REPUBLIC OF RWANDA

INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC) FOR THE REPUBLIC OF RWANDA

INTRODUCTION

Rwanda, known as the "land of a thousand hills" is a landlocked country of 26,338 square kilometres, geographically located in Central Africa between 1°04' and 2°51' of south latitude and between 28°45' and 31°15' of east longitude[1]. The country has seen significant economic development in recent years, with GDP growing at an average of over 8% annually over the last decade and targeted to reach 11.5 % under the medium term development implementation framework EDPRS II[2]. It has a population of 10,515,973 people[3] which is growing at 2.8% per year. Important to note however is that Rwanda's fertility rate has reduced from 6.1 in 2005 to 4.2 in 2014 and that food crop production growth has grown more twice that of the population between 2007 and 2014 while per capita income has tripled from US$ 211 in 2001 to US$ 718 in 2014[4]. A vision for 2050 based on the Green Growth and Climate Resilience Strategy envisages Rwanda as a developed climate-resilient, low carbon economy, with a strong services sector, low unemployment and low levels of poverty. It would be a country where agriculture and industry have a minimal negative impact on the environment, operating in a sustainable way, and enabling self-sufficient basic necessities for all living in it. By 2050, development will be achieved with low carbon domestic energy resources and practices, reducing the country's contribution to climate change while allowing it to be independent of imported oil for power generation. Finally, Rwanda will have the robust local and regional knowledge to be able to respond and adapt to changes in the climate and the resulting impacts.

Rwanda is pleased to submit this INDC to replace the preliminary INDC submitted to the Convention in September 2015. This affirms the country's commitment to engage in the forthcoming international process of developing a climate change agreement.

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[1] second National Communication report 2012
[2] Economic Development and Poverty Reduction Strategy II (2013-2018)
[3] Fourth Population and Housing Census 2012
[4] 4th Integrated Household Living Conditions Survey (2013/14)

Rwanda has been committed to addressing the challenge of climate change since 1998 when it ratified the United Nations Framework Convention on Climate Change (UNFCCC) and later the Kyoto Protocol in 2003. The country submitted its Initial National Communication to the UNFCCC in 2005, National Adaptation Programmes of Action (NAPA) in 2006, and the Second National Communication in 2012. The Third National Communication is under preparation.

Rwanda's INDC is built upon its National Strategy for Climate Change and Low Carbon Development Strategy. The full implementation of this strategy rests upon five enabling pillars: Institutional Arrangements; Finance; Capacity Building and Knowledge Management; Technology, Innovation and Infrastructure; and Integrated Planning and Data Management.

ADAPTATION CONTRIBUTION	
Rationale and process for adaptation contribution	Rwanda is highly vulnerable to climate change, as it is strongly reliant on rain-fed agriculture both for rural livelihoods and for exports of mainly tea and coffee. With the highest population density in Africa[5], adaptation concerns are central to the INDC. In recent years, extreme weather events in Rwanda increased in frequency and magnitude what, in some parts of the country, led to significant losses including human lives[6]. Floods and landslides were increasingly reported in the high altitude Western and Northern Provinces, whereas droughts made severe damages in the Eastern Province[7].
Summary of climate change trends, impacts and vulnerabilities	Rwanda has experienced a temperature increase of 1.4°C since 1970[8], higher than the global average, and can expect an increase in temperature of up to 2.0°C by the 2030s from 1970. Rainfall is highly variable in Rwanda but average annual rainfall may increase by up to 5-10% by the 2030s from 1970[9]. This is expected to lead to increasing rainfall intensity, leading to a higher frequency of floods and storms resulting in landslides, crop losses, health risks, and damage to infrastructure, as well as an increase in temperatures resulting in proliferation of diseases, crop decline and reduced land availability that impacts on food security and export earnings.
Adaptation vision and goals	
Vision for adaptation	Rwanda's long term vision is to become a climate resilient economy, with strategic objectives to achieve Energy Security and a Low Carbon Energy Supply that supports the development of Green Industry and Services; Sustainable Land Use and Water Resource Management that result in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services, as

