REPUBLIC OF BURUNDI

CONTRIBUTION DETERMINED AT NATIONAL LEVEL 2020

APPENDIX

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 Nationally Determined Expected Contribution (NDA) submitted in 2015 at 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 indicates that the GHG emission reductions announced in the existing commitments are not sufficient to keep global warming below the 2°C target. It therefore calls on the Parties to make greater efforts towards a transition that would enable us to reach 1.5°C. In this context, it is useful and urgent to see how countries are implementing their commitments by applying paragraphs 1, 2, 3, 9 and 13 of Article 4 of the Paris Agreement.

The Paris Agreement requires signatory countries to 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 those countries that have opted for a 2030 timeframe, 2020 is the first opportunity to reaffirm their commitment to effectively combating global warming by resubmitting their 2015 NDCs in 2020.

Although Burundi chose a timeframe of 2030 in the 2015 NDC, the government wanted to review its commitments by basing them on more up-to-date data, and to align the NDC more closely with the directives 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 unconditionally and by 20% conditionally.

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

Burundi's NDC takes account of the IPCC's special report of October 2018 on the consequences of global warming after the Paris Agreement. This report establishes the collective ambition to limit global warming "below 2°C above pre-industrial levels and to continue efforts to limit 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 in the fight against climate change.

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

Updating the Republic of Burundi's NDC promotes transparency, accuracy, completeness, comparability and consistency, 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, which will enable Burundi's efforts to meet its climate change mitigation targets to be measured.

The sectors taken into account in the NDC are energy and transport, Industrial Processes and Product Use (IPUP), Agriculture, Forestry and Land Use (AFAL) and waste management. It should be noted that forests play an important role in both adaptation and mitigation.

1.1 Background to Burundi's initial NDC (NDC 2015)

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

a) Adaptation

Burundi is exposed to the harmful effects of climate change[2] . These affect all sectors, in particular energy, agriculture and livestock, water, health, landscapes and terrestrial ecosystems.

The adaptation needs identified in the 2015 NDC concerned 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 (Burundi NDP 2018-2027, DOPEAE, PN-PA CC, preliminary NAP, etc.).

b) Attenuation

With regard to mitigation, Burundi had committed to a 23% reduction in greenhouse gas emissions by 2030 compared to the baseline scenario (BAU), which corresponded to a 3% reduction (1,958 Gg ECO2) under its unconditional target and a 20% reduction (14,897 Gg $_{ECO2}$) under its conditional target.

According to the 2015 NDC, the BAU was established on the basis of the assumptions relating to the growth of the national economy (GDP), population growth and the rate of electrification contained in the above-mentioned documents. Some of these documents and many others have been used as a basis for establishing the BAU for the 2020 NDC.

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[1] *Les cibles de réduction des GES et la contribution des Etats, Institut de Recherche en économie contemporaine, Note d'intervention n° 72, Janvier 2021*

[2] national communications on climate change (2005, 2010, 2019), 'Changes in climate parameters in Burundi up to 2050 and Integrated vulnerability analysis in Burundi carried out as part of the 'Adaptation to Climate Change for the Protection of Water and Soil Resources' (ACCES) project,

Mitigation objectives were assessed on the basis of the actions carried out that contributed to mitigation. The accounting and verification of avoided GHG emissions were calculated using the 2006 IPCC GLs. Interim targets for 2020 and 2025 were also defined in the 2015 NDC. The mitigation targets of the 2015 NDC are summarised in Table 1.

Table 1: Emissions by mitigation objective

OBJECTIVES	Percentage	$CO2_{eq}$ emissions (Gg)
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 target, the following measures were planned:

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

- In the **energy** sector, Burundi was planning to build three hydroelectric power stations to increase the electrification rate to 35%, giving an output of 45.4 MW by 2030.

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

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

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

The policy and strategy documents that take into account the activities that generate greenhouse gas emissions and that were used to formulate the assumptions, measures and mitigation objectives are shown in Table 2 by sector.

Table 2: Documents used to formulate hypotheses and objectives

Sectors	**Policies and strategies in force**
Energy	Sectoral Strategy for the Energy Sector in Burundi (2011) ; National Environment Strategy (SNEB, 1997).
Land use and forestry	Burundi National Forest Policy (2012); National Biodiversity Strategy and Action Plan 2013-2020.
Agriculture	Stratégie Agricole Nationale 2008-2015 (2008); Stratégie Nationale d'Utilisation Durable des terres (2007); Programme d'Action National de Lutte Contre la Dégradation des Terres (2005); Stratégie nationale et Plan d'Action de lutte contre la dégradation des sols 2011-2016; Plan National d'Investissement Agricole 2012-2017.
All sectors	Vision "Burundi 2025", Strategic Growth Framework, 2012; First and Second National Communications on Climate Change, 2001 and 2010; National Action Plan for Adaptation to Climate Change, 2007; Summary Report of Greenhouse Gas Inventories, 2009; Summary Report of GHG Emissions Mitigation Studies, 2009; National Policy on Climate Change, 2013; National Strategy and Action Plan on Climate Change, 2013.

Source: CDN 2015

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

Table 3: Scope and scale of the 2015 NDC

Sector	Gas	Sub-sectors	Geographical scope
Energy	CO_2, CH_4, N_2O	Activities of combustion of fuels	The whole country.
Agriculture/Livestock	CH_4 and N_2O	Domestic livestock and managed soils	The whole country.
Land use and forestry	CO_2	Forest land	The whole area

Source: CDN 2015

The mechanism for compensating for the loss of income in the implementation of the proposed NDC was based on international mechanisms relating to the compensation of greenhouse gas emissions (Article 6 AP) and on national legislation in force. With regard to forests, it was planned to promote the valuation of ecosystem services.

