REPUBLIC OF BURUNDI

2020 NATIONALLY DETERMINED CONTRIBUTION

ANNEX

July 2021

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1. Background and planning for the 2015 NDC update

Burundi has made commitments to the international community to contribute to the fight against climate change, through its Intended Nationally Determined Contribution (NDC) submitted in 2015 to the twenty-first Conference of the Parties (COP 21) of the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in 2015. It became a Determined Contribution in 2018 after Burundi ratified the Paris Agreement.

The Paris Agreement warns of the threat of climate change and says that the GHG emission reductions announced in existing commitments are not enough to keep global warming below the 2°C target. To this end, it invites Parties to make more efforts for a transition that would allow them to reach 1.5°C. In this context, it is useful and urgent to see how countries are implementing their commitments by implementing paragraphs 1, 2, 3, 9 and 13 of Article 4 of the Paris Agreement.

The Paris Agreement provides that signatory countries must review their NDCs every 5 years. In 2020, countries are invited to submit revised NDCs based on their 2015 contributions to the UNFCCC Secretariat. For countries that have chosen a time horizon of 2030, the year 2020 is a first opportunity to reaffirm their commitment to effectively combat global warming by re-communicating their 2015 NDC in 2020.

Although Burundi has chosen a time horizon of 2030 in the 2015 NDC, the Government wished to review its commitments by backing them up with more up-to-date data as well as a better alignment of the NDC with the guidelines of the Paris Agreement, particularly with regard to the rulebook adopted at COP24, for the 2020 NDC. In the 2015 NDC, Burundi committed to reducing its greenhouse gas (GHG) emissions by 3% by 2030 without conditions and by 20% under conditions.

The ambition envisaged for the 2020 NDC is to improve the quality of the 2015 NDC, update quantitative estimates with more recent data, reassess mitigation and adaptation opportunities for 2020-2030, take more sectors into account in the definition of targets, present complementary mitigation measures, and include the Adaptation Communication in the NDC.

Burundi's NDC takes into account the IPCC Special Report of October 2018 on the consequences of global warming after the Paris Agreement. This report sets out the collective ambition to limit global warming "to below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C".

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The updated NDCs are based on the principle of voluntary commitment by countries and promote cooperation between countries to achieve, in a coordinated manner, common objectives to combat

climate change, which must lead to a 45%[1] reduction in greenhouse gas emissions by 2030 compared to 2010 levels, in order to stay below the 1.5°C target.

The updating of the NDC of the Republic of Burundi promotes transparency, precision, comprehensiveness, comparability and coherence and is in line with the IPCC report and the conclusions of the Talanoa Dialogue.

Its trajectory is planned in relation to a BAU (*Business as Usual)* reference scenario that will measure Burundi's effort in terms of its mitigation objectives vis-à-vis climate change.

The sectors taken into account in the NDC are the sectors of Energy and Transport, Industrial Processes and Product Use (IPP), Agriculture, Forestry and Land Use (AFOLU) and Waste Management. It should be noted that the forest plays an important role in both adaptation and mitigation.

1.1 Reminders on Burundi's Initial NDC (NDC 2015)

Burundi's initial NDC was published in 2015 and took into account aspects related to adaptation and mitigation.

a) Adaptation

Burundi is exposed to the adverse effects of climate change2. These affect all sectors, in particular the sectors of energy, agriculture and livestock, water, health, landscapes and terrestrial ecosystems.

The adaptation needs identified in the 2015 NDC related to forestry, human, institutional, technical and financial capacity building, and technology transfer. National priorities, policies and programmes have been defined in terms of adaptation to climate change (NDP Burundi 2018-2027, DOPEAE, NP-PA CC, Preliminary NAP, etc.).

b) Attenuation

Regarding mitigation, Burundi had committed to reducing greenhouse gas emissions by 23% by 2030 compared to the baseline scenario (BAU), which corresponded to a reduction of 3% (1,958 Gg CEE2) under its unconditional objective and 20% (14,897 Gg CEE2) under its conditional objective.

According to the 2015 NDC, the establishment of the BAU referred to the assumptions related to the growth of the national economy (GDP), population growth and the rate of electrification contained in the above-mentioned documents. Some of these and many other documents developed served as the basis for the establishment of the NDC 2020 AU.

[1] *GHG reduction targets and the contribution of States, Institute for Research in Contemporary Economics, Intervention Note n° 72, January 2021*

[2] National Communications on Climate Change (2005, 2010, 2019), Evolution of climate parameters in Burundi by 2050 and Integrated Vulnerability Analysis in Burundi conducted within the framework of the project "Climate Change Adaptation for the Protection of Water and Soil Resources" (ACCES),

Mitigation targets were assessed on the basis of actions taken that contribute to mitigation. Accounting and verification of avoided GHG emissions was calculated using the IPCC 2006 GL. Interim targets for 2020 and 2025 were also set out in the 2015 NDC. The 2015 NDC mitigation targets are summarized in Table 1.

Table 1: Emissions by mitigation targets

OBJECTIVES	Percentage	CO2 eq (Gg) emission
Unconditional target (2030) %	**3%**	1.958
Conditional target (2030) %	**20%**	14.897
Unconditional target (2025) %	2%	1.305
Conditional target (2025) %	17%	9.897
Unconditional target (2020) %	1%	653
Conditional target (2020) %	11%	4.897

Source: CDN 2015

To achieve the unconditional objective, the following measures were planned:

- in the **forestry** sector, Burundi planned to increase GHG sinks by (re)afforestation by 4 ha per year for 15 years from 2016 to 2030.

- in the **energy** sector, Burundi planned to build three hydroelectric power plants in order to increase the electrification rate to 35%, i.e. a production of 45.4 MW in 2030.

To achieve the conditional target, the following measures were considered subject to funding:

- in the forestry sector, Burundi has committed to (i) reforesting 8,000 ha/year for 15 years from 2016, (ii) replacing 100% of all charcoal stoves and traditional domestic stoves by 2030.

- in the agricultural sector, Burundi planned to gradually replace 100% of mineral fertilizers with organic manure by 2030.

The policy and strategic documents that take into account the activities that generate greenhouse gas emissions and that were used to develop the assumptions, measures and mitigation targets can be found in Table 2 by sector.

Table 2: Documents supporting the formulation of assumptions and objectives

Sectors	**Current policy documents and strategies**
Energy	Sector Strategy for the Energy Sector in Burundi (2011); National Environmental Strategy (SNEB, 1997).
Land use and forestry	Burundi's National Forest Policy (2012); National Strategy and Action Plan on Biodiversity 2013-2020.
Agriculture	National Agricultural Strategy 2008-2015 (2008); National Strategy for Sustainable Land Use (2007); National Action Programme to Combat Land Degradation (2005); National Strategy and Action Plan to Combat Land Degradation 2011-2016; National Agricultural Investment Plan 2012-2017.
All sectors	Burundi 2025 Vision, Strategic Growth Framework, 2012; First and Second National Communications on Climate Change , 2001 and 2010; National Action Plan for Adaptation to Climate Change, 2007; Synthesis report on greenhouse gas inventories, 2009; Summary report of GHG mitigation studies, 2009; National Policy on Climate Change, 2013; National Climate Change Strategy and Action Plan , 2013.

Source: CDN 2015

The scope and scope of the 2015 NDC can be found in Table 3.

Table 3: Scope and Scope of the 2015 NDC

Sector	Gas	Subsectors	Geographic Scope
Energy	CO2, CH_4, N_2O	Activities from combustion from Fuels	The whole territory.
Agriculture/Livestock	CH4 and N_2O	Domestic livestock and managed soils	The whole territory.
Land use and forestry	CO2	Forest land	The whole territory

Source: CDN 2015

The mechanism for compensating for the shortfall in the implementation of the proposed NDC was based on international mechanisms for offsetting greenhouse gas emissions (Article 6 AP) and existing national legislation. In the area of forests, it was envisaged to promote the valuation of ecosystem services.

Regarding the conditional objectives, the needs in terms of support were analysed. In order for the conditional objectives to be achieved, support in capacity building of the Ministry's services in charge of the environment and in technology transfer was necessary. In addition, financial support was essential.

The cost of the mitigation and adaptation components for the implementation of the prioritized actions enshrined in the 2015 NDC by unconditional and conditional objectives was estimated at one billion four hundred and ninety-three million five hundred and eighty-nine thousand US dollars (USD 1,493,589,000). Table 4 illustrates the support needed for the implementation of the 2015 NDC.

Table 4: Support required for the implementation of the 2015 NDC

Program	Cost in USD (X1000)
1.Climate Adaptation and Risk Management	3,719
2.Mitigation of greenhouse gas emissions Greenhouse and low-carbon development	1 446 118
3.Promotion of Research and Development and Technology Transfer	25,787
4.Capacity Building, Disaster Management Knowledge and communication	3,465
5. Reforestation and agroforestry	10,000
6.Extension of Improved Grinding Wheels	1,500
7. Extension of Household Improved Cookstoves and handicrafts	3,000
Total	1 493 589

Source: CDN 2015

1.2 New elements contributing to the update

The update of Burundi's NDC takes into account new elements published since the 2015 NDC, both at the national and international levels. At the national level, these are mainly the Third GHG Inventory (2005, 2010 and 2015), the National Plan for the Development of Burundi 2018-2027 (PND BURUNDI 2018-2027), the Orientation Document for the Environment, Agriculture and Livestock Policy (DOPEAE 2020), the National Strategy for the Reduction of Emissions from Deforestation and Forest Degradation and the role of ecosystem conservationSustainable Forest Management and Enhancement of Forest Carbon Stocks (REDD+) 2019, policies and plans related to industry, transport, energy, health and gender.

At the international level, these are mainly the decisions resulting from COP 24 in 2018, which was held in Katowice, Poland in December 2018, and the ICTU, which aims to guide countries when updating their NDCs. The Katowice Package sets out the Modalities, Procedures and Guidelines that specify how the Enhanced Transparency Framework (CTR) is implemented. It sets out the essential procedures and mechanisms that will operationalize the Paris Agreement.

The updated NDC is also in the process of implementing the Paris Agreement and specifically in paragraphs 1, 2, 3, 9 and 13 of its Article 4. In addition, the update takes into account Decision 4/CMA. 1 Annex I on the ICTU (Information, Clarity, Transparency and Under standing) which highlights Information on Clarity, Transparency and Understanding of NDCs and integrates cross-cutting issues such as gender and social inclusion.

1.2.1 GHG inventory and BAU projections

After the submission of the 2015 NDC to the UNFCCC Secretariat, the Third Communication was developed and validated in 2019 under the Coordination of the Ministry of Environment with the support of the Global Environment Facility. It is based on the 3rd national GHG inventory. The methodology for calculating GHG emissions and removals followed the 2006 IPCC Guidelines.

This inventory covers the years 2005, 2010 and 2015.

The greenhouse gases considered are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O).

The sectors covered are (i) energy; (ii) Industrial Processes and Product Use (IPU);
(iii) Agriculture, Forestry and Other Land Use (AFOLU) and (iv) Waste Management.

The NCR contains projections of emissions to 2050 if no action is taken to mitigate GHG emissions. These projections also show mitigation scenarios based on GHG mitigation policies, measures, strategies and plans planned and implemented in Burundi.

1.2.2. Analysis of the implementation of the 2015 NDC.

Prior to the update of the NDC, an analysis of the implementation of the 2015 NDC was carried out. This analysis aimed to assess the progress made in the implementation of the first NDC in relation to the country's commitments to reduce greenhouse gas emissions through unconditional and conditional objectives.

Regarding the **unconditional objective**, it was planned in the forestry sector to forest 4000 ha per year for 5 years, i.e. 20000 ha for 5 years and to build three hydroelectric power plants in order to increase the electrification rate to 35%.

The degree of implementation of the unconditional actions of the 2015 NDC in the forestry and energy sectors in 2020 is summarized in Table 5.

Table 5: Degree of implementation of the 2015 NDC unconditional actions

Sector	Planned actions	Actions carried out	Rate from Achievement in %
Forester	Woodland 20,000ha in 5 years	11033ha	55%[3]
Energy	Build 3 Central Hydroelectric	4 power plants under construction	0
Total			

Source: NDC Evaluation Report 2015

Regarding the **conditional objective**, it was planned (i) in the forestry sector to forest 8000 ha per year for 5 years, i.e. 40000 ha from 2016 to 2020, (ii) in the energy sector to replace 100%, to

[3] Compared to the areas to be afforested planned in 2020

by 2030, all traditional carbonization stoves and all traditional domestic stoves and (iii) in the agricultural sector, to gradually replace 100% of mineral fertilizers with organic manure, by 2030. The results for each proposed conditional action can be found in Table 6.

Table 6: Degree of implementation of the 2015 NDC conditional actions in 2020

Sector	Planned actions	Actions carried out	Rate from Achievement in %	Cost of Action4
Forester	Wooding 40,000 ha in 5 years	29684 ha	74%	4462600
Energy	Replace at 100%, at by 2030, all traditional carbonization furnaces	DN	DN	1500000
	Replace at 100%, at2030 deadline, in all hearth the Ranges traditional domestic servants	DN	DN	DN
Agricultural	Gradually replace 100% of mineral fertilisers with organic fertilisers by 2030	DN	DN	DN
Total				

Source: NDC Evaluation Report 2015

In mitigation, the overall cost of implementing greenhouse gas emission reduction actions in all sectors by conditional target was estimated at USD 1,446,118,000...

The analysis of the 2015 NDC highlighted some gaps in its implementation and drew lessons for the 2020 update of the NDC.

The shortcomings identified are as follows:

- ✓ Lack of a national coordination framework for NDC implementation.
- ✓ Lack of indicators for monitoring and evaluating the implementation of the NDC.
- ✓ Low capacity for mobilizing resources for the implementation of the NDC through unconditional and conditional objectives.
- ✓ Lack of a national MRV system for climate finance.
- ✓ Insufficient capacity-building and technology transfer actions.

- ✓ Low awareness on the ownership of the NDC by all stakeholders. Lessons learned

from the implementation of the 2015 NDC include:

- ✓ The 2015 NDC is very ambitious and contains certain commitments that are not or cannot be achieved within the planned timeframe.
- ✓ Measuring, reporting and assessing mitigation and adaptation actions is difficult to achieve due to the lack of clear indicators and information on sectoral contributions to implementation and the existence of an MRV system for the NDC.

Suggestion for the improvement of the NDC 2020:

Taking into account the shortcomings observed in the 2015 NDC and its implementation as well as Burundi's commitment to increase its ambitions, new elements have been incorporated into the 2020 NDC. These include:

- ✓ The integration of the waste and industry sectors (PIUP), and the transport subsectors.
- ✓ Consideration of gender and social inclusion aspects in accordance with existing national policies.
- ✓ The development of a logical framework with measurable monitoring indicators for monitoring and evaluating the implementation of priority mitigation and adaptation actions included in the 2020 NDC.
- ✓ The establishment of an inclusive national coordination and monitoring framework for the implementation of the NDC.
- ✓ Raising awareness among all the actors involved (political decision-makers, planners, local authorities and grassroots communities while respecting the gender dimension) on the implementation of the NDC for its ownership.
- ✓ The integration of all the actors involved in the planning process in order to take into account the climate change in relation to the NDC in the implementation of the strategic development (sectoral strategies and policies).
- ✓ Strengthening the institutional and technical capacities of sectoral entities with sufficient financial means and appropriate tools for effective implementation of the NDC with a mechanism for monitoring, reporting and verifying REDD+ and other climate change actions as well as a national research and development programme on climate change adaptation.
- ✓ The formulation of projects in line with the requirements of the various financing mechanisms and the creation of a strategic framework conducive to the mobilization of financing, following the example of several African countries Parties to the Convention, have created a National Climate Change Fund.
- ✓ Improvement of the data collection system.

- ✓ Integration of NDC programmes into sectoral plans and policies.
- ✓ The inclusion of the ICTU in the 2020 NDC.

1.2.4. National Plans, Policies and Strategies.

(i) Burundi Economic Development Plan

The first document published since the 2015 NDC is the Burundi National Development Plan 2018-2027 made public in 2018. This plan was produced in a context where Burundi is experiencing major changes in the areas of administrative and economic governance with a major challenge related to the structural transformation of the national economy. It comes to face the challenges of socio-economic development . These challenges are an obvious fact that must be resolved by the said plan for the decade 2018-2027.

Burundi's National Development Plan 2018-2027 (PNB) is part of a development plan based on a new dynamic of transformation of economic, demographic and social structures. This pattern generates multiplier effects that are both lasting on the improvement of economic growth and on average per capita income. It will enable the satisfaction of basic needs, poverty reduction, human capital development, environmental sustainability and social equity.

GNP is thus a strategic orientation tool on which sectors will have to build their policies and action plans to contribute positively to the increase in gross domestic product (GDP). This plan is intended to be the foundation of strong and inclusive growth from 2018 onwards in order to enable Burundi to reach the level of emerging countries by 2027. Its challenge is to create the conditions for lasting peace and stability for the long-term structural transformation of the economy characterized by double-digit, sustainable and equitable growth.

The implementation of the NDP is based on five strategic orientations, namely (i) to boost growth sectors ; (ii) develop human capital; (iii) protecting the environment, adapting to climate change and improving spatial planning, (iv) strengthening democracy, governance, the rule of law and safeguarding national sovereignty, (v) strengthening resource mobilization mechanisms and developing cooperation and partnership.

The updated NDC is one of the tools for the implementation of the National Development Plan and still takes into account the 2030 Sustainable Development Goals.

(ii) National policies and strategies.

To mitigate the adverse effects of climate change impacts, the Government of Burundi has defined political orientations, particularly through the NDP 2018-2027, the Vision 2025 published by Burundi in 2011 and the various sectoral policies such as the National Water Policy, the National Water Strategy, the National Agricultural Strategy (SAN), National Strategy and Action Plan on Biodiversity 2013-2020; the National Forest Policy and the Energy Policy Letter and its implementation strategy. In addition, it has developed and adopted strategies with specific action plans for climate change, including:

- The National Policy and Strategy and Action Plan on Climate Change.
- The National Communication Strategy on Adaptation to Climate Change.
- The National Action Plan for Adaptation to Climate Change (PANA, 2007).
- National Communications on Climate Change.
- The National Forest Strategy, 2021 replacing the National Forest Strategy (2012).
- The National REDD+ Strategy, 2019, the National Strategy for Sustainable Land Use (2007).
- The National Strategy and Action Plan to Combat Land Degradation 2011-2016.
- The National Agricultural Investment Plan 2012-2017.
- The Preliminary National Adaptation Plan (2020).

The implementation of the updated NDC contributes to the achievement of the objectives of the various plan, policy and strategy documents mentioned above in terms of mitigation of greenhouse gas emissions and adaptation to the impacts of climate change.

1.2.2 Presentation of information in accordance with Decision 4/CMA.1, annex I

The Information, Clarity, Transparency and Under Standing (ICTU) information has been taken into account in the update of the NDC by focusing on the following points:

(i) Quantifiable information on benchmarks.

(ii) Timelines and/or implementation periods.

(iii) The scope and scope of application.

(iv) The planning process.

(v) Hypotheses and methodological approaches.

(vi) The manner in which the Party considers its nationally determined contribution to be equitable in the light of its national circumstances.

(vii) How the NDC contributes to the achievement of the objective of the Convention as set out in its Article 2.

.At the international level, the IPCC special report on the consequences of global warming of 1.50C has been published.**This special report** was approved at the 48th meeting of the IPCC in Incheon, South Korea and has been published since 8 October 2018.

It served as the scientific basis for the Talanoa Dialogue, which ended at COP **24** in December 2018 in Katowice, Poland, to take stock of the collective efforts made by Parties to achieve the long-term goal of the Paris Agreement and to encourage countries to make new, more ambitious commitments by 2020.

The conclusions of the Talanoa Dialogue call on all countries to submit strengthened climate plans (Nationally Determined Contributions - NDCs) to the United Nations by 2020.

They encourage Parties to pay specific attention to the role of the transport sector (including international aviation and shipping), to financing the transition, to the role of public and private investments, to the carbon price in this context (taking into account socio-economic aspects), and to the synergies of the transition towards a circular economy that aims at the sober and efficient management of resources, etc.

1.3 Planning for the NDC Update

1.3.1 Institutional commitment

The Ministry of Environment, Agriculture and Livestock is the institutional coordination framework which, through its administrative and technical structure, is in charge of the NDC 2020. To this end, it has set up a national commission in charge of monitoring the updating of the 2015 NDC. It is composed of senior executives from the various sectors emitting GHG emissions, including the AFOLU, Energy, Transport and Industrial Processes and Product and Waste Uses sectors. Executives from non-emitting but cross-cutting sectors, namely Health and Gender, were also included in the reflections.

In close collaboration with UNDP, this commission is responsible for monitoring the process of updating the NDC from the recruitment of the Bureau and the phases of development (validation of the methodology, organization of retreats, technical sessions and consultation workshops with stakeholders, validation at different stages of the document and submission of the updated NDC for adoption and approval).

On the technical side, the NDC 2020 was carried out by a consortium of 10 national experts assisted by an international consultant.

1.3.2. Enhanced ambition of the 2020 NDC.

Burundi has been actively engaged in the NDC process and, as early as 2015, it submitted a first NDC with mitigation targets for 2030. Yet, in 2020, although the country could simply resubmit its 2015 NDC (since it went until 2030), Burundi embarked on an ambitious updating project.

Increasing ambition for the 2020 NDC mainly consists of taking more sectors into account in the definition of targets and complementary mitigation actions and including the Adaptation Communication in the NDC.

The inclusion of actions in the Transport, IPPU and Waste sectors in the 2020 NDC increases the ambition in terms of GHG emission mitigation.

This NDC therefore represents an improvement over the previous NDC, as the coverage of emissions in terms of sectors has been extended to all categories estimated in the GHG inventory.

In addition, the 2020 NDC takes into account the gender dimension and therefore reinforces its equity character. As the scope of implementation of the NDC 2020 is national, its implementation will be equitable and just according to the diverse backgrounds and lifestyles of local communities.

Burundi is part of the dynamic to continue to make efforts to reduce GHG emissions. It will evolve towards the objective of reducing or limiting emissions at the scale of the economy and increasing carbon stocks, in particular through the implementation of the National Development Plan 2018-2027, and the Orientation Document of the Environment, Agriculture and Livestock Policy as well as other sectoral policies.

The 2020 NDC contributes to paragraph a) of Article 2 of the PA because it provides for the implementation, from 2021 to 2030, of projects/programmes to reduce greenhouse gas emissions. It will also contribute to the implementation of Article 4, paragraph 1, of the PA. Thus, it provides for political, strategic and mitigation plans/programmes and adaptation plans with beneficial effects for mitigation.

The goal is to achieve the desired global GHG cap in accordance with the best available science. This will make it possible to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of the century, on the basis of equity, and in the context of sustainable development and poverty reduction.

The 2020 NDC will be implemented from 1 January 2021 and will end on 31 December 2030. From 2020 to 2025, a biannual assessment will be made to see the progress made in reducing greenhouse gas emissions from 2021 to 2025.

1.3.3. Participatory and inclusive approach.

The 2020 update of the NDC was organized by making a real effort to ensure a participatory and inclusive approach during the planning, development and verification stages. It took into account the involvement of all stakeholders including state institutions, the private sector, non-governmental organizations and grassroots community associations.

UN agencies and technical and financial partners were also consulted to give their contribution as part of the process of updating the NDC 2020.

For the 2020 update of the NDC, the consultations also gathered the opinions of civil society organizations5 and researchers from the University. The aim was to involve and involve the private sector, civil society organizations, local communities, youth and the Batwa in the formulation and evaluation of mitigation projects. Particular emphasis was placed on

[5] Strategic Advocacy Alliance, which brings together about fifteen organizations campaigning for human rights and gender, led by COCAFEM/GL and the Swiss Cooperation, the Catholic and Anglican Churches on the occasion of a Round Table on May 12, 2021 on the role of religious leadership in the response to the current ecological crisis and two Batwa organizations UNIPROBA and UPARED, the most representative of the Batwa and the Laudato Si Platform bringing together four associations of young people sensitive to climate change.