[5] World Bank Data 2015
[6] The assessment of economic impacts of the 2012 wet season flooding in Rwanda 2013
[7] Rwanda baseline climate change vulnerability index 2015
[8] Green Growth and Climate Resilience Strategy 2011
[9] IPCC Fifth Assessment Report 2013

	well as to ensure Social Protection, Improved Health and Disaster Risk Reduction that reduces vulnerability to climate change impacts[10]		
Sector goals	The priority adaptation actions have been identified in Rwanda's Green Growth and Climate Resilient Strategy (2011), are on-going and will be partially or fully achieved by 2050. Many of the actions specified under the sectors programmes have both mitigation and adaptation benefits.		
Agriculture			
Programme of Action	**Actions**	**Descriptions and Goals/Targets**	**Mitigation benefit**
1. Sustainable intensification of agriculture	**1.1 Mainstreaming agro ecology techniques using spatial plant stacking as in agro forestry, kitchen gardens, nutrient recycling, and water conservation to maximise sustainable food production;**	Seasonal shortages of food supply as a result of poor harvests caused by droughts and flooding and soil erosion are among the most significant signs of how the agriculture sector is vulnerable to climate change in Rwanda. In order to adapt to this situation, Rwanda intends to mainstream agro ecology technologies in its current agriculture intensification programme and other natural resource-based livelihood programmes. 100% of the households involved in agriculture production will be implementing agro forestry sustainable food production by 2030.	Reduced GHG emissions from land use change
	1.2 Utilising resource recovery and reuse through organic waste composting and wastewater irrigation;	The steep nature of Rwanda's topography coupled with very high population density (415 inhabitants / km^2)[11] leads to several pressures on natural resources, including land, and this remains the main reason for land degradation. Arable lands also show little tolerance when it comes to climate change effects like heavy rains and draughts. In fact, heavy rains lead to soil	Reduction of methane emissions from landfills

[10] Green Growth and climate resilience Strategy, 2011
[11] Fourth Population and Housing Census, 2012

		erosion resulting in fertility decline and low productivity. Rwanda intends to promote recovery and reuse of both organic waste and wastewater in order to restore and maintain soil fertility. Organic waste use through composting, currently used at a small scale, will be implemented to reach 100% of the households involved in agriculture production countrywide by 2030. Waste water irrigation, mainly practiced in correction centers under national prisons services will be implemented countrywide by 2030.	
	1.3 Using fertiliser enriched compost	Rwanda relies on imported inorganic fertilisers for its agriculture intensification activities. For instance, 36000 Mt of these were imported in 2014 and these importations are likelly to increase in the near future. Although good at increasing yields, intensive use of inorganic fertilisers has adverse impacts to the environment in general and climate change in particular. In contrast, the use of organic fertilisers by composting has many environmental benefits whereby it provides an excellent way to manage the huge volume of organic waste and utilise it in a productive manner. The effectiveness of composted organic waste can be further improved by enriching and blending it with nutrients (Nitrogen phosphorus). This technique ensures a more efficient use of inorganic fertilizers, and adds valuable organic matter to soils, which also maximizes terrestrial carbon in farm soils. Rwanda intends to ensure the use of fertilizer enriched compost and shift from using pure inorganic fertilizers by	Reduce GHG emissions from fertilizer manufacturing processes

		2030.	
	1.4 Mainstreaming sustainable pest management techniques to control plant parasites and pathogens	Increasing average temperatures, changes in precipitation and water shortage are seen as climate change aspects that result in pests and diseases proliferation. In order to adapt to this, Rwanda intends to promote sustainable pest management techniques that incorporates a cropping system based on producing multiple crop and fodder yields but which is also designed to control plant parasites and pathogens such as stemborers and striga weed. Rwanda also intends to implement push-pull system using Napier grass and desmodium legume to manage pests under maize, sorghum, millets and rain-fed rice plantations. The main adaptation benefits of the push-pull system are the increase of yields, soil fertility improvement through nitrogen fixation and provision of a continuous supply of fodder to cattle from the harvest of Napier grass and desmodium. Thisimproves milk yields of cattle while reducing methane emissions as a result of improved fodder regimes.	Reduced GHG emissions from enteric fermentation
	1.5 Soil conservation and land husbandry	90% of Rwanda's crop land is on slopes ranging from 5 to 50% which makes it vulnerable to climate change impacts like soil erosion leading to permanent fertility loss. Rwanda intends to expand its soil conservation and land husbandry programmes trough: Installation of land protection structures like radical and progressive terraces where these structures will be installed on 100% of the relevant area by 2030; Development and implementation of an intensive agroforestry programme with	Reduced GHG emissions from farm land and increased carbon sink through agro forestry practices