With regard to the conditional objectives, the needs in terms of support were analysed. In order for the conditional objectives to be achieved, support was needed to build the capacity of the Ministry's departments responsible for the environment and for technology transfer. Financial support was also essential.

The cost of the mitigation and adaptation components for the implementation of the prioritised actions included in the 2015 NDC by unconditional and conditional targets 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 required to implement the 2015 NDA.

Table 4: Support needed to implement CDN 2015

Programme	Cost in USD (X1000)
1 Adapting to and managing climate risks	3 719
2.mitigation of greenhouse gas emissions greenhouse gas emissions and low-carbon development	1 446 118
3. promoting research and development and technology transfer	25 787
4.capacity building, risk management knowledge and communication	3 465
5 Reforestation and agroforestry	10 000
6. dissemination of improved grinding wheels	1 500
7. dissemination of improved domestic stoves and crafts	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 national and international level. At the national level, these are mainly the Third GHG Inventory (2005, 2010 and 2015), the Burundi National Development Plan 2018-2027 (PND BURUNDI 2018-2027), the Environment, Agriculture and Livestock Policy Orientation Document (DOPEAE 2020), the National Strategy for Reducing Emissions from Deforestation and Forest Degradation and the role of Conservation of Forest Ecosystems, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks (REDD+) 2019, policies and plans relating to industry, transport, energy, health and gender.

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

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

1.2.1 GHG inventory and BAU projections

Following the submission of the 2015 NDC to the UNFCCC Secretariat, the Third Communication was prepared and validated in 2019 under the Coordination of the Ministry in charge of the 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 (CO_2), methane (CH_4) and nitrous oxide (N_2O).

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

The TCN contains projections of emissions up to 2050 if no measures are 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 CDN 2015.

Prior to updating the NDC, an analysis of the implementation of the 2015 NDC was carried out. The aim of this analysis was to assess the progress made in implementing the first NDC in relation to the country's commitments to reduce greenhouse gas emissions by means of unconditional and conditional targets.

With regard to the **unconditional** objective, it was planned in the forestry sector to afforest 4,000 ha per year for 5 years, i.e. 20,000 ha for 5 years, and to build three hydroelectric power stations 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 summarised in Table 5.

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

Sector	Actions planned	Actions taken	Rates of realization in
Forester	Forest 20,000ha in 5 years	11033ha	55%3
Energy	Build 3 hydroelectric power stations	4 power stations under construction	0
Total			

Source: CDN Evaluation Report 2015

With regard to the **conditional objective**, it was planned (i) in the forestry sector, to afforest 8,000 ha per year for 5 years, i.e. 40,000 ha from 2016 to 2020, (ii) in the energy sector, to replace 100%, at

3 In relation to the area to be afforested in 2020

By 2030, all traditional charcoal stoves and all traditional domestic cooking cookers and (iii) in the agricultural sector, gradually replace 100% of mineral fertilisers with organic manure by 2030. The results by proposed conditional actions are shown in Table 6.

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

Sector	Actions planned	Actions taken	Rates of realization in	Cost of action4
Forester	40,000 ha to be afforested in 5 years	29684 ha	74%	4462600
Energy	Replace à 100%, à By 2030, all traditional carbonisation furnaces	DN	DN	1500000
	Replace à 100%, in all vehicles by 2030. homes the traditional domestic cookers	DN	DN	DN
Agricultural	Gradually replace 100% of mineral fertilisers with organic manure by 2030	DN	DN	DN
Total				

Source: CDN 2015 evaluation report

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

The analysis of the 2015 NDC has highlighted certain shortcomings in its implementation and drawn lessons for the 2020 update of the NDC.

The gaps identified are as follows:

- ✓ Lack of a national coordination framework for the implementation of CDNs.
- ✓ Lack of indicators for monitoring and evaluating the implementation of the NDC.
- ✓ Weak capacity to mobilise resources to implement the NDC by unconditional and conditional objectives.
- ✓ Absence of a national MRV system for climate financing.
- ✓ Insufficient capacity-building and technology transfer.

- ✓ Low awareness of 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 a number of commitments that are difficult or impossible to achieve within the planned timeframe.

- ✓ Measuring, reporting and evaluating mitigation and adaptation actions are difficult due to a lack of indicators and precise information on sectoral contributions to the implementation of the Kyoto Protocol.

  and the existence of an MRV system for the NDC.

Suggestion for improving CDN 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

- ✓ Integration of the waste and industry sectors (PIUP), and the transport sub-sectors.
- ✓ Taking account of gender and social inclusion aspects in accordance with current national policies.

- ✓ The development of a logical framework with measurable monitoring indicators for monitoring and evaluating the implementation of the priority mitigation and adaptation actions listed.

  in CDN 2020.

- ✓ The establishment of an inclusive national coordination and monitoring framework for the implementation of the NDC.

- ✓ Raising awareness among all the players involved (political decision-makers, planners, local authorities and grassroots communities, while respecting the gender dimension) of the need to implement a gender equality policy.

  implementation of the NDC to ensure its ownership.

- ✓ The integration of all the stakeholders involved in planning to take account of climate change in relation to the NDC when putting in place strategic tools for

  development (sectoral strategies and policies).