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the participation of women and indigenous peoples assimilated to the Batwa during the consultation process .

A total of 5 workshops bringing together all stakeholders were organized in order to collect data, define the actions to be considered in the unconditional and conditional scenarios of the NDC, and validate the methodological approaches and results.

1.3.4. Capacity building and technology transfer

During the implementation of the 2015 NDC, capacity building of sectoral institutional managers was carried out, although in very limited numbers. These reinforcements focused on the tools and methodologies for greenhouse gas inventories and on studies of vulnerabilities, adaptation to climate change and mitigation of GHG emissions. Capacity building also focused on project funding procedures and mechanisms. However, the need for capacity building in these areas remains a national priority, as the number of reinforced staff is still insufficient and the mastery of these tools is still low in all sectors.

It is in this context that the NDC 2020 expresses a continued need to strengthen a large number of stakeholders involved in mitigation at the level of the various sectors in order to address the following situations:

- Limited availability of quality data.

- Poor technical knowledge for projections and analysis of mitigation measures.

- Difficulty in training technical and scientific personnel due to the lack of specialized training institutions in the field of climate change on site and the limits of cooperation for external training.

As research and development in the field of climate change remains incomplete and technical and financial means limited, the NDC 2020 proposes technology transfer actions to build capacity.

The most important actions are:

- Strengthen sectoral institutions on building reliable databases on climate change.
- Support climate research and development.

1.3.5. Timeline of work performed

The work to update the NDC took place over 5 months. The schedule of work can be found in Table 7.

Table 7: Work schedule

	Planned activities
1	PREFED/CAREPD interview with the Programme Specialist/Head of the Sustainable Development and Inclusive Growth Unit at UNDP, the international consultant and the authorities of the Ministry of Environment, Agriculture and Livestock.
2	Develop the methodological note, work plan and timeline for the update of the 2015 NDC in collaboration with the International Experts in charge of monitoring the update.
3	Participate in the weekly meetings organized by international experts from April 2021.
4	Prepare the report on the implementation of the 2015 NDC of the Republic of Burundi.
5	Validate the report on the implementation of the 2015 NDC of the Republic of Burundi by the Technical Commission in charge of monitoring the update.
6	Participate in a workshop to present (i) the NDC evaluated and the draft NAP developed, (ii) a methodological note, the work plan and a timeline for the updating of the NDC and (iv) validation of the questionnaire for the collection of sectoral data with a special focus on climate change adaptation/mitigation, gender mainstreaming, youth, vulnerable groups and capacity building needs, as well as the validation of the report on the implementation of the 2015 NDC of the Republic of Burundi.
7	Organize stakeholder consultation raids for data collection and document collection and surveys on energy consumption needs and fertilizer/pesticide use.
8	Analysis and processing of the data collected and preparation of sectoral reports and drafting of sectoral reports taking into account adaptation/mitigation aspects.
9	Incorporate the observations of the targeted experts into these sectoral reports.
10	Organize 4 regional consultation workshops.
11	Drafting of the draft document of the updated NDC of Burundi by the Consortium's experts .
12	Sending the draft document of the NDC 2020 to UNDP.
13	Analysis of the draft document by international experts.
14	Comments on the NDC 2020 addressed to National Experts by the Experts International.

15	Incorporation of comments from international experts into the consolidated document.
16	Retransmission of the consolidated document to international experts for final comments.
17	Transmission of the latest comments to the experts for inclusion in the consolidated NDC document .
18	Organization of a national workshop to validate the NDC 2020.
19	Integration of the comments from the participants of the validation workshop into the document of the updated NDC of Burundi.
20	Sending the 2020 NDC consolidated document to the International Experts for final observations and grooming.
21	Forwarding the consolidated document to the national experts.
22	Prepare a presentation text of the updated NDC to the Government.
23	Adoption of the NDC 2020 by the Council of Ministers.
24	Approval of the NDC by the National Assembly.
25	Transmit the updated CND document of the Republic of Burundi to the UNFCCC Secretariat.

1.4 Burundi 2020 NDC

Table 9 provides information on the clarity, transparency and understanding of the Republic of Burundi's 2020 NDC .

Table 8: Information on Clarity, Transparency and Understanding of the 2020 NDC.

1. Planning Process	
has. Information on the planning processes that the Party has followed in developing its Nationally Determined Contribution and, if available, on the Party's implementation plans, including, as appropriate, :	
i. National institutional arrangements, public participation and collaboration with local communities and indigenous peoples , taking into account gender issues ;	**Institutional arrangements:** The Ministry of the Environment, Agriculture and Livestock is the institutional framework in charge, through its technical and administrative structure, of updating the NDC 2020. To this end, it has set up a national commission in charge of monitoring the updating of the 2015 NDC. It is composed of

	senior executives from the various sectors (AFOLU, Energy including Transport, PIUP and Waste). Representatives of sectors involved in related themes (Health, Gender) have also been integrated into the Commission. In close collaboration with UNDP, this commission is responsible for monitoring the process of updating the NDC since the recruitment of the Bureau and the development phases (validation of the methodology, organization of retreats for technical sessions and workshops for consultation with stakeholders and phased validation of the document, submission of the updated NDC for adoption and approval). On the technical side, the NDC 2020 was carried out by a consortium of 10 national experts (6 sectoral experts, an economist, a gender specialist, a health expert and a climate expert) assisted by an international consultant. **Participatory aspect** The updating process was based on numerous exchange workshops (data collection, selection of actions, approval of methodologies, verification and approval of results). These workshops aimed to ensure the participation and involvement of all technical stakeholders and civil society with the involvement of local communities, indigenous peoples, the international dimension and the social dimension. The workshops also aimed to communicate on the actions selected and thus ensure their implementation by the stakeholders. The 2020 NDC was approved by the Burundian authorities before being circulated to UNDP.
ii. Contextual issues, including, but not limited to:	
- National circumstances, including geography, climate, economy, sustainable development and poverty eradication	**Burundi** is a country in Central Africa with an area of 27,834 km2. It is located between 28° 50 and 30° 54 East longitude between the Congo Basin and the eastern highlands and between 2° 30 and 4° 28 South latitude, at the crossroads of the Central Africa, East Africa and even Southern African routes. The country has a hot and humid tropical climate influenced by altitude and characterized by alternating rainy seasons (October to May) and dry seasons (June to September). Its rainfall and temperature are strongly influenced by the terrain, the altitude of the country (772-2670 m) and by climate change. The average annual rainfall varies from 750 mm in the north-east of Burundi to more than 2000 mm in the mountainous area. The highest average annual temperature is 24.7°C between 2006-2015 recorded in the Imbo Plain Natural Region, while the lowest is 16.6°C between 2006-2015 recorded in the Mugamba Natural Region.

	From a socio-economic point of view, Burundi has about 12.3 million populations in 2020, more than 90% of whom live in rural areas and 51% are women. Being among the Least Developed Countries (LDCs), its annual per capita income is estimated at USD 280 and its economy is mainly based on agriculture. With a density of **480.99 people/km²,** the population growth of 2.4% puts pressure on land and water resources and aggravates the situation of deforestation and deforestation. According to the TCN, the sectors that emit more are agriculture, energy and waste with emissions of 4186.21 CO2 eq in Gg and 1072.4 CO2 eq in Gg respectively. Gg and 230.73 CO2 eq. For other sectors, GHG emissions are insignificant.
-Best practices and experience gained from the development of the Nationally Determined Contribution	Best practices and experience from the development of: ✓ Participatory approach to the planning process for the development of the NDC (Data collection, data processing, calculation by the IPCC 2006 software, needs, prioritization of measures, etc.); ✓ Consideration of Decision 4/CMA.1
- Other contextual aspirations and priorities recognized upon accession to the Paris Agreement	The updated NDC 2020 is in line with the objective of the Paris Agreement, in its provisions of Article 4 paragraphs 2 and 3, Article 4, Article 5, Article 6, (1) and (2) and Article 7(1) and (2). Developed countries should act in accordance with the provisions of Article 9 of the Paris Agreement. Compliance with Article 9.4 of the Paris Agreement, which highlights areas of cooperation and facilitation and aims to improve understanding, action and support. These areas include early warning systems, emergency preparedness, etc.
b. Specific information applicable to Parties, including regional economic integration organizations and their member States, that have agreed to act jointly pursuant to Article 4, paragraph 2, of the Paris Agreement, including Parties that have decided to act jointly, and the terms of the relevant agreement, in accordance with in paragraphs 16 to 18 of Article 4 of the Paris Agreement	Not applicable *The updated NDC is not developed within the framework of regional economic integration organizations and their member states to act jointly pursuant to Article 4.2 of the Paris Agreement. Paragraphs 16, 17 and 18 do not relate to the updated NDC of the Republic of Burundi.*
c. How the Party's preparation of its Nationally Determined Contribution has been informed by the results of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement	The steps that were taken for the 2020 NDC were not informed by the global stocktake, as the first global stocktake on climate action will be released in 2023. However, the results of the global stocktake will be taken into account for the update of the 2020 NDC.
d. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement, which consists of adaptation measures and/or economic diversification plans that have led to	Not applicable

mitigation benefits in accordance with Article 4, paragraph 7, of the Paris Agreement,	

6. How the Party considers its nationally determined contribution to be equitable and ambitious in light of its national circumstances	
has. How the Party considers its nationally determined contribution to be equitable and ambitious in light of its national circumstances	During the preparation of the NDC, the vulnerability analysis of the sectors (Agriculture, Forestry and All Other Land, Energy, Health, PIUP) was carried out. Negative impacts due to climate change have been identified and mitigation and/or adaptation measures to address these impacts have been identified by sector. The development of the 2020 NDC used the most important data from the TCN and other sectors have been taken into account such as the Waste, IPUP and Transport sectors.
b. Considerations of fairness	Gender and social inclusion are taken into account in the 2020 NDC. In addition, the actions included in it have been identified on the basis of national policy and strategy documents.
c. The manner in which the Party has taken into account Article 4, paragraph 3, of the Paris Agreement6	The 2020 NDC raised the ambition compared to the previous NDC by taking into account actions on sectors and sub-sectors not included in the 2015 NDC: transport, waste. In addition, the themes of Health, Gender and Social Inclusion have been integrated into the prioritization of actions. The 2020 NDC represents an improvement over the previous NDC , as the coverage of emissions in terms of sectors has been extended to all sectors and gases estimated in the most recent GHG inventory. The 2020 NDC defined specific indicators for monitoring and evaluation and recommends a capacity building plan for better ownership by the various stakeholders.
d. How the Party has taken into account Article 4, paragraph 4, of the Paris Agreement7	Although Burundi is not an emitting country, it is developing at least through its policies actions to mitigate GHG emissions.
e. How the Party has taken into account Article 4, paragraph 6, of the Paris Agreement8	Burundi is strengthening its efforts in terms of mitigation through the inclusion in the new NDC of national actions to reduce GHG emissions and increase carbon stocks. For example, the development of new and renewable energies (solar, wind, hydroelectric power plants under construction, etc.), the increase in the internal budget to finance mitigation and adaptation measures but also policies such as the National Development Plan, 2018-2027 and the Environmental Planning Policy, Agriculture and Livestock,

6 How does the NDC represent a progression beyond the Party's previous NDC and reflects its highest possible ambition?

7 Developing countries: Information on how they continue to strengthen their mitigation efforts, and how they intend to move over time towards the Economy wide emission reduction or limitation target (EWERLT) in light of different national circumstances.

8 Least developed countries and small island developing States can prepare and communicate low-greenhouse gas emission development strategies, plans and measures appropriate to their particular circumstances.

7. The manner in which the Nationally Determined Contribution contributes to the achievement of the objective of the Convention as set out in Article 2 of the Convention	
has. How the Nationally Determined Contribution contributes to the achievement of the objective of the Convention as set out in Article 29 of the Convention	The NDC 2020 contributes to the objectives of the Convention and the Paris Agreement by accelerating low-carbon development .
b. How the Nationally Determined Contribution contributes to Article 2, paragraph 1 (a), and Article 4, paragraph 1, of the Paris Agreement10	- The revised NDC contributes to Article 2(a) of the PA. It plans to implement projects from 2021 to 2025 /programmes to reduce greenhouse gas emissions . -The revised NDC will also contribute to the implementation of paragraph 1 of Article 4 of the PA, as it provides for political, strategic and mitigation plans/programmes. Existing policies take into account the climate plan and SDGs with the aim of developing in a low-carbon way to contribute to the overall goal.

2 Mitigation objectives

2.1 The National GHG Inventory

Burundi has issued three national communications on climate change. He submitted them to the Secretariat of the United Nations Framework Convention on Climate Change. Each of these communications is based on an inventory of greenhouse gases.

The third national climate communication, published in 2019, is based on the third GHG inventory that was published in 201811. The latter concerns the years 2005, 2010 and 2015.

9 Article 2 of the UNFCCC sets out the ultimate objective of "stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system" (UNFCCC 1992). The second sentence specifies that this stabilization must be achieved "within a sufficient period of time to allow ecosystems to adapt naturally to climate change, so that food production is not threatened and so that economic development can continue.

10 Article 2.1(a) of the Paris Agreement includes two global temperature goals – "well below 2 degrees" and "1.5 degrees". Article 4.1 qualifies them by stating that "Parties aim to achieve global capping of greenhouse gas emissions as soon as possible, recognizing that such capping will take longer for developing country Parties, and to undertake rapid reductions in such emissions. and subsequently undertake rapid reductions in accordance with the best available science ...", and that Parties will also strive to "achieve a balance between anthropogenic emissions by sources and emissions by sinks" in the second half of the century

11 Burundi is in the process of preparing its first Biennial Climate Update Report, which will be based on the fourth greenhouse gas inventory. The latter is under development and therefore cannot serve as a reference for the update of the 2020 NDC.

The third national climate communication and its GHG inventory are retained as reference documents for the update of the 2020 NDC.

2.1.1 Perimeters

Under the supervision of the Ministry of the Environment, greenhouse gas inventories are carried out by the Burundian Office for the Protection of the Environment (OBPE).

The 3rd national GHG inventory used in the 2020 NDC takes into account the sectors of energy (including transport), agriculture, forestry and other land use (AFOLU), Industrial Processes and Product Uses (IPPPs) and waste.

Possible exclusions of certain subsectors (sources not present in Burundi or whose emissions are not estimated in the latest national GHG inventory) are presented in the sectoral paragraphs below.

The gases whose emissions or removals are taken into account are shown in Table 10.

Table 9: Sectors and Gases recorded.

Sectors	Gas
Energy	CO2, CH_4, N_{2O}
Agriculture and Livestock	CO2, CH_4, N_{2O}
CONCEITED	CO2, CH_4, N_{2O}
PIUP	CO2, CH_4, $N_{2O,}$
Rubbish	CH4, N2O

2.1.2 F-gases (HFCs, PFCs and SF_6 and NF_3

These gases are not accounted for in the third greenhouse gas inventory and are therefore not considered in the 2020 NDC.

2.1.3. Methodology

The methodology adopted is based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. GHG emissions and removals were calculated using the 2006 IPCC inventory software using Tier 1 methodology.

2.1.3.1 Energy

The calculation of Greenhouse Gas (GHG) emissions was carried out using the Tier 1 method of the 2006 IPCC Guidelines and the IPCC Tools software.

For this level of methodology, the necessary data that can be used are the activity data on the quantity of fuels burned (activity data) and the default emission factors for each fuel from the IPCC 2006 GL.

In the calculation of emissions from the energy sector, the activity data used come from the subsectors energy industries, manufacturing, construction, trade, agriculture, forestry, fishing, residential and transportation.

In the residential subsector, the fuels used are wood energy, bagasse[12] made up of vegetable or agricultural waste for cooking, heating and lighting, and petroleum for lighting by rural households. As for urban households, the fuels used are charcoal for cooking and petroleum for partial lighting.

In the transport subsector, the fuels used are diesel and petrol.

Emissions from the burning of plant or agricultural waste, which are used mainly in rural households, have not been quantified due to a lack of data.

2.1.3.2 Agriculture and Livestock

Calculated emissions in this sector are from domestic livestock (enteric fermentation and manure management) and managed soils (burning of harvested biomass residues, emissions from rice cultivation, direct N2O emissions from managed soils, and CO2 emissions from liming and urea application).

The methodology used in the 3rd GHG Inventory for the calculation of GHG emissions in the agriculture sector is Tier 1 and the default parameters of the 2006 IPCC Draft Resolution.

IPCC IPCC software was used to calculate methane (CH4) and nitrous oxide (N2O) emissions.

The Agriculture and Livestock sector includes the subsectors and categories listed in Table 11.

Table 10: Agriculture and Livestock Subsectors and Categories

Sub-sector	Categories
Domestic Livestock	Enteric fermentation ,
	Manure Management Systems
Cropland	Burning crop residues
	Rice growing
	Application of synthetic fertilizers for all crops
	Managed soils (liming, urea-based fertilizers),

For livestock, the input data focus on the primary characterization of the herd to classify the animals according to what is applicable to the country, taking into account the species and categories of livestock.

For managed soils, activity data are the amount of biomass burned during leaf removal by pre-harvest fire from the area occupied by sugarcane. For rice cultivation, the activity data collected in the field concern the annual rice harvest areas and the

[12] *Taken into account in the 3rd GHG Inventory.*

time of the vegetative cycle. For fertilizer application and liming, the input data are the quantities of fertilizer and lime used, respectively.

The daily monitoring of the areas on which wood products are harvested (Case of SOSUMO) is done.

2.1.3.3 Industrial Processes and Product Use (IPU)

In Burundi's 3rd GHG inventory, the Tier 1 methodology used for the calculation of emissions is the one recommended by the 2006 IPCC guidelines in which activity data have been multiplied by default emission factors. The calculations were made using the IPCC software.

The emission sources taken into account are lime production (mineral industry subsector) and iron and steel production (metal industry subsector). Burundi has no chemical industries. Emissions from non-energy fuel use are not estimated due to lack of data.

Emissions of fluorinated gases and NF3 related to the use (domestic or industrial) and manufacture of these gases are not estimated, on the one hand, because there are no national data to estimate emissions from the use of products, and on the other hand, because there are no industries that produce these products in Burundi.

In Burundi's 3rd GHG inventory, the TF sector includes the sub-sectors of forest land , cropland, pasture, wetlands and peatlands.

Activity data are areas of both public and private forest land, pasture, cropland and peatland.

After data collection and processing, the method used to calculate GHG emissions is as described in the 2006 IPCC Guidelines. The data conversion factors contained in FRA 2015 were used.

The calculations of emissions/removals were carried out using the IPCC 2006 software by entering the processed activity data.

Based on the data entered, the software calculates the emissions attributable to biomass stock change, wetland management, forest fires and harvested wood products and sums the emissions of all land use and use categories (LFAs).

For the TF sector, in addition to these emission sources, the rate of deforestation and forest degradation , the rate of wood consumption, and the development of wood-saving technologies are to be considered.

. Continuous monitoring and evaluation for the implementation of projects/programmes/measures designed to mitigate emissions and subsequent removals due to natural disturbances on exploited land is carried out.

2.1.3.5 Waste

In Burundi's 3rd GHG inventory, the methodology for calculating emissions in this sector was based on the 2006 IPCC Guidelines for National GHG Inventories and the 2006 IPCC software. Given the absence of country-specific emission factors, estimates were based on Tier 1 methods using mainly activity data and default parameters.

The categories of solid waste considered in Burundi's third GHG inventory are municipal solid waste (household and commercial). Biomedical waste was not taken into account in the calculation of emissions due to the lack of data related to solid waste discarded in pits and incinerated. Solid waste emissions calculations only concerned the cities of Bujumbura and Gitega and certain markets. Regarding wastewater, discharges from households, commerce and industry are taken into account.

2.1.4. Results

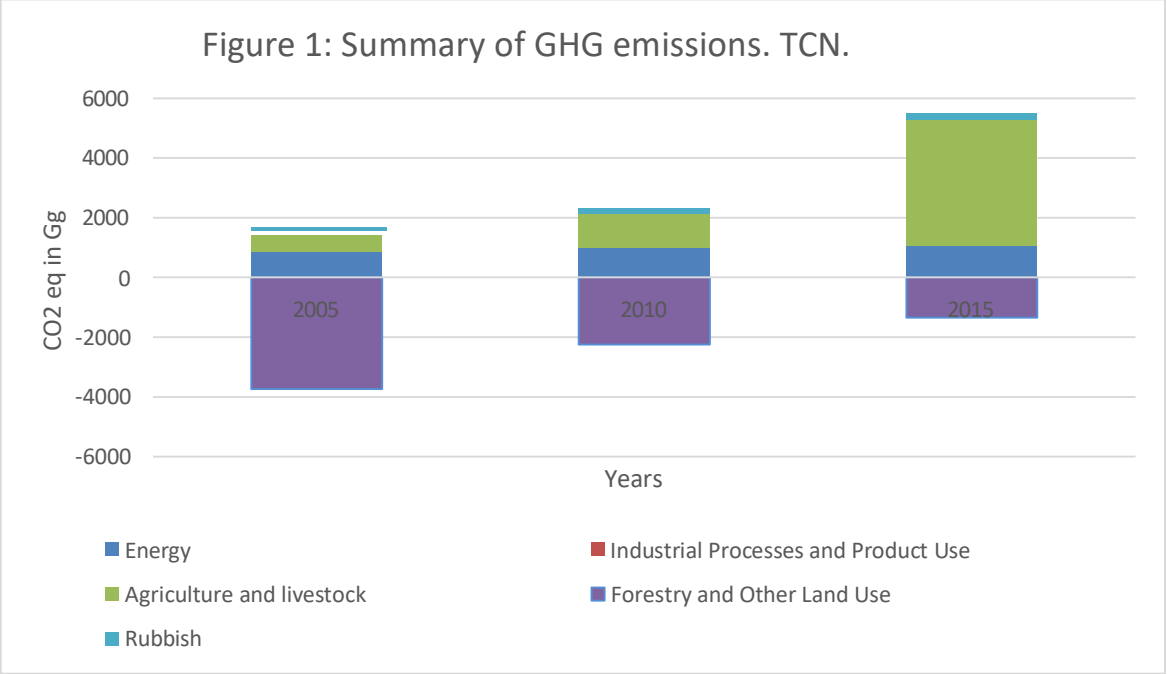
Table 12 and Figure 1 summarize the results of Burundi's 3rd national GHG inventory. For the conversion to CO2 equivalents, in Gg, the Global Warming Potential (GWP) values corresponding to a 100-year period of the IPCC Second Assessment Report (SOD) were used. These are 21 for CH4 and 310 for N2O.

Table 11: National GHG Emissions in Gg CO2eq by Sector

Sectors	2005	2010	2015
Energy	858,34	988,41	1069,43
Industrial Processes and Product Use	0	0,78	7,84
Agriculture and livestock	567,41	1150,37	4186,21
Forestry and Other Land Use	-3732.43	-2249.77	-1348.48
Rubbish	174,83	165,32	230,7
Total national emissions with removals	***-2130.22***	***56,51***	***4148,06***
Total emissions without removals	***1602,21***	***2306,28***	***5496,54***

Source: 3rd National GHG Inventory (NCE)

Chart 1: Summary of GHG emissions, NCE.



The analysis of the results of the synthesis of emissions with removals shows that the absorption capacity has decreased sharply in Burundi, resulting in an increase in greenhouse gas emissions . All the emissions recorded during the third inventory show that they come from agriculture, in soils managed by manure management systems.

2.1.4.1 Energy sector

Table 13 presents the energy sector emission results for the three types of gases (CO2, CH4, N2O) for the years 2005, 2010 and 2015.

