliance systems, in addition to conducting awareness and education campaigns to foster a culture of eco-entrepreneurship and provide technical support, advice and services for entrepreneurs to tap into opportunities in the emerging green economy. Finally, it should aid management and workers in transitioning business operations away from high-carbon, high-polluting, and resource-intensive operations.

Such support should include technology transfer mechanisms on favourable terms, as mutually agreed, as well as support for innovation and sharing of good practices to facilitate a just transition to environmentally sustainable economies (ILO, 2015).

As a way of promoting the private sector to green, the government should also consider financial incentives (grants, low-interest loans, and tax incentives) for businesses adopting environmentally sound practices, including, but not limited to, energy-saving and efficiency measures and measures targeted at clean sources of energy, in line with economic and social sustainability (ILO, 2015).

In addition to formulating holistic skills development policies and promoting and expanding skills development programs and technical and vocational education and training systems with green and environmental principles, the government must also look to **develop an international collaboration network for local actors to access and collaborate with international agents including across national, regional, and global value chains**. This platform could be designed so that local actors looking to work on the green economy but who do not have the necessary knowledge and experience in accessing international financing and project, can contact and collaborate with international actors and agencies who do meet these requirements. This collaboration will provide the local companies and agencies the experience and knowledge required to, in future, be able to access these projects and fundings independently. The growth of the AfCFTA provides the proposed network with significant expansion opportunities as it increases the interlinkages between African countries and private sector actors, giving Rwandan actors greater access to regional and global value and knowledge chains.

Acknowledging its national talent pool, an outcome of its education and social development strategies, the government needs to put **talent retention and attraction strategies** in place in order to (i) prevent highly skilled and capable Rwandans from emigrating out of the country and (ii) increase foreign higher-skilled talent coming to Rwanda to work. Reducing the country's brain drain, while increasing the influx of foreign talent means that overall, the country's population's ability to contribute to and work in the green economy will increase. Moreover, the prevention of brain drain means that the education and the capacity development initiatives designed for the Rwandan population benefit Rwanda and its socioeconomic development, not a third country which is able to take advantage of skilled Rwandan labor without investing in its development. Further, the increased influx of foreign talent may also help provide increased knowledge and experience to the Rwandan workforce, as working with this foreign talent will increase the skills and knowledge gained by the Rwandan population.

Examples of stakeholder proposed initiatives which respond to the above-mentioned recommendations include the establishment of an international research stays program, and the Student Champion Program proposed in Interview 4 of the stakeholder consultations (See Annex 2). Furthermore, Rwanda can take learnings from talent retention and attraction initiatives implemented in third countries and adapt them to meet local needs and contexts. Examples of programs which could help guide talent attraction strategies in Rwanda include the Ikerbasque program and the Bizkaia Talent Program in the Basque Country in Northern Spain. The Ikerbasque program provides stable, long term research positions across different stages of a researcher's career. These positions are at universities and research centers across the Basque Country. The program covers 345 researchers from 35 different countries, in addition to attracting foreign talent, it has also successfully retained Basque talent in Basque universities and research institutions (Ikerbasque, n.d.). Bizkaia Talent aims to attract and retain international highly skilled workers.

Implementing such capacity development and talent retention initiatives – that are responsive to identified labour market needs of Rwanda's green economy – and related green job strategies will help the country improve and better utilise its knowledge and technical capacity related to the green economy. Allowing it to overcome one of its main barriers to the expansion of its IGE.

In addition to policy alignment and capacity development, **the Government of Rwanda needs to overcome a lack of finance to the IGE by promoting and helping to access capital**

resources. There are several tools already being implemented and potential reforms to be implemented to help achieve these aims. Rwanda recently unveiled its Green Taxonomy, an instrument which provides clear, relevant, and actionable guidance for the market by defining sustainability criteria, fostering common understandings, building trust, and preventing greenwashing. Examples of applications for the **Green Taxonomy** include to develop standards for green bonds and loans, green budget tagging, insurance, and management of environmental risk, to develop new stock market products, and to ensure transparent ESG reporting. Through its implementation it is expected to unlock substantial green investments contributing to Rwanda's IGE vision (Republic of Rwanda, 2023).

Linking the Green Taxonomy to capacity development initiatives, it is critical for Rwanda to develop and roll out educational programs for the Green Taxonomy concurrently, allowing public and private sector workers, such as bankers, investors, or budget officials, in addition to entrepreneurs to effectively implement and leverage the Green Taxonomy in their operations, and thus unlocking its full investment potential.

Green public procurement can also be used as a tool to promote green production systems and green products. Rwanda's 2018 National Environment and Climate Change Policy underscored the adoption of green procurement as a pivotal measure for mainstreaming environmental and climate action while enhancing national resilience. The strategy advocated for the development of national guidelines on green procurement by the government. The objective was to bolster the acquisition of environmentally sustainable products and services in alignment with efficacy and cost-effectiveness requirements. Simultaneously, the strategy aimed to curtail solid waste generation, diminish energy and natural resource consumption, and broaden the market for green products and services. In developing countries, public procurement makes up as much as 30% of GDP (UNEP, n.d.), thus expanding and ensuring green public procurement allows the government to invest significant resources into companies incorporating and promoting IGE principles, rewording them, and incentivizing other to further integrate IGE principles into their operations.

Another way of increasing finance for the IGE is via a **Green Fiscal Reform**. An Environmental and Climate Change Fiscal Reform could include the establishment of new green taxes and levies, or the elimination of environmentally harmful subsidies. Implementing such reforms would allow the Government of Rwanda to increase revenue generation to be spent on green growth, and re-direct funds from polluting industries to activities furthering green growth. Moreover, tax reliefs that promote green investments in the industrial and agricultural sectors will contribute to increasing private sector engagement with the green economy. The development of such a reform is already included in the GGCRS.

A third way of increasing financing to the IGE in Rwanda is through increased **Modelling** both physical and economic. The expansion of such activities would provide stakeholders with more detailed information and data on the physical and economic impacts of climate change on the country and their activities, in addition to being able to provide information on the benefits associated with action to minimize these impacts. As a result, increasing the accessibility of this information will allow public and private sector actors in addition to individuals themselves take more informed decision with regards to climate action. Increasing access to this information is expected to increase financing for green initiatives as stakeholders will be able to see the costs of inactions and weight them against the benefits of action. Currently, however, Rwanda has limited modelling capacity, as such the government need to invest and further develop the country's modelling capacities to effectively develop this information.

In addition to the macrolevel actions detailed above, PAGE in its assistance and collaboration with the Government of Rwanda should also promote increased localization of IGE initiatives. The development and implementation of smaller-scale localized IGE initiatives has several key benefits such as the responding to specific community needs and problems through more nuanced and community-based interventions and outcomes. Examples of such interventions include the promotion of community-based and localized disaster risk management initiatives, or the implementation of small-scale income generation projects designed specifically for a group or

community. This localization should be developed simultaneously to the macrolevel interventions, as they are complementary to one another. National level strategies guide trajectories and agendas, but interventions are not one size fits all, as such bringing them to the community and local level allows for certain IGE interventions to better excel.

Such a process of localization and community-based action requires increased community and stakeholder engagement as well. Although in the development of its current development policies and strategies Rwanda had extensive stakeholder engagement, as the consultations with sectoral stakeholders showed, see Table 16, further engagement with key sectoral stakeholders is required to foster a more enabling environment which would positively impact the implementation of localized and nuanced green growth initiatives in the relevant sectors. Consequently, in the development process of Rwanda's future green growth and other development initiatives, strategies and policies, **further stakeholder and community engagement activities and social dialogue** are required.

These community engagement and social dialogue processes are necessary to make sure that all voices and communities are heard and get to meaningfully contribute to and shape development processes. Moreover, meaningful community participation and dialogue makes sure that the green growth and green economy policies, actions and interventions respond to the needs of the Rwandan population, leading to more ownership and better fit to their contexts and purpose, and that their implementation is more effective and sustainable, thus contributing to positive impact.

Finally, although Rwanda is working hard and investing into climate action and minimizing the impacts of climate change on the country, the fact of the matter is that the physical impacts of climate change are increasing in frequency and severity across the globe. Consequently, in addition to the work it is already undertaking and is planning to undertake, Rwanda should **increase its promotion and investment into comprehensive risk management strategies and emergency preparedness mechanisms and tools**. This includes, but is not limited to, investments into increased disaster risk reduction interventions or comprehensive Early Warning Systems. Such initiatives will allow Rwanda to better prepare for climate or environmental emergencies by providing stakeholders with more information and data on events and giving them mechanisms and capabilities to respond to these emergencies to minimize the socio-economic impacts of climate and environmental disasters. By integrating these initiatives, mechanisms, and tools into its climate action portfolio Rwanda will increase its national, community and sectoral resilience to the impacts of climate change and minimize the development consequences of these physical impacts.

6. PAGE ENGAGEMENT: STRATEGIC FRAMEWORK AND ACTION PLAN

The Rwandan socio-economic context, existing national plans, policies/ strategies and processes, on-going activities related to IGE, government and non-government stakeholders and key green economy players have been described. The analysis shows that Rwanda has a robust policy framework, which has allowed it to start its IGE transition. The analysis also shows that Rwanda needs to address some challenges to advance towards a more IGE. Conversely, IGE implementation support Rwanda is receiving, will act as a catalyst for a speedier transition that is already underway.

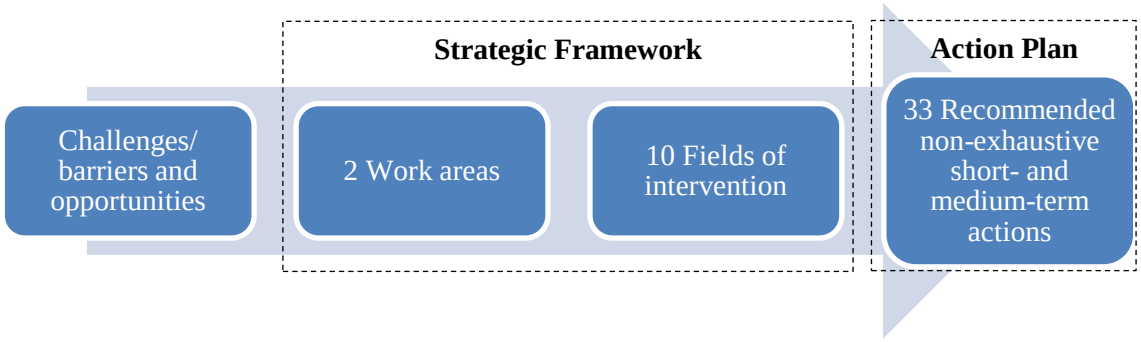
PAGE has the expertise and experience to partner with Rwanda to jointly work towards overcoming the IGE challenges currently faced by the country to further promoting the principles of IGE. PAGE engagement will work to **turn challenges/ barriers into opportunities.**

In accordance with key local institutional and non-institutional stakeholder wishes and guidance (see Annex 2), PAGE's role in Rwanda in the IGE sphere would be that of a catalyser, facilitator, and green policy influencer, supporting the government in its leadership. Consequently, **PAGE's mission** in the country should be to assist and support the government and other local stakeholders to operationalize and implement the strategic interventions proposed by the GGCRS and assist and inform any future green growth, IGE, and development policy initiatives developed in Rwanda.

The success in this mission is set out to be achieved through work in two **work areas**: (1) support high-quality strategic orientation, research, and technical and human resources capacity development, and (2) influence evolution of policy and regulatory environment supportive to IGE implementation. Each work area focuses on different **fields of intervention** that promote **concrete actions** expected to minimize and overcome the identified barriers and constraints to green economy expansion. These are suggested actions and is not an exhaustive list of actions to be taken in the country. The final annual work plan will be prepared with involvement of all agencies and jointly with the national partners.

Figure 9 shows PAGE strategic framework (work areas and fields of intervention) and action plan (recommended short- and medium-term actions).