- ✓ Strengthening the institutional and technical capacities of the sectoral bodies by providing them with sufficient financial resources and appropriate tools for the effective implementation of the NDC, including

  a mechanism for monitoring, reporting and verification of REDD+ and other climate change actions, as well as a national research and development programme for adaptation to climate change.

- ✓ The formulation of projects in line with the requirements of the various funding mechanisms and the creation of a strategic framework conducive to the mobilisation of funding such as

  Several African countries that are Parties to the Convention have set up a National Climate Change Fund.

- ✓ Improving 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 CSD is the Burundi National Development Plan 2018-2027, which was made public in 2018. This plan was produced in a context where Burundi is undergoing major changes in the areas of administrative and economic governance, with a major challenge linked to the structural transformation of the national economy. It addresses the challenges of socio-economic development. These challenges are obvious and must be resolved by this plan for the decade 2018-2027.

Burundi's National Development Plan 2018-2027 (NDP) is part of a development plan based on a new dynamic for transforming economic, demographic and social structures. This plan will generate lasting multiplier effects in terms of improved economic growth and average per capita income. It will enable basic needs to be met, poverty to be reduced, human capital to be developed, environmental sustainability and social equity to be ensured.

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

The implementation of the NDP is based on five strategic guidelines: (i) boosting growth-generating sectors; (ii) developing human capital; (iii) protecting the environment, adapting to climate change and improving regional planning; (iv) strengthening democracy, governance, the rule of law and safeguarding national sovereignty; (v) strengthening mechanisms for mobilising resources and developing cooperation and partnership.

The updated NDC is one of the tools for implementing the National Development Plan and also takes account of the 2030 Sustainable Development objectives.

(ii) National policies and strategies.

To mitigate the adverse effects of climate change, the Government of Burundi has defined policy guidelines, notably 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), the National Biodiversity Strategy and Action Plan 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 on 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 Forestry Strategy, 2021 replacing that of (2012).
- The National REDD+ Strategy, 2019, the National Sustainable Land Use Strategy (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 achieving the objectives of the various plans, policies and strategies mentioned above in terms of mitigating greenhouse gas emissions and adapting to the impacts of climate change.

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

Information, Clarity, Transparency and Under standing (ICTU) has been taken into account in updating the NDC, focusing on the following points:

(i) Quantifiable information on reference points.

(ii) Timetables and/or implementation periods.

(iii) Scope and field of application.

(iv) The planning process.

(v) Hypotheses and methodological approaches.

(vi) The way in which the Party considers that its nationally determined contribution is fair in the light of its national situation.

(vii) The way in which the NDC contributes to achieving the objective of the Convention as set out in Article 2.

At international level, the IPCC has published a special report on the consequences of global warming of 1.^{50C}. **This special report** was approved at the ^{48th} IPCC meeting in Incheon, South Korea, and was published on 8 October 2018.

It served as the scientific basis for the Talanoa Dialogue, which closed at **COP 24** in December 2018 in Katowice, Poland, to take stock of the collective efforts made by the 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 enhanced climate plans (Nationally Determined Contributions - NDCs) to the United Nations by 2020.

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

1.3 Planning the update of the CDN

1.3.1 Institutional commitment

The Ministry of the Environment, Agriculture and Livestock is the coordinating institutional framework which, through its administrative and technical structure, is in charge of the 2020 NDC. To this end, it has set up a national commission to monitor the updating of the 2015 NDC. It is made up of senior executives from the various sectors that emit GHG emissions, including the AFAT, Energy, Transport and Industrial Processes and Product and Waste Use sectors. Executives from non-emitting but cross-cutting sectors such as Health and Gender were also included in the discussions.

Working closely with the UNDP, this committee is responsible for monitoring the process of updating the NDC from the time the Office was recruited and during the drafting phases (validation of the methodology, organisation of retreats, technical sessions and consultation workshops with stakeholders, validation at various stages of the document and submission of the updated NDC for adoption and approval).

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

1.3.2. Greater ambition for CDN 2020.

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

The increase in ambition for the 2020 NDC mainly consists, on the one hand, of taking into account more sectors in the definition of objectives and complementary measures in terms of mitigation and, on the other hand, of including the Communication on Adaptation in the NDC.

The inclusion of actions relating to the Transport, UPIP and Waste sectors in the 2020 NDC increases ambition in terms of mitigating GHG emissions.

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

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

Burundi is committed to continuing its efforts to reduce GHG emissions. It will move towards the objective of reducing or limiting emissions across the economy and increasing carbon stocks, in particular through the implementation of the 2018-2027 National Development Plan, the Environment, Agriculture and Livestock Policy Guidance Document and other sectoral policies.

The 2020 NDC contributes to paragraph a) of Article 2 of the PA as 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 paragraph 1 of Article 4 of the PA. It therefore provides for political and strategic measures, mitigation plans/programmes and adaptation plans with beneficial effects for mitigation.

The aim is to achieve the desired global GHG cap in accordance with the best available scientific data. It will then be possible to achieve a balance between anthropogenic emissions by sources and anthropogenic removals by sinks of greenhouse gases during the second half of the century, on the basis of equity, and in the context of sustainable development and the fight against poverty.

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

1.3.3. A participative and inclusive approach.

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

The UN agencies and the technical and financial partners were also consulted about their contribution to the process of updating the 2020 CSD.