Table 12: Overall GHG emissions in Gg CO_{2e} of the Energy sector

SECTORS OF ACTIVITY	2005			2010			2015		
	CO2	CH4	N2O	CO2	CH4	N2O	CO2	CH4	N2O
1.Energy industry	0,78	0,02	0	1,36	0,02	0	0,92	0,02	0
2. Ind. Manufacturing and Construction	30,25	0	0	47,91	0	0	45,48	0	0
3.Transportation:	74,46	0,02	0	81,25	0,02	0	69,88	0	0
Aerial	67,50	-	-	1,39	-	-	0,96	-	-
Truck driver	6,28	0,02	0,00	79,20	0,02	0,00	68,42	0,00	0,00
Maritime	0,68	-	-	0,66	-	-	0,50	-	-

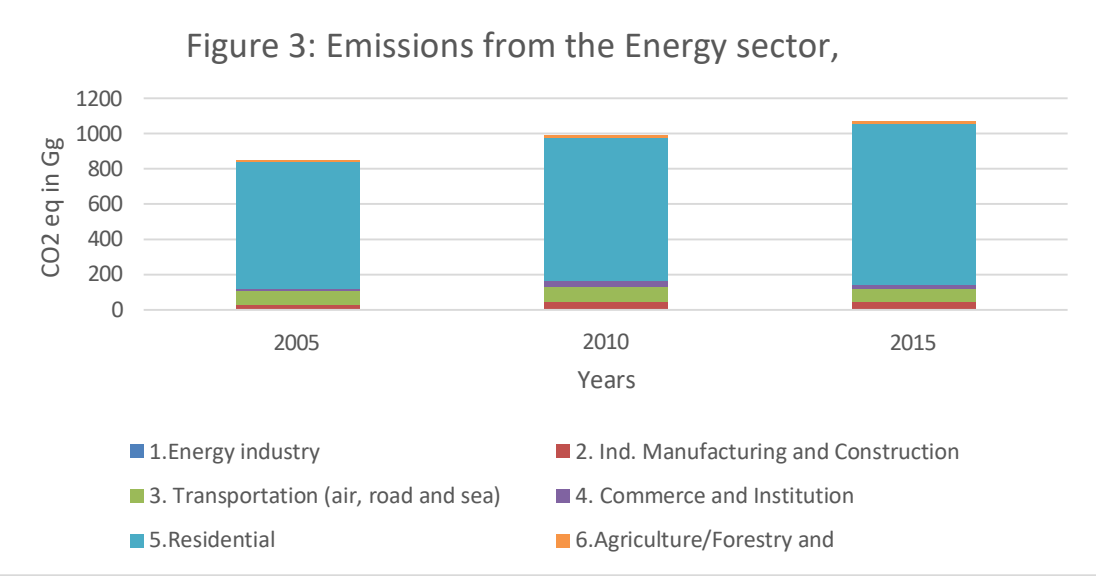
4. Trade and Institution	11,68	0,52	0,01	20,46	0,55	0,01	10,63	0,62	0,01
5.Residential	6,28	28,30	0,37	8,71	31,86	0,42	11,41	35,87	0,47
6.Agriculture/Forestry and Fisheries	9,76	0,06	0,00	12,49	0,07	0,00	13,93	0,08	0,00
TOTAL emissions	133,22	28,92	0,38	172,19	32,52	0,43	152,24	36,59	0,48
TOTAL CO2 EQ	858,34			988,41			1069,43		

Figure 2: GHG emissions from the Energy sector

Table 13: Summary of emissions from the energy sector by subsector.

SECTORS OF ACTIVITY	**2005**	**2010**	**2015**
1.Energy industry	1,2	1,78	1,34
2. Ind. Manufacturing and Construction	30,25	47,91	45,48
3. Transportation (air, road and sea)	74,88	81,67	69,88
4. Trade and Institution	15,3	35,11	26,75
5.Residential	715,28	807,97	910,38
6.Agriculture/Forestry and Fisheries	11,02	13,96	15,61
TOTAL CO2 EQ	**858,34**	**988,41**	**1069,43**

Figure 3: Emissions from the energy sector



The emissions results from the energy sector show that the amount of CO2 emitted is the largest in the transport subsector, followed by the manufacturing and construction subsector .

Regarding non-CO2 emissions, the "residential" sector is taking the lead with methane emissions from the incomplete combustion of biomass and its derivatives.

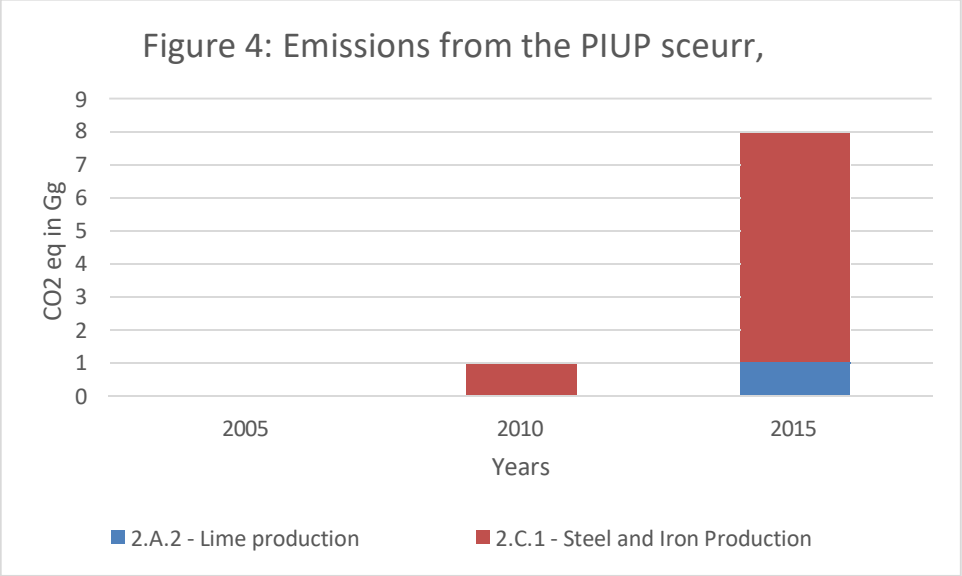
2.1.4.2 Industrial Processes and Product Use (IPU).

Emissions from the IPPU sector are negligible and the results can be found in Table 14.

Table 14: GHG emissions from the PIUP sector in Gg CO_2.

YEARS	2005	2010	2015	
Categories	0	CO2 (Gg)	CO2 (Gg)	CH4 (Gg)
2.A Mineral industries	0			
2.A.2 - Lime production	0	0	1,21	0
2.C Metal industries				
2.C.1 - Steel and Iron Production		0,78	6,24	0,02
Total PIUP in CO2 eq in Gg	0	0.78	7,87	

Figure 4: Emissions from the IPPU sector



2.1.4.3 Agriculture and Livestock Sector

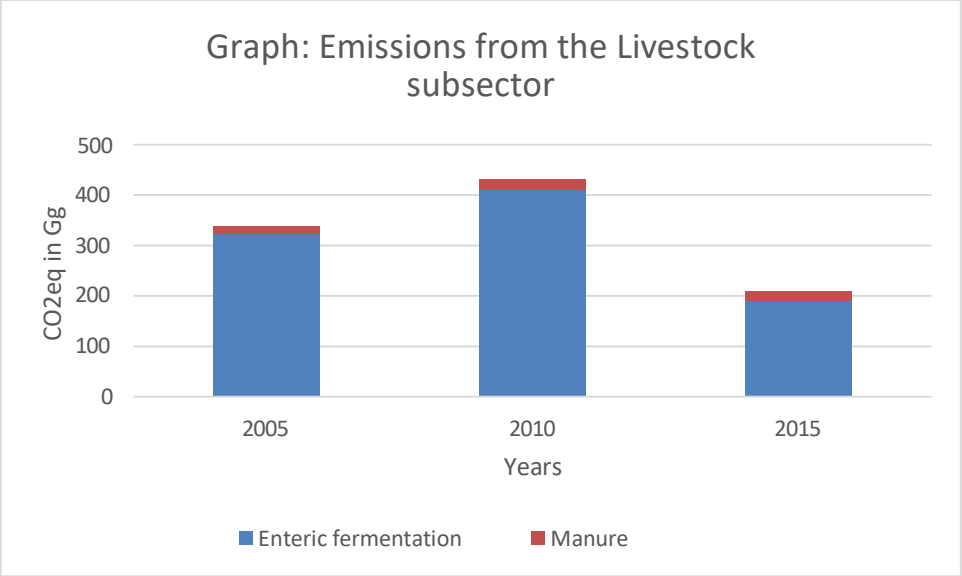
Emissions from the agriculture and livestock sector come from domestic livestock and managed soils.

Table 15 and Chart 4 show the results of GHG emissions from domestic livestock and managed soils.

Table 15: Emissions of CH_4 from domestic livestock in CO2 eq in Gg.

Domestic livestock subsector	**Categories**	**2005**	**2010**	**2015**
	Enteric fermentation	322,50	410,22	189,52
	Management of the manure	14,64	21,61	19,46
Total domestic livestock	**Total**	**337,13**	**431,83**	**208,99**

Figure 5: Emissions from the domestic livestock sector

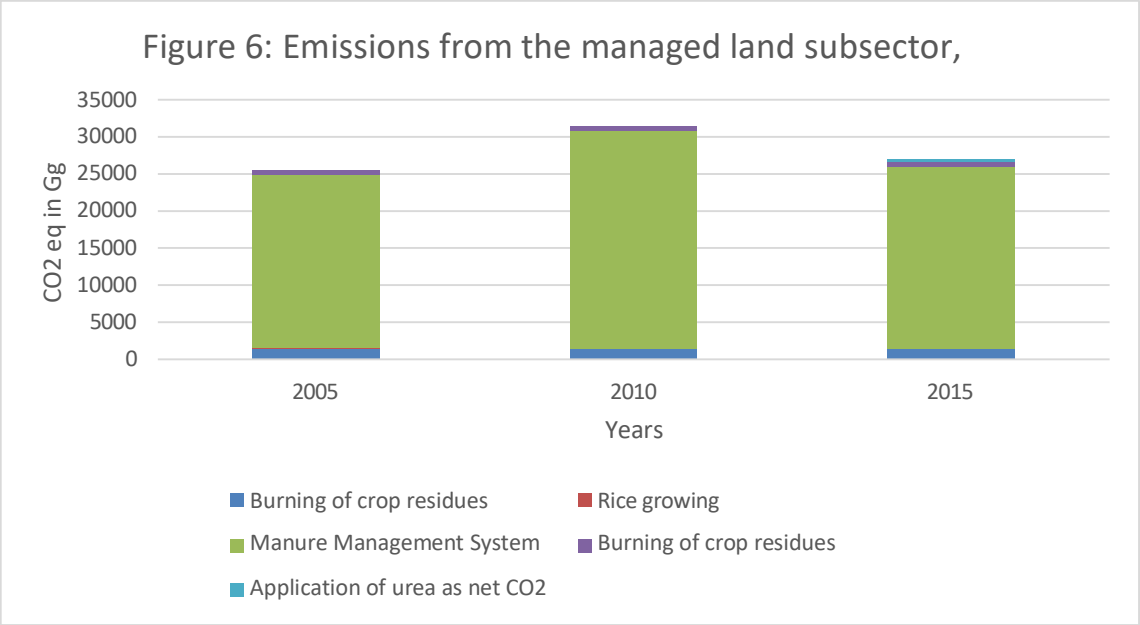


As for managed soils, the resulting emissions are mainly due to manure management systems . Table 16 and Figure 5 show the situation of CH4 emissions from managed soils in CO2 equivalent in Gg.

Table 16: Emissions from managed soils in CO2 eq in Gg.

Categories	**2005**	**2010**	**2015**
Burning of crop residues	1475,04	1424,43	1480,92
Rice growing	29,54	12,34	10,27
Manure Management System	$ 23,398.78	$ 29,463.12	$ 24,515.58
Burning of crop residues	564,2	545,6	567,3
Application of Urea to Net CO_2	0	0	390,17
Total Managed Soil	**$ 25,467.56**	**$ 31,445.49**	**$ 26,964.24**

Figure 6: Emissions from managed soils



The analysis in Table 16 shows that CO2 eq emissions in Gg from the manure management system are high. This is an error in the accounting of non-CO_2 emissions from this manure management system. For this reason, the reliable results that can be considered in the agriculture sector are those in Table 12.

2.1.4.4 Forestry and other land use (ATL)

Table 17 and Figure 6 present the results of Burundi's 3rd national inventory for the TF sector, distinguishing between emissions and removals from changes in carbon stocks in different reservoirs and during land-use changes.

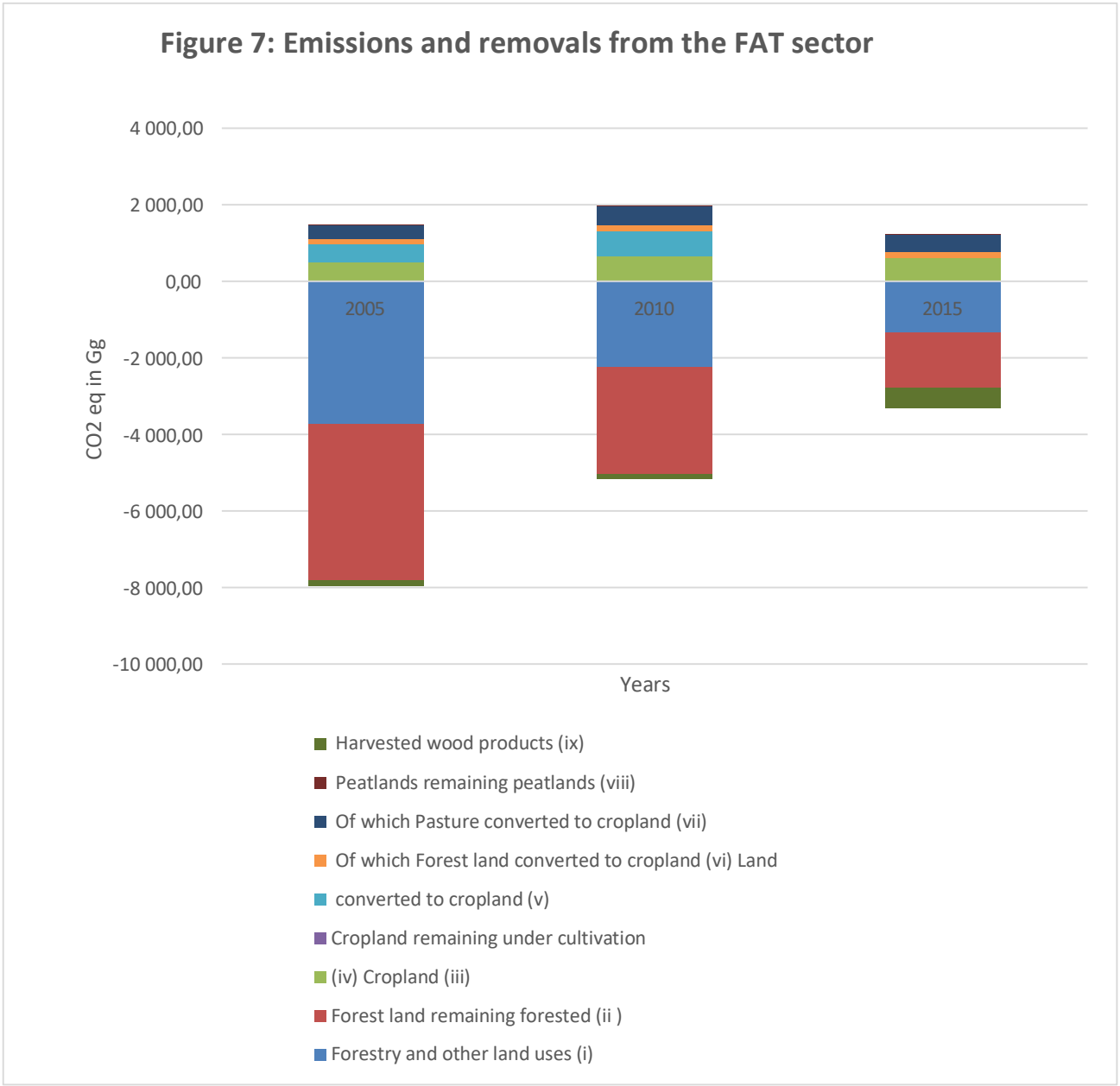
Table 17: Summary of the results of TAT issuances/removals.

Subcategories of the FAT sector	Emissions /CO2 removals in Gg 2005	Emissions /CO2 removals to Gg in 2010	Emissions /CO2 removals to Gg in 2015
Forestry and Other Land Use (i)	- $ 3,732.43	- $ 2,249.77	- $ 1,348.48
Remaining forest land Forestry (II)	- $ 4,083.31	- $ 2,780.56	- $ 1,447.11
Cropland (iii)	490,77	655,40	610,45
Earths Grown remaining cultivated (iv)	0,16	0,16	0,16
Land converted to land cultivated (v)	490,61	655,25	610,29
Whose Earths Forest Converted in earths cultivated (vi)	112,83	160,46	170,94

Of which Pasture converted in Cultivated Land (VII)	377,78	494,79	439,35
Peatlands remaining Peatlands (VIII)	11,10	11,10	11,10
Harvested wood products (ix)	- 150,99	- 135,72	- 522,91

FAT(i)=(ii)+(iii)+(viii)+(ix); Cropland= (iv)+(v)+(vi)+(vii).

Figure 7: Emissions and removals from the FAT sector



The results show that the main source of emissions from the TF sector is the conversion of pasture to cropland, which accounted for 75%, 74.2% and 70.7% respectively in 2005, 2010 and 2015. Forest conversion is in second place with 22.5%, 24.1

% and 27.5% of the sector's total emissions, while the contribution of peatlands to the TF sector's

emissions remains low (around 2%).

As for absorptions, there was a decrease in absorption capacity of 32% between 2005 and 2010 and 48% between 2010 and 2015. This was mainly due to the problems of

deforestation for the benefit of agriculture, housing and public infrastructure. Through these figures, we notice that the data used to carry out the inventories do not reflect reality. The evolution of GHG emissions from the TF sector depend on the use of wood either for cooking or in construction, which has an impact on forest degradation and the conversion of forest land for agriculture or construction. Demographics are therefore one of the causes that accentuates the increase in emissions from the TF sector. On the other hand, the increase in carbon sinks is in line with the increase in forest areas and good practices in the conservation and management of forest ecosystems.

Reforestation and the fight against the conversion of forest land and pastures for other speculations are important avenues for mitigation through the REDD+ process.

2.1.4.5 Waste Sector

Table 18 and Figure 6 present the results of the 3rd national inventory of Burundi from the Waste sector.

Table 18: Summary of GHG emissions from the waste sector

Year	2005		2010		2015	
Emission sources	**CH4**	**N2O**	**CH4**	**N2O**	**CH4**	**N2O**
Emissions from solid waste landfills	0,01	-	0,01	-	0,01	-
Emission from domestic and commercial wastewater	0,93	0,47	0,07	0,53	1,20	0,61
Emissions from wastewater Industrial	0,42	-	0,03	-	0,80	-
Total (in Gg) by Gas	**1,36**	**0,47**	**0,11**	**0,53**	**2,02**	**0,61**
Total CO2 Equivalent Emissions in Gg by Gas	**28,52**	**146,32**	**2,26**	**163,06**	**42,44**	**188,64**
Total CO2 eq emissions in Gg	174,26		166,61		231,31	

Figure 8: Emissions from the waste sector

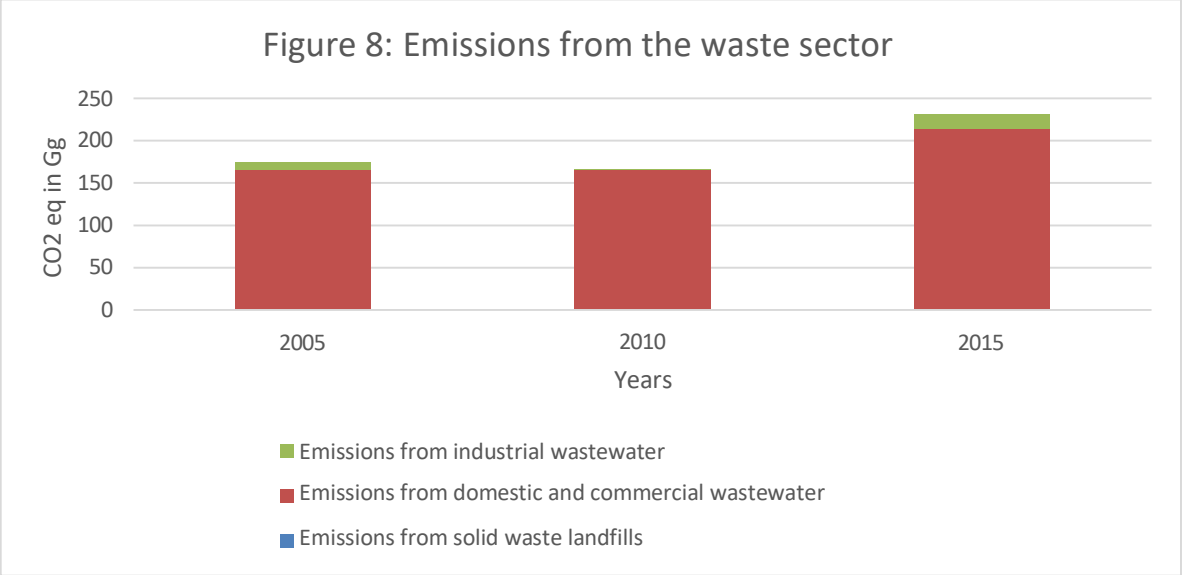


Table 18 shows that emissions from the waste sector represent respectively 10.88% in 2005, 7.22% in 2010 and 4.21% in 2015 compared to the total GHG emissions of the third greenhouse gas inventory (see Table 12).

2.2 The mitigation scenarios of the NDC 2020

2.2.1. Indicator, Base Year and Target Year(s)

In the context of the NDC 2020, the reference indicator is a **quantitative** indicator of GHG emissions, **relating** to a "Business as Usual" (BAU) scenario integrating all sectors of the 3rd edition of the National GHG Inventory and **Annual** for 2 target years.

As this is an indicator defined in relation to a baseline scenario, the years corresponding to the targets are the years 2025 and 2030.

The updated NDC will have a 10-year period spread over two periods. The first period will start on January 1, 2021 and end on December 31, 2030 with an interim year of 2025.

The 2020 NDC defines 2 scenarios: the baseline scenario and the mitigation scenario.

The Reference Scenario chosen is the Business As Usual (BAU) scenario, which corresponds to the trend in the evolution of GHG emissions in the event that Burundi does not take any mitigation measures, while the mitigation scenario involves the implementation of actions contributing to the reduction of GHG emissions.

Two mitigation scenarios are distinguished: the unconditional **objective scenario** (achievable by Burundi's own resources) and the conditional **objective scenario** (achievable by the support of international cooperation in accordance with Articles 9 and 6 of the Paris Agreement).

2.2.2. Perimeter

The scope of the NDC 2020 projections covers the entire national territory of Burundi. The NDC 2020 takes into account all sectors accounted for in the 3rd national GHG inventory for the calculation of target values. In particular, the subsectors of cropland, peatlands and harvested wood products of the TF, the Industrial Products and Product Uses (IPP) sector, transport and the waste sector are now taken into account in the calculation of the target value. This was not the case in the 2015 NDC and it demonstrates an increase in Burundi's ambition. The sectors that are affected by the updated NDC are presented in Table 19.

Table 19: Sectors Accounted

Sectors	Subsectors	Affected gases
Energy and Transport	Stationary combustion of fuels	CO2, CH_4 and N_2O
	Transport	
PIUP	Mineral industries	CO2, CH_4 and N_2O
	Metallurgical industries	
AFOLU	Agriculture and Livestock	CO2, CH_4 and N_2O
	Forestry and Other Land Use	CO2, CH_4 and N_2O
Waste	Treatment of solid and liquid waste	CO2, CH_4 and N_2O

For these sectors, all gases considered in the 3rd inventory are also taken into account in the calculation of the target value, namely CO2, CH4 and N2O. HFCs, PFCs, SF6, NF3 gases were not taken into account because they are not estimated in the 3rd national GHG inventory.