		a target of covering 100% of arable land by 2030.	
	1.6 Irrigation and water management	The Rwandan agriculture mainly rain fed which makes it vulnerable to weather shocks. Rwanda intends to increase investment in irrigated agriculture to increase production, harness fresh water resources while ensuring food security to its population. Under this action, district irrigation master plans will be designed and small-scale schemes will be developed where possible based on water catchments, and farmer organisations trained in their development. Agricultural land fitted with operational irrigation infrastructure was estimated at 4% of the total land with irrigation potential in 2012. The overall target of the new irrigation programme is to reach 11% by 2030.	Efficient use of irrigation water reduce nitrogen losses including nitrous oxide emissions.
2. Agricultural diversity in local and export markets	**2.1 Add value to agricultural products through processing to meet its own market demand for food stuffs;**	Food stuff distribution faces challenges when it comes to rural community market places where traded commodities can be damaged under extreme weather conditions. Rwanda intends to expand local markets by constructing market infrastructure, including roofed market facilities, serviceable road and transport networks, developing decentralized village-based agricultural processing centers that incorporate low-carbon sources of energy, such as biogas-digesters and solar driers, and decentralized compost plants. This forms a conduit for agricultural-based trade based on less food miles for regionally and internationally imported food products. Strengthening local markets will also	Reduced GHG emissions as a result of using low carbon energy sources and reduced transport distance.

		build economic resilience in rural areas that is less dependent on linear commodity flows of raw goods leaving rural areas unprocessed and without added value. Group based organizations involved in agriculture production and running agro processing facilities were estimated at 10% of the total operating group based organizations in 2014. The target is for this percentage to increase by up to 90% by 2030. Also the installed capacity of agro processing installations is to reach 1,200,000 MT by 2030 from 400,000 MT[12] in 2014. In addition, Rwanda targets to have 100% of farmers with access to services for post harvest treatment and storage of food crops and reduce post harvest losses to at least 1% by 2030 from 10.4%, 27.4% and 8.3% in 2014 for maize, beans and rice respectively. The use of solar energy in warehouses will be actively promoted.	
Forestry			
Programme of action	**Actions**	**Description and goals/targets**	**Mitigation benefits**
3.Sustainable Forestry, Agroforestry and Biomass Energy	**3.1Promote afforestation/reforestation of designated areas through enhanced germplasm and technical practices in planting and post-planting processes;**	The Rwandan forestry sector provides the main part of the primary energy needs (97% of cooking energy) to the population. Since 2002, there have been consistent gap in wood products supply and demand with deficits reaching 12 million cubic meters in 2009. This deficit shows how the forest sector is and likely to remain under pressure.In order to deal with this main issue, Rwanda intends to improve the management of its forest resources by increasing efforts in using quality germplasm, planting	Reduced GHG emissions through sequestration

[12] Metric Tons

		trees at the right time (rain season) and improving post-planting care,. Furthermore, the country intends to use mixed-species approaches which contribute greatly to the achievement of both mitigation objectives and adaptation benefits of ecosystem resilience and biodiversity. Through this strategic action, the country's target is to achieve an overall 30% sustained forest cover of the total national land surface by 2030 from 28.8% in 2013.	
	3.2 Employ Improved Forest Management for degraded forest resources;	Land scarcity is a primary constraint to the expansion of Rwanda's forest resources. Rwanda should maximize the productivity of its many degraded forest plantations which present an opportunity to increase biomass supply without converting additional land. By 2030, Rwanda will implement public private partnerships to sustainably managing all forestry plantations through multiyear contracts with forests operators (in cooperatives) who will plant and maintain young plantations until they reach their commercial size.	Reduced GHG emissions through sequestration
Tourism			
Programme of action	**Actions**	**Description and goals/targets**	**Mitigation benefits**
4.Ecotourism, Conservation and Payment for Ecosystem Services Promotion in Protected Areas	**4.1 Maximise business tourism (the largest source of export revenues) through strategic conference management in order maximise the distribution and volume of business travellers**	Rwanda will promote business conferences in efforts to maximize the distribution and volume of business travelers throughout the year. These efforts will result in increased bed occupancy at available hotels and lodges within Kigali, and subsequent visitation to its surroundings including Volcanoes National Park (VNP), Nyungwe forest and Akagera National Park	