For the 2020 update of the NDC, the consultations also gathered the opinions of civil society organisations[5] and researchers from the University. The aim was to involve the private sector, civil society organisations, local communities, young people and the Batwa in the formulation and evaluation of mitigation projects. Particular emphasis was placed on

[5] Alliance Stratégique de Plaidoyer (Strategic Advocacy Alliance), which brings together some fifteen organisations campaigning for human rights and gender, led by COCAFEM/ GL and the Swiss Cooperation, the Catholic and Anglican Churches at a Round Table on 12 May 2021 on the role of religious leadership in responding to the current ecological crisis and two Batwa organisations, 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 the stakeholders were organised to collect the data, define the actions to be considered in the unconditional and conditional NDC scenarios, and validate the methodological approaches and results.

1.3.4. Capacity building and technology transfer

During the implementation of the 2015 NDC, capacity-building for managers of sectoral institutions was carried out, albeit in very limited numbers. The capacity-building focused on tools and methodologies for greenhouse gas inventories and on studies of vulnerability, adaptation to climate change and mitigation of GHG emissions. Capacity building also focused on project financing procedures and mechanisms. However, the need for capacity building in these areas remains a national priority, as the number of staff being strengthened is still insufficient and mastery of these tools is still weak in all sectors.

It is in this context that CSD 2020 expresses a continuing 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.

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

- Difficulty in training technical and scientific staff due to the lack of specialised 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 is still lacking, and technical and financial resources are limited, CND 2020 proposes technology transfer actions to strengthen capacities.

The most important actions are as follows:

- Strengthen sectoral institutions to build up reliable databases on climate change.
- Supporting climate-related research and development.

1.3.5. Work schedule

Work on updating the NDC took 5 months. The work schedule is shown in Table 7.

Table 7: Work schedule

	Planned activities
1	PREFED/CAREPD meeting with the Programme Specialist/Head of the UNDP Sustainable Development and Inclusive Growth Unit, the international consultant and authorities from the Ministry of the Environment, Agriculture and Livestock.
2	To draw up the methodological note, work plan and timetable for the 2015 NDC update in collaboration with the international experts responsible for monitoring the update.
3	Take part in the weekly meetings organised by the 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 preliminary NAP drawn up, (ii) a methodological note, work plan and timetable for updating the NDC and (iv) validation of the questionnaire for collecting sectoral data, with special reference to climate change adaptation/mitigation, gender mainstreaming, youth, vulnerable groups and capacity-building needs, as well as validation of the report on the implementation of the 2015 NDC for the Republic of Burundi.
7	Organise consultation visits with stakeholders to collect data and documents, and carry out surveys on energy consumption requirements and the use of fertilisers/pesticides.
8	Analysis and processing of the data collected and drafting of sectoral reports, taking into account adaptation/mitigation aspects.
9	Include in these sectoral reports the observations made by the targeted experts.
10	Organise 4 regional consultation workshops.
11	Drafting of the provisional document for the updated Burundi NDC by the Consortium experts.
12	The draft 2020 NDC document is sent to the UNDP.
13	Analysis of the draft document by the international experts.
14	Comments on the CND 2020 addressed to the National Experts by the International Experts.
15	Incorporation of comments from international experts into the consolidated document.

16	Forwarding of the consolidated document to the international experts for final comments.
17	Transmission of the final comments to the experts for incorporation into the consolidated CDN document.
18	Organisation of a national workshop to validate the CDN 2020.
19	Incorporation of comments made by participants at the validation workshop into the updated Burundi NDC document.
20	The consolidated document for the 2020 CND is sent to the international experts for final comments and fine-tuning.
21	Forward the consolidated document to the national experts.
22	Prepare a text presenting the updated NDC to the Government.
23	Adoption of the CND 2020 by the Council of Ministers.
24	Approval of the CDN by the National Assembly.
25	Transmit the Republic of Burundi's updated CND document to the UNFCCC Secretariat.

1.4 Burundi CDN 2020

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

Table 8: Information on the clarity, transparency and understanding of the 2020 NDC.

1. Planning process	
a. 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, where relevant, on :	
i. National institutional arrangements, public participation and collaboration with local communities and indigenous peoples, taking gender issues into account;	**Institutional arrangements :** The Ministry of the Environment, Agriculture and Livestock, through its technical and administrative structure, is the institutional framework responsible for updating the 2020 NDC. To this end, it has set up a national commission to monitor the updating of the 2015 NDA. It is composed of
	senior executives from the various sectors (AFAT, Energy including Transport, PIUP and Waste). Representatives of sectors involved in related issues (Health, Gender) have also been included in the Commission. Working in close collaboration with the UNDP, this commission has been responsible for monitoring the process of updating the NDC since the recruitment of the Office and the drafting phases

ii. Contextual issues, including, inter alia, as appropriate :	
- National situation, including geography, climate, economy, sustainable development and poverty eradication	**Burundi is a** Central African country with a surface area of 27,834 km^2. It lies between 28° 50 and 30° 54 longitude east, between the Congo Basin and the eastern high plateaux, and between 2° 30 and 4° 28 latitude south, at the crossroads of Central Africa, East Africa and even Southern Africa. The country has a hot, humid tropical climate influenced by altitude and characterised by an alternating rainy season (October to May) and dry season (June to September). Rainfall and temperature are strongly influenced by relief, altitude (772-2670 m) and climate change. Average annual rainfall varies from 750 mm in north-eastern Burundi to more than 2,000 mm in the mountainous zone. The highest average annual temperature between 2006 and 2015 was 24.7°C in the Imbo plain natural region, while the lowest was 16.6°C between 2006 and 2015 in the Mugamba natural region.
	From a socio-economic point of view, Burundi will have a population of around 12.3 million in 2020, over 90% of whom will live in rural areas and 51% of whom will be women. As a Least Developed Country (LDC), its annual per capita income is estimated at USD 280, and its economy is essentially based on agriculture. With a population density of **480.99 people per km²**, population growth of 2.4% is putting pressure on land and water resources and exacerbating the situation of deforestation. According to the TCN, the sectors that emit the most are agriculture, energy and waste, with emissions of 4,186.21 Eq CO_2 in Gg, 1,072.4 Eq CO_2 in Gg and 1,050.4 Eq CO_2 in Gg respectively. Gg and 230.73 Eq CO_2 . For the other sectors, GHG emissions are insignificant.
-Best practice and experience from the development of the nationally determined contribution	Best practice and experience from the development : ✓ Participatory approach to the NDC planning process (Data collection, data processing, calculation using IPCC 2006 software, requirements, prioritisation of measures, etc.); ✓ Consideration of Decision 4/CMA.1