Figure 9: PAGE Engagement – Strategic Framework and Action Plan



The action plan is made up of **33 short- and medium-term actions** designed around **2 mentioned work areas** and **10 fields of intervention.** Table 10 below, highlights the work areas, fields on intervention and short- and medium-term actions areas to be taken by PAGE over the next 4-5 years. Given the expected role of PAGE, the actions proposed focus on supporting and assisting the Rwandan government in its implementation of current green initiatives and in the development of new policies and interventions to promote green growth in the country. The fields of intervention and the actions themselves have been designed to be aligned with and contributing to the achievement of the GGCRS objectives. For example, PAGE's support for the development of training programs for green off-farm skills, is directly aligned with the GGCRS's strategic intervention High quality, tradeable off-farm jobs. Moreover, assisting Rwanda in identifying its

e-mobility capacity and helping it develop green mobility strategies is aligned with the CCGRS' strategic intervention calling for a transition to green public transport. This alignment is critical as PAGE's activities need to be in support of the objectives and initiatives designated by the Rwandan government.

The table also identifies the main partners with whom PAGE will need to collaborate. The partner institutions considered have different functions within the country, be they financial, environmental, educational, or social. Therefore, PAGE's ability to work with these institutions will ensure that the work plans are integrated in the institutional mandates extending PAGE influence on different national spheres and areas, thus increasing their scope, efficiency, and effectiveness. In addition, working with national institutions would create the conditions that benefit all-of society in line with institutional mandates.

Furthermore, recognizing that the green growth and IGE agenda is driven and set by national priorities and objectives means that international and national actors each have distinct, yet collaborative, roles and responsibilities in the implementation of proposed actions and initiatives. For their part, international actors act as promoters and catalysts for change in Rwanda. They support, in close partnership with national stakeholders, policy development and provide financing and develop studies and research into the viability and suitability of relevant interventions. Although supported by international actors, it is crucial for these studies to respond to the country's needs and objectives, consequently, they are developed in coordination and collaboration with national authorities and the relevant national ministries and other stakeholders. Such a collaboration means that Rwanda can make better use of international financing and expertise while making sure that these align with its national priorities and vision. The implementation phase is led by the various national authorities and ministries in Rwanda. During this period, international actors will maintain their support, and aid and continue to work with national actors, but it is the national actors who assume the leadership role in this phase.

The proposed actions can also be used to facilitate and increase South-South collaboration and cooperation on green growth and IGE. This is especially true for capacity development measures where expertise, skills and experience from other Global South countries can by utilized to develop capacity in Rwanda. An increase in South-South cooperation not only contributes to fostering sustainable development, but also reduces the country's dependance on external western aid.

Even though each action is classified under a specific field of intervention, the proposed actions are not independent from one another. Many actions have synergies and achieve co-benefits across various fields of intervention. For example, while the development of green skills among the workforce is classified under Green jobs, it also contributes to increasing private sector involvement in the green economy. Furthermore, the establishment of green codes and standards such as in the mining industry or urbanization also contribute to increasing private sector involvement. Also, support to increase private sector involvement has implications for the national green economy transition.

Green growth is a cross-cutting issue and, as such, **sectors of interest are all sectors identified in the Review GGCRS and the Updated NDC** (see Table 1). It is also worth noting that although most of the proposed actions are cross-cutting, some are sector specific.

Table 10: PAGE engagement summary

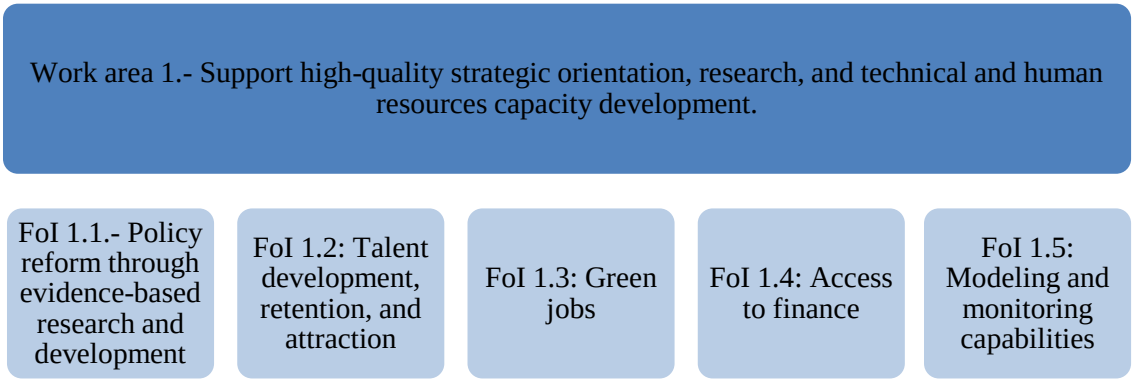
Work area	Fields of Intervention	Actions	Timeline	Sector	Main Partners
Work area 1: Support High-quality strategic orientation, policymaking, research, and technical and human resources capacity development	Field of Intervention 1.1: Policy reform through evidence-based research and development	Support the development and expansion of sustainable agriculture through research into climate resilient cultivars, breeds, and market trends	Short-term	Agriculture	GoR, MINAGRI, MINEMA
		Resources efficiency and circularity: Support increased water and energy efficiency through research on water and energy management practices across sectors such as urbanization (building codes) and agriculture (Irrigation) as well as industry (resource efficiency) and waste (circular economy – recycling)	Short-term	Waste, Water and Energy	GoR, MINICOM/MINAGRI, RWB
		Regional collaboration: Support the development of a common African position on green economy, climate change, biodiversity, and circular economy	Short-term	Cross-cutting	MOE MINECOFIN MINEMA
		Assist Rwanda in developing green mobility strategies and tools of implementation: Help Rwanda assess its EV manufacturing capacity and potential	Short-term	Transport/Industry (Manufacturing)	MININFRA/ MINICOM, RTDA
		Assist Rwanda in developing a green trade strategy, and helping to identify key green export opportunities	Short-term	Cross-cutting	GoR, MINICOM, MINAGRI, MINECOFIN, MININFRA, MoE, Inkomoko, RICEM
		Assist Rwanda in developing a dedicated green procurement strategy and create legal and regulatory measures for sustainable public procurement across all phases of the procurement cycle	Short-term	Public	MINECOFIN, MINIJUST, MINALOC, RPPA
	Field of Intervention 1.2: Talent development, retention, and attraction	Help Rwanda identify specific existing green capacity gaps in its educational system and workforce	Short-term	Education	Inkomoko, RICEM, ILO, MINECOFIN, MoE, MINEDUC, MIGEPROF,
		Influence and support the development of an educational curriculum which includes and promotes IGE priorities. To be applied to all age groups.	Short-term		

		Support the development of a capacity development framework (or policy programme) that facilitates capacity development in priority sectors targeting critical national institutions of green economy. One possible means of implementing this Programme can be through the design and implementation of a Student Green Champion Program.	Short-term		MINIYOUTH, HEC, NYC, UNITAR, UNEP, SIDA[6], UR
		Improve the capacities of policy makers in key institutions to carry out analytical work and apply evidence-based research when planning, developing, and implementing IGE policies in key priority areas.	Short term		
		Work with key national learning institutions (such as University of Rwanda) and research centres, to strengthen their capacities to develop and deliver IGE learning and promote international collaboration between them and international agents in IGE learning.	Medium term		
		Design and implement focused training programs to strengthen and expand capabilities, collaborate with reputable researchers, and think tanks to offer analytical support services throughout the region and continent	Medium - Long term		
		Support skills and capacity development on IGE and green jobs for policy/ decision makers (to enhance their capacity to formulate and implement good green policies), employers/ entrepreneurs and employees (so they are well prepared to pursue new green economy ventures and green jobs)			
	Field of Intervention 1.3: Green jobs	Help identify key green economy jobs, and related skills and knowledge requirements that are responsive to identified labour market needs of Rwanda's green economy. And development related strategies	Short-term	Cross-cutting	NWC, NYC, MINEDUC, MIFORTA, MINECUD, MIGEPROF, MINIYOUTH, HEC, Basic Education Board, ILO,
		Support the development of inclusive environmental and climate education programs for primary and secondary school students	Medium-term	Cross-cutting	
		Support the development of training programs for green off-farm skills, enterprises and jobs and unlocking economic value chains	Medium-term	Agriculture	

[6] Synergies exist with the Research cooperation between Swedish and Rwandan universities. Swedish higher education institutions are working with the State University of Rwanda to conduct research and train students at master's and doctoral level. The cooperation includes research and training on environment and climate.

					UNIDO, UNITAR, EfD
	Field of Intervention 1.4: Access to finance	Establish a support mechanism to help the public and private sector identify grants, resources, and funding opportunities and prepare competitive/winning tenders and proposals for funding	Short-term	Cross-cutting	MINECOFIN, FONERWA, Inkomoko, RICEM
		Promote an international network of firms and financial institutions with whom national actors can collaborate	Short-term	Cross-cutting	UNIDO
		Promote and support research on innovative green and climate finance instruments targeting public and private sector actors	Medium-Long term	Finance	MINICOM/MINECOFIN, MOE, NCST, UNEP, BRD, RICEM
	Field of Intervention 1.5: Modelling and monitoring capabilities	Support capacity development for effective green and climate integration into macroeconomic modelling that informs regular economic analysis, reporting, and evidence-based policy formulation for Rwanda	Medium-Long term	Cross-cutting	MINECOFIN, MINEMA, MOE, NCST, UNEP, UNBL, ILO
		Support capacity for data/information management including analysis and benchmarking to help the government identify the status and projected trajectory of its green economy	Medium-term	Cross-cutting	GoR, MINEMA, UNIDO, NCST, UNEP, UNBL, NISR
		Support the development of a NDC Monitoring, Reporting and Verification System	Short-term	Cross-cutting	NISR, NCST, UN
Work area 2: Influence evolution of policy and regulatory environment supportive to IGE implementation	Field of Intervention 2.1: Policy positioning	Support mainstreaming of green growth across identified priority sectors as part of the implementation of NST-2	Short-term	Cross-cutting	MINECOFIN
	Field of Intervention 2.2: Greening standards and codes	Support and aid the development of green and sustainable mining standards	Medium-term	Mining	Rwanda Standards Board
		Support and aid the establishment of effective, efficient, and sustainable municipal service management practices		Public	
		Support and aid the development of urbanization codes to foster green and multifunctional urban spaces		Urbanization	
	Field of Intervention 2.3: Access to finance	Assist in the mobilization of the green bond expected to be issued by the Rwanda Development Bank	Short-term	Finance	RDB, UNIDO, FONERWA

		Promote a tax relief program to promote green investments in the industrial and agricultural sectors	Medium-term		GoR, MINECOFIN, MOE, UNEP, REG, RICEM
		Support and inform a fiscal reform aimed at eliminating environmentally harmful subsidies (both fossil and non-fossil) and/or modifying (or introducing new) fiscal incentives that encourage environmentally friendly behavior patterns	Medium-term	Cross-cutting (but focus on big emitters)	
	Field of Intervention 2.4: Private sector engagement	Support the government in developing strategies to incentivize and catalyze private sector investment in the green economy	Medium-term	Cross-cutting	MINICOM, PSF, JADF, Inkomoko, RICEM
		Help the GoR position itself in international markets and consciousness to attract foreign direct investment	Short-term	Cross-cutting	MINICOM, MINAFETT, GoR, RDB
	Field of Intervention 2.5: Green economy coordination	Assist the GoR to increase and broaden its community engagement and social dialogue initiatives	Short-term	Cross-cutting	All relevant national and international actors
		Help the government develop and implement effective cross-sectoral coordination mechanisms	Short-term		MINECOFIN, MoE



Field of Intervention 1.1.- Policy reform through evidence-based research and development

Action 1.1.1.- Support the development and expansion of sustainable agriculture through research into climate resilient cultivars, breeds, and market trends.

Description

Promote sustainable agriculture by researching climate-resistant crops and livestock while staying attuned to evolving market trends.

Related challenges/ barriers and opportunities

- Barriers: Lack of data to take well-informed decisions
- Opportunities: Data gathering and strategic thinking

Action 1.1.2.- Resources efficiency and circularity: Support increased water and energy efficiency through research on water and energy management practices across sectors such as urbanization (building codes) and agriculture (Irrigation) as well as industry (resource efficiency) and waste (circular economy – recycling)

Description

Advance water and energy efficiency by conducting research on cutting-edge water and energy management techniques. Moreover, promote the implementation of circular economy principles to further increase efficiency.