	throughout the year	Through this strategic action, Rwanda expects business and leisure tourists to increase from 545,000 people in 2012 to 1,262,000 people in 2030.	
Water			
Programme of action	**Actions**	**Description and goals/targets**	**Mitigation benefits**
5.Integrated Water Resource Management and Planning	**5.1Establish a national integrated water resource management framework that incorporates district and community-based catchment management;**	Rwanda will integrate management of water resources at the district and community levels, define catchment wide responsibilities, cluster catchment partner-districts according to sub-catchment regions, and improve understanding of water users within districts and catchments. The national framework for IWRM will be cascaded down to district and catchment levels. To this end, catchments committees and water users associations (WUAs) will be established and trained at district level to cover all the 30 districts by 2030. Also, detailed catchment management plans have will be developed and implemented for all the nine identified main catchments areas by 2030.	IWRM is expected to result in improved water resources in both quality and quantity. This will increase opportunities for hydropower development thus reducing emissions from fossil fuels used for electrical power generation.
	5.2 Develop water resource models, improved meteorological services, water quality testing, and improved hydro-related information management;	To allow precise planning of water resources and improved allocation, Rwanda will develop water balances at district and catchment levels, supported by hydrological models, improved rainfall monitoring, and a better understanding of agro-meteorology and water quality testing. The important national water datasets will be identified to enable monitoring of the water balance, model abstraction and future demand. Furthermore, assessments will be undertaken of water resources under a range of climate change scenarios. In this regard,	

		surface water quality monitoring will be carried out on selected sites of main rivers. All the existing 53 gauging stations will be upgraded to automated real time data stations by 2030.	
	5.3 Develop a National Water Security Plan to employ water storage and rain water harvesting, water conservation practices, efficient irrigation, and other water efficient technologies.	Rwanda will establish a comprehensive National Water Security Plan to expand water storage and irrigation infrastructure, rainwater harvesting, water conservation and water efficiency practices. This strategic action brings together the national policies and strategies for irrigation, water supply and sanitation, IWRM and energy. In this regard, an assessment of the current water storage capacity will be carried out and the improved water storage will be the main outcome of the assessment with reference to the IWRM subsector strategic plan. Rwanda will also implement the water resources master plan which identified potential sites for multipurpose dam construction countrywide for improved water storage. In addition to the detailed design for one of the identified, others will be initiated and finished by 2030. Rainwater harvesting will also be mandatory and will be made an integral part building codes by 2030.	
Land use			
Programme of action	**Actions**	**Description and goals/targets**	**Mitigation benefits**
6.Integrated approach to Sustainable Land Use Planning and Management	**6.1 Employ an integrated approach to planning and sustainable land use management;**	Given the size of the country and its very high demographic pressure, competition for land will continue to grow with increasing pressures from agriculture and livestock making land resources more vulnerable to climate change impacts. Encroachment on sensitive areas will persist until land	Combined actions under this programme will result in availing more land space which might be

		reforms are completed. Rwanda will implement rigorous planning and zoning regulatory framework to manage the changing demands on land. In addition to initiatives like systematic land registration and implementation of land tenure regularization reform. Rwanda intends to reduce the plot size for single family houses from current 600 m^2 to 300 m^2 by 2016 and to 225 m^2 by 2030.	converted to others uses such as new forest plantations thus serving as carbon sink.
	6.2Improve spatial data by harnessing ICT and GIS (Geographic Information System) technology;	Rwanda will develop National Spatial Data Infrastructure (SDI) to manage the nation's land information resources and to identify the fundamental datasets required to manage land and water resources, monitor land use and environmental change, support economic development, and enable Rwanda to better plan, monitor, and respond to the impacts of climate change. It is planned that the establishment of the National Spatial Data Infrastructure will be operational by 2030.	This strategic action will result in better estimations of GHG emissions from land use, land use change and forestry thus improving planning and implementatio n of specific mitigation actions for the same sector.
Cross cutting			
Programme of action	**Actions**	**Description and goals/targets**	**Mitigation benefits**
7.Disaster Management	**7.1 Conduct risk assessments and vulnerability mapping**	Specific risk and vulnerability assessments are key for better planning and implementation of relevant adaptation actions. In addition to the countrywide vulnerability index that was completed recently, Rwanda will conduct risk assessments and initiate	