- Other aspirations and contextual priorities recognised when signing up to the Paris Agreement	The updated 2020 NDC is in line with the objective of the Paris Agreement, in its provisions of Article 4 paragraphs 2 and 3, Article 4, Article 5 and 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 paragraph 4 of Article 9 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, the emergency preparedness, etc.
b. Specific information applicable to Parties, including regional economic integration organisations and their member States, that have agreed to act jointly in accordance with Article 4, paragraph 2 of the Paris Agreement, including the Parties that have decided to act jointly, and the terms of the relevant agreement, in accordance with Article 4, paragraph 2 of the Paris Agreement. 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 organisations and their member states to act jointly in accordance with Article 4, paragraph 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 development of its nationally determined contribution has been informed by the results of the global stocktake, in accordance with paragraph 9 of Article 4 of the Paris Agreement	The steps taken for the 2020 UNFCCC have not been informed by the global review, as the first global review of climate action will be published in 2023. However, the results of the global assessment will be taken into account when updating the 2020 NDC.
d. Each Party having a nationally determined contribution under Article 4 of the Paris Agreement, which consists of adaptation measures and/or economic diversification plans that generate	Not applicable

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

6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	
a. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	During the preparation of the NDC, the vulnerability of the sectors (Agriculture, Forestry and Other Land, Energy, Health, PIUP) was analysed. The negative impacts of climate change were identified, and mitigation and/or adaptation measures to deal with these impacts were identified for each sector. The development of the 2020 NDC has used the most up-to-date TCN and other sectors have been taken into account, such as waste, PIUP and transport.
b. Equity considerations	Gender and social inclusion are taken into account in the 2020 NDC. In addition, the actions included have been identified on the basis of national policy and strategy documents.
c. The manner in which the Party has taken into account paragraph 3 of Article 4 of the Paris Agreement6	The 2020 NDC is more ambitious than the previous NDC, taking into account actions in sectors and sub-sectors not included in the 2015 NDC, such as transport and waste. In addition, the themes of health, gender and social inclusion have been integrated into the prioritisation of actions. The 2020 NDC represents an improvement on 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. CDN 2020 has defined precise indicators for monitoring and evaluation and recommends a capacity-building plan to ensure greater ownership by the various stakeholders.
d. The manner in which the Party has taken into account Paragraph 4 of Article 4 of the Paris Agreement7	Although Burundi is not an emitting country, it is developing a number of through its policies to mitigate GHG emissions.
e. The manner in which the Party has taken into account paragraph 6 of Article 4 of the Paris Agreement8	Burundi is strengthening its mitigation efforts 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 stations currently under construction, etc.), the increase in the domestic budget to finance mitigation and adaptation measures, and policies such as the National Development Plan 2018-2027 and the Environmental Planning Policy, the National Action Plan on Climate Change and the National Action Plan on Climate Change. Agriculture and Livestock,

6 How does the NEC represent progress beyond the Party's previous NEC and reflect its greatest 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 the light of different national circumstances.

8 Least Developed Countries and Small Island Developing States may establish and communicate low greenhouse gas emission development strategies, plans and measures appropriate to their particular circumstances.

7. The way in which the nationally determined contribution contributes to the achievement of the objective of the Convention as set out in Article 2.	
a. The way in which the nationally determined contribution contributes to the achievement of the objective of the Convention as set out in its Article 29	CND 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 paragraph a) of article 2 of the PA. Between 2021 and 2025, it plans to implement the following projects /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 policy and strategy measures and mitigation plans/programmes. Existing policies take account of the climate plan and the SDGs, with the aim of developing in a low-carbon way to contribute to the global objective.

2 Mitigation objectives

2.1 The national GHG inventory

Burundi has published three national communications on climate change. It has submitted them to the Secretariat of the United Nations Framework Convention on Climate Change. Each of these communications is based on a greenhouse gas inventory.

The third national climate communication, published in 2019, is based on the third GHG inventory published in 201811 . This covers the years 2005, 2010 and 2015.

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

10 Article 2.1(a) of the Paris Agreement includes two global temperature targets - "well below 2 degrees" and "1.5 degrees". Article 4.1 qualifies these by stating that "Parties aim to achieve the global cap on greenhouse gas emissions as soon as possible, recognising that this will take longer for developing country Parties, and to undertake early reductions of such emissions. and to undertake early reductions thereafter 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 currently preparing its first Biennial Climate Update Report, which will be based on the fourth greenhouse gas inventory. This inventory is currently being drawn up and cannot therefore be used as a reference for updating the 2020 NDC.

The Third National Climate Communication and its GHG inventory have been retained as reference documents for updating the 2020 NDC.