Related challenges/ barriers and opportunities

- Barriers: Lack of data to take well-informed decisions
- Opportunities: Data gathering and strategic thinking

Action 1.1.3.- Regional collaboration: Support the development of a common African position on green economy, climate change, biodiversity, and circular economy

Description

Position Rwanda as the green economy African leader with a unique voice by (1) building a common African position on green growth, (2) enhancing Africa's voice at global green economy fora, and (3) influencing international dialogues. Activities to be developed in the short term may include: to develop a policy brief on Rwanda's position on green growth and climate change for the 2023 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC (COP28).

Related challenges/ barriers and opportunities

- Barriers: Certain misalignment across the sector strategic plans
- Opportunities: Build a common African position on green growth

Action 1.1.4.- Assist Rwanda in developing green mobility strategies and tools of implementation: Help Rwanda assess its EV manufacturing capacity and potential.

Description

Transport is one of Rwanda's largest emitters. Moreover, the GGCRS calls for the decarbonization of the transport sector in Rwanda. Doing so has environmental benefits for the country and is an opportunity to capitalize on EV manufacturing, expanding the country's manufacturing industry, and positioning itself as a green mobility hub in Africa.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Further integrate green growth priorities into the national policy framework

Action 1.1.5.- Assist Rwanda in developing a green trade strategy and helping to identify key green export opportunities.

Description

Support Rwanda's formulation of a green trade strategy, fostering sustainable economic growth. Collaborate in pinpointing strategic green export opportunities, aligning with the nation's environmental and development goals.

Related challenges/ barriers and opportunities

- Barriers: Certain misalignment across the sector strategic plans, and lack of coordination
- Opportunities: Further integrate green growth priorities into the national policy framework

Action 1.1.6.- Assist Rwanda in developing a dedicated green procurement strategy and create legal and regulatory measures for sustainable public procurement across all phases of the procurement cycle

Description

Despite being highlighted as an objective within the National Environment and Climate Change Policy and also mentioned in the updated NDC, Rwanda lacks a dedicated strategy to implement sustainable public procurement. Moreover, there is also an absence of comprehensive measures within the legal and regulatory framework governing public procurement to address sustainability considerations across all phases of the procurement cycle.

Related challenges/ barriers and opportunities

- Barriers: Certain misalignment across the sector strategic plans, and lack of coordination
- Opportunities: Further integrate green growth priorities into the national policy framework

Field of Intervention 1.2.- Talent development, retention, and attraction

Action 1.2.1.- Help Rwanda identify specific existing green capacity gaps in its educational system and workforce.

Description

Assist in conducting a comprehensive assessment to identify specific capacity gaps in Rwanda's educational system and workforce. Focus on areas such as curriculum development, teacher training, and the integration of modern technologies. Assess the alignment between educational programs and industry needs to enhance workforce readiness. Additionally, examine the availability of vocational training programs and the inclusivity of education to address diverse learning needs. This analysis will aid in developing targeted interventions to bridge identified gaps and strengthen Rwanda's education and workforce capabilities.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.2.- Influence and support the development of an educational curriculum which includes and promotes IGE priorities. To be applied to all age groups.

Description

Endorse and assist in the creation of an inclusive educational curriculum that actively incorporates and champions the priorities of the IGE. Advocate for the integration of IGE principles across all age groups, fostering a holistic understanding of sustainable practices. Support curriculum development initiatives that emphasize environmental stewardship, social equity, and economic resilience.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.3.- Support the development of a capacity development framework (or policy programme) that facilitates capacity development in priority sectors targeting critical national institutions (MINECOFIN, MoE and MINEDUC) of green economy. One possible means of implementing this Programme can be through the design and implementation of a Student Green Champion Program

Description

This program uses education and training systems and institutions as catalysts and support for a shift to a more green and sustainable society. Some elements of the Program could include the following: (1) Integrate Green Growth and Environmental issues in the Curriculum of formal (Primary Schools, Technical and Vocational Education and Training (TVET), and Higher/University) and informal education. (2) Provide green capabilities to several institutions to have champions in different organizations. Choosing some critical/ more sensitive university colleagues/ departments (e.g., colleague of technology) and collaborate with them so that they can start to provide courses on environmental issues to some critical sectors (e.g., agriculture and water infrastructure) - others will follow pioneers so just need to teach a few sectors.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.4.- Improve the capacities of policy makers in key institutions to carry out analytical work and apply evidence-based research when planning, developing, and implementing IGE policies in key priority areas.

Description

Prioritizing frontline institutions such as REMA and FONERWA, the initiative fosters strategic expertise through tailored training, ensuring early success and supporting Rwanda's growth plans. The aim is for frontline institutions to be able effectively implement critical environmental and developmental initiatives.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.5.- Work with key national learning institutions (such as University of Rwanda) and research centres, to strengthen their capacities to develop and deliver IGE learning and promote international collaboration between them and international agents in IGE learning.

Description

The initiative extends capacity support to the University of Rwanda (UR) and engages nationally based researchers. This collaborative effort contributes to the national expansion of targeted green economy capacities, fostering sustainable development and environmental initiatives. Moreover, it aims to foster global partnerships, enhance knowledge exchange, and promote cooperation between local entities and international stakeholders for mutual benefit and shared advancements.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.6.- Develop and deliver targeted training aimed at embedding and enhancing capacities through partnerships with established researchers/think tanks to provide analytical support services offerings across the region and the continent.

Description

Implement targeted training through established researchers and think tanks to embed capacities, enabling them to offer analytical and technical support services not only across the region but also throughout the continent. This strategic approach fosters knowledge dissemination and strengthens collaborative efforts for broader impact in various domains.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.2.7.- Support skills and capacity development on IGE and green jobs of policy/decision makers (to enhance their capacity to formulate and implement good green policies), employers/entrepreneurs and employees (so they are well prepared to pursue new green economy ventures and green jobs)

Description

Support the green capacity development of policymakers and decision-makers to enable the elaboration and implementation of effective green policies. Additionally, empower employees with the necessary skills to prepare them for emerging green jobs, ensuring a workforce ready for sustainable development and environmental stewardship.

Related challenges/ barriers and opportunities and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Field of Intervention 1.3.- Green jobs

Action 1.3.1.- Help identify key green economy jobs, and related skills and knowledge requirements that are responsive to identified labour market needs of Rwanda's green economy and develop related strategies.

Description

Assist in pinpointing essential skills and knowledge prerequisites for a green economy, fostering sustainability and environmental management. The action could build on the National Skills Development and Employment Promotion Strategy (NSDEPS) 2019-2024, aimed at developing and increasing the employability of the Rwandan population. This project could be integrated into the NST-2.

Related challenges/ barriers and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools

Action 1.3.2.- Support the development of inclusive environmental and climate education programs for primary and secondary school students.

Description

Promote the integration of the IGE and its principles into school curriculums, ensuring that Rwandans receive inclusive green education from a young age.

Related challenges/ barriers and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local talent pools

Action 1.3.3.- Support the development of training programs for green off-farm skills, enterprises and jobs and unlocking economic value chains.

Description

Promote the establishment of training initiatives for valuable off-farm green economy skills.

Related challenges/ barriers and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Build capacity and tap into local and international talent pools and unlock local, regional, and global economic value chains

Field of Intervention 1.4.- Access to finance

Action 1.4.1.- Establish a support mechanism to help the public and private sector identify grants, resources, and funding opportunities and prepare competitive/winning tenders and proposals for funding.

Description

Help civil society (1) to identify existing grants, resources, and funding opportunities, and (2) to prepare competing/winning tenders and proposals for funding.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources to complement public resources

Action 1.4.2.- Promote an international network of firms with whom national firms can collaborate.

Description

Promote the formation of an international network of firms to facilitate collaboration opportunities for national firms. The initiative aims to enhance knowledge-sharing and create avenues for cooperation between national and international businesses, fostering mutual growth and innovation.

Related challenges/ barriers and opportunities

- Barriers: Lack of skills/ capacity
- Opportunities: Mobilize and capture additional finance from private resources to complement public resources and Build capacity and tap into local and international talent pools

Action 1.4.3.- Promote and support research on innovative green and climate finance instruments targeting public and private sector actors.

Description

The use in Rwanda of taxes and levies that have been proposed over the past years to raise funding for climate change actions in developing countries, but that have not been used yet in the context of climate finance and might raise substantial revenues, can be analysed. These instruments include the following: a financial transaction tax, an airline passenger levy, a sustainable tourism tax, a bunker fuels levy, a fossil fuel levy, or a carbon pricing system. The phasing out of environmentally harmful subsidies (including for biodiversity) can also be explored.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources to complement public resources

Field of Intervention 1.5.- Modelling and monitoring capabilities

Action 1.5.1.- Support capacity development for effective green and climate integration into macroeconomic modelling that informs regular economic analysis, reporting, and evidence-based policy formulation for Rwanda.

Description

Green modelling in Rwanda is most needed to understand how green policy interventions can affect economic (e.g., GDP), social (e.g., poverty reduction and employment), and environmental (e.g., supply of ecosystem services) outcomes and to inform evidence-based policy formulation. For example, the implications of the transition to IGE for (1) the public finances of Rwanda, both in terms of revenues and expenditure and long-term debt sustainability, (2) the re-distribution of employment and frictions in the labour market and the ability to adjust skills to the needs of a

green economy, and (3) the changes in GDP of the necessary increase in the aggregate investment needs. This will increase understanding of policymakers, government officials, the scientific community, conservation managers, worker and employer organisations, and private sector of the importance of green policies and will inform decision making.

Related challenges/ barriers and opportunities

- Barriers: Lack of data to take well-informed, evidence-based decisions
- Opportunities: Macroeconomic green modelling for evidence-based policy formulation and decisions

Action 1.5.2.- Support capacity for data/information management including analysis and benchmarking to help the government identify the status and projected trajectory of its green economy.

Description

This initiative aims to assist the government in identifying the current status and projected trajectory of its green economy. Strengthening these capabilities enhances informed decision-making for sustainable development initiatives.

Related challenges/ barriers and opportunities

- Barriers: Lack of data to take well-informed decisions
- Opportunities: Data gathering and monitoring

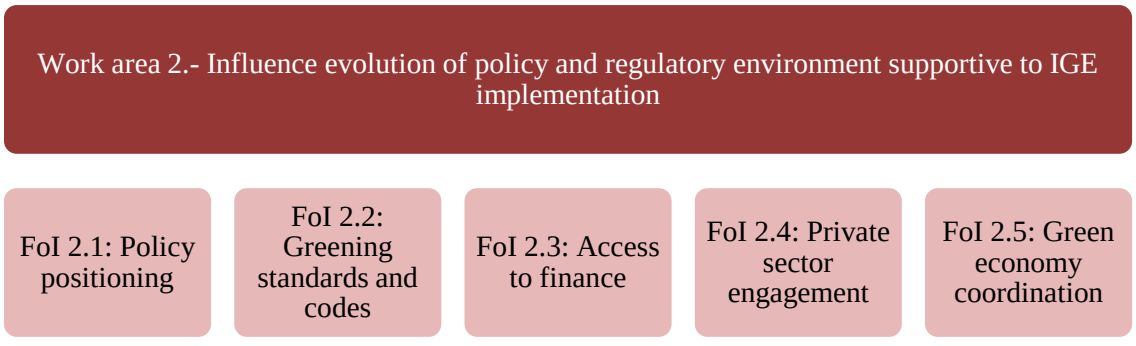
Action 1.5.3.- Support the development of a NDC Monitoring, Reporting and Verification System.

Description

Although Rwanda has set ambitious adaptation and mitigation goals for 2030 and recognizes the necessity of integrating and aligning its national development strategies with these goals, the country does not have a national NDC monitoring system.

Related challenges/ barriers and opportunities

- Barriers: Lack of data to take well-informed decisions
- Opportunities: Data gathering and monitoring



Field of Intervention 2.1.- Policy positioning

Action 2.1.1.- Support mainstreaming of green growth across identified priority sectors as part of the formulation and implementation of NST-2

Description

As the NST-2 is rolling out, there is an opportunity to influence the integration of green growth priorities into the NST-2 and an alignment of the NST-2 with the revised GGCRS.