The 2020 NDC takes into account Article 5 of the Paris Agreement on enhancing GHG sinks and reservoirs as set out in Article 4, paragraph 1 (d), of the Convention, including forests and the REDD+ mechanism. Article 5, paragraph 1, calls on Parties to take measures to conserve and enhance carbon sinks.

2.2.3. Method of calculating emissions/removals of the different scenarios

The formula used to calculate avoided emissions per share is as follows:

E=DA x EF where DA= activity data (AD) and EF= emission factor (EF) proposed by default for each gas and fuel by the IPCC 2006 GL.

The mitigation scenario is established by implementing mitigation actions to reduce GHG emissions. The calculation of avoided emissions is done by deducting the emissions calculated by emission mitigation action from the BAU.

For the **2 mitigation scenarios**, the approach consisted of calculating the avoided emissions by 2025 and 2030, by action taken in the NDC for each sector, and then subtracting these avoided emissions from the values of the sectoral reference scenario.

For the conversion to CO2 equivalents, the Global Warming Potential (GWP) values corresponding to a 100-year period recommended in the IPCC Second Assessment Report were applied. These are 21 for CH_4 and 310 for N2O.

2.2.4. BAU Reference Scenario.

The value of BAU emissions is subject to change as a result of methodological changes and improvements in the compilation of future greenhouse gas inventories.

The BAU baseline scenario is established if no action is taken to implement policies, plans and strategies that can contribute to GHG mitigation. The BAU considered is that of the TCN, which is projected until 2030 from 2015.

2.2.4.1 Energy Sector

2.2.4.1.1 Plans, Policies and Strategy

The National Development Plan 2018-2027 is the basic document on which the development of the energy sector is based.

2.2.4.1.2 Assumptions and parameters for projecting GHG emissions

The projection assumptions are based on the population growth rate, economic growth (GDP), and the country's political and strategic orientation measures relating to the country's socio-economic and environmental developments.

2.2.4.3. GHG impacts / BAU scenario.

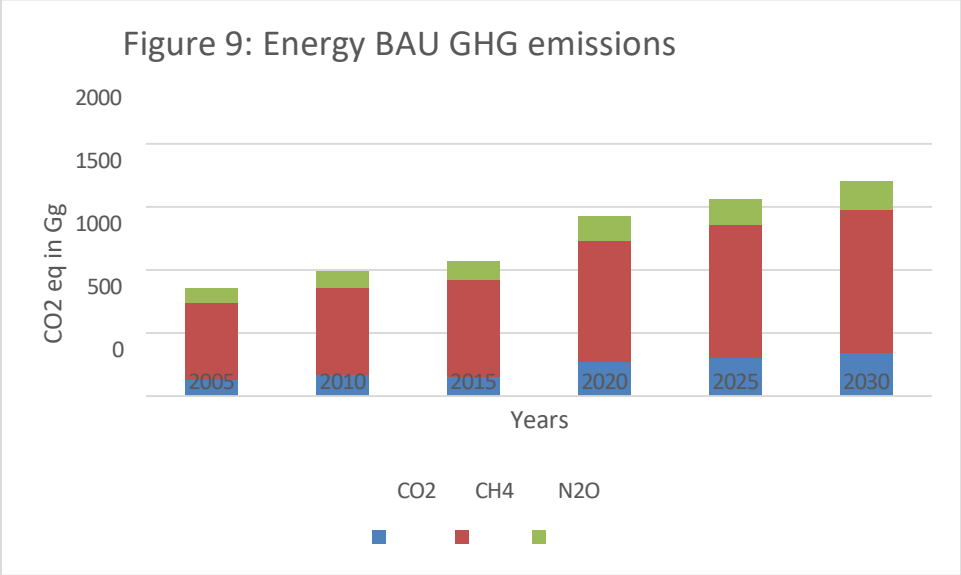
Table 21 shows the historical and projected GHG emissions for the Energy sector's BAU scenario for 2025 and 2030.

Table 20: GHG emissions from the Energy sector by the BAU scenario

Gas	2005	2010	2015	2020	2025	2030
CO2	133,22	172,19	152,24	269,54	304,99	345,58
CH4	28,92	32,52	36,59	45,94	50,03	54,16
N2O	0,38	0,43	0,48	0,61	0,66	0,72
Total Eq CO2 in Gg	858,34	988,41	1069,43	$ 1,423.01	$ 1,561.21	$ 1,705.23

Source: TCN

Figure 9: GHG emissions from the Energy sector



2.2.4.2 Industrial Processes and Product Use Sector (IPUP)

2.2.4.2.1 Plans, Policies and Strategies

In addition to the Plans, Policies and Strategies common to all sectors (NDP 2018-2027, Vision Burundi 2025, National Policy on Climate Change), the Industrialization Policy is specific to the PIUP sector.

2.2.4.2.2. Projection assumptions and parameters

The projection assumptions of the PIUP sector are based on economic growth and the rate of industrialization.

The parameters are quantities of lime used in tons, quantities of iron and steel used in tons. Emission factors were taken into account as parameters for calculating emissions.

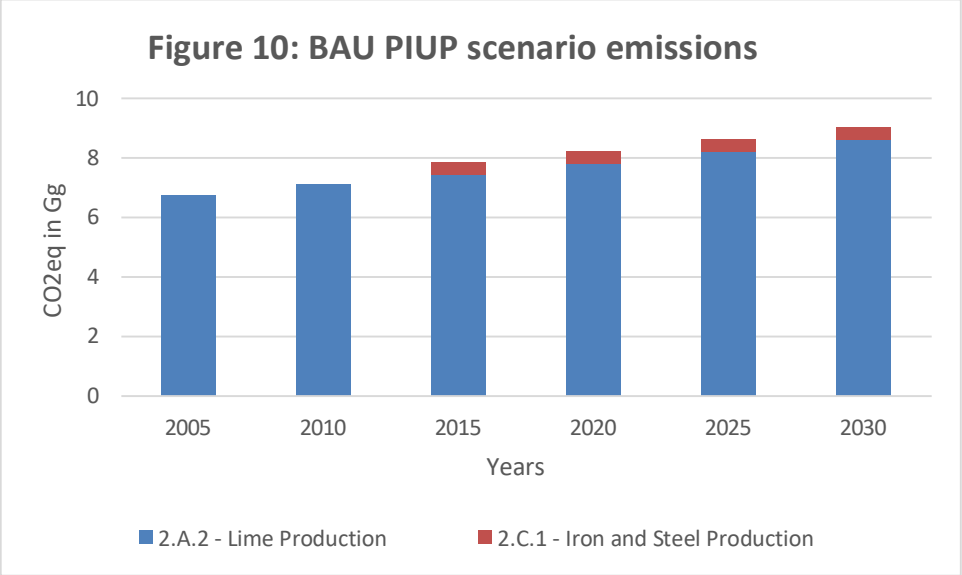
2.2.4.2.3 GHG impact

The BAU scenario emissions for the PIUP sector can be found in Table 22.

Table 21: Emissions in Gg of CO2 eq in the BAU scenario of the PIUP sector

GAS	2005	2010	2015	2020	2025	2030
2.A.2 - Lime Production	6,75	7,09	7,44	7,82	8,21	8,62
2.C.1 - Iron and Steel Production	0	0	0,42	0,42	0,42	0,42
Total CO2 eq in Gg	6,75	7,09	7,86	8,24	8,63	9,04

Chart 10: BAU ERAP Scenario Emissions



2.2.4.3 Agriculture and Livestock Sector

2.2.4.3.1 Plans, Policies and Strategies

In addition to the Plans, Policies and Strategies common to all sectors (NDP 2018-2027, Burundi Vision 2025, National Climate Change Policy), some Plans, Policies and Strategies are specific to the Agriculture sector.

- Orientation Document of the Environment, Agriculture and Livestock Policy (DOPEAE),
- National Agricultural Investment Plan (NAIP) 2018-2022,
- National Agricultural Strategy (SAN) 2018-2025,
- Seed Subsidy Program,
- Mineral Fertilizer Subsidy Program,
- Vaccination programme against the main diseases of domestic animals,
- Artificial insemination program for animals,
- Livestock restocking programme,

2.2.4.3.2. **Projection assumptions and parameters**

As part of the3rd National Climate Communication, the BAU scenario for the Agriculture sector has been defined and emission projections up to 2050 have been made.

As with other sectors, the BAU baseline scenario is based on assumptions where no action is taken to implement these policies, plans or strategies that can mitigate emissions from domestic livestock and managed soils.

The projected parameters of the BAU scenario are linked to the evolution of the number of cattle, goats and sheep for domestic livestock. As for the soils managed, the parameters are related to the areas of the

rice planting, areas harvested for sugar cane, to the quantities of nitrogen and urea fertilizers used for the managed soils.

As part of the NDC 2020, the assumptions and parameters of the NCT's Agriculture Sector Reference Case for 2025 and 2030 were retained.

2.2.4.3.3 GHG impact

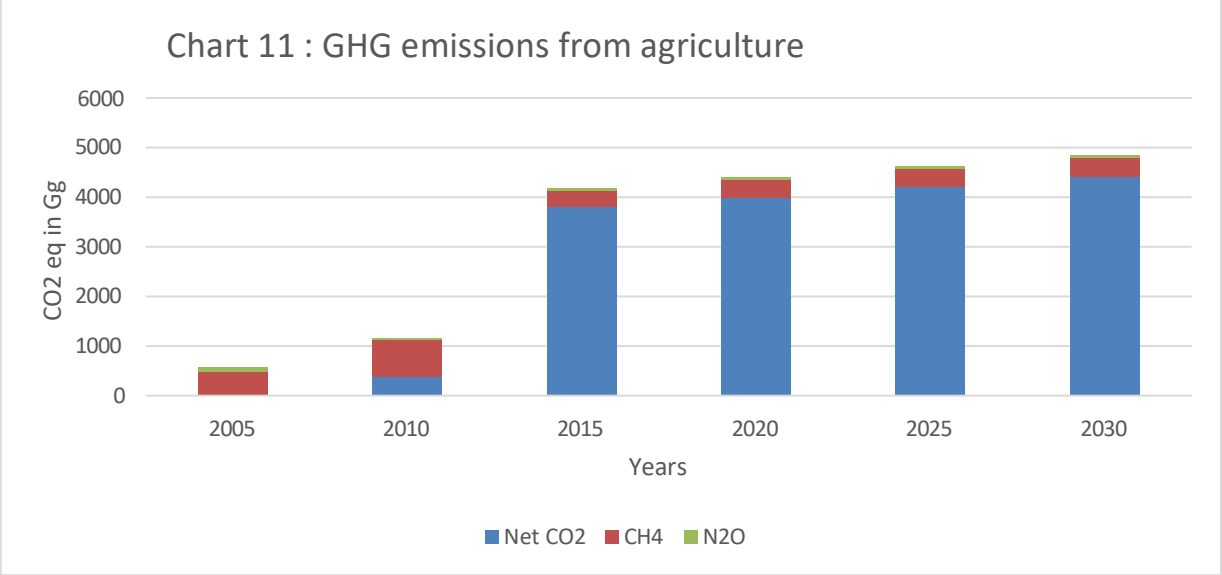
In the 2020 NDC framework, the Reference Case (BAU) emissions of the Agriculture sector of the NCT have been selected for 2025 and 2030.

In this situation, the projection of emissions from 2005 to 2050 can be found in Table 23.

Table 22: Projected GHG emissions (Gg) from the Agriculture and Livestock sector / BAU scenario in CO2e

	2005	2010	2015	2020	2025	2030
Net CO2	1,91	390,30	$ 3,806.86	$ 3,997.20	$ 4,197.06	$ 4,406.92
CH4	22,50	34,57	15,85	16,64	17,47	18,35
N2O	0,30	0,11	0,15	0,16	0,17	0,17
Total ECO 2 in Gg	567,41	$ 1,150.37	4,186.21	$ 4,395.52	4,615.30	$ 4,846.06

Figure 11: Agriculture BAU Scenario Emissions



2.2.4.4 Forestry and Other Land Use (FAT) Sector 2.2.4.4.1P&M,

Plans, Strategies and Projects

In addition to the Plans, Policies and Strategies common to all sectors (NDP 2018-2027, Vision Burundi 2025, National Policy on Climate Change), some Plans, Policies and Strategies are specific to the TF

sector:

- National REDD+ Strategy,
- National erosion control protocol for the AFOLU sector,

2.2.4.4.2Projection Assumptions and Parameters

As part of the[3rd] National Communication, the BAU scenario of the FAT sector has been defined and projections of sectoral emissions until 2050 have been calculated.

In the TF sector, the projection assumptions of the BAU emissions scenario are based on the decrease in the rate of forest cover and the increase in the need for forest products for either construction or energy. The BAU scenario is based on the non-implementation of policy measures leading to the fight against deforestation and forest degradation and the enhancement of carbon stocks. The projection parameters are based on population data, deforested and/or degraded forest areas, the ratio of wood consumption, population and economic growth as well as activity data for the reference year.

As part of the NDC 2020, the assumptions and parameters of the TCN's TF baseline scenario for 2025 and 2030 were retained.

Table 24 highlights the input data that have an impact on the evolution of emissions from the TF sector.

Table 23: BAU Scenario Data by Sub-Categories

Subcategories	Assumptions	Parameters
Forest areas	Conversion some Forest land for speculation	Reduced areas of afforestation and its effects on the increase in GHG
	Illegal logging	Ditto
Pastures	Conversion of pastures to agricultural or other purposes	Decrease some Areas from pastures

For forest areas, the two assumptions mentioned in Table 27 show that these areas will decrease and pine and Callitris forests will be the most affected, as shown in Table 25.

Table 24: Evolution of pines and Callitris

Petrol	2005	2010	2015	2020	2025	2030
Pine	8715,70	9520,54	9162,60	8509,46	7856,32	7203,18
Callitris	6647,36	7539,51	7256,12	6243,24	5230,36	4217,48
Total	15363,06	17060,05	16418,72	14752,70	13086,68	11420,66

2.2.4.4.3. GHG impacts

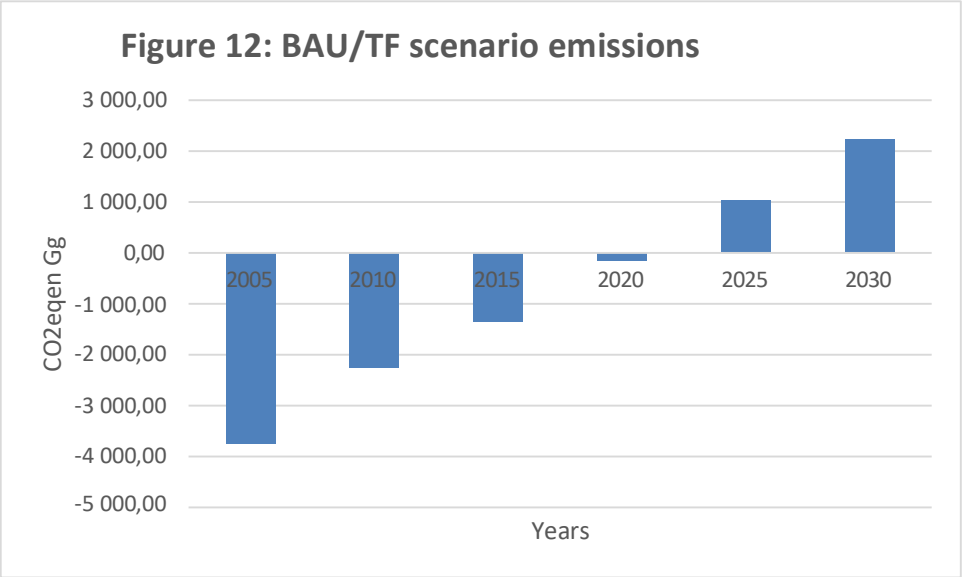
As part of the 3rd National Communication (TCN), the emissions of the BAU scenario of the FAT sector were projected on the basis of assumptions related to the conversion of forest land and pastures to other speculations.

Table 26 and Figure 12 present the historical and projected GHG emissions under the BAU scenario of the TF sector to 2030.

Table 25. Evolution of TF emissions / BAU scenario

Year	2005	2010	2015	2020	2025	2030
Emissions in CO2 Equivalent in Gg	- 3 732,43	- 2 249,77	-1348.48	-156,505	1035,47	2227,45

Figure 12: BAU/TF scenario emissions



2.2.4.5 Waste sector

2.2.4.5.1 P&M, Plans, Strategies & Projects

In addition to the Plans, Policies and Strategies common to all sectors (PND 2018-2027, Vision Burundi 2025, National Policy on Climate Change), the National Sanitation Policy and its 2025 strategy for the waste sector is specific to the waste sector.

2.2.4.5.2 Projection assumptions and parameters

As part of the 3rd National Communication, the BAU scenario for the Waste sector has been defined and projections of sectoral emissions up to 2050 have been calculated.

As part of the NDC 2020, the assumptions and parameters of the baseline scenario of the NCT waste sector for 2025 and 2030 have been retained. The projection assumptions are based on the growth rate of population, the national economy and urbanization.

2.2.4.5.3 GHG impact

As part of the 3rd National Communication (TCN), the emissions of the BAU scenario of the Waste sector were projected on the basis of the rate of economic growth; the increase in population and waste stocks.

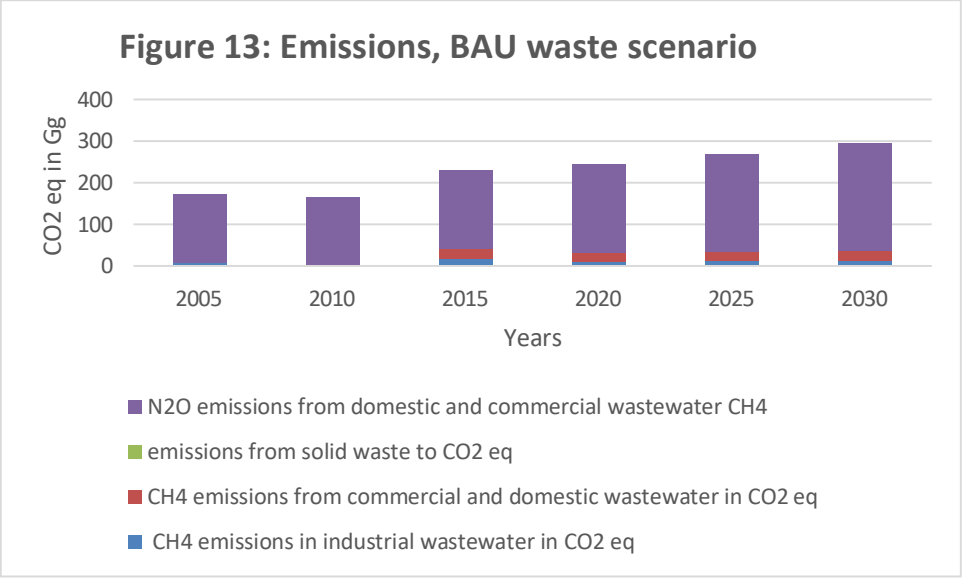
Table 27 and Figure 13 show the historical GHG emissions (from the 3rd national GHG inventory and projected (from the NCT) for the BAU scenario of the Waste sector by 2030.

Table 26: Evolution of GHG emissions in the BAU scenario for the Waste sector

Emissions	2005	2010	2015	2020	2025	2030
CH4 emissions in industrial wastewater in CO2 eq	8,82	0,63	16,84	11,26	12,43	13,61
CH_4 emissions from commercial and domestic wastewater in CO2 eq	0	0	25,12	19,59	21,65	23,69
CH_4 emissions from solid waste to CO2 eq	0,21	0,20	0,14	0,21	0,24	0,26
Emissions from N2O waters Worn Domestic and commercial	165,23	165,77	188,64	212,04	234,36	256,68
Total	174,26	166,60	230,73	243,10	268,68	294,23

Source: TCNCC

Figure 13: Emissions, BAU waste scenario



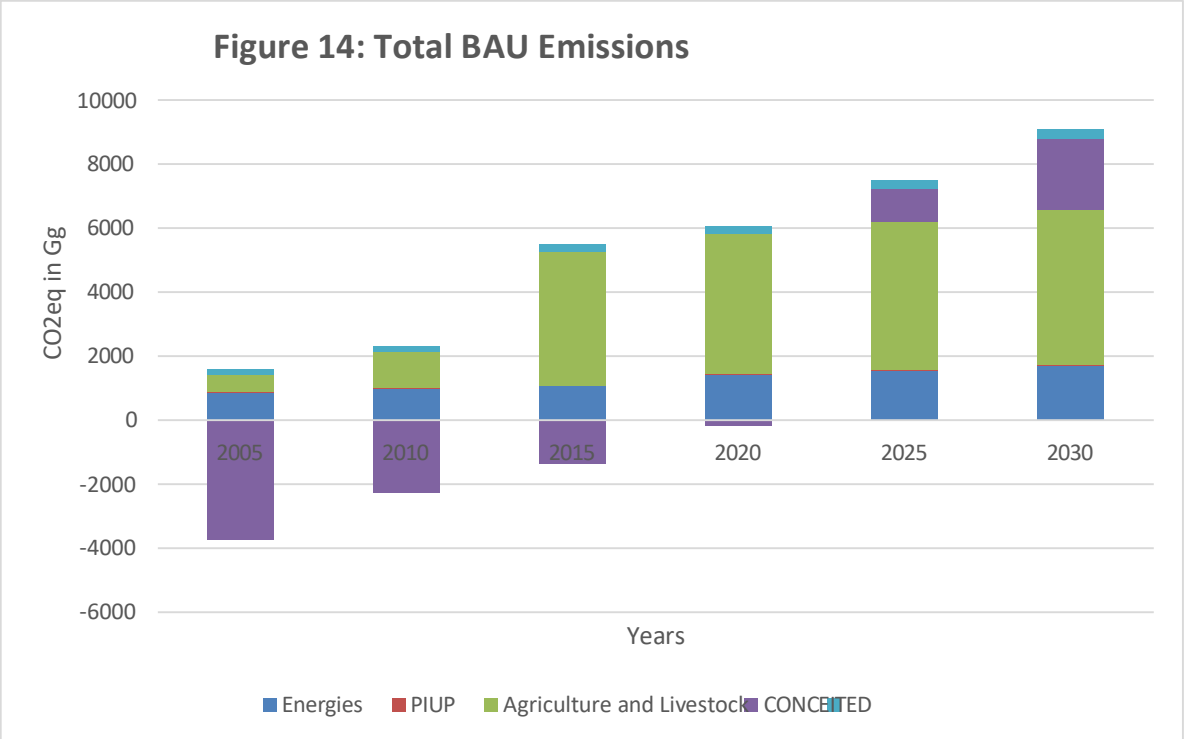
2.2.4.6. Summary of the BAU Scenario

Table 28 and Chart 13 present the historical (from the 3rd national inventory) and projected (from the NCT) GHG emissions in the case of the BAU scenario for all sectors by 2025 and 2030, except the "managed soils" sub-sector of Agriculture.