2.1.1 Perimeters

Under the supervision of the Ministry of the Environment, greenhouse gas inventories are carried out by the Office Burundais pour la Protection de l'Environnement (OBPE).

The 3rd national GHG inventory used in the 2020 NDC takes into account the energy (including transport), agriculture, forestry and other land use (AFAT), industrial processes and product use (IPUP) and waste sectors.

The possible exclusions of certain sub-sectors (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 absorptions are accounted for are listed in table 10.

Table 9: Sectors and Gas accounted for.

Sectors	Gas
Energy	CO_2, CH_4, N_2O
Agriculture and Livestock	CO_2, CH_4, N_2O
FAT	CO_2, CH_4, N_2O
PIUP	CO_2, CH_4, N_2O,
Waste	CH_4, N_2O

2.1.2 Fluorinated gases (HFCs, PFCs and SF_6 and NF_3

These gases are not included 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 have been calculated using the 2006 IPCC inventory software, using the Tier 1 method.

2.1.3.1 Energy

Greenhouse gas (GHG) emissions were calculated using the Tier 1 method of the 2006 IPCC Guidelines and the IPCC Tools software.

For this level of method, the necessary data that can be used are the activity data on the quantity of fuels burnt (activity data) and the default emission factors for each fuel from the IPCC's LD 2006.

In calculating emissions from the energy sector, the activity data used comes from the energy industries, manufacturing industries, construction, commerce, agriculture, forestry, fishing, residential and transport sub-sectors.

In the residential sub-sector, the fuels used are wood energy, bagasse[12] made from vegetable or agricultural waste for cooking, heating and lighting, and paraffin for lighting by rural households. Urban households use charcoal for cooking and oil for lighting.

In the transport sub-sector, the fuels used are diesel and petrol.

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

2.1.3.2 Agriculture and livestock

The emissions calculated in this sector relate to domestic livestock (enteric fermentation and manure management) and managed soils (burning of harvested biomass residues, emissions from rice cultivation, direct N_2O emissions from managed soils and CO_2 emissions from liming and urea application).

The methodology used in the 3rd GHG inventory to calculate GHG emissions in the agriculture sector is Tier 1 and the default parameters of the IPCC's 2006 GL.

The IPCC software was used to calculate methane (CH_4) and nitrous oxide (N_2O) emissions.

The Agriculture and Livestock sector comprises the sub-sectors and categories listed in table 11.

Table 10: Agriculture and livestock sub-sectors and categories

Sub-sector	Categories
Domestic cattle	Enteric fermentation,
	Manure management systems
Cultivated land	Combustion of crop residues
	Rice
	Application of synthetic fertilisers to all crops
	Managed soils (liming, urea-based fertilisers),

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

For managed soils, the activity data are the quantity of biomass burnt during the removal of leaves by fire before harvesting, based on the area occupied by sugarcane. For rice cultivation, the activity data collected in the field relate to the annual rice harvest area and the number of hectares harvested.

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

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

The areas from which wood products are harvested are monitored on a daily basis (SOSUMO).

2.1.3.3 Industrial Processes and Product Use (IPUP)

In Burundi's 3rd GHG inventory, the Tier 1 methodology used to calculate emissions is that recommended by the 2006 IPCC guidelines, in which activity data were multiplied by default emission factors. The calculations were carried out using IPCC software.

Burundi has no chemical industry. Emissions linked to the non-energy use of fuels are not estimated due to a lack of data.

Emissions of fluorinated gases and $_{NF3}$ linked to the use (domestic or industrial) and manufacture of these gases are not estimated, firstly because there are no national data enabling emissions from the use of products to be estimated, and secondly because there are no industries producing these products in Burundi.

In Burundi's 3rd GHG inventory, the FAT sector includes the sub-sectors forest land, cultivated land, pastureland, wetlands and peatlands.

Activity data includes the area of both public and private forest land, as well as the area of pasture, cultivated land and peat bogs.

Once the data had been collected and processed, the method used to calculate GHG emissions was that described in the 2006 IPCC Guidelines. The data conversion factors contained in FRA 2015 were used.

Emissions/absorptions calculations were carried out using the IPCC 2006 software, based on processed activity data.

On the basis of the data entered, the software calculates the emissions attributable to biomass stock change, wetland management, forest fires and harvested wood products, and sums up the emissions from all the land use and land cover (LULUC) categories.

For the FAT 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 need to be considered.

Ongoing monitoring and evaluation of the implementation of projects/programmes/measures designed to mitigate emissions and subsequent absorptions 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 emission factors specific to the country, the 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 relating to solid waste disposed of in pits and incinerated. Calculations of emissions from solid waste only covered the cities of Bujumbura and Gitega and certain markets. With regard to wastewater, discharges from households, commerce and industry are taken into account.