Related challenges/ barriers and opportunities

- Barriers: Certain misalignment across the sector strategic plans
- Opportunities: Further integrate green growth priorities into the national policy framework

Field of Intervention 2.2.- Greening standards and codes

Action 2.2.1.- Support and aid the development of green and sustainable mining standards.

Description

These provide guidelines and certification processes that help the sector reduce its environmental impact and promotes sustainable practices. Having green mining standards will guide mining activities so that their environmental impact is reduced and overseen. It will help private investment toward green projects.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Action 2.2.2.- Support and aid the establishment of effective, efficient, and sustainable municipal service management practices.

Description

Aid in establishing efficient, sustainable municipal service management practices for effective governance.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Action 2.2.3.- Support and aid the development of urbanization codes to foster green and multifunctional urban spaces.

Description

These provide guidelines and certification processes that help urban planners use nature-based and green solutions to improve urban environments and living. Having green urban standards will promote sustainable, liveable, and green urban development. It will help drive private investment toward green projects.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Field of Intervention 2.3.- Access to finance

Action 2.3.1.- Assist in the mobilization of the green bond expected to be issued by the Rwanda Development Bank

Description

It will enable the scale up of decarbonization and resource efficiency projects in the industrial sectors. Projects that can be scaled up include greening of industrial parks (e.g., an agro-industrial park has already been put in place in Rwanda) greening of manufacturing industry (e.g., low carbon transformation strategies have been implemented in 19 tea processing plants).

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Action 2.3.2.- Promote a tax relief program to promote green investments in the industrial and agricultural sectors.

Description

Having an ad-hoc green taxonomy will help identify which investment options are sustainable in Rwanda and which are not. As the lack of clarity about which activities and assets can be defined as green has long posed a barrier to scaling up green finance. This will help drive the most needed private investment toward green projects aligned with Rwanda's green growth and sustainability priorities.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Action 2.3.3.- Support and inform a fiscal reform aimed at eliminating environmentally harmful subsidies (both fossil and non-fossil), modifying, or introducing new fiscal incentives that to encourage environmentally friendly behaviour patterns.

Description

Research on **fit for purpose innovative green and climate finance** instruments. Analyse the use in Rwanda of **taxes and levies** that have been proposed over the past years to raise funding for climate change actions in developing countries, but that have not been used yet in the context of climate finance and might raise substantial revenues in Rwanda. These instruments include the following: a financial transaction tax, an airline passenger levy, a sustainable tourism tax, a bunker fuels levy, a fossil fuel levy, or a carbon pricing system.

The phasing out of **environmentally harmful subsidies** (including for biodiversity) can also be explored. Such a reform will free up resources, making them available to be spent on green initiatives. Moreover, it would reduce financing of carbon-intensive and polluting industries.

Other area of interest is the **potentia**l **use of financial cooperatives** to create liquidity.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Field of Intervention 2.4.- Private sector engagement

Action 2.4.1.- Support the government in developing strategies to incentivize and catalyse private sector investment in the green economy.

Description

Assist the government in formulating strategies to encourage and stimulate private sector investments in the green economy.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Action 2.4.2.- Promote foreign direct investment through helping the GoR position itself in international markets and consciousness.

Description

Foster foreign direct investment by aiding the Government of Rwanda in establishing a strong international market presence and global awareness.

Related challenges/ barriers and opportunities

- Barriers: Lack of international and private financing resources
- Opportunities: Mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources

Field of Intervention 2.5.- Green economy coordination

Action 2.5.1.- Assist the Government of Rwanda to increase and broaden its community engagement and social dialogue initiatives.

Description

Increased engagement with key sectoral stakeholders is required to foster a more enabling environment which would positively impact the implementation of green growth initiatives in the relevant sectors. Increasing community participation in the development process allows policies to better fit their context and purpose, in addition to increasing community uptake. This contributes to increasing the effectiveness of green growth and green economy policies, strategies, and initiatives.

Related challenges/ barriers and opportunities

- Barriers: Lack of sufficient coordination
- Opportunities: Establish effective and efficient coordination and increase community participation

Action 2.5.2.- Help the government develop and implement effective cross-sectoral coordination mechanisms.

Description

Assist the government in crafting and executing efficient cross-sectoral coordination mechanisms for enhanced governance and collaboration.

Related challenges/ barriers and opportunities

- Barriers: Lack of sufficient coordination
- Opportunities: Establish effective and efficient coordination

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8. ANNEX 1: DETAILED TABLES

Table 11: Non-exhaustive list of national actors relevant to the IGE transition in Rwanda

Ministries
Ministry of Agriculture and Animal Resources
Ministry in charge of Emergency Management
Ministry of Education
Ministry of Environment
Ministry of Finance and Economic Planning
Ministry of Gender and Family Promotion
Ministry of ICT & Innovation
Ministry of Infrastructure
Ministry of Justice
Ministry of Local Government
Ministry of Public Service and Labour
Ministry of Trade and Industry
Ministry of Youth
Parliament of the Republic of Rwanda
Government agencies
Cleaner Production and Climate Innovation Centre
Development Bank of Rwanda
Energy Private Developers
Local Administrative Entities Development Agency
National Agricultural Export Development Board
National Council for Science and Technology
National Industrial Research and Development Agency
National Institute of Statistics of Rwanda
National Land Authority
National Women's Council
National Youth Council
Private Sector Federation
Rwanda Agriculture and Animal Resources Development Board
Rwanda Development Board
Rwanda Energy Group

Rwanda Environment Management Authority
Rwanda Forestry Authority
Rwanda Green Fund
Rwanda Housing Authority
Rwanda Information Society Authority
Rwanda Meteorology Agency
Rwanda Standards Board
Rwanda Transport Development Agency
Rwanda Water Resources Board
Water and Sanitation Corporation
Private sector, civil society, and academic institutions
250Start-Ups
Inkomoko
Rwandan Institute of Cooperatives, Entrepreneurship and Microfinance
Rwanda Greenpreneurs Network
Rwanda Private Sector Federation
BPN Business Owners Association
Rwanda Hospitality Association
Rwanda Bankers' Association
Rwanda Workers' Trade Union Confederation and its affiliates
STAVER (Workers union in Agriculture, fishing, veterinary and environment in Rwanda)
STRIGEP (Workers union in industry, Garages, petroleum, and private printing enterprises)
SYPELGAZ (Energy, Water and Sanitation Union)
REWU (Rwanda extractive workers union)
SYTRAMORWA (Union of Motorcyclists and taxi drivers)
STAP (Workers union in Public Administration)
SENJOUSMEL (Union of teachers, journalists, medical service, libraries of the private sector and non-governmental organizations)
SNER (Rwanda National Teachers' Union)
Rwanda Environmental NGO's Forum and its members
Rural Environment and Development Organization (RENGOF member)
Rwanda Youth Organization for Development (RENGOF member)
APEFA (RENGOF member)
Sabyinyo Community Livelihood Association (RENGOF member)
Poverty Reduction and Gender Promotion Organization (RENGOF member)

University of Rwanda
Water and Sanitation Corporation
Cross-sector actors
District Disaster Management Committee
National Disaster Management Committee (NADIMAC)
National Platform for Disaster Management
Sector Disaster Management Committee
Joint Action Development Forum

Source: (Government of Rwanda, 2022), (CESTRAR, n.d.) & (RENGOF, n.d.)

Table 12: International actors contributing to climate action and green economy development in Rwanda

Name	Projects
Adaptation fund (AF)	**"Reducing Vulnerability to Climate Change in Northwest Rwanda through Community Based Adaptation"**. Implementing Entity: Ministry of Environment (MoE). Duration: 2014-2019.
African Development Bank (AfDB)	**1. "Rwanda Sustainable Water Supply and Sanitation Program".** Implementing Agency: Water and Sanitation Corporation Rwanda. **2. "Skills and Business Development Programme"**. Implementing Agency: Ministry of Finance and Economic Planning (MINECOFIN). Duration: 2017-2020.
Climate & Development Knowledge Network (CDKN)	1. **"Providing technical advisory support towards the implementation of Rwanda's Green Growth and Climate Resilience Strategy"**. Implementing Entity: Rwanda Environment Management Authority (REMA). Duration: 2015-2017. **2. "FONERWA capacity building". Duration:** 2013-2015.
DFID (now Foreign, Commonwealth & Development Office)	**"Advanced Coffee Crop Optimisation for Rural Development (ACCORD)"**. Duration: 2018-2021.
FAO	**"Joint Programme Enhancing Climate Resilient and Integrated Agriculture in Disaster Prone Areas of Rwanda"**. Duration: 2019-2023. **"Building climate resilient city region food systems through adapted production system"**. Duration: 2018-2021.
Green Climate Fund (GCF)	**1."Transforming Eastern Province through Adaptation"**. Duration: 2021-2027. **2. "Strengthening Climate Resilience of Rural Communities in Northern Rwanda"**. Duration: 2019-2025.
Global Environment Facility (GEF)	**1. "Ecosistem-Based Restoration Approach for Nyungwe-Ruhango Corridor"**. Implementing Agency: The World Bank. **2. "Supporting a Green Economy - Decoupling Hazardous Waste Generation from Economic Growth in Rwanda"** Implementing Agency: UNDP.
Global Green Growth Institute (GGGI)	1. **"Support to setup Super ESCO facility in Rwanda as a vehicle to promote energy efficiency"**. Duration: 2022-2023. **2. "Smart and Electric Public Transport Services for Low-Carbon City Development in Rwanda".** Duration: 2021-2022.
International Fund for Agriculture Development (IFAD)	**1."Promoting Smallholder Agro-Export Competitiveness Project"**. Duration: 2022-2029. **2."Partnership for Resilient and Inclusive Small Livestock Markets Programme"**. Duration: 2019-2026.
KfW Development Bank	1. **"Promoting growth and export-oriented small and medium-sized enterprises (SMEs)"**. Partner: Development Bank of Rwanda (BRD). **2. "ICT Facility"**. Partner: Rwanda Information Society Authority (RISA).
Least Developed Courtiers Fund (LDCF)	**"Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood Prone Areas"**. Duration: 2010-2014. Partners: UNEP, UNDP, RAB (Rwanda Agriculture Board) and AAP (African Adaptation Program).
Swedish International Development Agency (SIDA)	SIDA is helping to **develop the university's ability to conduct research and train students** in areas such as environment and climate, innovation, health, peace and conflict research and sustainable economic development. Partner: State University of Rwanda.
United Nations Development Programme (UNDP)	"**Vanishing Treasures' – protecting endangered mountain species"**. Implementing agencies and partnering organizations: REMA, UNDP, UNEP, GEF. Duration: 2018-2023.

UN Industrial Development Organization (UNIDO)	**"Programme for Country Partnership (PCP) for Rwanda"**
World Bank	**1. "Rwanda Quality Basic Education for Human Capital Development"**. Duration: 2020-2027. **2. "Rwanda Priority Skills for Growth (PSG)"**. Duration: 2018-2024.