Table 27: Emissions in Gg CO_{2eq} of the BAU scenario for all sectors

Sector	2005	2010	2015	2020	2025	2030
Energies	858,34	988,41	1069,43	$ 1,423.01	$ 1,561.21	$ 1,705.23
PIUP	6,75	7,09	7,86	8,24	8,63	9,04
Agriculture and Breeding	567,41	$ 1,150.37	4,186.21	$ 4,395.52	4,615.30	$ 4,846.06
CONCEITED	-3 732,43	-2 249,77	-1348.48	-156,505	1035,47	2227,45
Rubbish	174,26	166,6	230,7337	243,1032	268,6803	294,2343
Total with FAT	-2125.67	62,70	$ 4,145.75	$ 5,913.37	$ 7,489.29	9,082.01
Total without FAT	$ 1,606.76	$ 2,312.47	$ 5,494.23	$ 6,069.87	$ 6,453.82	$ 6,854.56

Figure 14: Total BAU Emissions



2.2.5. Unconditional scenario

2.2.5.1 Energy sector (excluding transport subsector)

2.2.5.1.1 P&M, Mitigation Plans and Actions

A. **Energy sector excluding Transport sub-sector**

Burundi's National Development Plan 2018-2027, the National Climate Change Policy, the National Climate Change Adaptation Strategy, the three National Communications on Climate Change and the Policy Letter and the Energy Sector Sector Strategy provide for essential measures and technologies for the mitigation of climate change. greenhouse gas emissions. They emphasize the introduction of new technologies and measures aimed at improving the conditions for the production and use of energy sources that emit no or low greenhouse gases to replace the technologies currently in use.

Priority programmes and projects include the construction of hydroelectric and solar power plants, the promotion of improved wood carbonization techniques, the promotion of improved domestic charcoal stoves in urban and rural areas, the promotion of biogas in schools and detention facilities, and the improvement of energy efficiency.

In the 2020 NDC, several actions for the implementation of these priority programmes with an impact in terms of mitigation are selected as part of the unconditional scenario and are described in Table 28.

Table 28: Actions selected for the unconditional scenario of the Energy sector

National Priorities	Objective	Actions	IOV	Costs x1000USD	Start date	Date end	State progress in March 2021
1- Increase the capacity from Production of Energy hydroelectric	45.4 MW are installed	Developing three Central Hydroelectric from Ruzibazi (15MW), Kabu 16 (20MW) and Mpanda (10,4 MW),	Number of MW Installed	239000	2018 for Ruzibazi, 2017 for Kabu and 2012 for Mpanda	2025	45%
	19.25MW are being developed as part of the Public-Private Partnership	Lay out the CHE of RUVYI 102 and MULE 037 (10.65MW)	Number New power plants Hydroelectric Functional - Short story capacity of hydroelectric generation	56100	2022	2026	0%
		Converting power plants into cascade on DAMA (8.8MW) and SIGUVYAYE		46600	2022	2026	
	300KW of karonke micropower plant are	Lay out the Micropower plant from	Installed capacity	0,8	2022	2026	0%

	stake in Service (private)	Karonke (300KW)					
2- Increase the capacity fro m energy production by the system photovoltaic	7.5MW are established	Developing the Mubuga solar power plant	Installed capacity	18	2018	2022	0%
	50 As well Public outs ide network electric by solar energy photovoltaic (total 200kW)	Electrify public establishments outs ide Electrical network by solar energy photovoltaic	Number of electrified establishments	7,9	2022	2025	99%
3- Promote the use of biogas digesters in schools in boarding school for compensate the use of the wood for cooking	20 As well School RP M boarding school are Equipped with of a digester biogas	Building Digesters biogas at 20 properties in regime boarding school	Number of establishments Equipped with of a digester b iogas.	0,2	2021	2024	0%

Source: Ministry of Hydraulics, Energy and Mines.

B. Transport sub-sector

The national transport sector policies and strategies considered in the unconditional scenario are the Burundi National Development Plan 2018-2027, the National Strategy for Transport Sector Planning and Management 2018-2027, the sectoral policy of the Ministry of Transport, Public Works and Equipment and the National Transport Policyindustrialization. The mitigation strategies provided for in these documents are mainly the promotion of electric vehicles, public transit by large buses, and the development of pedestrian and bicycle paths.

In the 2020 NDC, the priority for the mitigation of greenhouse gas emissions in the Transport sub-sector is the development of public transport by large buses to reduce the fuel consumption of individual vehicles.

Table 29: National Mitigation Priority in the Transportation Subsector

National Priority	Target	Cost (X1000USD)	Indicators of after care-evaluation	Observations/Considerations	Date of discovery	Dat the end	Progress report in March 2021
Improvement one an	From here 2030, 300	$ 30,518	Number fro m Great bus acquired	This action goes contribute at Mitigation	202 2	203 0	5%

d increase ion of the park Automobile fro m	Great Bus in			som e GHG emissions from cars Individual.			
transport by common.	Circulation						

Source: Priority Action Programme (PAP, July 2018).

2.2.5.1.2. Projection assumptions and parameters

A. Energy sector excluding transport subsector.

The mitigation priorities selected consist of implementing technologies or fuels that emit less GHGs as a substitute for technologies or fuels that are not efficient in terms of mitigation, namely:

- diesel power plants for electricity generation,
- firewood for cooking and lighting in rural households and charcoal for urban households for cooking energy.

Table 30 shows the parameters used to account for these emissions.

Table 30: Mitigation priorities and metrics for emissions accounting

No	Mitigation priorities	Emission calculation parameters
1	Construction of hydroelectric power plants	- Production capacity of the plant; - Number of hours of annual operation of the plant (4000h); - Equivalent to annual production in Tera joules; - Emissions from a diesel power plant of the same capacity
2	Construction of solar power plants or solar mini-grids	- Production capacity of the plant; - Number of hours of annual operation of the plant (1200h); - Equivalent to annual production in Tera joules - Emissions from a diesel power plant of the same capacity

3	Promoting the use of biogas digesters in boarding schools	- Biogas digester volume (50m3); - Energy production in kWh of a m3 of a digester (1.25kWh) - Emissions emitted by wood to produce the same energy for cooking

B. Transport sub-sector

IPCC Tools 2006 software is used to quantify the emissions emitted by buses and the emissions that cars would have emitted to transport the same number of people over the same distance. The avoided emissions are then calculated by the difference between the two.

Table 31: Mitigation priorities and emission calculation parameters for the transportation subsector

Mitigation priorities	Calculation parameters
Improvement and increase of the shared vehicle fleet	- Number of 60-seat buses (200 buses in 2025 and 300 buses in 2030); - Bus fuel consumption (50l/100km); - daily journey in km (28km/day); - Amount of bus fuel per day in liters; - Annual quantity of bus fuel in litres; - Number of passenger cars excluded from circulation; - Car Consumption (10/100km) - Amount of fuel saved from consumption; - Annual amount of fuels saved from consumption

Priorities selected	Amount of diesel not consumed due to the action (in TJ)		EF (kg/GJ)	Emissions in Gg CO2 eq		Spring
	2025	2030		2025	2030	
Improvement and increase of the vehicle fleet public transit.	65,82	98,73	74100 Kg CO2/TJ; 3kg CH4/TJ and 0.6Kg N2O/TJ	4,963	7,445	PND

2.2.5.1.3. GHG impact

A. Energy sector excluding transport subsector

The avoided emissions of the mitigation scenario are equal to the default emission factors (Tier 1) of the substituted technology/fuel multiplied by the energy consumption avoided as a result of the implementation of the actions. The IPCC Tools 2006 software made it possible to quantify these emissions to be avoided by entering the activity data of each project in relation to the practice that was in place. This methodology has been applied to all the actions selected in the 2020 NDC.

Table 32 shows the avoided GHG emissions in the Energy sector (excluding transport) for 2025 and 2030.

Table 32: Avoided Emissions by National Priorities

National Priorities	Priorities selected	Avoided emissions in Gg CO2eq	
		2025	2030
1.Increasing hydropower generation capacity	To develop the Ruzibazi hydroelectric power plant (15MW), the Kabu 16 hydroelectric power plant (20MW) and the Mpanda hydroelectric power plant (10.4MW)	48,6	48,6
	Fitting out the RUVYI 102 and MULE 037 CHE (10.65MW)	0	11,4
	Setting up cascade power plants on DAMA (8.8MW) and SIGUVYAYE	0	9,42
	Developing the Karonke micro-power plant (300KW)	0	0,32
2.Increasing energy production capacity through The photovoltaic system	Developing the Mubuga solar power plant (7.5MW)	2,41	2,41
	Electrifying public establishments outside the electricity grid with photovoltaic solar energy	0,06	0,06
3.Promote the use of biogas digesters in boarding schools	Build some Digesters at biogas at 20 establishments with electric regime	0,004	0,004
Total		**51**	**72,22**

B. Transport sub-sector

Table 33 shows the avoided GHG emissions in the Transportation subsector for 2025 and 2030.

Table 33: Avoided Emissions

Gas	CO2 (Gg)	CH4 (Mg)	N2O (Mg)	CO2 (Gg)	CH 4 (Mg)	N2O (Mg)	Total CO2 eq in Gg	
	2025	2025	2025	2030	2030	2030	2025	2030
Emissions emitted by the bus	2,889	0, 15	0, 15	1,4445	0,075	0,075	52,54	26,26
Emissions from cars Off-road	7,766	0, 41	0, 41	3,883	0,205	0,205	143,47	71,74
Avoided CO2 eq emissions in Gg	4,877	5,46	80,6	2,4385	2,73	40,3	90,9	136,4

2.2.5.1.4. Industrial Processes and Product Uses Sector (PIUP)

2.2.5.1.4.1. P&M, Mitigation Plans and Actions

In the IPPU sector, no action is prioritized in the updated NDC to reduce emissions by unconditional objective due to the lack of well-defined indicators. However, plans and policies and strategies exist that can help reduce emissions in this sector.

2.2.5.1.4.2. Assumptions and projection parameters

As there are no actions planned by unconditional objective to be included in the 2020 NDC, the assumptions and parameters of the projections are not necessary.

2.2.5.1.5. GHG impact

. The NDC 2020 does not include actions to mitigate emissions from the IPPU sector, but it is counted in the BAU.

2.2.5.1.6. Agriculture Sector

The Ministry in charge of Agriculture and Livestock has developed a policy document for the Environment, Agriculture and Livestock. The latter is based on the 2018-2027 NDP and the 2018-2022 NDIP. To implement these strategic measures contained in these documents, the Ministry plans to develop a national policy on permanent stall farming.

However, no action to support this policy is included in the conditional target.

2.2.5.1.7. Sector Forestry and other land use 2.2.5.1.7.1.

Mitigation plans, strategies and actions selected

Burundi has developed Plans and Strategies that can have an impact in terms of mitigation related to the TF sector, by reducing GHG emissions from the forest sector through good forest resource management practices or by increasing GHG sinks. The most important ones are the following:

- The National Development Plan 2018-2027 which, in its strategic orientation 3, envisages the protection of the environment, adaptation to climate change and the improvement of land use planning.
- The Orientation Document for the Environment, Agriculture and Livestock Policy,
- The National Forest Policy, which, in its specific objective 2, envisages increasing the rate of forest cover to 20% by 2025,
- The National Strategy for the Reduction of Emissions from Deforestation and Degradation of Forests Forests, (+) the role of Forest Ecosystem Conservation and Sustainable Forest Management and the enhancement of carbon stocks,

- The National Policy on Climate Change which, in its axis 2, envisages the reduction of greenhouse gas emissions **and low-carbon development; etc.**

These plans, policies and strategies were considered to define the actions of the TF sector to be retained in the framework of the unconditional scenario of the NDC 2020.

Thus, two priority actions selected in the 2020 NDC for the unconditional scenario are recorded in Table 34.

Table 34: Priority actions selected by unconditional objective

Priority Strategies	Objective	Actions	Cost x1000USD	Start date	End date	Progress ent 2021.
1.Developing rural forestry	Carry the rate of coverage forestry at 15.74%, that is increase th e forest cover of 160.000 ha from here 2025 (PND 2018-2027)	Produce and plant 85344000 plants13 on 53,340 ha at a rate of 5334 ha /year of 2021 to 2030.	8.001	2021	2030	0
2.Develop of the sector bamboo at Burundi	2500 ha from bamboo grove created in ten years at 250ha/year.	Protecting the shores of Rivers by the plantation fro m bamboo on 2500 ha at a rate of 250ha /year at leave from 2021 until 2030.	5.500	2021	2030	0

Source of actions: DOPEAE, TCNCC and PND 2018-2027 Burundi.

2.2.5.1.7.2. Projection assumptions and parameters

For the TF sector, the input parameters of the 2 selected actions are presented in Table 37. The figures in terms of areas are recorded in the DOPEAE and were validated by the workshops held in Muramvya on 21 and 22 July 2021 and in Ngozi on 6 and 7 July 2021.

Table 35: Priority actions selected by unconditional objective

	Actions	Areas planted per year (in ha)	Planted areas Cumulative in 2025 (ha)	Cumulative planted areas in 2030 (in ha)	Source of figures
1	Development from forestry Rural (reforestation of 53340 ha	5334	26670	53340	Surface area validation workshops

	over 10 years)				

13 Recommended spacing 2.5mx2.5m

2	Development of the bamboo sector	250	1250	2500	
	Total	5584	27920	55840	

2.2.5.1.7.3. GHG impact

The Tier 1 methodology of the 2006 IPCC Guidelines was used to calculate the additional GHG removals resulting from the mitigation actions selected under the unconditional scenario. It consists of multiplying the activity data by the absorption factors.

To calculate the removals, the areas of afforestation were considered as activity data . IPCC 2006 software was then used to calculate these intakes. Table 42 gives the results of removals in 2025 and 2030 in CO2 eq in Gg.

Table 36: Results of removals from the forest sector in CO2Eq in Gg

Actions	CO2 eq removals in Gg		
	2021	2025	2030
Woodland 53340ha in 2030 at the right rate of 5334 ha /year from 2021.	0	-1068.01	-2128.01
Protect river banks by planting bamboo on an area of 2500ha in 2030 at a rate of 250ha/year from 2021.	0	-49.87	-99.74
Total		-1117.87	-2227.75

2.2.5.1.8. Waste sector

2.2.5.1.8.1. Mitigation plans, strategies and actions selected

Burundi's National Development Plan 2018-2027, the National Sanitation Policy, the National Climate Change Adaptation Plan, the National Communications on Climate Change, etc., provide for actions to mitigate greenhouse gas emissions from the waste sector.

However, in the context of the 2020 NDC, no action is envisaged due to the lack of reliable data on the quantification of waste and landfill sites are not known, except for a few sites identified in the third greenhouse gas inventory located in the city of Bujumbura.

2.2.5.1.8.2. Projection assumptions and parameters

As there are no unconditional scenario actions in the 2020 NDC, the projection assumptions and parameters are not required.

2.2.5.1.8.3. GHG impact

For the sake of unconditional objectives, no priority has been retained. As a result, the waste sector has no impact in terms of reducing GHG emissions,

2.2.5.2 Target Definition

The target of the unconditional scenario is a reduction in national emissions of 1.58% compared to the BAU scenario by 2025 and 3.04% in 2030.

2.2.5.2.1 Calculation method

The methodology for calculating the target at the sector level is first summed up by the avoided or absorbed emissions of all priority actions in the sector. The value of the national target in CO2 equivalent in Gg per unconditional objective corresponds to the sum of the emissions/removals resulting from the implementation of priority actions in all sectors. In percentage terms, the target value is the ratio of the sum of the sectoral emissions of the unconditional scenario to the sum of the sectoral emissions of the Business As Usual (BAU) scenario.

The value of the "C" target in % is expressed by the following equation: X/Y*100.

Where X = ∑of the sectoral emissions of the unconditional scenario in CO2 Eqe in

Gg.

Y = ∑ of the Business As Usual (BAU) scenario sector emissions in CO2 Eqe in Gg.

2.2.5.2.2 Summary of avoided emissions and additional removals

The summary of avoided emissions and removals in all sectors can be found in table 37.

Table 37: Summary of avoided emissions and additional removals

	Avoided GHG emissions (in Gg CO2 eq)	Avoided GHG emissions (in Gg CO2 eq)
Sectors	2025	2030
1. Energy excluding transport	51,08	72,22
2. Transportation	50,9	136,4
3. FAT	-1117.87	-2227.45
Total some Emissions with Absorption	-1015.89	-2018.83
Total some Emissions without Absorption	102	209

2.2.5.3. Percentage target value

Table 38: Target value by unconditional objective

Unconditional goal	2025	2030
Scenario Mitigation unconditional	102	209
BAU scenario	6,453.8	6,854.6
Mitigation in %	**1,58**	**3,04**

It should be noted that the calculation of the target by unconditional objective is excluding absorptions.

2.2.6. Other impacts

The actions adopted in the unconditional objective scenario have an impact on health, especially by reducing diseases resulting from smoke from wood burning and air pollution from gases from vehicle emissions. Other impacts on improving living conditions are significant through increased access to electrical energy, including the growth of household incomes through job creation and modernization and diversification of income-generating activities. They also have a positive impact on biodiversity conservation, including soil conservation, increased water consumption, etc.

2.2.7. Conditional scenario

2.2.7.1. Energy Sector

2.2.7.1.1. P&M, plans and priority actions selected

The policies and strategies mentioned above for the unconditional scenario are also valid for the conditional scenario.

The actions of the conditional scenario of the energy sector, which differ from the actions of the unconditional scenario, focus on the construction of hydroelectric power plants, the construction and rehabilitation of transmission and distribution lines of national electricity as well as the promotion of renewable energies. Some actions that depend on international funds for implementation are in addition to those provided for in the unconditional scenario. They are counted separately from those of the unconditional scenario. Those selected for the energy sector are reported in Table 39.

Table 39: National priorities in the energy sector

Selected actions/projects	Target	Activities	IOV	Costs x1000 USD	Date start	End date	State progress
Increase the capacity from production Energy	141,5 MW are installed	Lay out three hydroelectric power plants es: Jiji –	-Number News Central	708100	2018 Jiji – Mulembwe; 2021 Rusumo	2025	35%

hydroelectric		Mulembwe (49MW) ;	Hydroelectric		Falls		
		Rusumo Falls (27MW) and Kirasa (16 MW)	Functional EU - Short story capacity of hydroelectric generation		(27MW) and 2022 Kirasa (16 MW)		
		Lay out The power plant Hydroelectric of Ruzizi III (147 MW) or 49MW for Burundi		579000	2021	2026	0%
	Four (4) Microcentral are are built and commissioned	To develop four waga sites, Gikuka, Moyovozi, Nyamvyondo with a 1MW power		8105	2022	2025	0%
Electrify the Country Centers	28 Heads - Places municipalities are electrified	Building power lines serving 28 municipalities and centres not still electrified of the country	Number from chief towns of Electrified municipalities	43000	2022	2025	0%
Promoting renewable energy in rural areas through the Nyakiriza and Umucowiterambere sun projects	48 centres in the interior of the country are electrified by mini-grids Solar	Install some mini-grids in 48 solar centers The interior of the country by some (15.07MW)	Number of electrified centres	114000	2021	2024	0%
	40940 households with equipment Solar	Distribute solar kits to 40940 Rural households (capacity from 491.28kW)	Number households with receipt some Kits solar		2021	2024	0%
	455 health facilities will be electrified for energy solar	Install the 455 Energy Health Facility (1820kw)	Number of health facilities electrified		2021	2024	0%

	454 Establishmen t Ts school will be electrified for	Install the 454 Schools from health E nergy (1816kw)	Number of establishment Nts school Electrified		2021	2024	0%
	solar energy						
	331000 Households are equipped in heart h Improved	Build 331000 households improved in th e Households Rural	Number hou seholds with rece ipt some heart h Improved		2021	2024	0%
	12 Multi-service solar platforms installed (18kw)	Install 12 multi-service solar platforms	Number so lar platforms Multi		2021	2024	0%
	14 heart h improved in the Schools a t Canteen school are Installed	Build 14 Improved Stoves in th e Schools a t School canteen	Number im proved fireplaces built		2021	2024	0%
Press the production and production Popularization of heart h Improved	From here 2025, 50% some Households rural use some hearth improved for the cooking.	To strengthen the capacities of Manufacture of Improved Fireplaces and Organize Exhibition fairs of heart h Improved for **develop new Markets a nd to establish contact with potential Customers**	Number of Rural households wh o Uses so me Improved fireplaces for the cooking.	78000	17/10/201 8	31/12/20 24	20%
	From here 2025, 85% so me Urban households use Improved fireplaces		Number of Urban households wh o Uses so me Improved fireplaces for		2021	2026	74%

	for the cooking		the cooking.				
	From here 2030, 75% some Households rural use some hearth improved for the cooking.		Number of Rural households who Uses some Improved fireplaces for the cooking.		Jul-21	2024	0%
	From here 2030, 90% some Households		Number of Urban households who		2021	2026	0%
	Urban use Improved fireplaces for the cooking		Uses some Improved fireplaces for the cooking.				
Construction and Factory Equipment from assembly and production of solar panels Photovoltaic that can produce 12MWp/year	From here 2025, panels Photovoltaïques from 48MW are produced	Build and equip one factory from assembly and production of solar panels photovoltaic s	Capacity of the panels produced	43200	2022	2025	0%
Energy supply to rural peace villages by solar photovoltaic systems	27 villages of peace are Suppliesés in Energies by photovoltaic solar systems	108	Number from Villages of peace electrified by the system solar	108000	2022	2025	0%
Total				1611758,2			

2.2.7.1.2. Projection assumptions and parameters

The calculation of greenhouse gas emissions from different energy sources is based on parameters, including population, technologies or measures adopted, the lifestyle of the population and the emission factors of the fuels used. The quantity of emissions is equal to the emission factors which are multiplied by the energy values. The IPCC Tools 2006 software made it possible to quantify the emissions to be avoided by entering the activity data of each action in relation to the practice that was in place. This methodology has been applied to all actions identified in the context of the 2015 NDC update. Table 47 shows the parameters used to account for these emissions.