		vulnerability mapping to develop effective disaster management systems. Risk assessments will be conducted and completed countrywide by 2030. Every five years, Rwanda will be updating the recently developed climate change vulnerability index as to reflect the real situation of vulnerability to Climate change at any given time in the country. In addition, other assessments (such as national communication) with a vulnerability assessment will be conducted periodically.	
	7.2 Establish an integrated early-warning system, and disaster response plans	Rwanda is exposed to climate related disasters like droughts, floods and landslides. In addition to existing disaster management initiatives mainly focusing on preparedness, assessment, mitigation and disaster reduction , Rwanda will establish and early-warning system in order to prevent the impact of natural climate disasters on humans. Rwanda will also improve its capacity in disaster preparedness and mobilization and distribution of relief to populations affected by specific disaster events.	
8.**Climate data and projections**	**7.3 Employ community-based disaster risk reduction (DRR) programmes designed around local environmental and economic conditions, to mobilise local capacity in emergency response, and to**	Rwanda will implement the following community based DRR activities: improved farming techniques that mitigate flood and landslide impacts; first aid training; and environmental and public health awareness for disease prevention, particularly following flood and storm episodes. In order to reduce locally-specific hazards, relocation from high risk zones is considered as one of the strategic actions. In addition to households previously relocated from high risk zones, Rwanda will relocate additional 30 000 households by 2030.	

	reduce locally-specific hazards		
	8.1 Improve observation facilities to provide all climate information necessary for future monitoring, climate trend detection, management of climate variability, early warning and disaster management	Rwanda will establish of additional observations in order to provide climate information necessary for future monitoring, climate trend detection, management of climate variability, early warning and disaster management by upgrading and maintenance of existing stations and calibration of meteorological instruments including weather radar.	

MITIGATION CONTRIBUTION	
Timeframe	up to 2030
Type of Contribution	Emission reductions from projected emissions resulting from the deviation of BAU emissions for the year 2030 based on policies /actions conditional on availability of international support for finance, technology and capacity building.
Estimated GHG emissions reduction	Estimated impact of policies/actions is underway and will be informed by the Third National Communication Report which will be completed by 2017.
Sectors covered	Energy, Transport , Industry, Waste and Forestry,
GHG covered	CO_2, N_2O, CH_4.
Mitigation actions	
Vision for mitigation	On the road to a low carbon economy, Rwanda aims to achieve Energy Security and a Low Carbon Energy Supply that support the development of Green Industry and Services and avoids deforestation.
Energy	

Programme of action	**Actions**	**Description and targets**		**Adaptation benefits**
		Baseline scenario	**Mitigation scenario**	
1.Low carbon energy mix	**1.1 Establishment of new grid connected renewable electricity**	In the current national energy mix , fossil fuel	Rwanda will increase the share of renewable	Through these initiatives, there will be

	generation capacity in the form of large-scale hydro power plants and solar PV power	electricity generation makes 32% of the total generation capacity, with a projection of 46% in 2020 and much more in 2030 under business as usual scenario. s	energy in country power generation through construction of hydro, solar power plants and methane to electricity power plantshenceshiftin g from using fossil fuels for its electricity needs. Further to this, Rwanda is committed to create a regional interconnectivity through construction of new transmission lines and sub-stations and will improve/upgrade existing ones This will allow the import of electricity that would be otherwise generated from fossil fuel power plants (diesel or peat power plant) to meet the fututе supply and demand for energy.	creation of off farm jobs thus increasing adaptive capacities of local communities. Availed electricity will create more opportunities for diversified commercial activities in the construction industry and services for example.
2.Sustainable Small Scale energy installation	**2.1 Installation of solar PV mini-grids in rural communities.**	Rural communities depend mainly on kerosene for their	Rwanda will establish up to 100 solar PV mini-grids in rural	Rural electrification will create additional