Source: (Republic of Rwanda, 2021)

Table 13: Percentage of institutional expenditure on environment and climate change, from 2013 to 2019

	MINAGRI	RAB	MINIRENA	MOE	REMA	FRWA	MIDMAR	RMB	MINEMA	MINILAF	NAEB	RFA	RHA	Rwanda Meteo	MINICOM	RNRA	RLMU	RTDA	LTRP	WASAC
13-14	48.8	7.5	14.2		41		19.5				16.5			94.8		41.4				
14-15	41.8	21.6	5.3		67.3		37.5				9.5			92.3		38.1				
15-16	44.9	28.3	4.9		61.3						2			63.1		25				
16-17	52.7	24.6	4.5		82.4	17.7			9.2		2.3			84.5		38.3	5.5	2		11.8
17-18	44.9	25.9	31.1		71.2	69.2		13.4	13.9	10.8	5.4		11.9	70.2			2.3	6.9	2	41
18-19	12.7	27		42.7	68.3	47.1		4.6	12.5	5.2	29	98.2	5.5	60.6	37.4		6.1	9.3	20	6.1
19-20	32.5	13		38.8	75.4	51.4		0.3	0.2		9.9	8.5	9.7	63.3	15.4		4.1	2.7	5.8	21.8

Source: (REMA, 2022)

Table 14: GGCRS interventions, indicators and costs

Strategic Intervention	Mitigation	Adaptation	Green Growth	Indicator	Total cost until 2050 (US$ Mn.)
Green Industrialisation and Trade					
Low-Carbon, Climate-Resilient Energy and Transport Networks					
Increasing RE generation in the generating mix	X			Share of renewables in total electricity supply (%)	1,241
Low carbon energy to key sectors	X		X	Percentage of EVs over total vehicles, by type (motorbike, car, bus)	1,114
Sustainable and climate resilience transport networks, freight and logistics		X		Travel times on international and national roads, including delays at ports, weighbridges, police checks and border posts (frequency: biannual; unit of measure: hours)	5,617
Integrated multimodal transport systems	X	X		Reduced length (km) of roads vulnerable to landslide, by type (national paved | national unpaved | district road)	4,469
Universal Access to Electricity - on-grid solutions	X		X	Number of households connected to the grid	1,432
Green Industry and Private Sector Participation					
Green SEZs and Industrial Parks	X		X	Emission intensity per output (tonnes/US$ million value added)	365
Increase finance for green technologies in industries to raise productivity			X	Cumulative volume of financial resources [US$ millions] mobilized for climate and environmental purposes in industry and technology	10,305
Strengthen industrial sector capacity including of the Cleaner Production and Climate Innovation Centre			X	Students enrolled in TVET as proportion of total students in Basic Education (%)	24
Greening the Mining Sector to ensure sustainability and responsiveness to the Green Economy	X	X	X	Percentage of companies deploying climate compatible mining	64
Green Urban Transition and Integration					
Low Carbon and Smart Urban Infrastructure and Services					
Rwanda Green Building Minimum Compliance System	X			Number and % of new Category 4 and 5 buildings that comply with the Green Building Minimum Compliance system (i.e. those covered by the regulation: commercial buildings, health and education facilities, public administrative buildings and social/cultural ones)	2,292
High quality, affordable housing, and dense cities	X	X		Decreasing percentage of urban population living in informal settlements	12,950
High quality, tradeable off-farm jobs		X	X	% of skilled people (qualified and experienced) with critical and rare skills in the high priority sectors	306
Transition to green public transit	X			CO2 Emissions intensity per passenger-km for public transit	1,841

Smart approaches for municipal service management	X	X	X	Public services rendered online (%)	197
Integrated and Resilient Urban Landscapes					
Agglomeration, Densification, Mixed User and Multifunctional Urban Spaces		X	X	Percentage of urban households living in a smart green city/district	1,700
Greening Cities through Green Space and Agriculture	X	X	X	Average share of the built-up area of cities that is open and green space for public use for all (SDG)	7
Integrated Urban Stormwater and Drainage Management		X		Percentage of urban population in areas covered by master plans with storm water considerations	400
Sustainable Land Use and Natural Resource Management					
Adaptive and Resilient Land Use Management and Spatial Planning					
Integrated planning and monitoring for sustainable land management		X		NLUDMP that includes comprehensive measures and procedures for sustainable land use practices	92
Development of sustainable sectoral land use strategies and National Spatial Data Infrastructure (NSDI) including information management and sharing policy		X		Percentage of operational integrated geospatial information framework integrated with environmental and socio-economic statistics	117
GIS/ICT Innovation throughout Government, Districts and Implementing Agencies		X		GIS systems and ICT tools in use at all levels of government	11
Development of an inclusive and automated land administration to regulate and provide guidance for land tenure security		X		Percentage of registered state land optimally used	38
Risk Assessment and Vulnerability Mapping (including integrated early warning system)		X		Percentage of occurred extreme weather events for which advance warning was provided at least 30 minutes in advance	80
Integrated Water Resources Management					
Climate Resilient Water Infrastructure for Storage and Supply		X		% of water storage and supply infrastructure fortified with climate resilience improvements	280
Completion of Remaining Level 1 Catchment Plans and implementation of catchment restoration and soil erosion control strategies		X		Percentage of water bodies with ambient water quality	2,172
Strengthened Disaster Management and Response		X		Number of effective city contingency plans developed	40
Vibrant Resilient Green Rural Livelihoods					
Sustainable Agriculture, Forestry and Conservation					
Enhance agro-ecology, crop variety, climate resilient cultivars and animal breeds, local and export markets		X	X	Climate resilient crop varieties: (i) number of varieties developed and (ii) percentage of farmers adopting them	1,089
improved on-farm water and energy management incl. efficient irrigation and farming systems	X	X	X	Number of hectares under irrigation within IWRM (Integrated Water Resources Management) framework	2,955
Diversification and manufacturing with expansion of local and export market access		X	X	Capacity of storage constructed in MT (million metric tonne)	470

Developing agroforestry and soil management for sustainable agriculture and fruit production	X	X	X	Average tree density (tree/ha) in crop and agroforestry lands	734
Rehabilitation of degraded forest resources and improvement of forest management	X	X		Number of ha restored and set under approved management plan	150
Promoting conservation, community-based ecotourism, and enforcement of PES	X	X	X	Tourism revenue generated by ecotourism parks sites per year	72
Green and Climate Resilient Rural Settlements					
Decentralized Water Treatment Solutions		X		Number of households having access to improved water sources and sanitation services	320
Bus services in rural areas	X	X		Percentage of population conveying with public transportation (total | urban | rural)	248
Off-grid electricity and efficient wood conversion	X			Number of households with off grid access to electricity	2,761
Model villages and effective spatial planning	X			Number of smart green villages	74

Source: (Government of Rwanda, 2022)

Table 15: M&E matrix of NST-1 economic and social outcomes

Outcome	Indicator	Unit	Baseline 2016/17	Target 2020/21	Current Status	Progress in % vs Mid-term Target
Increased national income	GDP Per Capita	US$	729	1240	854	Not rated
Reduced Poverty	Population living below the poverty line	%	38.2	20	_-	Not rated
Economic Transformation Pillar						
Increased decent and productive jobs	Number of new decent and productive jobs created	Number	155,994	1,071,500 cumulative (Annual target 214,300)	942,324 Cumulative (164,189 in 2021)	88%
Developed and integrated cities and towns	Population living in urban areas	%	18.4	28.19	_-	Not rated
Accelerated growth of Exports (Goods and services)	A. Annual export growth	%	10.8 average growth of EDPRS 2	17%	9.5%	55.9%
	B. Value of exports	US$ millions	(US$ 1,893.7 Calendar year 2017)	US$ 3,250.6 (Calendar year 2021)	US$ 2,110	64.91%
Increased digital literacy	Percentage of digital literacy	% (15-30 years)	10.5 (for computer literacy 15- 24 years, EICV 5)	50%	15.2	37.8%
		% (15 and above)	8.9 (for computer literacy, EICV 5)	45.00%	20.40%	
Accelerated industrialization for economic transformation	Industry as share of GDP	%	16.5	19.40%	20%	103%
Increased revenues from Tourism	Value of tourism revenues	US$ millions	374	600	164	27.33%
	Value of MICE revenues	US$ millions	64	106	12.5	11.8%
Accelerated growth of mining export revenues	Value of mineral exports per annum	US$ millions	373	800	677	84.62%
Developed hard infrastructure for trade competitiveness	A. Number of passengers carried per year by National Carrier.	Number of people	771,454	1,767,670	614,215	34.7%
	B. Length of unpaved national roads upgraded to paved	Km	1,305	1,531	1,532.5	100.1%
	C. Number of Km of feeder roads rehabilitated	Km	2,060	3,855	3,456.4	89.6%
Enhanced long-term savings	Gross domestic Savings as a share of GDP	%	10.6 (2017)	14%	13.17%	94%

Increased usage of electronic payment systems	Percentage of payments done electronically as a share of GDP	%	26.90%	75%	95%	126.7%
Increased productivity, quality, and sustainability of crop production	A. Ha of irrigation developed within an Integrated Water Resources Management Framework	Ha	48,508 (2016)	77,084	66,840.5	86.71%
	B. Area of consolidated land	Ha	635,603	877,703	762,773	86.90%
	C. Percentage of farm operations mechanized	%	25	37	30%	81.08%
	D. Area of Land under erosion control measures and used optimally	- Radical terraces (Ha)	110,905	125,000	131,056.70	102.8%
		- Progressive terraces (Ha)	923,604	965,604	972,055	
	E. Percentage of farmers using quality seeds on consolidated sites	Large Scale farmers (%)	52	63	88.8%	130.5%
		Small Scale Farmers (%)	18%	30%	36%	
	F. Quantity of fertilizer applied	Kg per ha per Annum	32	60	60	100%
	G. Yield of major crops (MT/Ha for – Maize, Beans, Irish potatoes, Wheat, and Soybeans)	MT/ha	Maize: 1.57	Maize: 2.34	Maize: 1.6	64.7%
			Beans: 1.21 Irish	Beans: 1.69	Beans: 0.7	
			potatoes: 8.18	Irish potatoes: 11.6	Irish potatoes: 8.9	
			Wheat: 0.95	Wheat: 1.29	Wheat: 1.0	
			Soybeans: 0.55	Soybeans: 0.84	Soybeans: 0.5	
	H. Strategic reserves stored at district level	MT	Maize: 123,000	Maize: 131,684	Maize: 15,752	10.2%
			Beans: 61,814	Beans: 65,307	Beans: 5,550	
	I. Quantity of meat and dairy products produced (Meat, Milk, Eggs)	MT	Milk: 776,284	Milk: 1,012,924	Milk: 891,326	92%
			Meat: 96,457	Meat: 128,091	Meat: 174,904	
			Eggs: 7,475	Eggs: 11,211	Eggs: 5,800	
	J. Credit to agriculture sector as percentage of total loans	%	5.2	8%	6.15%	
Increased sustainability and profitability of forestry management	a. Forest coverage of total surface areas	%	29.8	30	30.40%	101.3%
	b. % of public forest plantation allocated to private operators	%	14.1	55	38.45%	69.90%
Reduced biomass usage for cooking	Percentage of households using firewood for cooking	%	79.9%	66.60%	77.70%	16.50%
Social Transformation Pillar						
Eradicated extreme poverty	Percentage of the population living below extreme poverty line	%	16	3.5	16	Not rated

Improved nutrition for children under five (5) years of age	Prevalence of chronic malnutrition (stunting) among under 5 Children	%	38	29.9	33	61.73%
Reduced maternal mortality	Maternal mortality	Per 100,000	210 (2013/14)	168	203	16.7%
Reduced under 5 mortality	Under 5 mortality	Per 1,000	50/1,000	48	45	250%
Enhanced access to basic infrastructure for health facilities	A. Percentage of health facilities with water	%	84	100	99	97%
	B. Percentage of health facilities with electricity	%	82.8	100	95	
Increased human resources for quality health	Ratio of medical practitioners, general specialists, nurses and qualified midwives per population	Ratio (Doctor/ population)	1/10,055	1/9,000	1/8,027	158.8%
		Ratio (Nurses/ population)	1/1,094	1/900	1/1,169	
		Ratio (Midwives/ (w omen aged beateen15-49)	1/ 4,064	1/ 3,500	1/2,342	
Increased modern contraceptive prevalence rate	Prevalence of modern contraceptive use among women in reproduction age (15-49)	%	48	54.6	58	106.2%
Increased access to pre-primary education	Net Enrolment Rate in pre- primary.	%	17.5	31.2	25.9	83%
Improved education quality in primary and secondary education	A. Pupil: Trained Teacher ratio (primary)	Ratio	62:1	56:1	59:1	50%
	B. Percentage of schools with access to computers	% (Primary)	69	83	75	93.8%
		% (Secondary)	84	85.5	83.2	
	C. Percentage of learners achieving minimum proficiency in numeracy in S3	% (S3)	78.8	85.9	85.9	100%
Increased Technical and Vocational Education and Training	Employability of TVET Graduates: TVET Graduates employed with Six month of graduates (Female and Male)	%	70	80	79.3	99.13%
	Percentage of students enrolled in TVET as proportion of total students	%	31.1	43.5	31.9	73.3%
Increased enrolment in STEM related courses in higher education and TVET	Percentage of students enrolled in STEM related courses as proportion of total students in higher education and TVET	%	59.3 (2017)	61.2	49	80.06%
Reduced Drop out at	Drop out ratio	%	Primary: 5.6	Primary: 3.2	Primary: 9.5	-282.82%

primary, lower and upper secondary			Lower secondary: 6.3 Upper secondary: 3	Lower secondary: 4 Upper secondary: 2	Lower secondary: 11 Upper secondary: 7.8	
Increased access to basic infrastructure (water, sanitation, electricity, ICT, shelter) achieved	A. Percentage of Households using an improved water source	%	87.4 (EICV5)	100	89.2	89.2%
	B. Percentage of Households with access to basic sanitation facilities	%	86.2 (EICV 5)	100	89.6	89.6%
	C. Percentage of households living in planned settlements	%	61.7	72.74	67.2	92.4%
	D. Percentage of households with access to electricity	%	34.4	71.5	71.92%	100.6%
	E. Mobile-broadband internet subscriptions	Ratio/ 100 people	122	40	17.5	43.75%