Table 40: Metrics for Emissions Accounting

No	Technologies implemented	Emission calculation parameters
1	Construction of hydroelectric power plants	- Production capacity of the plant; - Number of hours of annual operation of the plant (4000h); - Equivalent to annual production in Tera joules;
		- Emissions emitted by a diesel power plant of the same capacity
2	Construction of solar power plants or solar mini-grids	- Production capacity of the plant; - Number of hours of annual operation of the plant (1200h); - Equivalent to annual production in Tera joules - Emissions from a diesel power plant of the same capacity
3	Electrifying the 28 capitals of municipalities in the interior of the country	- Population benefiting from the project; - Consumption average Annual by habitat (30kWh/home/year); - The amount of oil used to produce the same amount of energy for lighting;
4	Use of solar kits in households	- Total power of solar kits (491.28kW); - Average annual energy production in kWh; - The amount of oil used to produce the same amount of energy for lighting

5	Install the 455 Solar energy health and school facilities	- Total installed capacity at the solar and health establishment (1820kw for health and 1816kw for schools); - number of hours of operation per day (4 hours); - average annual energy production; - The amount of diesel used to produce the same amount of energy;
6	Build some hearth improved household	- Projections of the total population (13604766 in 2025 and 2030 14882591 in 2030 according to ISTEEBU data, 2010); - Rural population projections (12230685 in 2025 and 13379449 in 2030) - Urban population projections (1374081 in 2025 and 1503142 in 2030) - Household size; - Average amount of wood consumed per day and per person (2.93kg);
		- Average amount of charcoal consumed per day and per person (0.68); - Amount of energy generated by one kilogram of wood (4.5kWh) - Amount of energy generated by one kilogram of coal (8.89kWh); - Proportion of the population using wood and charcoal. In urban areas uses charcoal and in rural areas wood is used. - Efficiency of improved cookstoves (20%)
7	Install 12 Platforms Multi-service solar	- Total power of multi-service solar platforms; - Number of hours of operation per day (4h); - Average annual energy production; - The amount of diesel used to produce the same amount of energy
8	Build 14 improved stoves in schools in school canteen	- Number of cubic metres consumed per year (800); - Number of kilos per cubic metre (600kg); - Amount of energy generated by one kilogram of wood (4.5kWh)

		- Efficiency of improved cookstoves (20%)
9	Build and equip the solar panel assembly and production plant Photovoltaic systems that can produce 12MWp/year	- Total annual production capacity per year; - The amount of oil used to produce the same amount of energy
10	Electrifying rural peace villages with solar photovoltaic systems	- Average number of households in peace villages (200 households); - Average size of a household (5 people); - Average energy consumption per person per day (30kWh/home/day); - The amount of oil used to produce the same amount of energy
	Setting up a thermal power plant based on municipal waste: Bujumbura	- Amount of waste/person/year (kg/person/year) - Projection of the population in Bujumbura City Hall:
		➢ 839854 in 2025 ➢ 899042 in 2030 - Annual quantities of waste (ton); - Fermentable waste (57%) - Amount of energy waste (25000tons/MW); - Annual production (MWh); - Production Annual (TJ)

2.2.7.1.3 GHG impact

Table 41: Avoided Emissions by Identified Shares in the Energy Sector

					Avoided emissions in Gg Eq CO2	
Selected actions/projects	Target	activities	IOV	Cost x1000 USD	2025	2030

1.Increasing the capacity pr oduction of Energy Hydroelectric e	141.5 MW are installed	Lay out thre e Central Hydroelectric: Jiji – Mulembwe (49MW); Rusumo Falls (27MW) and Kirasa (16 MW)	-Number fro m New power plants hydroelectric Functional - Short story capacity from production hydroelectric	267000	99,03	99,03
		Lay out The power plant hydroelectric from Ruzizi III (147 MW) either 49MW for Burundi		579000	52,46	52,46
	Four (4) micropower plants are built and stake in service	Lay out four 4 sites of waga, Gikuka, Moyovozi, Nyamvyondo with a power of 1MW		8105	1,071	1,071
2. Electrifying the country's centers	28 municipal capitals are electrified	build so me Power lines serving the 28 Common and centres No again	Number fro m Capitals fro m Electrified municipalities	43000	1,12	1,12
		Electrified of the country				
3.Promoting Energies renewable energy in rural areas through the Nyakiriza sun and Umucowitera mbere	48 centres from the interior of the countries are electrified by mini-grids Solar	Install so me mini-grids solar in 48 Centres fro m (15.07MW)	Number fro m Electrified Centers	114	5,06	5,06
	40940 Households so me Solar Equipment	distribute solar kits to 40940 rural households (capacity of 491.28kW)	Number of households that received solar kits		0,147	0,147
	455 health facilities will be electrified for solar energy	Install the 455 As well from health from Energy	Number of establishment s from health Electrified		0,703	0,703

		(1820kw)				
	454 schools will be Electrified for Energy solar	Install the 454 As well School from health from Energy (1816kw)	Number of establishment s school Electrified		0,701	0,701
	331000 Households are Equipped with in Improved Fireplaces	Build 331000 Improved Stoves in the Households Rural	Number of households receiving improved cookstoves		10,58	10,58
	12 multi-service solar platforms Installed (18kw)	Install 12 Multi-service solar platforms	Number from Multi-service solar platforms		0,00522	0,00522
	14 Improved Stoves in the Schools at School canteen are Installed	Build 14 hearth improved in the Schools at Canteen school	Number of improved stoves built		0,17825	0,17825
4.Press Production and the popularization of hearth Improved	By 2025, 50% of rural households use improved cookstoves for cooking.	Building the capacity of stove manufacturing technicians and Organize	Number from Rural households who Uses some hearth improved for baking.	78	39,062	

		Fairs exhibition of hearth improved for develop from New markets and to establish contact with potential Customers				
	By 2025, 85% of urban households use improved cookstoves for cooking	Make and sell the Improved Fireplaces at 85% from the rural population in 2025	Number from Urban households who Uses some hearth improved for baking.		3,4221	
	By 2030, 75% of rural households use Improved cookstoves for cooking.	Make and sell the Improved Fireplaces at 75% from the rural population in 2030	Number from Rural households who Uses some hearth improved for cooking .			64,1107
	By 2030, 90% of urban households use improved cookstoves for cooking	Make and sell the Improved Fireplaces at 90% from Population urban in 2030	Number from Urban households who Uses some hearth improved for cooking .			3,964

5. Construction and equipment Factory assembly and production of Photovoltaic solar panels Can produce 12MWp/year	By 2025, 48MW photovoltaic panels will be produced	Build and equip one factory from Assembly and production of photovoltaic solar panels	Capacity some Product Panels	43.2	0,0432	0,0432
6.Energy supply to the villages of Rural peace by systems	27 peace villages are supplied with energy by Solar systems	Install the Solar systems Photovoltaic	Number of Peace Villages Electrified by the Solar System	108000		81,51
solar photovoltaic are	Photovoltaic S					
7.Setting up a power plant thermal based some rubbish Municipal Organizations:	6.4MW in 2025 and 8.38MW in 2030 are produced	Build The power plant	Installed capacity	0	17,43	23,04
Total				1240305	231,01	343,72

2.2.7.2 Industrial Processes and Product Use (IPU).

2.2.7.2.1 P&M, plans and priority actions selected

The national policies, plans and strategies selected in conditional scenarios are the same as those used in the unconditional scenario. Table 43 shows the priority actions of the sector.

Table 42: Priority actions of the PIUP sector

Priority actions	Targets	Activities	Monitoring indicators	Costs (x1000USD)	Year start	End date
1. Support Project for the Development of Research and Innovation in the Industrial Sector "PADRI in acronym".	10 Innovative industries	Revitalize Industries Emerging and support the Industries Existing	Number of industries	1562,5	2021	2025
Total				1562,5		

Source: TCNCC.

2.2.7.2.2. Projection assumptions and parameters

The projection assumptions are linked to the economy (GDP), the purchasing power of the populations to supply lime for agriculture and the reinforcing bars and steel used in construction.

The projection parameters are the quantities of lime, iron and steel. Other parameters are emission factors. To calculate emissions from lime production, the formula is C(tonne of CO2) **= AXB,** Conversion to Gg of CO2 **D=C/103**

These parameters are: **A:** Quantity of lime produced in tons: 1908 tons in 2015.

B: Emission factors by type of lime produced (tonne of CO2/tonne of lime produced): 0.75.

2.2.6.2.3 Mitigation impacts.

As the inventory experts did not have data on the ground, the mitigation actions were calculated by reducing the emissions of the 2015 inventory by 3% every 5 years, i.e. a reduction of 2% compared to the baseline scenario.

Table 43: Avoided Emissions by Identified Action

Year	2025	2030
To support the development of Research and Innovation in the industrial sector "PADRI in acronym".	0,28	0,55

2.2.7.3. Agriculture Sector

2.2.7.3.1 P&M, plans and priority actions selected.

The Ministry in charge of Agriculture and Livestock has developed a Guidance Document for the Environment, Agriculture and Livestock Policy. The latter is based on the 2018-2027 NDP and the 2018-2022 NDIP. To implement these strategic measures contained in these documents, the Ministry plans to develop a national policy on permanent stall farming. The success of this policy will be based on agro-sylvo-zootechnical systems that make it possible to increase livestock feed by increasing the area of fodder crops, silage and organic fertilization by the composting system. For example, the improvement of the composition of livestock feeds by adopting agro-sylvo-zootechnical integration systems has been made a national priority.

Table 45 shows the priority action to be taken, the cost of the action and the time frame.

Table 44: Priority action of the agricultural sector.

Priority Strategies	Objective	Actions	Cost x1000USD	Start date	End date	Progress ent 2021.
Improved composition some food for the cattle by adopting the Systems integration agro Sylvo Zootechnical	Improve the Foods for the livestock in permanent housing and reduce the Emissions issues managed soils.	Improve the composition some Foods for the livestock	387,17	2021	2030	Ongoing

2.2.7.3.2 Projection assumptions and parameters.

The parameters of the agricultural sector are based on the projected numbers in 2025 and 2030 by species. The numbers of these animals are shown in Table 45.

Table 45: Number of animals by species.

Species (T)	Number of N(T) heads in 2025	Number of N(T) heads in 2030
Dairy cows	171835	171835
Other cattle	391672	391672
Sheep	173691	202640
Goats	494894	549882
Pigs	625459	1000734
Total		

The formula for calculating emissions is as follows: **CH4= N(T)*EF(T)*10^-6**

where (T): Category or species; N(T): number of heads, EF: Emission factor, CH4: Total CH4 emissions.

The Emission Factor for each animal category can be found in Table 48.

Table 46: Emission factor for each animal.

Species (T)	EF (KgCH4/year)
Dairy cows	46
Other cattle	31
Sheep	5
Goats	5
Pigs	1

2.2.7.3.3. GHG impacts.

Table 47: Impacts of the action in terms of GHG emission reductions

		Avoided emissions in Gg Eq CO_2	
Actions /projects Priority	Target	2025	2030
Improve composition Feed by adopting the agro sylvo zootechnical integration	Reduce in 2025 and 2030 by 3% CH4 issues from the enteric fermentation from 2015 (22.6 Gg of CH4)	504,39	519,99

2.2.7.4 Forestry and Other Land Use Sector

2.2.6.4.1 P&M, plans and priority actions selected.

The national policies, plans and strategies selected in conditional scenarios are the same as those used in the unconditional scenario.

The implementation of these policies, plans and strategies will be reflected in the national priorities in table 48.

Table 48: National priorities in the TF sector

Actions /projects Priority	Target	Activities	IOV	Costx1000 USD	Date of beginning	Date of end	Status
1. Develop rural forestry	Increase the forest cover rate to 15.74%, i.e. increase forest cover by 160,000ha by 2027 (NDP 2018-2027)	**Create some forest plantations and agroforestry on 106,680 ha at reason from 10668ha /year to from 2021**	Areas created	$ 16,002	2021	2030	0%
2. Rehabilitate degraded environments in Mumirwa and Bugesera	9000 ha Afforestation created and/or restored and 18000 ha of watersheds protected against erosion	**Create some forest plantations and agroforestry on** 22375 ha to reason from 2275.5 ha /year to from 2021	Number of hectares installed	8,019	2021	2030	0%
3. Protecting water sources by planting bamboo	22,500 ha of bamboo groves created in ten years	Planting along rivers, around water sources and in the Farms 22500ha in 2030 at the rate of 2250 ha from of 2021.	Number of hectares installed	37154	2021	2030	0%

4. Development of Moringa cultivation	10 ha /region Created and 5 Cuttings/Household distributed to half some Burundian households (916 667), either428 ha/year	Create some Moringa plantation on 4280 ha at a rate of 428ha/year from 2021.	Number of hectares installed	705,65	2021	2030	0%
TOTAL				61881			

2.2.7.4.2 Projection assumptions and parameters.

In the TF sector, the assumptions for projecting GHG emissions to 2050 are based on changes in forest area. The projection parameters are areas of forest and/or agroforestry plantations created.

2.2.7.4.3 GHG impacts.

Table 49: Equity impacts of the TF sector

		Emissions in Gg CO2 eq	
Actions /projects Priority	Target	2025	2030
1.Developing forestry Rural	Target 160.000 ha from afforestation created	-2128.01	-4256.02
2. Project for the rehabilitation of degraded environments in the Congo Basin and the Bugesera	9000 ha of woodlands created or restored and 18000 ha of watersheds Protected against erosion	-468.75	-892.65
3.Project from development from the bamboo sector in Burundi	2250 ha from bamboo groves created per year	-448.82	-897.64
4. Development of Moringa cultivation	10 ha/region created and 5 cuttings/household distributed to half of the Households Burundian (916667), i.e. 428 ha/year	-85.38	-170.75
Total		-3130.96	-6217.06

2.2.7.5 Waste sector .

In terms of mitigating greenhouse gas emissions, the project contributes twice by avoiding emissions from waste in landfills (Waste Sector) and emissions from the diesel-based thermal power plant (Energy Sector).

2.2.7.5.1 P&M, plans and priority actions selected.

The National Development Plan for Burundi 2018-2027 and the National Sanitation Policy will serve as a reference for the unconditional scenario. In this conditional scenario, the priority objectives are the sanitation of urban centres. The priority action is shown in table 50.

Table 50: Identified priority actions

Actions Priority	Target	Activity	IOV	Cost x 1000USD
Lay out one thermal power plant	8.38MW	Build one thermal power plant	Capacity pr oduction	13900
Waste-based Municipal : Bujumbura		based on municipal waste		
				13900

2.2.7.5.2 Projection assumptions and parameters.

Projection assumptions are based on economic growth (GDP), population growth and the rate of urbanization. The projection parameters can be found in Table 51.

Table 51: Parameters for the waste sector

Projects	Parameters: waste sector
To develop a thermal power plant based on municipal waste in the city of Bujumbura	- Projection of the population in Bujumbura City Hall: ➢ 839854 in 2025 ➢ 899042 in 2030 - Amount of waste/person/year (kg/person/year) - Methane Correction Factor(%): 46 - DOCF: 50% - Delay time (months) :6 - Emissions emitted by waste in the landfill; - Emissions from the biogas plant

2.2.7.5.3 GHG impact

Table 52: Impacts per action of the waste sector

		Emissions in Gg CO2 eq	
Action	**Target**	**2025**	**2030**
Setting up a thermal power plant based on municipal waste:	6.4MW in 2025 and 8.38MW in 2030	0,1	0,13

2.2.7.6 Conditions for achieving these objectives

Actions have been identified in all sectors. The cost of implementation is estimated at one billion six hundred and eighty-nine thousand one hundred and two thousand US dollars (1,689,102). Their implementation requires the commitment of all stakeholders. Parties to the Paris Agreement listed in Annex I shall support Burundi by providing the necessary funding for the implementation of the programmes identified in accordance with Article 9 of the Paris Agreement. The technical and financial partners are called upon to be at Burundi's side to support it in the execution of the identified actions.

As the implementation of certain actions requires technical expertise, capacity building in the different areas of intervention is essential. The aim is to strengthen the capacities of all stakeholders in the transfer of knowledge for the acquisition of financing as well as the transfer of technologies.

The achievement of results will depend on the establishment of a robust implementation mechanism that builds on existing institutional, legislative and financial arrangements. The latter must be strengthened to be operational and efficient.

The involvement of all stakeholders is essential to achieve the expected results. Gender and social inclusion are encouraged.

The implementation of these actions identified by conditional objective will give a boost to the socio-economic and environmental development of our country.

2.2.7.7 Target Definition

The target of the conditional scenario is to reduce national emissions by 11% compared to the BAU scenario by 2025 and by 13% compared to the BAU scenario by 2030.

2.2.7.8 Calculation method

The methodology for calculating the target at the sector level is first summed up by the avoided or absorbed emissions of all priority actions in the sector. The value of the national target in CO2 equivalent in Gg per conditional objective corresponds to the sum of the emissions/removals resulting from the implementation of the priority actions in all sectors. In percentage terms, the target value is the ratio of the sum of the sectoral emissions of the conditional scenario to the sum of the sectoral emissions of the Business As Usual (BAU) scenario.

The value of the "C" target in % is expressed by the following equation: X/Y*100.

Where X = ∑of the sectoral emissions of the conditional scenario in CO2 eq in

Gg.

Y = ∑ of the sectoral emissions of the Business As Usual (BAU) scenario in CO2 eq in Gg.

2.2.7.9 Summary of avoided emissions and removals

The summary of avoided emissions and removals in all sectors is shown in table 53.

Table 53: Summary of avoided emissions and GHG removals.

	Avoided GHG emissions in Gg CO2 eq	Avoided GHG emissions in Gg CO2 eq
Sector s	2025	2030
1. Energy and transport	231,01	343,72
2.PIUP	0,28	0,55
3.Agriculture	504,39	519,99
4. Forestry and agroforestry	-3130.96	-6217.06
5.Waste	0,1	0,13
Total some Emissions with Absorption	-2395.18	-5352.67
Total some Emissions without Absorption	735,78	864,39

NB: The FAT sector is not counted in the GHG emission mitigation objectives, but on the other hand has a great importance in the increase of carbon stocks.

3. TARGET VALUE IN PERCENTAGE

The percentage value of the target is 12.61% in 2030 and 11.40% in 2025 and these values correspond to greenhouse gas emission reductions of 864.39 CO2e in Gg in 2030 and 735.78 CO2e in Gg in 2025 compared to the BAU Reference Case in 2030 and 2025. Table 54 shows the details of the target values.

Table 54: Target value by conditional target

Conditional Objective	CO2 eq emissions in Gg	CO2 eq emissions in Gg
	2025	2030
Conditional Mitigation Scenario	735,78	864,39
BAU scenario	$ 6,453.82	$ 6,854.56
Target value in %	11,40	12,61

3.1. Other impacts

The actions adopted in the conditional objective scenario have an impact on health, especially by reducing diseases resulting from smoke from wood combustion and air pollution from gases from vehicle emissions. Other impacts on improving living conditions are significant through increased access to electrical energy, **including** the growth of household incomes through job creation and the modernization and diversification of electricity

income-generating activities. **They also have a positive impact on biodiversity conservation, including soil conservation, water supply, etc.**

3.2. ICTU

The summary corresponds to an extract from the ICTU 55 table as it appears in the CDN2020.

Table 55: UTCI

1. Quantifiable information on the reference point (including, as appropriate, a year of reference)	
has. The reference year(s), reference period(s) or other starting point(s)	Base years: 2025 (intermediate base years) and 2030 (target year) (case of an indicator defined against a Business as Usual (BAU) scenario)
b. Quantifiable information on the benchmarks, their values in the reference year(s), reference period(s) or other starting points and, where applicable, the target year	The benchmark indicator is an annual quantitative indicator, relative to the GHG emissions of the scenario "Business as Usual" (BAU), for the target years 2025 and 2030 and 2 mitigation scenarios (unconditional and conditional). National GHG emissions: • in 2015 (BAU base year): 1,935.9 Gg $CO_{2eq.}$ • in 2025 (BAU): 6,453.8 Gg $CO_{2eq.}$ • in 2030 (BAU): 6,854.6 Gg Gg $CO_{2eq.}$
c. For strategies, plans and measures referred to in paragraph 6 of Article 4 of the Paris Agreement, or policies and measures that are part of the Nationally Determined Contributions , where paragraph 1 (b) above does not apply, Parties shall provide other relevant information.	Not applicable (Burundi is in the list of LDCs but has provided quantifiable information, which is proof of Burundi's ambition)
d. A target relative to the benchmark, expressed numerically, such as a percentage or amount of reduction	Benchmark targets (reduction relative to the BAU): Unconditional scenario – 2025: 1.58% Unconditional scenario – 2030: 3.04% Conditional scenario – 2025: 11.40% Conditional scenario – 2030: 12.61%

e. Information on the data sources used to quantify the baseline(s)	The historical emissions (2005, 2010 and 2015), used as the basis for the projections, are those of the 3rd GHG Inventory Report used in Burundi's 3rd National Communication (NCR) submitted in 2019. The projection assumptions are linked to the national economy (PIP) and population growth. For the FAT, the wood energy needs were used for the projections. These assumptions are provided by ISTEEBU (Institute of Statistics and Economic Studies in Burundi). The projected emissions for the years 2025 and 2030 in the BAU scenario are taken from the NCT.
f. Information on the circumstances under which the Party may update the values of the benchmarks	The base year emissions value is subject to updating as a result of methodological changes and improvements in the compilation of future greenhouse gas inventories.

2. Time horizon and/or implementation period	
has. The timetable and/or period for implementation , including start and end dates , in accordance with any other relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)	The 2020 NDC is implemented from January 1, 2021 and will end on December 31, 2030. The time horizon is 10 years, but an intermediate stage is planned after 5 years.
b. Whether it's an annual or multi-year, as applicable	The targets set out in the 2020 NDC are annual.

3. Scope and Scope	
has. A general description of the target	The reference indicator is an annual quantitative indicator, relative to the GHG emissions of the "Business as Usual" (BAU) scenario, for all sectors of the inventory, excluding the managed land sub-sector of Agriculture, for the target years 2025 and 2030 and 2 mitigation scenarios (unconditional and conditional).
b. The sectors, gases, categories Tanks Referred by the determined at the national level, including, where applicable, in accordance with the Principals of the Group experts Intergovernmental Conference on Climate (IPCC)	All sectors and subsectors and GHGs included in the Burundi's 3rd national GHG inventory are taken into counts in Burundi's 2020 NDC, namely:

Sectors	Gas
Agriculture , excluding managed	CO2, $N_{2O,}$ CH4
Forestry and Other Land (FAT)	CO2
Energy	CO2, CH_4, $NO_{.2}$

	Industrial Processes and Use Products:	CO2, CH4
	Rubbish	N2O, CH_4
	Regarding GHGs, emissions of PFCs, HFCs, SF6 and NF_3 are not estimated in the inventory and therefore not taken into account. account in the NDC.	
c. How the Party has considered subparagraphs (c) and (d) of the Paragraph 31 of decision 1/CP.21	For the Energy sector, fugitive emissions are not estimated in the inventory and therefore not taken into account in the NDC. For the Agriculture sector, emissions from the managed soils sub-sector are not accounted for either in the BAU or in the mitigation scenario. For the FAT sector, carbon monoxide has not been calculated due to a lack of global warming potential. Emissions /removals are considered in the BAU and the mitigation scenario. In the Waste sector, emissions from open combustion, composting and anaerobic digestion are not estimated in the inventory. Compared to the previous NDC, the new NDC takes into account actions relating to two new sectors (Agriculture and Waste) in the two mitigation scenarios. Removals from the TF sector are not taken into account in the calculation of the target values and indicator.	
d. The benefits in the area of mitigation resulting from adaptation measures and/or economic diversification of the Parties, including including the description of the projects, actions and initiatives relating in particular to adaptation measures and/or Economic diversification of the Parties	The Republic of Burundi's adaptation measures and/or economic diversification plans will have beneficial effects in the area of mitigation. These are Burundi's policies, measures or strategies for adapting to the adverse effects of climate change in all sectors covered by this NDC. These measures have been identified and quantified in the document of the Third National Communication on Climate Change (TCNCC), the National Development Plan (NDP) 2018-2027, the National Development Policy Document (NCCP), the Environment Agriculture and Livestock (DOPEAE), etc.	

4. Planning Process

has. Information on the planning processes that the Party has followed to develop its nationally determined contribution and, if available, on the Party's implementation plans, including, where applicable:	
i. National institutional arrangements, public participation and collaboration with local communities and indigenous peoples, taking into account gender issues;	**Institutional arrangements:** The Ministry of the Environment, Agriculture and Livestock is the institutional framework in charge of updating and implementing the 2020 NDC to through its structures Administrative and technical unconcentrated. To this end, it has set up a national commission responsible for monitoring the update of the 2015 NDC. It is made up of executives from the various sectors (AFOLU, Energy including transport, PIUP and Waste). Executives involved in related themes (Health, Gender) have also been integrated into the Commission. In close in collaboration with UNDP, this commission is responsible for monitoring of the NDC update process since Office recruitment and implementation phases (validation of methodology, organization of retreats for technical sessions and workshops for stakeholder consultations and phased validation of the document and submission of the updated NDC for adoption and approval). On the technical side, the NDC 2020 was carried out by a PREFED/CAREPED Consortium that aligned 10 national experts (6 sectoral experts, an economist, a gender specialist, a health expert and a climate expert) with the support of an international consultant.

	Participatory aspect During the updating process, numerous exchange workshops were held (data collection, selection of actions, approval of methodologies, verification and approval of results). These workshops aimed to ensure the participation and involvement of all technical stakeholders and civil society with the involvement of local communities, indigenous peoples and took into account the gender and social inclusion dimension. The workshops also aimed to communicate on the actions selected and thus ensure ownership for their implementation by the stakeholders. The 2020 NDC was approved by the Burundian authorities before being released.
ii. Contextual issues, including, but not limited to:	
- The national situation, including the geography the climate the economy, the	**Burundi** is a country in Central Africa with a area of 27,834 km^2. It is located between 28° 50 and 30° 54
sustainable development and poverty eradication	of East Longitude between the Congo Basin and the eastern highlands and between 2°30 and 4° 28 South latitude, at the crossroads of the routes of Central Africa, East Africa and even Southern Africa. The country has a hot and humid tropical climate influenced by altitude and characterized by alternating rainy seasons (October to May) and dry seasons (June to September). Its rainfall and temperature are strongly influenced by the terrain, the altitude of the country (772-2670 m) and by climate change. The average annual rainfall varies from 750 mm in the north-east of Burundi to more than 2000 mm in the mountainous area. The highest average annual temperature is 24.7°C between 2006-2015 recorded in the Imbo Plain Natural Region, while the lowest is 16.6°C between 2006-2015 recorded in the Mugamba Natural Region. From a socio-economic point of view, Burundi has about 12.3 million populations in 2020, more than 90% of whom live in rural areas and 51% are women. Being among the Least Developed Countries (LDCs), its annual per capita income is estimated at USD 280 and its economy is mainly based on agriculture. With a density of **480.99 people/km²,** the population growth of 2.4% puts pressure on land and water resources and aggravates the situation of deforestation and deforestation.