		lighting needs, wood fuel and agriculture residues for their cooking needs.	communities, with total capacity of up to 9.4 MWp and will establish rural productive zones using electricty for increasing the income generating potential of rural communities.	income generating activities for communities and lowers some of the daily energy-related burdens of community members, It will also contribute to the success of forestry management programmes where wood fuels are replaced by electricity
3.Energy efficiency and demand side management	**3.1 Increase energy efficiency through demand-side measures and grid-loss reduction**	Currently demand side management is not well undertaken in Rwanda and grid losses are estimated at 23%	Through the energy utility, Rwanda will establish dedicated energy efficiency and demand side management unit to oversee the design and implementation of relevant efficiency programs to clip electrical peak demand. The dedicated unit will also be in charge of planning and implementing measures aiming	Demand side management and energy efficiency initiatives would increase opportunities of more off farm jobs.

			at reducing grid losses. These are expected to drop from 23% c to 7.8% by 2030. The unit will also investigate expanding and managing bulk procurement and distribution of [13]CFLs for residential customers (based on current consumption and end-user affordability) with targeted subsidies for retrofits.	
	3.2 Promote environmentally sustainable use of biomass fuels	Biomass is almost wholly relied on for cooking and related uses by both urban and rural households. The single most important appliance in the biomass sector is the cookstove. This determines the efficiency with which biomass is used. Wood fuel consumption including charcoal was estmated at 4.2 Mt/year in 2010. With	Given the fact that poor performing cook stoves are still used in most cases leading to inefficiencies in fuel consumption and health effects, Rwanda intends to increase the diffusion of improved cook stoves and reach 100% of all households in needs 2030. Additional supporting initiatives are mainly the	Adaptation benefits under these initiatives rely in the fact that they will result in reduced deforestation thus ensuring sustainable basic energy source. Further to this, indoor airpollution will be reduced and quality of life improved. Revenues will also increase as a result of

[13] Compact fluorescent lights

		continued population growth and urbanisation , this consumption will exceed 11Mt/year by 2030 under the business as usual scenario.	installation of 35 000 domestic biogas digesters and 15 institutional biogas digesters annually, and increasing average charcoal yields up to 50% by 2030. In addition, Rwanda will enhance the use of LPG[14] through tax reductions on importations.	energy savings.
Transport				
Programme of action	**Actions**	**Description and targets**		**Adaptation benefits**
		Baseline scenario	**Mitigation scenario**	
4.Efficient resilient transport system	**4.1 Bus Promotion of public transport, improvement of transport infrastructure, setting vehicles' emission standards and regulations and integrated national transportation planning**	The Rwandan transport sector is experiencing a rapid growth of vihicles population and an increase in light duty vehicles equipped with (post-1998 era) 3-way catalytic converters. It is expected that under the busines as usual scenario, the annual increase in population vehicles will reach 16.5% from 12%	A high rate increase in population of vehicles and light duty vehicles would lead to the high GHG emission scenarios in the future as explained in the BAU. To avoid these emissions, By 2030, Rwanda will implement the following actions:Construction of central Bus Terminal(s) and Customer Service	Increase of climate resilience by creating affordable, reliable and accessible transport services to the community.

[14] Liquefied Petroleum Gas

		while light duty vehicles will increase 20% by 2030.	Centers inKigali,Standardized Route Optimization planning and implementation,Planning, rehabilitation and construction of intra-modal passenger terminals, Construction of 17 km BRT main corridor and 6 modern interchanges which will results in GHG emissions reductions estimated 1,260,000 tCO_2e.Construction of dedicated "rush hour" high speed bus lanes, Improvement of traffic and pedestrian controls and street lighting using solar pannels Enforcing Fleet renewal and scrappage (heavy, medium, mini-bus), Setting emission standards (equivalent to Euro standards)	

			for new vehicles, Use of higher fuel efficiencies and low carbon technologies for new vehicles, Standardized compliance and inspections for non-Rwandan registered vehicles,Integration with International Airport and convention/business center.	
Industry				
Programme of action	**Actions**	**Description and targets**		**Adaptation benefits**
		Baseline scenario	**Mitigation scenario**	
5.Green industry and private sector development	**5.1Scale up resource efficiency to reduce energy demand in agro processing industries**	Industrial emissions are mainly resulting from non efficient technologies that are being used by plants during the production process. As Rwanda pursues industrialization and development,under the BUA scenario, the industrial sector is expected to be the fastest growing sources of GHG emissions.	Under the mitigation scenario, Rwanda is committed to achieve energy efficiency by starting with agro-processing industries as large consumers of wood fuels. By 2030, Rwanda intends to avoid total GHG emission reductions of 146,000 tCO2e from Tea and Coffee industries. This action will	These initiatives will lower consumption of wood fuels thus sustaining adaptation roles of forests.