Source: (Government of Rwanda, 2022)

9. ANNEX 2: RECORD OF ALL CONSULTATIONS AND MEETINGS

MEETINGS AND WORKSHOPS

Agenda

#	Date	Agency	Contact	Time
1	10/7/2023	United Nations Development Program (UNDP)/ United Nations (UN)	Angela Zeleza. Office of the UN Resident Coordinator. Economist & Development Coordination Officer. Osten Chulu. Economic Advisor. Head of Inclusive Green Economy Unit	1 pm – 2:00 pm
2	11/7/2023	International Labour Organization (ILO)	François Murwanashyaka. National Programme Officer	1:15 pm – 2:00 pm
3	11/7/2023	United Nations Industrial Development Organization (UNIDO)	Andre Habimana. Country Representative. Helmine Egokom Agulaba. Project Associate.	2:15 pm – 3:00 pm
4	12/7/2023	Higher Education Council (HEC)	Rose Mukankomeje. Director General.	8:00 am – 9:00 am
5	12/7/2023	Workshop	Stakeholders from public sector	9:30 am – 4:30 pm
6	13/7/2023	Workshop	Stakeholders from private sector	9:00 am – 3:30 am
7	13/7/2023	United Nations Development Program (UNDP)	Maxwell Gomera. Resident Representative	4:00 pm – 4:45 pm
8	14/7/2023	Swedish International Development Cooperation Agency (SIDA)		9 am – 9:30 am
9	14/7/2023	United Nations (UN)	Ozonnia Ojielo UN Resident Coordinator	11 am -11:30 am
10	14/7/2023	Ministry of Environment	Patrick Karera. Permanent Secretary	12 pm – 12:30 pm
11	14/7/2023	KFW	Yves Tuyishime. Senior Portfolio Coordinator. Climate & Energy.	2:15 pm – 3 pm
12	26/7/2023	UNEP & UNITAR		10:00 am – 10:45 am

Minutes of meetings

1. Monday 10 July 2023. 9 am – 10:30 am

Participants:

- **Angela Zeleza**. Office of the UN Resident Coordinator. Development Coordination Officer. Economist. UN Rwanda.
- **Osten Chulu**. Economic Advisor. Head of Inclusive Green Economy Unit. UNDP Rwanda
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa (National Consultant)
- Patxi Greño (International Consultant. Metroeconomica)

Modality:

- Face-to-face

Notes:

Green Economy Policy Stocktaking Study is very important for Rwanda.

The National Strategy for Transformation 2017 – 2024 (NST-1) integrates the country's green growth priorities, but needs were different 6 years ago when the NST-1 was developed (green growth more important now than when the NST-1 was developed). As the National Strategy for Transformation 2025 – 2031 (NST-2) is rolling on now, there is an opportunity (i) to further integrate green growth priorities into de new national strategy and (ii) to further align the NST-2 with the revised Green Growth Climate Resilience Strategy (GGCRS). The NST-2 will have an Integrated National Financing Framework (INFF).

There is also an opportunity to align the next UN Sustainable Development Cooperation Framework (UNSDCF) for Rwanda commencing in 2024/2025 with the NST-2. This will ensure that the next UNSDCF integrates the country's green growth priorities and contributes to the realization of the Sustainable Development Goals (SDGs).

Green growth agenda is a priority for UN Rwanda and UNDP Rwanda economists, although importance should be strengthened. Some work in progress relevant for green growth include the following:

- Rwanda Natural Capital Accounting. Natural Capital Accounting (NCA) informs on how natural resources are contributing to the economy to improve decision making. NCA is linked to the System of National Accounts that helps to integrate natural resource use into economic development planning. Rwanda has developed Natural Capital Accounts for land, water, minerals and ecosystems. This Government-led initiatives have been supported by the World Bank's WAVES Initiative (https://www.wavespartnership.org/) following the UN Statistics Division's (UNSD) System of Environmental Economic Accounting (https://seea.un.org/) of integrating NCA with the System of National Accounts
- Valuation of ecosystem services. They would like the economic value of ecosystems to be reflected in the country's GDP.
- Environmental/green taxation.

The ambitions set out across Rwanda's green development framework requires considerable investment. For example, for all Green Growth and Climate Resilience Strategy (GGCRS) initiatives to be implemented a total of US$ 55.03 billion is required up to 2050. The strategy calls for the mobilization of US$ 17.6 billion in public funds, while US$ 37,43 need to be provided by the private sector. **Climate finance is, therefore, a major challenge.** It is very important to mobilize and capture additional finance from private resources that can complement the scarce/ limited public resources. Some sources of finance include the following:

- UN Rwanda has supported piloting innovative financing instruments and mechanisms to mobilize private climate investment such as the **green bond** issued by the Rwanda Development Bank. At the time being, it has been difficult to find eligible projects as there is not a clear definition of what is green for Rwanda. Within this context, one of the working areas of UN Rwanda is to identify eligible projects (i.e., projects that can be financed with the green bond) using the EU green taxonomy. Rwanda is now developing its own green taxonomy to build up the regulatory environment.
- Rwanda was the first African country to reach an agreement with the **International Monetary Fund (IMF) on support from the Resilience and Sustainability Trust (RST)**. The IMF's RST will help Rwanda deliver its green growth and climate strategy objectives. It complements the IMF's existing lending toolkit by providing longer-term, affordable financing to address longer-term challenges, including green growth and climate change.
- During the 27th United Nations Climate Change Conference of the Parties (COP27), Rwanda launched a new green investment facility[7] to support SMEs' climate projects.
- Other sources of finance from the private sector need to be investigated.

Data availability still a challenge in Rwanda, even though more data than in other countries in the world exists. This challenge is especially relevant outside of major cities of the country, where socioeconomic data is lacking. Up to date socioeconomic data/statistics at the household level for policy formulation and planning is also lacking – last Integrated Household Living Conditions Survey (EICV) was carried out in 2017/2018. **More resources need to be injected to the National Institute of Statistics of Rwanda (NISR).**

Agriculture is the main economic sector in Rwanda but needs to change (other important sectors include banking, health, etc.) but to make this happen the following shortcomings/ challenges need to be addressed:

- Improve coordination between stakeholders. Coordination between sectoral strategies is also a challenge.
- Improve knowledge/ capacity building.
- Mobilize additional finance from private sector.

[7] Initially capitalized at US$104 million

2. Tuesday 11 July 2023. 1:15 pm – 2:00 pm.

Participants:

- **François Murwanashyaka**. National Programme Officer. International Labour Organization (ILO).
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

Whereas the ILO has a wealth of experience and expertise in a wide range of areas of relevance for IGE, green jobs and Just Transition, the ILO Rwanda has not worked on green growth in the past, but it is now an area of interest for the organization in the country. ILO has recently sent a proposal to get funds for developing capacity on green economy and green jobs. The aim of the project is three-fold. First, to identify potential green jobs and skills. Second, to develop capacities of policy/ decision makers (so they can elaborate and implement good green policies), employees (so they are well prepared for the new green jobs to come) and citizens. Third, to develop in-house capacities. **The project (green jobs strategy) could be part of the interventions to be funded by PAGE**. It is recommended that the project is integrated in the NST-2.

Although some gaps exist, **Rwanda has a good policy framework** that integrates the country's green growth priorities. During the development of the different national policies efforts and processes were undertaken to ensure that the country's green growth and economy priorities were integrated.

Does ILO prioritize green economy, development, and growth in certain sectors over others? They work in all sectors. Green jobs are a cross-cutting issue.

What challenges and difficulties have you faced or are foreseen during your collaboration with the Government of Rwanda and its agencies, during strategies and projects/initiatives implementation?

ILO collaborates with different Ministries of the Government of Rwanda, including the Ministry of Public Service and Labor (MIFOTRA), the Ministry of Finance Ministry and Economic Planning (MINCOFIN), and the Ministry of Infrastructure (MININFRA). While working with them they don't usually encounter major challenges and difficulties. As far as they are concern, some Ministries are more aware of the importance and potential of green jobs than others.

3. Tuesday 11 July 2023. 2:15 pm – 3:00 pm.

Participants:

- **Andre Habimana**. Country Representative. United Nations Industrial Development Organization (UNIDO)
- **Helmine Egokom Agulaba**. Project Associate. United Nations Industrial Development Organization (UNIDO)
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- On-line

Notes:

Challenges

- Mobilizing resources is proving very hard. Would like PAGE to support.
- Financial resources: UNIDO has worldwide expertise that can be shared but need financial resources for implementation in Rwanda.
- Scale-up projects: Need to engage more with the private sectors to be able to promote private investment and scale-up projects!

Projects in which UNIDO is involved and could be supported by PAGE (UNIDO has not had support from PAGE this far)

- Montreal Protocol.
- Projects/ initiatives related to the Nationally Determined Contribution (NDC)
- Decarbonization and resource efficiency of industrial sectors (supporting the Ministry of Environment). Some examples include the following:
    - Agro-industry: Integrated agro-industrial park, particularly for fruits and vegetables. UNIDO has already put in place an agro-industrial park.
    - Livestock value chain development: from cow to leader products.
    - Greening manufacturing industry
    - Artificial Intelligence in industries.
    - Low carbon transformation (Decarbonization) of the tea sector in Rwanda. Efficient use of energy in the sector. 19 tea processing plants in Rwanda.
- UNIDO supported Rwanda Cleaner Production and Climate Innovation Centre (supported by the National Industrial Research & Development Agency - NIRDA). The aim was to help provide technical assistance, provide equipment, and build the local capacity to implement cleaner production practices and technologies to SME in manufacturing industries — such as pulp and paper, textiles and leather, metal fabrication, and food and agriculture (e.g., banana wine making) – that requested support. Working modality was through open calls. The center closed last years (2022) and UNIDO is now exploring avenues to support **National Innovation Centers** to promote young companies.

Green growth work, past and future

- The NST-1 and the NDC estate very clearly what needs to be done to advance towards green growth in Rwanda.
- UNIDO Rwanda supports the implementation of the NST-1 (2017-2024), and the Government's "Vision 2050", with a focus on selected priority areas/sectors. Its work also

aligns with and support the updated NDC, which is now the entry point for UNIDO and thus sets its working areas for the next few years.
- In the new planning phase, Rwanda's NST-2 should be aligned with the updated NDC.

Sectors of interest

- UNIDO select sectors and gradually moves to try and cover all selected sectors. Priority sectors include food and beverages, textiles, wearing apparel, leather, paper, coke and refined petroleum, chemicals, non-metallic minerals, basic metals, motor vehicles and transport equipment.
- UNIDO is currently defining new priorities. Sectors will be selected and prioritized based on NST-2 priorities.
- UNIDO can inform the "right" waste management policies.
- UNIDO can do capacity building in all sectors of interest.

Cross-cutting areas of interest

Enhance capacities of the youth.

Main development partners

- Financial institutions: Afreximbank, African Development Bank, World Bank
- Bilateral/multilateral partners: Belgium, China, European Union, Germany (GIZ), Japan, Global Environment Facility, Republic of Korea, Sweden (SIDA), Switzerland, United Kingdom of Great Britain and Northern Ireland (DFID)
- UN entities: Food and Agriculture Organization, United Nations Development Programme, United Nations Economic Commission for Africa
- Business sector: Rwanda's Energy Private Developers' Association, Private Sector Federation, Rwanda Association of Manufacturers
- Looking forward to further partnering.