2.1.4. Results

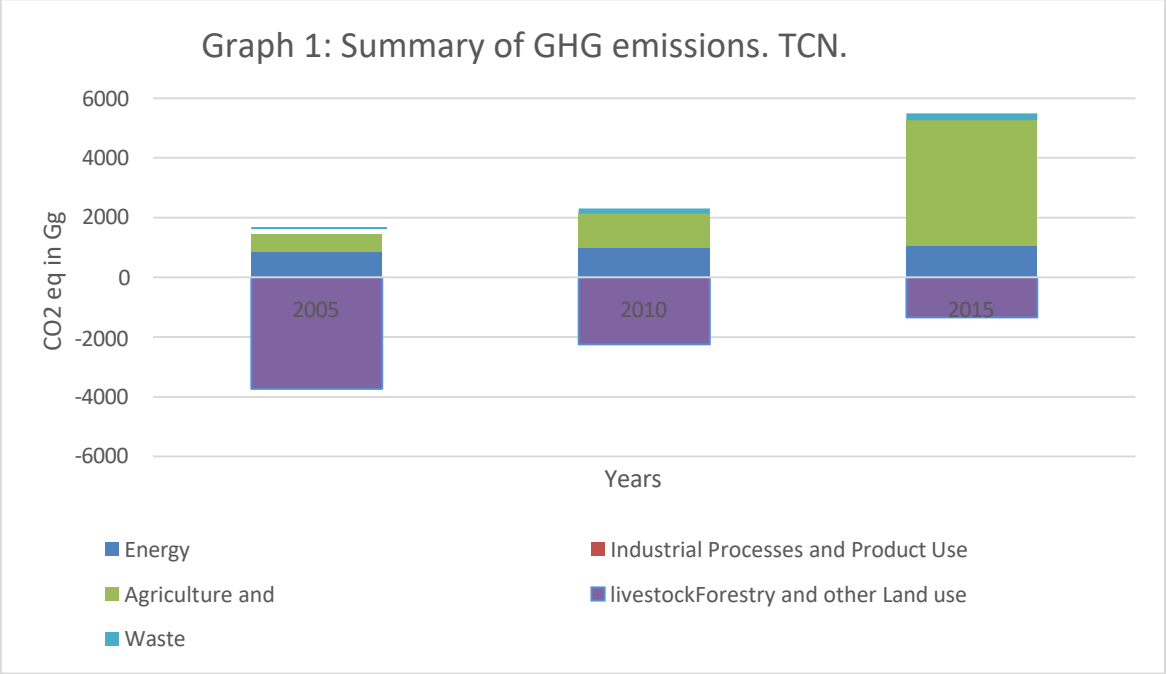
Table 12 and Figure 1 summarise the results of Burundi's 3rd national GHG inventory. For the conversion into CO2 equivalents, in Gg, the Global Warming Potential (GWP) values corresponding to a period of 100 years from the IPCC Second Assessment Report (SOD) were used. These are 21 for CH4 and 310 for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

Table 11: National GHG emissions in Gg of 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
Waste	174,83	165,32	230,7
Total national emissions with absorptions	***-2130,22***	***56,51***	***4148,06***
Total emissions excluding absorptions	***1602,21***	***2306,28***	***5496,54***

Source: 3rd National GHG Inventory (TCN)

Graphique 1 : Synthèse des émissions de GES, TCN.



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

2.1.4.1 Energy sector

Table 13 shows the results for emissions from the energy sector for the three types of gas (CO_2, CH_4, N_2O) for the years 2005, 2010 and 2015.

Table 12: Overall GHG emissions in Gg CO2e from the energy sector

BUSINESS SECTORS	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. Manufacturing and construction industries	30,25	0	0	47,91	0	0	45,48	0	0
3.Transport:	74,46	0,02	0	81,25	0,02	0	69,88	0	0
Aerial	67,50	-	-	1,39	-	-	0,96	-	-
Road	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	-	-

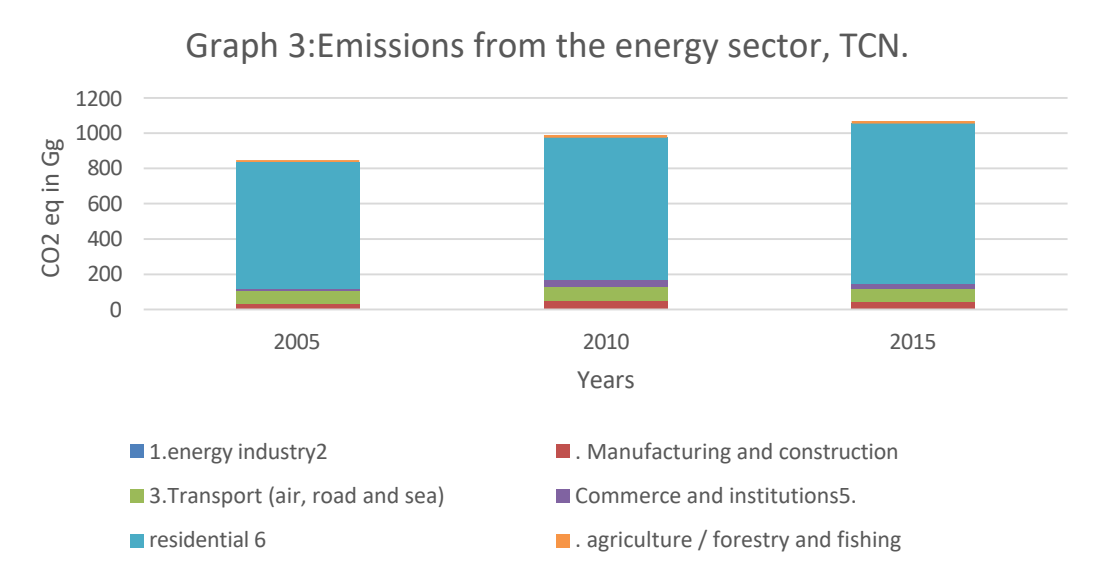
4. Trade and institutions	11,68	0,52	0,01	20,46	0,55	0,01	10,63	0,62	0,01
5.residential	6,28	28,30	0,37	8,71	31,86	0,42	11,41	35,87	0,47
6 Agriculture / forestry and fishing	9,76	0,06	0,00	12,49	0,07	0,00	13,93	0,08	0,00
TOTAL emissions	133,22	28,92	0,38	172,19	32,52	0,43	152,24	36,59	0,48
TOTAL IN EQ CO_2	858,34			988,41			1069,43		

Figure 2: GHG emissions from the energy sector

Table 13: Summary of energy sector emissions by sub-sector.