			focus on e energy efficiency improvements through the installation of less energy intensive equipments and technologies for drying, roasting packaging, improvements of water efficiency through loss minimization, recycling and reuse.	
	5.2 Establishment of Eco-industrial park of Green Industry complex	Rwanda has prioritized the development of industrial parks and special economic zones (SEZs) for export oriented markets. Development of such industrial parks will require significant energy and the concept of establishing green industrial parks will focus on reducing the carbon footprint of goods produced in these industrial zones through a greater use of renewable, energy efficient technologies and	Rwanda will establish Eco-Industrial Parks / Green Industries Complex where following principles will be applied: The production of goods and services in the industrial park must, at a minimum comply with defined standards; Any CO_2 emissions that remains after consideration of heating, cooling, fixed lighting and ventilation must be less that or equal to a pre defined carbon compliance limit.	

		shared resources.	Any remaining CO2 emissions, from regulated energy sources must be reduced to zero The actual emission reduction potential can vary greatly based on the actual level of low carbon technologies implemented and in implementing "zero-carbon" principle, the emission reduction potential can be as high as 80-100% compared to a baseline based only on carbon intensive energy source.	
Waste				
Programme of action	**Actions**	**Description and targets**		**Adaptation benefits**
		Baseline scenario	**Mitigation scenario**	
6.Implementation of Low carbon urban systems	**6.1 Utilization of urban waste as a high value resource stream**	Under the BAU, the waste sector will undergo substantial growth in the future based on expected population growth and urbanisation. The majority of solid waste collected in urban areas is centrally	With respect to the urban waste management By 2030, Rwanda is committed to achieve the following : Development and implementation of landfill regulations in all urban areas , Extraction and	Creation of off farm jobs during the implementation and operation phases thus enhancing climate resilience capacity of local

		deposited. With this continued trend the expected baseline scenario of annual GHG emissions from landfills will be high.	utilization of Landfill Gas (LFG) for power generation; approximately 586,000 tCO2e will be reduced from this action.	communities
Forestry				
Programme of action	**Actions**	**Description and targets**		**Adaptation benefits**
		Baseline scenario	**Mitigation scenario**	
7.Sustainable Forestry, Agro forestry and Biomass Energy	**7.1 Mandate licensing of sustainable charcoal production techniques**	In 2012 Rwanda had a sink (or negative emissions) of -2,540,000 tCO2e. It is difficult to directly predict the future use of wood resources or BAU, due to various streams of use, therefore the mitigation (sink) potential is derived for the savings of wood resources not used under alternative emission scenarios.	Rwanda will apply a Sustainable Charcoal Value Chain to reduce the demand of wood in charcoal production and downstream activities, leading to a potential net reduction in wood use of approximately 5,770,000 t between 2016 – 2030 (equal to 5,770,000 tCO_2 saved).	Most notable benefits resulting from this measure are mainly; improved forest productivity, improved access to efficiently produced domestic fuels, jobs creation, and potential lower fuel (charcoal) cost.
Fairness, equity, ambition and means of implementation (cross-cutting for both mitigation and adaptation)				
Fairness, equity and ambition	Rwanda is part of the Least Developed Countries and has a low human development index according to the Human Development Report 2014. The country is still facing social and economic challenges addressed in the Economic Development and Poverty Reduction Strategy (2013 - 2018). Adaptation is the first priority of the country due to high vulnerability of key economic activities such as agriculture, energy and forestry. In addition, Rwanda has one of the lowest GHG emissions per capita in the world estimated at 0.99			