Financial sources

- GEF, GCF, Mitigation Funding (Decarbonization of the tea sector)
- Dedicated Industrial Fund.
- Rwandan Government

4. Wednesday 12 July 2023. 8:15 am – 9:00 am.

Participants:

- **Rose Mukankomeje**. Director General. Higher Education Council.
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

The **Higher Education Council (HEC**) is an independent government agency in charge of **high education/ universities**. It is responsible for ensuring the structure, organisation and functioning of higher education institutions and monitoring and evaluating the quality and standard of provision and ensuring the quality enhancement of teaching and research. It advises the Minister in charge of Higher Education on all matters relating to the accreditation of higher education institutions. It is not responsible for basic education nor for Technical and Vocational Education and Training (TVET), which are under the responsibility of the National Examination and School Inspection Authority (NESA).

Progress so far in education

The Government of Rwanda has developed many policies in several areas/sectors. However not that many in the green/sustainable development education area (In 2010, REMA developed a strategy for the provision of Environmental Education for Sustainable Development in all sectors of the economy), where there are also problems when it comes to implementation. As a result, **people in the country does not have green capabilities**.

Challenges

- Lack of a policy framework
- Lack of financial resources
- Lack of knowledge and awareness of the importance of green education: Rwanda has well educated people but with no green economy training.
- Bring facts to policy makers: data is needed to prove that things are working.

Projects that could be supported by PAGE

Design Student Champion Program: Education and training systems and institutions can act as catalysts and support a shift to a more green and sustainable society. What could be some elements of the Program?

- Green growth capabilities are relevant in all education levels: Integrate Green Growth and Environment issues in the Curriculum of formal (Primary Schools, Technical and Vocational Education and Training (TVET), and Higher/University) and informal education. For example,
    - Teach farmers how to choose seeds adapted to Rwandan climate conditions, how to improve irrigation and how to make better use of fertilizers.
    - Teach students the green growth opportunities: do modules in different countries and get a certificate based on modules done in other countries.
- Green growth capabilities are relevant for all policy areas/ sectors: Provide green capabilities to several institutions to have champions in different organizations. How could this work? Choose some critical/ more sensitive university colleagues/ departments (e.g., colleague of technology) and collaborate with them so that they can start to provide courses on

environmental issues to some critical sectors (e.g., agriculture and water infrastructure - **others will follow pioneers** so just need to teach a few sectors). For example,

- Teach ministries how to use money for sustainability and that there are different ways of doing things.
- Organize talks/seminars by champions (national and international) that are attended by politicians, etc.

Minutes of the workshops

Table 16: Stakeholder workshop response matrix

Questions	Responses		
	5. Wednesday 12 July, 9:30 am – 4:30 pm.		6. Thursday 13 July, 9:00 pm – 3:30 pm.
	Group 1. Focus on **transport**	Group 2. Focus on **energy**	Group 1. Focus on **agriculture**
Questions on current policy design			
During the development/ design of the strategic plan 2018-2024, what efforts and processes were undertaken to ensure that the country's inclusive green growth and economy priorities were integrated into the plan?	The integrated approach was used during the design between transport infrastructure development and services/ operation. For the transport infrastructure development, the plan was targeting economic growth (trade facilitation infrastructure) and social inclusion (connecting people to different places). For transport services/operations, the green growth and social inclusion were considered: - Improve public transport services and reduce traffic congestions in urban areas. - Support an efficient and sustainable air transport system	Alignment with the country's climate/green agenda Stakeholders' engagement workshops (public and private sectors, NGOs, CSOs, international stakeholders, etc) Primary and secondary data collection and assessment Sector Working Groups validation workshops of the reports/strategies	-
What challenges were experienced during this integration process?	The source of finance was not clear/ensured. Elaboration of targets due to lack of accurate data for baseline and projection	Budget for implementation Overall coordination between different stakeholders/sectors (e.g., erosion control budget RWB/MINAGRI) Technical capacity for implementation	-

		Private sector access to climate finance and implementation of green projects	
What learnings were taken from this experience?	There is a need of data recording and keeping for ultimate use During the strategy design, there is a need of diversifying sources of financing, more importantly promoting private investment.	Extensive consultations with different stakeholders Consultative and joint plannings (planning together taking into account different sectors)	-
Were international stakeholders (UN, WB, PAGE, etc.) involved in the process? Which international stakeholders? How did they get involved (e.g., technical and/or financial assistance)?	WB, AfDB– Technical and financial assistance	Yes, DPs were consulted and are also part of SWGs	-
Questions on current policy implementation			
Will the targets in the strategic plan 2018-2024 (those related to inclusive green growth) be achieved or are on track of being achieved? Are you aware of any evaluations that have been done?	They are on track. TSSP/NST1 review is ongoing.	Still far from achieving the set target especially in energy, agriculture and access to climate finance. Evaluations done: GGCRS evaluation was conducted in 2018 and has triggered the revision of the 2023 strategy	Targets (50%) that will not be achieved for the following reasons: - Insufficiency of extension services - Low capacity of extension agents - Production of urea from methane gas not started yet - Local seeds production still low (beans) - Crop production against target still stagnant (beans, maize, wheat, Irish potatoes, soybean) Some targets are on track of being achieved or on watch.
If answer to previous questions is yes, what were the enabling conditions?		Legal and institutional frameworks in place	For targets that will be achieved or on track:

		Establishment of Rwanda Green Fun to mobilize, coordinate and manage climate finance at country level, Cleaner Production centre, etc	- Successful impactful research in some areas (corn, vegetables, Irish potatoes) - Financial resources - Extension services
If answer to previous question is not, what are the barriers and challenges (finance, capacities, legal, knowledge, etc.) and what steps can help create enabling conditions?	Most of these initiatives were targeted by Government which caused financial burden. The private investment was few. Consequently, some projects were delayed and not fully implemented Climate change effect. For instance, land sliding during infrastructure development.	Access to international green/climate finance Institutional capacity to implement green projects Green growth value chain awareness raising Private investments are still low	- Insufficient research and extension services (knowledge) - Limited access to finance (farmers, government, etc.) - Climate change (floods, drought, soil erosion) - Limited funding to research - Ineffective integrated cross-sectoral coordination (fragmented performance contracts, thus non-integrated budgets; Integration and harmonization of public sector, private sector and civil society) - Ineffective coordination of funding and interventions
And what steps can help create enabling conditions?	-	- Facilitate partnerships with international donors/opportunities - Leverage public finance to fund private investments - Design innovative instruments to facilitate access to climate finance - Capacity building in terms of programmatic design - Capacity building to the whole value chain of partners	- Increase the budget allocated to agriculture sector - Enhance capacity building (number and quality) - Increase research budget - Harmonize integrated cross-sectoral coordination within the government and between government and private sector and civil society
Have international stakeholders (UN, WB, PAGE, etc.) been involved in the implementation?	IMF, WB, AfDB, China Exim Bank	International stakeholders are involved in funding, implementation, technical assistance and capacity building.	- UN agencies - World Bank - USAID - EU - GIZ

			- SIDA - WORLD VISION - AGRA - Mastercard Foundation - ENABEL - Gatsby Africa - ETC
How did they help?		- Facilitate access to climate finance (reduce bureaucracy) - Financial support to the country's priority/green growth agenda - Capacity building - Technical assistance	- Financial support - Technical support (capacity development support) - Monitoring and Evaluation
If yes, Which stakeholders were involved?	All of them		
If not, should they get involved in the future?	N/A	They can still be involved in the future	
Questions on future policy design			
What changes should be made to past processes to improve the TSSP 2024-2029's (or its successor strategy's) integration of inclusive green growth?	Promote private investment in transport infrastructure development finance Enhancement of disaggregate transport related data collection and keeping Enhancement of climate change mainstreaming in transport projects Scale up green mobility for private cars (target of below than 10% in NST2)	More and deep consultations with different stakeholders/partners	
Are you working or planning to work in any inclusive green growth projects and initiatives that would like to be considered in the strategic plan 2024-	Currently Rwanda is promoting Green Mobility scale up and transit-oriented development	Yes, the following: - Integrated solid waste management strategy and liquid waste strategy have	

2029 (or its successor strategy)? Can you provide details?		implementation plan with projects to be considered - Green Gicumbi project - Congo Nile - Mainstreaming climate smart agriculture - INTEGO, IREME, CAF etc - TREPA and COMBIO project - RUDPII - Etc.	
Will international stakeholders (UN, WB, PAGE, etc.) need to be involved/ engaged during these processes?	Yes	International stakeholders will need to be engaged during different stages of projects initiation and implementation	
Do you think that the next iteration of the TSSP 2024-2029 (or its successor strategy) should be built on and integrate the interventions outlined in the NST-2, Updated NDC and the Revised GGCRS?	Yes	Absolutely, the ESSP 2024-2029 should align with the country's medium- and long-term strategies	
Questions on future policy implementation			
What enabling conditions may positively impact the implementation of inclusive green growth initiatives in the transport sector (or other)?	Engagement of key stakeholders Available legal framework Institutional coordination	- Facilitate the private sector to access climate finance (innovative instruments, incentivization, etc) - Facilitate the private sector to design bankable and sustainable projects - Support the private sector to implement sustainably the projects	
What factors/ barriers/ challenges (finance, capacities, legal, knowledge, etc.) may negatively impact the implementation of inclusive green growth initiatives in the energy sector?	Finance Coordination	- Lack of technical skills - Coordination of different stakeholders (scattered initiatives in different sectors, e.g., cookstove)	

How can international stakeholders help to overcome barriers? What kind of support can/ should they provide?	Financial support in country's green economy agenda, especially infrastructure/transport.	They can: - Support country's effort through the developed initiatives such as IREME, INTEGO etc - Facilitate access to international climate finance - Financial support to the country's priority/green growth agenda - Capacity building - Technical assistance	
Final Recommendation	Establish Research and Development units/departments in all Government institutions to foster data accuracy as a complement to NISR data set and take measures relying on scientific findings. Continuous capacity building in green technology and economy.		

7. Thursday 13 July 2023. 4:00 pm – 4:45 pm.

Participants:

- **Maxwell Gomera**. Resident Representative. United Nations Development Program (UNDP)
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

Green modelling in Rwanda most needed to understand how green policy interventions can affect economic (e.g., GDP), social (e.g., poverty reduction and employment), and environmental (e.g., supply of ecosystem services) outcomes. This will increase understanding of policymakers, government officials, scientific community, conservation managers, and private sector of the importance of green policies and will inform decision making.

Role of PAGE: Two areas of work

Area of Work 1: High-quality thinking and research

This area of work will produce high-quality research that ultimately informs PAGE's work in Rwanda. Examples of initiatives include:

- Help better understand where Rwanda is right now and where would Rwanda like to be in the next 5-10 years. Play a green/ climate leading role in the Region?
- Research on fit for purpose innovative green and climate finance instruments; for example, Can cooperatives be used to create liquidity? How can cooperatives be used to create liquidity?
- Run pilots than can be scaled-up and implemented by partners.

Area of Work 2: Shape-influence the policy regulator environment targeting institutions that make decisions.

This area of work will contribute to having a policy framework in place that supports green investments (both public and private) for sustainable development and enhance integrated green growth. Examples of initiatives include:

- Shape what is green in Rwanda, influencing and accelerating the **Rwanda green taxonomy**. Having a green taxonomy will help identify which investment options are sustainable and which are not. As the lack of clarity about which activities and assets can be defined as green has long posed a barrier to scaling up green finance, this will help drive the most needed private investment toward green projects aligned with Rwanda's green growth and sustainability priorities. Partner: MINCOFIN
- Mobilize the **green bond** expected to be issued by the Rwanda Development Bank. Partner: Rwanda Development Bank.
- Promote **green standards** in Rwanda, including Green Building Standards. Partner: Rwanda Standards Board.
- Influence **green capacity building**. Partners: Higher Education Council, Basic Education Board, ILO.

8. Friday 14 July 2023. 9:00 am – 9:30 pm.

Participants:

- Swedish International Development Cooperation Agency (SIDA)
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

SIDA's work in Rwanda aims to strengthen democracy and the environment, promote respect for human rights and help increase employment (Source: https://www.sida.se/en/sidas-international-work/countries-and-regions/rwanda). SIDA supports Rwanda in green transition.