	According to the TCN, the sectors that emit more are agriculture, energy and waste with emissions of 4186.21 CO2 eq in Gg respectively, 1072.4 CO2 eq in Gg and 230.73 CO2 eq. For other sectors, GHG emissions are insignificant.
-Best practices and experience gained from the development of the Nationally Determined Contribution	Best practices and experience from the development of: ✓ Participatory approach to the planning process for the development of the NDC (Data collection , data processing, calculation by the IPCC 2006 software, needs, prioritization of measures, etc.); ✓ Consideration of Decision 4/CMA.1
- Other contextual aspirations and priorities recognized upon accession to the Paris Agreement	The updated NDC 2020 is in line with the objective of the Paris Agreement, in its provisions of Article 4 paragraphs 2 and 3, Article 4, Article 5, Article 6, (1) and (2) and Article 7(1) and (2). Developed countries should act in accordance with the provisions of Article 9 of the Paris Agreement.
	Compliance with Article 9.4 of the Paris Agreement, which highlights areas of cooperation and facilitation and aims to improve understanding, action and support. These areas include systems early warning, emergency preparedness, etc.
b. Special information applicable to Parties, including regional integration organizations and their Member States, which have agreed to act jointly Pursuant to article 4, paragraph 2, of the Paris Agreement, including Parties which have decided to act jointly, and the terms of the relevant agreement, in accordance with paragraphs 16 to 18 of Article 4 of the The Paris Agreement	Not applicable *The updated NDC is not developed within the framework of regional economic integration organizations and their member states to act jointly pursuant to Article 4.2 of the Paris Agreement. Paragraphs 16, 17 and 18 do not concern the updated NDC of the Republic of Burundi.*
c. How the Party's preparation of its Nationally Determined Contribution has been informed by the results of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement	The steps that were taken for the 2020 NDC were not informed by the global stocktake, as the first global stocktake on climate action will be released in 2023. However, the global balance sheet will take into account the avoided emissions as part of the implementation of the 2020 NDC.

d. Each Party has a Nationally Determined Contribution under Article 4 of the Paris Agreement, which consists of adaptation measures and/or economic diversification plans that generate benefits in the area of mitigation in accordance with Article 4.7 of the Paris Agreement,	Not applicable

5. Assumptions and methodological approaches, including those concerning estimation and accounting for anthropogenic greenhouse gas emissions and, where applicable, anthropogenic removals:	
has. Hypotheses and approaches methodologies used to account for emissions and Anthropogenic greenhouse gas removals corresponding to the contribution of the Nationally determined Party in accordance with paragraph 31 of the decision 1/CP.21 and the accounting guidelines adopted by the CMA	The calculation of GHG emissions (BAU history and projection) and emissions avoided by conditional and unconditional action in 2025 and 2030 was carried out for the 5 planned sectors (energy, IPUP, agriculture excluding managed soils, TMF and waste) using the Tier 1 methodologies presented in the 2006 IPCC Guidelines (GL 2006). Assumptions are based on economic growth and population data. The methodological approach to accounting for emissions is the use of IPCC Tools 2006 software. The calculation of the target values as a percentage of the indicator for the 2025 and 2030 horizons for the conditional and
	unconditional action on the NDC 2020 was made by summing the emissions avoided thanks to the actions retained in the NDC. The sum of the avoided emissions is then divided by the emissions of the BAU scenario and then multiplied by 100 to obtain a percentage. The achievement of the target will be estimated, on a like-for-like basis, by comparing the actual emissions recorded in Burundi's future national inventories (excluding emissions from the managed soils sub-sector) and the projected emissions from the NDC BAU scenario. In the event of changes in methods and inventory improvements , the BAU will be recalculated.

b. Hypotheses and approaches methodologies used to account for the implementation of policies and measures or strategies in the Determined Contribution at the national	National policies and programmes on socio-economic development and environmental protection have been used as a reference for the identification of mitigation actions. All mitigation actions under the proposed **unconditional objective** are consistent with national socio-economic development programmes and are achievable. Mitigation actions under the **conditional target** are dependent on international financial support. These mitigation actions were validated during workshops with stakeholders from the different sectors. The calculation of the avoided emissions of the actions retained in the NDC was carried out using the IPCC methodology (IPCC Tool, 2006). As Burundi-specific emission factors are lacking, the use of Tier 1 EFs was recommended in the 2006 IPCC GL.
c. Information on how the Party will take into account existing methodologies and guidelines under the Convention for accounting for anthropogenic emissions and removals, as appropriate, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate	The following international documents were used to estimate and report on the Mitigation component of the NDC: <u>Calculation/Follow-up:</u> - **2006 IPCC Guidelines** - **IPCC, 2006 Software** <u>Reporting :</u> - **Annexes 1 and 2 of Decision 4/CMA.1** : Information to improve clarity, transparency and understanding of nationally determined contributions referred to in paragraph 28 of decision 1/CP.21
d. IPCC methods and metrics used to estimate anthropogenic greenhouse gas emissions and removals	The methods for calculating emissions/removals are those recommended by the IPCC and are based on the **2006 IPCC Guidelines.** **Parameters** for estimating GHG emissions/ removals in the Energy and Transport sectors, PIUP,
	Agriculture, Forestry and Land Use, Waste **are activity data**and emission factors. Progress towards the target will be monitored by applying the same methods for calculating these emissions/removals. The Global Warming Potential (GWP) of the **IPCC Second Assessment Report (SAR)** is used to convert emissions to CO2eq (21 for CH4 and 310 for N2O)
e. The assumptions, methods and sector-specific approaches, class or activity, in accordance with the IPCC Guidelines, as it includes, as appropriate:	

i. The approach to dealing with emissions and subsequent removals natural disturbances on working land	Continuous monitoring and evaluation of the implementation of projects/programmes/measures designed to mitigate the emissions and subsequent removals of natural disturbances on working land
ii. The Accounting Approach emissions and removals from harvested wood products	Daily monitoring of the areas on which the harvest is carried out wood products (Case of the sugar cane plantations of the SOSUMO industry)
iii. The approach to addressing the effects of age-class structure in forests	The approach is to make periodic inventories every five years (Classification of forests having 5 years, 10 years, 15 years, 20 years, etc.). Carbon stocks can be calculated by age group.
f. Other assumptions and methodological approaches used to understand the Nationally Determined Contribution and, where appropriate, to estimate emissions and removals correspondents, including:	
i. The way in which the benchmarks, the baseline(s), including , where applicable, sector-specific, category-specific or activity-specific baselines , are constructed, including, for example, the main parameters, assumptions, definitions, methods, data sources and models used	The baseline indicators (BAU scenario) of the NDC 2020 are constructed on the assumption that no plan, policy and strategic measures are made to mitigate emissions or increase removals. In the case of the NDC 2020, these BAU indicators are those defined **in the 3rd National Communication on CCs** submitted in 2019 by Burundi and projected until 2050 from 2005. Emissions from the managed soils subsector are not included in BAU emissions. The same is true for the reference levels for the different sectors. To this end, the calculation of GHG emissions in the BAU scenario has been carried out for all sectors (energy, PIUP, agriculture (excluding managed soils), TF and waste) using Tier 1 methodologies

	presented in the **2006 IPCC Guidelines** (GL 2006). The indicators of the mitigation actions selected in 2025 and 2030 have been defined for each sector. The main parameters are specific to each sector. These are activity data and sector-specific emission factors. **The main assumptions** for all sectors are those related to the economy, population growth, energy consumption per household, etc. The BAU scenario is a scenario that gives indicators of the evolution of greenhouse gas emissions over the time horizon if measures of plans, policies or strategies are not taken to mitigate these emissions. It is established by making projections **from the year 2015** onwards on the basis of economic growth, the rate of population growth, but assuming that no action is taken to implement plans, policies and strategies contributing to the mitigation of GHG emissions. **Data sources** for the determination of indicators include: • The NCTC (2019), • The Third GHG-2015 Inventory • The National Development Plan (2018-2027), • The Burundi Vision 2025, • The National Forest Policy (2012), • The Master Plan for the Production and Transmission of Electrical Energy 2014-2030, etc. **Models used** • **IPCC 2006** to perform emissions calculations • **LEAP for projections in the Energy sector** .
ii. For Parties whose nationally determined contributions contain non-greenhouse gas components, information on the assumptions and methodological approaches used in relation to the these elements, as necessary	Not applicable *Burundi's NDC only concerns GHGs from the different sectors.*
iii. For climate forcing factors included in Nationally Determined Contributions that are not covered by the IPCC Guidelines, information on how these factors are estimated	Not applicable *Burundi's NDC only concerns GHGs from the different sectors.*
iv. Other technical information, as required	Access to NDC finance in line with Article 5 of the Paris Agreement. The implementation of the 2020 NDC could be done with cooperation at the regional level (EAC and COMIFAC).

g. The intention to use cooperation under Article 6 of the Agreement of Paris, if applicable	Yes according to Article 6 of the Paris Agreement to access finance for the implementation of the 2020 NDC

6. The manner in which the Party considers its nationally determined contribution to be equitable, and ambitious given its national situation	
has. How the Party considers its nationally determined contribution to be equitable and ambitious in light of its national circumstances	During the preparation of the NDC, the vulnerability analysis of the sectors (Agriculture, Forestry and All Other Land, Energy, Health, PIUP) was carried out. Negative impacts due to climate change were identified and mitigation and/or adaptation measures to address these impacts were identified by sector. To this end, priority projects have been highlighted. The development of the 2020 NDC used the most recent data from the NCT and other sectors were considered such as the Waste, PIUP and Transport sectors.
b. Considerations of fairness	Gender and social inclusion are taken into account in the 2020 NDC. In addition to this, the actions included in it have been identified on the basis of national policy and strategy documents.
c. How the Party has taken into account Article 4, paragraph 3, of the Paris Agreement[14]	The 2020 NDC raised the ambition compared to the previous NDC by taking into account actions on sectors and sub-sectors not included in the 2015 NDC: transport, waste. In addition, the themes of Health, Gender and Social Inclusion have been integrated into the prioritization of actions. The NDC 2020 therefore represents an improvement over the previous NDC, as the coverage of emissions in terms of sectors has been extended to all sectors and gases estimated in the most recent GHG inventory. The 2020 NDC has defined precise indicators for monitoring and evaluation and recommends a capacity-building plan for better ownership by the various parties stakeholders.
d. The manner in which the Party has implemented Article 4, paragraph 4, of the the Paris Agreement.	Although Burundi is not an emitting country, it is developing mitigation actions through its policies GHG emissions.
e. How the Party has taken into account Article 4, paragraph 6, of the Paris Agreement[4]	Burundi is strengthening its efforts in terms of mitigation through the inclusion in the new NDC of national actions to reduce GHG emissions and increase carbon stocks. For example, the National Development Plan , 2018-2027, the National Development Planning Policy Environment, Agriculture and Livestock,

14 How does the CND represent a progression beyond the Party's previous CND and reflects its greatest possible ambition?

	development of new and renewable energies (solar, wind, hydroelectric power plants under construction, etc.), the increase in the internal budget for and funding mitigation and adaptation measures.

7. How the Nationally Determined Contribution contributes to the achievement of the objective of the Convention as set out in Article 2 thereof	
has. How the contribution nationally determined by the achievement of the objective of the Convention as as set out in Article 215 of the	The NDC 2020 contributes to the objectives of the Convention and the Paris Agreement by accelerating low-carbon development.
b. How the Nationally Determined Contribution (NDC) contributes to Article 2, paragraph 1 (a), and Article 4, paragraph 1, of the Paris Agreement16	- The revised NDC contributes to Article 2 (a) of the PA. It plans to implement projects from 2021 to 2025 /programmes to reduce greenhouse gas emissions . - The revised NDC will also contribute to the implementation of paragraph 1 of Article 4 of the PA, as it provides for political, strategic and mitigation plans/programmes. - Existing policies take into account the climate plan and the SDGs with the aim of developing low-carbon way to contribute to the overall goal.

4. COMMUNICATION ON ADAPTATION

4.1. National situation, institutional arrangements and legal frameworks

4.1.1. National situation

Burundi is a country in Central Africa with an area of 27,834 square km. It is located between 28° 50 and 30° 54 East longitude between the Congo Basin and the eastern highlands and between 2° 30 and 4° 28 South latitude, at the crossroads of the Central Africa, East Africa and even Southern African routes. Burundi has a hot and humid tropical climate.

Its rainfall and temperature are strongly influenced by the relief, the altitude of the country (772-2670 m) and by climate change. The average temperature is 21° C. The distribution of rainfall is unevenly distributed across the country, with the high mountains of the Congo-Nile Ridge receiving the greatest amounts of annual rainfall from 1600 to 2000 mm and the Ruzizi plain in the west as well as

15 Article 2 of the UNFCCC sets out the ultimate objective of "stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system" (UNFCCC 1992). The second sentence specifies that this stabilization must be achieved "within a sufficient period of time to allow ecosystems to adapt naturally to climate change, so that food production is not threatened and so that economic development can continue.

16 Article 2.1(a) of the Paris Agreement includes two global temperature objectives – "well below 2 degrees" and "1.5 degrees". Article 4.1 qualifies them by stating that "Parties aim to achieve global capping of greenhouse gas emissions as soon as possible, recognizing that such capping will take longer for developing country Parties, and to undertake rapid reductions in such emissions. and subsequently undertake rapid reductions in accordance with the best available science ...", and that Parties will also strive to "achieve a balance between anthropogenic emissions by sources and emissions by sinks" in the second half of the century

than the depressions of the Bugesera natural region; in the northeast, receiving the lowest amounts of annual rainfall between 800 and 1000 mm.

From an economic point of view, Burundi is among the Least Developed Countries (LDCs). Its annual per capita income is estimated at USD 202 and its economy is mainly based on agriculture. With a population of 11.9 million and a density of **480.99 people/km²,** the population growth of 2.4% puts pressure on land and water resources and aggravates the situation of deforestation and deforestation.

4.1.2. Institutional framework

In Burundi, the Ministry of the Environment, Agriculture and Livestock (MINEAGRIE) through the General Directorate of the Environment, Water Resources and Sanitation is responsible for coordinating the implementation of sectoral policies on climate change. The central administration services and the public institutions of the Geographical Institute of Burundi (IGEBU) and the Burundian Office for the Protection of the Environment (OBPE) provide their support.

IGEBU and OBPE are also respectively National Focal Point and Deputy National Focal Point of the United Nations Framework Convention on Climate Change (UNFCCC). In addition, the Director-General of Agriculture of the Ministry is the Designated National Authority (DNA) for the Green Climate Fund (GCF), and the focus of the Global Environment Facility (GEF) is ensured by the Permanent Secretary of MINEAGRIE.

In the context of climate change, the IGEBU is responsible for the collection, analysis, processing and dissemination of meteorological and hydrological data. As for the OBPE, the related missions are to (i) implement policies and strategies in the field of the environment and climate change and (ii) set up mechanisms for mitigating and adapting to climate change (the implementation of the NAP).

In addition to MINEAGRIE, other Ministries in charge of Energy, Public Health, Trade, Transport, Industry and Tourism, are concerned by issues related to climate change.

Given that climate change has a cross-cutting impact on all key sectors of the national economy, effective resilience to this issue requires the adoption of a multi-sectoral and multidisciplinary approach. The latter makes it possible to strengthen consultation between the actors in the field, to facilitate the establishment of a harmonized framework for future interventions as well as to mobilize financial resources for the implementation of the NAPAs and the NDC.

Contributions to other frameworks and/or conventions at the international level to which Burundi has acceded:

- United Nations Framework Convention on Climate Change and the Paris Agreement.
- Convention to Combat Desertification,
- Convention on Biological Diversity,

- Vienna Convention on the Protection of the Ozone Layer
- RAMSAR Convention on Wetlands.

4.1.3. National legal framework

- The Constitution of Burundi of 17 May 2018, especially in its articles 164, paragraph 4 and article 35
- Law No. 1/10 of 30 May 2011 on the creation and management of protected areas in Burundi
- Law No. 1/010 of 30 June 2000 on the Environmental Code
- Law No. 1/07 of 15 July 2016, revising the Forest Code
- Law No. 1/02 of 26 March 2012 on the Water Code in Burundi;
- Qualitative (Articles 43 to 47) and Quantitative Protection of Water Resources (Articles 48 to 50).
- Law No. 1/13 of 9 August 2011 revising the Burundi Land Code, Article 451 paragraph 1,
- Law No. 1/13 of 23 April 2015 on the Reorganization of the Electricity Sector
- Law No. 1/012 of 30 May 2018 on the Code of the Supply of Health Care and Services in Burundi, especially in its Articles 137 and 138
- Decree-Law No. 100/241 of 31 December 1992 regulating the disposal of waste water in urban areas.
- The Code of Ethics was promulgated by Law No. 1/010 of 30 June 2000.
- Decree No. 100/292 of 16 October 2007 on the creation, mission, composition, organization and operation of the National Platform for Risk Prevention and Disaster Management.

4.2. Impacts, risks and vulnerabilities

Through various IGEBU stations, Burundi has basic climate data and data management systems, as well as forecasting products. However, the production of data and products for monitoring extreme hydrometeorological events is low, due to low technical and financial capacity.

Referring to the TCNCC data, Burundi also shows thermal variations depending on its geographical areas. This is because higher regions experience colder temperatures on average than low-lying areas.

The analysis of the evolution of the inter-decadal average, maximum and minimum temperature shows that warming began with the decade 1986-1995 with the record that appeared respectively during the decade 2006-2015 followed by the decade 1996-2005. The record for the average maximum temperature was recorded during the decade 1996-2005 and the average temperature

was observed during the decade 2006-2015. All temperature analyses (analysis of the evolution of the interannual, inter-decadal and inter-normal temperatures) show that the temperatures recorded at the Bujumbura station at the airport have an upward trend.

According to the TCNCC (2019), periods of water scarcity have led to prolonged droughts since 1917 affecting, among other things, access to water and agricultural production. However, the year 2006 of great drought in the north of the country was followed by a period of severe flooding that severely affected most of the country, particularly the provinces of Kayanza, Ngozi, Ruyigi, Bururi, and Makamba. The main extreme events that have occurred in Burundi are as follows :

- In 2009, torrential rains threatened almost the entire territory, especially the Imbo plain, Mumirwa, the Buyenzi region and the central-eastern part of the country in the Mugamba and Kirimiro regions.
- In 2010, torrential rains fell on the city of Bujumbura, affecting the Bujumbura International Airport, among other things.
- In 2011, torrential rains flooded three urban communes in Bujumbura, causing significant damage.
- In February 2014, following flooding in the northern neighbourhoods of Bujumbura Mairie, Gatunguru and its surroundings, nearly 1,000 houses collapsed, 20,000 people were left homeless, and 77 deaths were recorded.
- Since September 2015, more than 4 million people have been affected by heavy or torrential rains, water deficits, strong winds, floods and landslides. These climatic events have destroyed more than 30,000 hectares of crops, more than 5,000 homes, more than 300 classrooms and about fifty bridges. More than 42,000 people have been displaced and are believed to remain in humanitarian need in the provinces of Kirundo, Makamba, Bubanza, Cibitoke and Ruyigi.
- In November 2015, with the El Nino phenomenon, floods affected at least 30,000 people, including 52 deaths. According to the IOM (**DTM**, 2019) about 31,000 people were displaced by climatic events during 2019. Torrential rains, strong winds and landslides have displaced 13,856 people.
- In 2019, heavy rains also destroyed crops and affected livelihoods. Following this event, 15% of the Burundian population suffered from severe food insecurity in April 2019.

According to the TCNCC, the projection of climate parameters in Burundi shows an upward trend in rainfall and temperatures. Climate models show an increase in annual rainfall between 12 and 13.15% by 2030 and 2050 for the country's 6 weather stations. They also show an increase in the maximum annual temperature between 0.80 and 0.91°C by 2030 and an increase between 1.89 and 2.02°C by 2050. The annual minimum temperature will increase between 0.91 and 0.99°C by 2030 and between 2.04 and 2.14°C by 2050

all scenarios and weather stations. The greatest temperature rise will occur during the dry season, increasing over time. The projected changes in precipitation and maximum and minimum temperatures do not indicate significant differences between the two scenarios but differences with the horizons (2030 and 2050).

According to the TCNCC (2019), increases or intensity of total precipitation are likely to cause flooding in the western Imbo plains and erosion in the southern zone and central plateau with the following consequences for the inhabitants of the hills and plains:

- Exposure to disasters;
- Decrease in agricultural production;
- Allocation of public infrastructure, biodiversity and siltation of dams;
- An increase in the risk of vector-borne diseases in the Imbo plain, Kumoso and in the marsh lowlands.

4.3. National adaptation priorities, strategies, policies, plans, targets and actions

Building on lessons learned from existing adaptation projects and programmes, this section presents priority adaptation actions to address key impacts, vulnerabilities and risks to climate change.

Since the preparation of the former NAPA, Burundi has implemented several adaptation projects and programmes, particularly in the sectors of agriculture and natural resources, energy and water management. Lessons learned from their implementation can be used for future projects and programmes, particularly in terms of: potential for scale-up, climate change information , awareness-raising and capacity building, adaptation planning at the subnational level, and strengthening private sector engagement, among others.

The implementation of adaptation initiatives has been plagued by gaps related to the identification of sectors, insufficient adaptation priorities, lack of continuity of project support and weak capacity building .

To strengthen the future implementation of adaptation priorities, two main concerns need to be taken into account, namely:

- Identify and summarize lessons learned from implemented adaptation projects and programmes
- Build capacity for the continued implementation of adaptation activities.

The determination of adaptation programmes is made after the review of strategic documents such as the Burundi NDP 2018-2027, NAPAs, the NDC, and the TCNCC. After carrying out an analysis of sectoral vulnerabilities based on a participatory approach, the team of experts selected the criteria for prioritizing the priority activities in the different sectors selected using, among other things, the Multi-Criteria Analysis (MCA), which made it possible to take into account variables and

qualitative parameters, and which incorporate the necessary information on the degree of adverse effects of climate change. Six prioritization criteria were retained and made it possible to achieve a prioritization at the sector level, namely:

1. Risk of loss of life;
2. Risk of loss of Quality of Life;
3. Evidence of the involvement of climate change;
4. Contribution to the Fight against Poverty / Sustainable Development;
5. Feasibility / Sustainability / Safety;
6. Benefit for the Environment.

Based on these criteria, the sector scores definitively identify key sectors that are vulnerable to climate risks as follows:

1°. Agriculture and Livestock

2°. Natural resources/ecosystems/forests 3°.

Water Resources

4°. Health

5°. Energy

6°. Infrastructure

In addition, priority areas have been proposed, in particular in the National Policy on Climate Change (2012), the National Strategy and Action Plan on Climate Change (2012) as well as in the National Development Plan 2018-2027, whose general strategic objective is "Promoting development that is resilient to the adverse effects of climate change". The SNPACC defines six strategic axes relating to adaptation. These are:

1. Climate Risk Adaptation and Management,
2. Promotion of Research and Development and Technology Transfer;
3. Capacity building;
4. Knowledge management and communication;
5. Involvement of gender, youth and vulnerable groups;
6. Mobilizing funding

Based on these strategic axes, a series of priority adaptation programs are identified in various documents, including: the NDP 2018-2027, Priority Action Programs (2018), the

PANA (2007), SNPACC (2013), CDN (2015), TCNCC (2019), Environmental , Agricultural and Livestock Policy Orientation Document (2020), and sectoral documents such as the NAIP 2016-2020.