	tCO2eq/person (2013)[15]. It should also be noted that the net emissions of Rwanda as per second national communication (emissions net of sequestration) were negative in 2005. Despite this, Rwanda has established mitigation targets in different sectors through its Green Growth and Climate Resilience Strategy and mainstreamed Green Economy in its Economic Development and Poverty Reduction Strategy. In this context, Rwanda considers that its Contribution is equitable and ambitious.
Planning processes	Rwanda's INDC has been developed taking into consideration various national guiding documents, including Green Growth and Climate Resilience Strategy (2011), Vision 2020, Economic Development and Poverty Reduction Strategy 2 (2013 - 2018), Sustainable Energy for All (2015 - 2030), and others. The development of this INDC was achieved through a participatory and transparent process through stakeholder consultations and workshops.
Means of Implementation	The Government of Rwanda already spends a substantial portion of its annual budget on infrastructure and the provision of social services, which contribute to low carbon and build climate resilience. However, the full implementation of this INDC will require predictable, sustainable and reliable support in the form of finance, capacity building and technology transfer. The initial costing of implementing the green growth and climate resilience strategy indicated that Rwanda will need 24.15 Billion USD in the sector of Water resource management, Agriculture and Energy up to 2030[16]. Costing of the remaining sectors will give the clear indication of financial needs. Rwanda successfully completed its Technology Needs Assessment (TNA). Elements of Rwanda's TNA process included institutional arrangements for TNA, extensive stakeholders' involvement and consultations, prioritization of sectors, barrier/market analysis and Technology Action Plans (TAP). Prioritized sectors in Rwanda's TNA were agriculture and energy.
Monitoring and reporting progress and MRV	The Republic of Rwanda through the Ministry of Natural Resources hold the responsibility to monitor and evaluate the implementation of INDCs through regular statutory stakeholders' consultative engagement including the Environment and Natural Resources Joint Sector Review (JSR) meetings. This will

[15] The Republic of Rwanda Statistical Yearbook 2014

[16] Report on Costing of Green Growth and Climate Resilience Strategy

	ensure the effective updating and implementation of both mitigation and adaptation plans.
Institutional arrangements	At the institutional level, the Ministry of Natural Resources (MINIRENA) is the Ministry responsible for formulating and monitoring national policies related to climate change and environment, while the Rwanda Environment Management Authority (REMA) is the official organ responsible for implementing national policies and strategies related to climate change and environment. A successful implementation of this INDC requires a close coordination and collaboration between MINIRENA, REMA and all potential stakeholders incuding the private sector, civil society and public institutions including Ministry of Agriculture and Animal Resources, the Ministry of Trade and Industry, Ministry of Local Government, the Ministry of Infrastructure, Ministry of Education, Ministry of Health, the Ministry of Finance and Economic Planning, Ministry of Disaster Management and Refugee Affairs, Rwanda Meteorology Agency, National Institute of Statistics, Rwanda Development Board, Rwanda Standards Board, Rwanda Agriculture Board; Rwanda Energy Group; Water and Sanitation Corporation; Rwanda Natural Resources Authority; Rwanda Biomedical Centre; Rwanda Transport Development Agency; Rwanda Housing Authority; Rwanda Revenue Authority; National Industrial Research and Development Agency; research centers and Universities. In order to coordinate and monitor the implementation of the adaptation and mitigation actions in the different sectors, Rwanda has set up different bodies and operationalized institutional arrangements, namely the Green Economy Technical Coordinating Committee and the National Fund for Environment and Climate change (FONERWA) as a national green fund to mobilize additional internal and external climate funds. In addition, MINIRENA has been accredited as implementing entity for Adaptation Fund and Green Climate Fund (GCF) while REMA has been nominated as national designated authority for GCF. These institutions are based on a sectorwide approach and work closely with development partners, civil society, academia and the private sector.
Participation in international market mechanism and other emission reduction mechanisms	The Government of Rwanda intends to sell carbon credits during the period to contribute towards achieving its Green Growth and Climate Resilience Strategy. Rwanda will also participate in other international emissions reduction mechanisms such as the Clean Development Mechanism (CDM), Nationally Appropriate Mitigation Actions (NAMAs), and the mechanism for Reducing Emissions from Deforestation and Forest Degradation (REDD+). Rwanda supports the development of effective accounting rules under the UNFCCC to guarantee the environmental integrity of market mechanisms.