Current projects (SIDA co-finances some programs, but most of the times works on their own)

Engage in **biodiversity conservation and restoration**.

Supports **development of renewable energy** (biogas and solar, at both household and company level) through loan guarantees. The aim is to increase lending for renewable energy and independent power generation. The loan guarantees are issued both directly to PV companies and to financial institutions that lend to individuals or SMEs. Loan guarantees are provided in partnership with the Rwandan National Development Bank (BRD) and the World Bank.

Works with FONERWA (Rwanda Green Fund), which supports projects for environmentally sustainable development. Projects include **climate-smart vegetable production, cleaner cooking methods, and introducing electric motorcycle taxis in Kigali**.

Research cooperation between Swedish and Rwandan universities. Swedish higher education institutions are working with the State University of Rwanda to conduct research and train students at master's and doctoral level. The cooperation includes research and training on environment and climate.

Sweden is helping to **improve access to climate finance**.

All coming to an end, as the current SIDA's strategy finishes in 2024.

Future projects

They do not expect to work in new areas. Maybe waste management (landfill), depending on priorities of the Government - Ministry of Finance. They will set priorities and work areas in the next strategy, starting 2025

Challenges

- Institutional capacities
- Problems on implementation: Rwanda has great ambitions to contribute to a green transition, but implementation is slow.
- Biodiversity restoration: change of season (COMBIO)
- Concentration of money in very specific things. This means, there are some uncovered areas. This includes the following: Urban restoration; Waste management; Circular economy; and Pollution control (air). Does PAGE have a role to play in these uncovered areas?

9. Friday 14 July 2023. 11:00 am – 11:30 am.

Participants:

- **Ozonnia Ojielo**. UN Resident Coordinator. UN
- **Angela Zeleza**. Office of the UN Resident Coordinator. Economist & Development Coordination Officer. Economist. UN Rwanda.
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

PAGE does a great work.

PAGE to lead the change for a green transition.

To have a real impact, PAGE should focus on a small number of very high-level issues and lead the path towards green growth in Africa. Work areas in which PAGE could focus include:

International arena

- Build a common African position and call for a unique African voice on green growth
- Enhance Africa's voice at global green economy fora and raise influence in international dialogues.
- Position Rwanda as the green economy African leader and unique voice.

National arena

- Shape Rwanda's policy agenda to build a green economy
- Unlock and catalyze further financing from public and private sector sources for Rwanda's green agenda. PAGE could play a catalytic role by helping to develop a policy framework that supports green investment.
- Identify critical gaps that need to be covered and find appropriate partners (e.g., ILO) that can implement projects to address the gaps detected. The following critical gaps and needs were mentioned: skills/capacities and finance. Training in proposal writing to prepare winning tenders for funding was mentioned as an important area of work if Rwanda wants to unlock finance[8].

[8] This issue was also mentioned by other interviewed people, including the Permanent Secretary of the Ministry of Environment

10. Thursday 13 July 2023. 12:00 pm – 12:30 pm.

Participants:

- **Patrick Karera**. Permanent Secretary. Ministry of Environment
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

Priorities

1. UNDP -> Macrolevel: PAGE as a catalyst stakeholder. No implementing agent.
2. Government and Private Sector: Research & Development & Policy Analysis focused on country needs. Capacity building from a practical point of view. For example, if we want to attract climate finance… how do we prepare proposals? We need to think of different ways of building capacity because capacity building has not worked so far. Education very important: champions.

Role of PAGE: What does the government want from PAGE?

- PAGE to identify green priorities and critical gaps.
- PAGE to influence capacities
- PAGE to help civil society (1st) to identify existing grants, resources, and funding opportunities, and (2nd) to prepare competing tenders and proposals for funding. Within this context, it is suggested that an international network of firms with whom national firms can work with could be promoted.
- PAGE to develop communication materials for different audiences.
- PAGE involved in macro-level data gathering. Partner: MINECOFIN
- PAGE to develop a policy brief on Rwanda's position on climate change and green growth for the 2023 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC (COP28), to be held from November 30 until December 12 in Dubai.
- PAGE to coordinate high level discussion groups

What is and what is not PAGE:

- PAGE is not an implementing agent.
- PAGE is a catalyst stakeholder
- PAGE is a green policy influencer. A power player who cause ideological changes, affects green policy design (mainstreaming green growth as a cross-cutting issues within the Rwandan policy framework), and alters popular perceptions.
- PAGE is a platform for all stakeholders from Rwanda (ministries, private sector, academic institutions, non-governmental organisations, etc.) to discuss, find and apply green solutions in the country for green discussion between stakeholders.

Focal Ministries for PAGE

- Ministry of Environment (MOE)
- Ministry of Finance and Economic Planning (MINECOFIN)
- Ministry of Trade and Industry (MINICOM)
- Ministry of Education (MINEDUC)

Implementation of PAGE should start in November

PAGE may organise the Green Economy Week to present the stocktaking study.

11. Thursday 13 July 2023. 2:15 pm – 3:00 pm.

Participants:

- Yves Tuyishime. Senior Portfolio Coordinator. Climate & Energy
- Fred Sabiti. National Technical Advisor on Environment Mainstreaming. United Nations Development Program (UNDP).
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- Face-to-face

Notes:

KfW supports Rwanda in the area of climate and energy and a 'Just Transition'.

It works with local governments.

KfW mainstreams environment and climate change in all its projects.

Incentivise districts to include climate issues in their projects.

GIZ & KfW have separate mandates.

- GIZ: Technical arm dealing with technical assistance. For example, GIZ has recently prepared a study on how to increase climate finance in Rwanda (by GIZ).
- KfW: finance investments dealing with implementation.

<u>Green projects so far</u>

As part of a climate partnership between Germany and Rwanda agreed in 2022, KfW is committed to climate change mitigation, climate change adaptation and urban development. This includes providing support to the following projects:

- The "Green City Kigali" project (together with FONERWA). An ecological neighbourhood with climate-friendly houses for over 7,000 people is being built here, for which KfW is financing the infrastructure. This is a champion-demonstration project that could be scaled-up.
- . Lack of public recreation spaces in cities.
- Construction of water and sewage lines, as well as for facilities to protect against flooding and erosion in the three fastest-growing cities (in partnership with REMA).
- Construction of a transmission line between Rwanda and Congo and Burundi to facilitate regional electricity trading.
- Construction and rehabilitation of hydropower plants on the Ruzizi River.
- Establishment of a financing facility that will support projects to reduce greenhouse gas emissions and mitigate the effects of climate change.
- Green agenda sensitive spaces project (in partnership with REMA). To address the lack of public spaces in cities, KfW is supporting the Ministry of Infrastructure, the Rwanda Housing Authority, and local authorities to implement a range of activities in these areas to promote the country’s public space agenda.
- Some small projects in the water sector in rural areas, although this is not a priority.
- Construction of a waste treatment plant (together with the European Union)

<u>Other on-going projects (no green but somehow related)</u>

- Invests in local infrastructure.
- Supports the development of a modern vocational training system.

- Supports the Rwandan development bank so that it can grant loans to small and medium-sized, export-oriented companies.

Prospects

- Germany and Rwanda have signed a partnership for climate. The aim is to improve the number of projects they can develop in the next 5-10 years.

Challenges

- Lack of capacity to integrate environmental issues. This is mostly at the local level
- Financial capacity in the government because a lot of projects need to be co-financed and public money sometimes comes late and this delays implementation.
- Rwanda only eligible for grants (i.e., not for loans, etc.).

12. Wednesday 26 July 2023. 10:00 am – 10:45 am.

Participants:

- Maya Valcheva. UNITAR. Geneva
- Luciana Fontes de Meira. UNEP. Geneva
- Alex Mulisa. National Consultant.
- Patxi Greño. International Consultant. Metroeconomica.

Modality:

- On-line

Notes UNITAR:

Involved mainly in capacity building

No activities in Rwanda apart from a gender training they have organised for the National Institute of Statistics. However, would be **willing to collaborate** in green capacity building and public awareness activities in the country. Regarding capacity building, they are mostly interested in training policy makers. Also in cooperate with universities, although to a lesser extent. Not interested in providing vocational training.

To identify the entry points, UNITAR is mostly interested in getting to know (i) the government's needs (so they can identify the space for collaboration in the green area), and (ii) who are the main learning institutions they can work with. These two issues will be identified in the stocktaking report, but during the call it was mentioned that lack of green capacities was one of the main challenges identified by stakeholders in Rwanda. Therefore, UNITAR would have a role to play.

Notes UNEP:

UNEP already works in Rwanda. It supports policy processes at the highest/ macro level (for MINCOFIN). They do analysis and capacity building (for example, the UNEP has enhanced and strengthened the capacity of the government of Rwanda at the national and city level to better design and implement policies and make investment decisions that prioritize the needs of pedestrians and cyclists).

UNEP is mostly interested in supporting **macro-economic policies** (e.g. economic potential of the green transition) and **fiscal reforms**. To identify the entry points, UNEP would like to know the key sectors of importance in Rwanda. Key sectors will be identified and analysed in the stocktaking report.

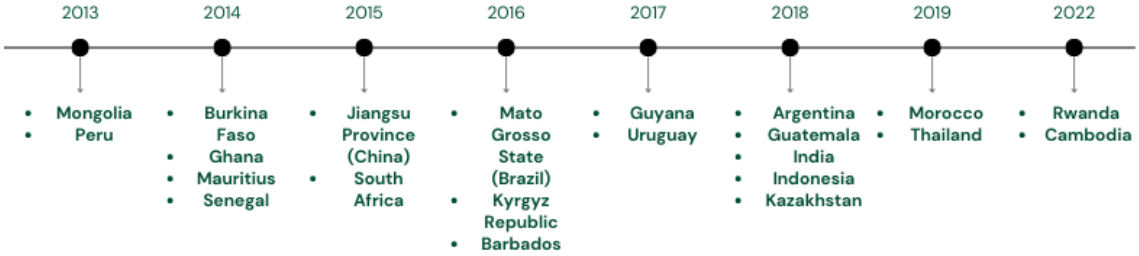
10. ANNEX 3: PAGE BACKGROUND

Launched in 2013, PAGE is a partnership between the UN Environment Programme (UNEP), the International Labour Organization (ILO), the UN Development Programme (UNDP), the UN Industrial Development Organization (UNIDO), and the UN Institute for Training and Research (UNITAR) supporting partner countries with their transition to an IGE through policy advice, assessments, capacity development and analytical tools.

The partnership supports countries to accelerate inclusive and transformative economic change to foster green growth through bringing on board all stakeholders including public and private sector institutions, reduce poverty and inequalities, increase decent jobs and social equity, and strengthen livelihoods and environmental protection in line with the 2030 Agenda.

It has 20 countries and 2 national sub-division as partners. Rwanda is one of the two latest countries to partner with PAGE, joining in 2022. The full list of partner countries, and their year of joining is shown in Figure 10.

Figure 10: Countries joining and year of joining PAGE



Source: (PAGE, 2022)

PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

Rwanda aspires to become a high-income country by 2050 and has developed and implemented a broad range of policies and strategies to promote its economic and social development, and IGE objectives through structural transformation. Existing strategies are interlinked and acknowledge the importance of sustainable development and work towards its achievement. Despite its robust policy framework, certain metrics such as energy coverage and inequality have not sufficiently improved. The main challenges behind these results are lack of capacity, lack of finance, and lack of coordination.

To address these barriers, six reforms are most needed:
Reform 1: Further align all development strategies, plans, and initiatives with the country's IGE principles and goals.
Reform 2: Enhance green knowledge and skills development programs for students, entrepreneurs, policymakers, and workers in the public and private domains.
Reform 3: Help increase access to capital resources in the country and overcome the lack of finance for example through a Green Fiscal Reform and the Green Taxonomy.
Reform 4: Promote green development through community-based and localized interventions.
Reform 5: Promotion of small-scale green income generating projects.
Reform 6: Promotion of green development through increased emergency management and preparedness.

Rwanda's partnership with PAGE will help the country to accelerate and foster upstream policy-making progress towards an IGE.

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Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
Ministry for Foreign Affairs of Finland
Norwegian Ministry of Climate and Environment
Ministry of Environment Republic of Korea
Sida