5. ADAPTATION

Overall, the objective of implementing adaptation measures is to increase the resilience of ecosystems and populations to the impacts of climate variability and change. Based on the projection model of two key parameters of temperature and precipitation and according to the prioritization criteria, the following priority actions have been chosen in 2 unconditional and conditional scenarios .

5.1 Unconditional scenario

Proposed priority actions by sector

SECTOR	ACTIONS PRIORITY	TARGET	ACTIVITY	INDICATEUR	COST IN USD
AGRICULTURE AND LIVESTOCK	1 Valorize and promote the autochthonous medicinal plants, nutritional plants and honey plants	By 2023, priority indigenous medicinal, nutritional and honey plants will be installed and provided to users	Produce some Seed Native plants medicinal, nutritional and Honey Plants Identified priority, install some Gardens in the country's stations and protected centres or areas and to make them available to local users.	Number of types of plants installed	51,500
	2 Promoting biopesticides used in Agriculture for pollution reduction and the improvement of the health human)	By 2023, the collected bio-pesticide plants will be installed in the Mahwa and Bukemba stations	Install one collection some plants bio-pesticides in Mahwa and Bukemba;	Number of species of biopesticides,installés and Registered	55,940

	3 Perform one Phytosanitary inventory research on diseases and Pests	By 2023, diseases and pests in Burundi will be inventoried	Inventory of Diseases and pests present in the country	List of diseases and pests inventoried	12,608
	Cultures in Burundi				
	4.Developing Mitigation Practices some Hazards Climate	By 2025, agricultural practices mitigating the climatic hazards will be developed	Initiating cultural practices that will cope with climatic hazards	Number of cultural practices initiated	100,000
HEALTH	Raise awareness the population some wrongdoing some Climate Change on Human Health	By 2025, less 700 Sessions from sensitization will be carried out in the hospitals and CDS	Conduct awareness workshops by hospital and CDS	Number of household awareness sessions	1 283 290
TRANSPORT AND BUILDINGS INFRASTRUCTU	4 Developing infrastructure for non-motorized transport in Bujumbura	By 2027, 7.5 km will be set up for non-motorised transport	Developing non-motorized	Number of Miles Fitted out s	1 345 500
WASTE	5 Manage rationally the rubbish Chemical	By 2025, a some Strategies from management and treatment some rubbish chemical weapons will	Develop the Management Strategies	Strategy document available	20 491 800

		be elaborate			
	Total				27 840 638

5.2. Conditional scenario

SECTOR	PRIORITY ACTIONS	TARGET	ACTIVITY	INDICATORS	COST (USD)
AGRICULTURE AND LIVESTOCK	1 Develop and evaluate from New varieties from culture	By 2025, 5 new and more productive varieties of priority crops are provided in	Put at the availability of populations in Seed and plants for	Number of new varieties introduced/area	8 800 000
	food crops at high potential from yield and nutrition and Resilient at climate change	All ecological zones	5 crops Deductions		
	2 . Produce and distribute the Seed from Suitable quality the climatic hazards	By 2027, quality seed will be available to all BPEAE	Insure Availability Seeds from quality at all BPEAE	The number of Kgs of quality seeds are available	1 140 156

	3 Promoting livestock farming from fish in Ponds	From here 2029, At least one increase from 13000 tons on the production fishery will be Made.	Promoting integrated fish farming	Number of tonnes of additional fish production in ponds	8 648 648
	4 Supporting increased livestock production	By 2025, a stock strategic some Veterinary Inputs Will functional	Set up one stock Strategic Veterinary Inputs	Number from stocks Strategic Functional	13 185 017
	5 Enhancing the Genetic Effect at Through the generalization of artificial insemination	From here 2027, one Management Structure Artificial Insemination, Genetic Improvement and Support the central services is functional	Put in place of a structure at autonomy of Insemination Management artificial, enhancement genetics and support the services central in The domains	A functional structure	53 003 438

5.3. Implementation and support needs

	6 **Agro-sylvo-Zootechnical and management durable some resources Natural : 18 392,856**	By 2027, At least 3000 pilot sites will be set up	Put in place some Sites Drivers for agro-sylvo-Zootechnical S and sustainable management some natural resources	Number of pilot sites set up	18 392 856
	7 Rehabilitate and strengthen Infrastructure breeding	By 2029, 9 Provincial veterinary centres, 80 Slaughter areas, 2 quarantine centres for veterinary control, 5 livestock markets will be rehabilitated and strengthened	Building and rehabilitating basic infrastructure	Number of infrastructures rehabilitated and strengthened	49 566 996
	8 Create the Units industrial Manufacture of Concentrated livestock feed	By 2027, 1 lick block manufacturing plant will be installed in the Imbo region, 4 satellite units will be installed in 4 provinces and 3 Will Rehabilitated	Install manufacturing units for livestock feed supplements	Number of livestock feed supplement manufacturing units installed and rehabilitated	26 795 300
WATER RESOURCES	9 Construct hill reservoirs for the collection of rainwater and watercourses for agricultural purposes	By 2027, 11,461 ha will be irrigated by hillside reservoirs	Construct water retention structures for irrigation	Number of hectares irrigated and functional reservoirs developed	17 192 480

	10 Protecting and managing flood zones	By 2027, 90,000 ha of flood zones will be protected	Ensuring the protection and management of flood zones	Number of km developed	3 000 000
	11 Improve Management water foragiculturalpurposes and for other domestic uses and the resilience of water, sanitation and hygiene systems the risks associated with the change climatic	By 2025, at least 10,000 households use rainwater for agricultural purposes	Collect and use rainwater for Agricultural and other uses	Percentage of communities or households that have Accessing a system Efficient collection rainwater and WASH projects that take into account the Risks Climate.	29000000
ENERGY	12 Rehabilitate existing hydroelectric power plants	From here 2027, 3 Central Will Rehabilitated	Rehabilitating power plants in poor condition	Number of power plants rehabilitated	200 000 000
	13 Perform one densification of the town from Bujumbura	By 2027, the line will be densified to 86.1 km of medium voltage and 1085 km of low voltage voltage will be made	Densify the Existing lines average and bass Tensions	Length densification	15 550 000
	14 Rehabilitating the city's network from Bujumbura	By 2027, 203.35 km of the medium-voltage line and 772.3 km of base voltage will be Rehabilitated	Rehabilitate Lines from average and low voltage	Number of km of lines rehabilitated	17 820 000
	15 Developing the Digesters Biogas in the Infrastructure Public	From here 2027, 30 establishments will be covered	Install the Biogas digesters in public facilities	Number of digesters installed	110 000 000

ES, TRANSPORT AND BUILDINGS INFRASTRUCTURE	16 Developing infrastructure for the transport No motorized	By 2027, 42.5 km will be developed for non-motorized transportation	Arrange the Ways from transport No motorized	Number of Km Developed	7 624 500

The priorities presented in the table above are intended to address the gaps identified above and, as such, enable the implementation of the recommendations made to this end. The focus is on

	17 Expanding the corridor tra nsport on the Lake tanganyika	By 2027, 3 ports Modern Will Arranged and 6 boats available	Develop the ports on Lake Tanganyika and acquire 6 Boats	Number of harbours and vessels acquired	62 352 500
WASTE	18 Connecting Businesses and Households to the wastewater treatment system	By 2025, 8 zones Composed so me Neighborhoods some industrial and institutional Sensitized audiences from the town from Bujumbura will be Connected the Wastewater systems	Raise awareness and join th e Households th e Industrial an d the As well Public	Number of Bujumbura City Hall areas connected	44 000 000
	19 Manage th e Solid waste in the city of Bujumbura an d in the others Main cities	By 2030, cities fro m Bujumbura Gitega, Ngozi and Rumonge will be equipped with the from transit and final landfills Solid waste thus that some sorting and recycling centres	Setting up transit sites and landfills Final so me Solid waste To put in place of sorting centres and fro m recycling for targeted cities ;	Number of transit sites and final landfills for solid waste and number of sorting and recycling centres by city	68 320 000

CROSS-CUTTING PRIORITIES	20 Perform one aftercare from Burundi's environment in real time for sustainable development	From here 2027, the Technical Capabilities and Human some Programs PUMA MESA and GMES Will Reinforced	Strengthen the technical, material and human capacities of surveillance tools and training sessions ALE Environment	Type and number of tools acquired and number of training sessions in PUMA, MESA and GMES Number of participants	608 430 000

capacity building and mobilization of finance to support the implementation of sectoral and cross-cutting priorities.

Human resources from the public, private and civil society sectors are essential for the implementation of climate change adaptation programmes. Capacity building of

	21 Mapping areas/communities most affected by the Climate risk and improve the resilience of water and sanitation systems nt and hygiene	From 2025 to 2025,250 water sources will be protected	Target the zones/commu Communities affected by the climate risk and the Sources Vulnerable by providing Resilient WASH systems to the climate	Percentage of points water with activities preservation and Source protection	82000000
	22 Improve knowledge of the Climate change, prevention of diseases related to climate change and the Disaster Risk Reduction in Community level e	From 2021 at 2025,5000 persons Will knowledge on change climate and capacity from himself Prevent against Risks climate change.	Strengthening the capacity of Communities on the climate change and on the prevention and management of Risks Related climate change	Number from Hills/sub-hills having benefited from formation at change climate/reduction some Risks from catastrophe	7300000
TOTAL ADAPTATION					1.452.121.891

stakeholders from the target ministries of research institutes; as well as the private sector and civil society is a fundamental part of the NAP implementation strategy.

Burundi has, to date, implemented a series of adaptation programmes financed mainly by bilateral and multilateral donors, such as the GEF, African Development Bank (AfDB), the World Bank and GIZ, as well as national funds for programmes such as the National Reforestation Programme. The management of environmental funds, such as the GEF, the Adaptation Fund, the Blue Fund and the Green Climate Fund, is held by the Ministry of the Environment. This is an asset for capitalising on synergies and capacities.

5.4. Implementation of adaptation measures and plans

In the context of the implementation of the NAPA the prerequisites are essential for policymakers to

take ownership of the NAPA and to acquire the technical and financial means necessary for the implementation of the NAP, and to develop and implement a strategy for mobilizing funds for adaptation in Burundi.

For decision-makers, implementation should focus on the following activities:

- Strengthen the coordination mechanism through a multisectoral and multidisciplinary approach to strengthen consultation among stakeholders in the field, facilitate the establishment of a harmonized framework for future interventions and the mobilization of financial resources for the implementation of the NAP and the NDC;
- Raise awareness among relevant stakeholders of the importance of adaptation and advocate for the recognition of climate change adaptation as a national priority ;
- Encourage technical and financial partners to invest in the field of climate change ;
- To develop legislation in the field of climate change and to provide them with implementing texts;
- Align sectoral policies with the NDP with climate change in mind
- Develop awareness-raising and training programmes on the theme of "climate change ".

To the stakeholders:

- Take ownership of and participate in the implementation of the NAP
- Participate in the development of awareness and training programs on the theme of climate change.

5.5. Progress and results

Burundi submitted its Third National Communication on Climate Change in 2019 to the UNFCCC Secretariat. Currently, the country is in the process of revising its NDC. The Government of Burundi recognized that the NAP process and the revision of the NDC are complementary processes that, when coherent, promote action and facilitate resource mobilization for adaptation. The NAP can contribute to the definition of adaptation ambition under the NDC.

5.6. Adaptation efforts

In Burundi, climate change is a reality and the consequences on the survival of communities are worsening day by day, and adaptation measures are essential and must be a national priority.

Under conditions of climate change, everyone (and especially farmers) is trying to adapt. People usually start by changing their technical practices by changing crop varieties and promoting improved farming practices. The use of the means of production (labour, inputs) is reasoned to take into account the risks: this translates in some cases into extensification, elsewhere into the concentration of resources on "safer" areas (taking into account the availability of water).

Among livestock farmers, there has been a change in the structure of herds, in particular the distribution between different animal species, and a change in fodder calendars based in particular on the permanent housing of herds.

In other cases, the search for solutions is often outside agriculture, with the search for other non-agricultural jobs, which is at the origin of the internal and external migrations observed today.

At the decision-making and institutional level, adaptation efforts are also mobilized despite their ineffectiveness and are manifested in the implementation of legal texts, strategies and plans that propose adaptation solutions, in order to mitigate the risks induced by these climate changes.

5.7. Cooperation in strengthening adaptation at the national, regional and international levels

At the national level, enhanced cooperation involves the involvement of all stakeholders in adapting to climate change at all stages of the planning and implementation of programmes under the NDC

At the regional level, cooperation is manifested through regional partnership agreements such as COMIFAC and the East African Community

The Parties to the Paris Agreement recognize the importance of international support and cooperation for adaptation efforts and the need to take into account the needs of Burundi, which are particularly vulnerable to the adverse effects of climate change

5.8. Barriers, challenges and gaps

Climate governance has some gaps, challenges and barriers in relevant regulatory frameworks and policies for adaptation, the main ones being:

- Weak multisectoral and multidisciplinary coordination on climate change, including adaptation due to the lack of a functional and permanent technical working group ;
- Limited institutional and individual technical capacities to translate policy priorities and promote effective implementation of activities, projects and programmes;
- Low level of integration of adaptation into the national and sectoral planning and budgeting process;
- Limited capacity to mobilize and access financing;
- A regulatory framework that is not sufficiently functional;
- Lack of climate focal points in all key sectors.

5.9. Good practices, lessons learned and exchange of information

In the implementation of adaptation projects and programmes under way or at the end of implementation, good practices and lessons can be learned, particularly in the agriculture and natural resources sectors.

Therefore, the lessons learned are stated as follows:

- The NAP process will be able to build on awareness-raising and capacity-building activities of government actors responsible for community development organizations ;
- Importance of the projects for regional integration of adaptation, which can be pursued in the context of the implementation of the NAP;
- Some projects have enabled the achievement of common adaptation and mitigation objectives as well as the mobilization of private sector investment;
- The NAP process will build on the targets to produce coordinated results at subnational levels contributing to the formulation of the national adaptation plan;
- The NAP can be supported by capacity-building activities and systems for the collection and dissemination of meteorological and hydrological information;
- The NAP process strengthens climate information systems and related capacities;
- The NAP process strengthens climate information and early warning systems, as well as climate change vulnerability maps.
- The communication strategy can be used as a basis for developing a communication plan for the NAP process.

5.10. Monitoring and evaluation

In its implementation, the monitoring and evaluation (M&E) of the NAP will make it possible to verify that this process is proceeding as planned. Adaptation monitoring and evaluation makes it possible to assess the impacts (in the short, medium and long term) of the priority actions carried out and whether they effectively contribute to the achievement of the objectives defined on the reduction of vulnerability. On the other hand, M&E can enable learning on adaptation by doing, reorienting actions as needed, as well as monitoring financial flows in the field of climate change.

Currently, Burundi does not have an M&E framework for climate change. National climate change and environment plans and strategies do not define the M&E system or objectively verifiable indicators. The National Strategy and Action Plan on Climate Change and the National Development Plan propose a set of indicators, but these lack a baseline and objectives. There is a National REDD+ Strategy (2019) that proposes a national forest monitoring system based on Measurement,

Notice and Verification (MRV), but its implementation is not effective. A tooled M&E mechanism will have to be put in place.

5.11. Adaptation measures and/or economic diversification plans

These measures refer to the implementation of various plans and strategies, including:

- the National Action Plan for Adaptation to Climate Change (PANA 2007);
- the NDP Burundi 2018-2027;
- the National Communication Strategy on Climate Change;

Burundi has implemented several adaptation projects and programmes, particularly in the agriculture and natural resources sectors. Lessons learned from their implementation can be used for future projects and programmes, particularly in terms of: potential for scale-up, climate change information, awareness-raising and capacity building, adaptation planning at the subnational level, and strengthening private sector engagement, among others.

5.12. Contributions to other frameworks and/or conventions at the international level

Adaptation in the Climate Change sector involves a variety of actors and sets up a common international conceptual framework which is the Paris Agreement.

Since the creation of the Ministry of the Environment in 1988, the Government of Burundi has begun the process of drafting laws related to the protection of the environment and its natural resources.

Although these texts have been promulgated, they have remained ineffective in the field of climate change due to a lack of implementing texts on the one hand, and for not having been sufficiently popularized and brought to the attention of actors at the sectoral level on the other hand.

Among the legal tools that the country can rely on to combat climate change , it is also worth mentioning the international conventions ratified by Burundi such as the United Nations Framework Convention on Climate Change, the Convention to Combat Desertification , the Convention on Biological Diversity, the Vienna Convention on Biological Diversity, the Convention to Combat Desertification, the Convention to Combat Desertification, the Convention to Combat Desertification, the Convention to Combat Desertification, the Convention to Combat Protection of the Ozone Layer and the RAMSAR Convention on Wetlands. These conventions are often the source of funds for adaptation activities.

5.13. Consideration of gender, traditional knowledge, indigenous peoples' knowledge and local knowledge systems

The 2020 NDC is based on Burundi's NDP, the SDGs, the 2030 Agenda for Sustainable Development and the Decisions of the Paris Agreement, particularly with regard to the rulebook adopted at COP24 to call for more vigilance on the impact of policies in the fight against climate change in order to prevent them from being to the detriment of women and vulnerable groups .

In all sectors and their projects working for climate change adaptation and the reduction of greenhouse gas (GHG) emissions, the Government of Burundi has the opportunity to establish a baseline on gender and social inclusion issues in terms of adaptation and reduction of greenhouse gas (GHG) emissions;

The agriculture, energy and infrastructure projects and programmes selected in this NDC are particularly called upon to systematically integrate gender and social inclusion aspects. They will inform and raise awareness among women, youth and batwa as actors in the reduction of greenhouse gases. Ongoing projects will build the capacity of women, youth and batwa to bring about a change in practices and optimize integrated landscape management and the sustainable food value chain to increase the adoption of resilient and improved production systems.

The projects will provide them with means and techniques to improve their standard of living, climate resilience and food security (income, use of non-greenhouse gas emitting energy sources , improved stoves, solar energy, etc.). During their implementation, forestry projects and those related to the restoration of land and ecosystems, vulnerable groups will benefit from special attention so that they become actors in the collective response-action for a sustainable fight against the advance of climate change instead of suffering the risks of disasters related to it.

Suggestions from these groups will be collected for project development and implementation and for community-based climate change disaster risk management. The traditional knowledge of the Batwa will be taken into consideration as they have a long experience of observation and engagement with their environment. After many years of interaction with their natural environment, they have developed strategies to respond to the impacts of climate change and have been able to respond to them thanks to their know-how and their philosophy of nature.

6. NDC IMPLEMENTATION PLAN

6.1. Institutional aspects

An institutional framework for the implementation of the NDC exists in Burundi. It is under the supervision of the Ministry of the Environment, Agriculture and Livestock (MINEAGRIE) through the General Directorate of the Environment, Water Resources and Sanitation. The latter is responsible for coordinating the implementation of sectoral policies on climate change.

The central administration services and public institutions (Geographical Institute of Burundi, IGEBU and Burundian Office for the Protection of the Environment, OBPE) provide their support. IGEBU and OBPE are also respectively National Focal Point and Deputy National Focal Point of the United Nations Framework Convention on Climate Change (UNFCCC).

In addition, the Director General of Agriculture of the said Ministry is the Designated National Authority (DNA) for the Green Climate Fund (GCF) while the Permanent Secretary of MINEAGRIE serves as the focal point of the Global Environment Facility (GEF).

In the context of climate change, the IGEBU is responsible for the collection, analysis, processing and dissemination of meteorological and hydrological data. As for the OBPE, its missions are: the implementation of policies and strategies in the field of the environment and climate change and the establishment of mechanisms for mitigating and adapting to climate change (the implementation of the NAP).

For all intents and purposes, it should be noted that other sectoral ministries are concerned by issues related to climate change, which has a transversal impact on all key sectors of the national economy. These are the Ministries in charge of Energy, Public Health, Trade, Transport, Industry and Tourism. This is what justifies the need for a multisectoral and multidisciplinary approach to ensure effective resilience.

Thus, the NDC 2020 recommends the strengthening of consultation between actors in the field with a view to facilitating the harmonization of interventions and the mobilization of financial resources for the implementation of the NAPAs and the NDC. To this end, as in other countries in the sub-region and around the world, a National Council on Climate Change, endowed with technical and financial capacities and high-level decision-making power, is essential for the needs of coordination, consultation and mobilization of the stakeholders involved at all levels as well as the monitoring and evaluation of the state of implementation of the NDC.

On the technical level, a National Technical Committee on Climate will have to be established and chaired by a parastatal agency like other structures of the East African Community. The creation and establishment of the National Council and the Technical Committee will be materialized by presidential decrees. The establishment of these structures will have to take into account all actors and address cross-cutting issues such as gender and social inclusion.

6.2. Legal framework

An impressive legal arsenal is based on the Constitution of Burundi of May 17, 2018, especially in its articles 164, paragraph 4 and article 35. It is supplemented by the following texts:

- Law No. 1/10 of 30 May 2011 on the creation and management of protected areas in Burundi
- Law No. 1/010 of 30 June 2000 on the Environmental Code
- Law No. 1/07 of 15 July 2016, revising the Forest Code
- Law No. 1/02 of 26 March 2012 on the Burundi Water Code with regard to the qualitative (arts. 43 to 47) and quantitative protection of water resources (arts. 48 to 50).
- Law No. 1/13 of 9 August 2011 revising the Burundi Land Code, Article 451 paragraph 1,
- Law No. 1/13 of 23 April 2015 on the Reorganization of the Electricity Sector
- Law No. 1/012 of 30 May 2018 on the Code of the Supply of Health Care and Services in Burundi, especially in its Articles 137 and 138

- Decree-Law No. 100/241 of 31 December 1992 regulating the disposal of waste water in urban areas.

- Decree No. 100/292 of 16 October 2007 on the creation, mission, composition, organization and operation of the National Platform for Risk Prevention and Disaster Management.

6.3. Funding mechanisms

The assessment of the financing needs of climate change mitigation and adaptation actions provided for in this NDC is based on the lists of identified programmes and projects underway or planned across the different sectors. An operational strategy for implementation and its financing will enable the NDC to be completed on time. Financing mechanisms have requirements to be met in terms of the quality of the projects to be presented, the data collected, the impact on mitigation or adaptation and the capacities of the management structures. Mastery of the technical, social and financial modalities is a guarantee of success in capturing the attention of the providers of the resources necessary for the implementation of the NDC.

7. MONITORING/EVALUATION MECHANISMS AND MRV

Under the supervision of the Ministry of the Environment, the monitoring and evaluation of the NDC will be carried out by the sectoral technical services.

This will involve, among other things, monitoring the implementation of the activities foreseen in this contribution as well as the various indicators of the NDC.

A capacity building plan for the sectors concerned by the MRV will be established in the NDC implementation strategy with the corresponding costs integrated into the cost of priority actions.

8. CONCLUSION

Burundi considers its NDC to be equitable and ambitious in view of its national situation and the way in which it contributes to the achievement of the objective of the Convention as set out in its Article 2 of the Paris Agreement. In its participatory development process, all stakeholders were consulted and the criteria for prioritizing actions were based on the human and socio-environmental dimension . It shows specific GHG reduction commitments compared to projected emissions by 2030. The country is committed to rules that ensure environmental integrity , promote sustainable development, and avoid double counting of emission reductions, in line with the rules to be adopted under Article 6 of the Paris Agreement.

The successful implementation of the new NDC 2020 by all stakeholders requires significant financial, human and technological resources from the country, but also the support of the international community, in order to enable even more significant reductions in GHG emissions and resilience to climate change.