BUSINESS SECTORS	**2005**	**2010**	**2015**
1. energy industry	1,2	1,78	1,34
2. Manufacturing and construction industries	30,25	47,91	45,48
3. Transport (air, road and sea)	74,88	81,67	69,88
4. Trade and institutions	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 IN EQ CO_2	**858,34**	**988,41**	**1069,43**

Figure 3: Emissions from the energy sector



The results for emissions from the energy sector show that the quantity of CO_2 emitted is highest in the transport sub-sector, followed by the manufacturing and construction sub-sectors.

In terms of non-CO_2 emissions, the 'residential' sector takes the lead, with methane emissions resulting from the incomplete combustion of biomass and its by-products.

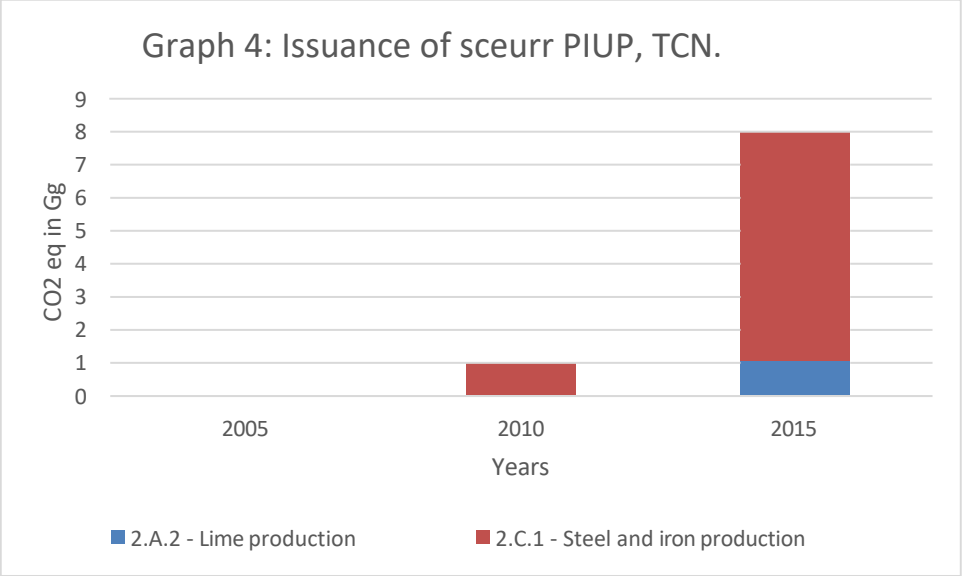
2.1.4.2 Industrial Processes and Product Use (IPUP).

Emissions from the PIUP sector are negligible and the results are shown in table 14.

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

YEARS	2005	2010	2015	
Categories	0	CO_2 (Gg)	CO_2 (Gg)	CH_4 (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 Eq CO_2 in Gg	0	0.78	7,87	

Graph 4: Emissions from the OUI sector



2.1.4.3 Agriculture and livestock sector

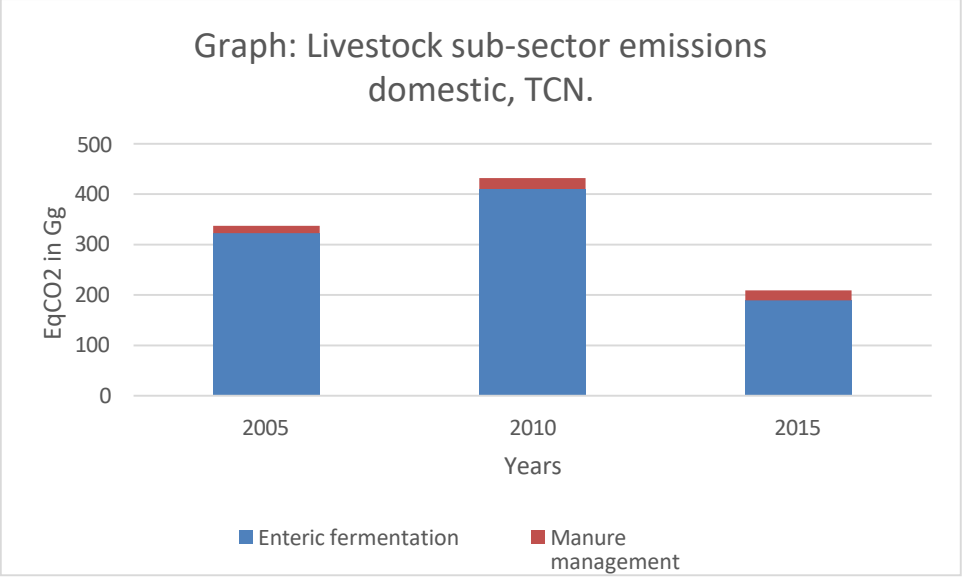
Emissions from the agriculture and livestock sector come from domestic livestock and managed soils.

Table 15 and graph 4 show the results for GHG emissions from domestic livestock and managed soils.

Table 15: CH_4 emissions from domestic livestock in $EqCO_2$ in Gg.

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

Graph 5: Emissions from the domestic livestock sector

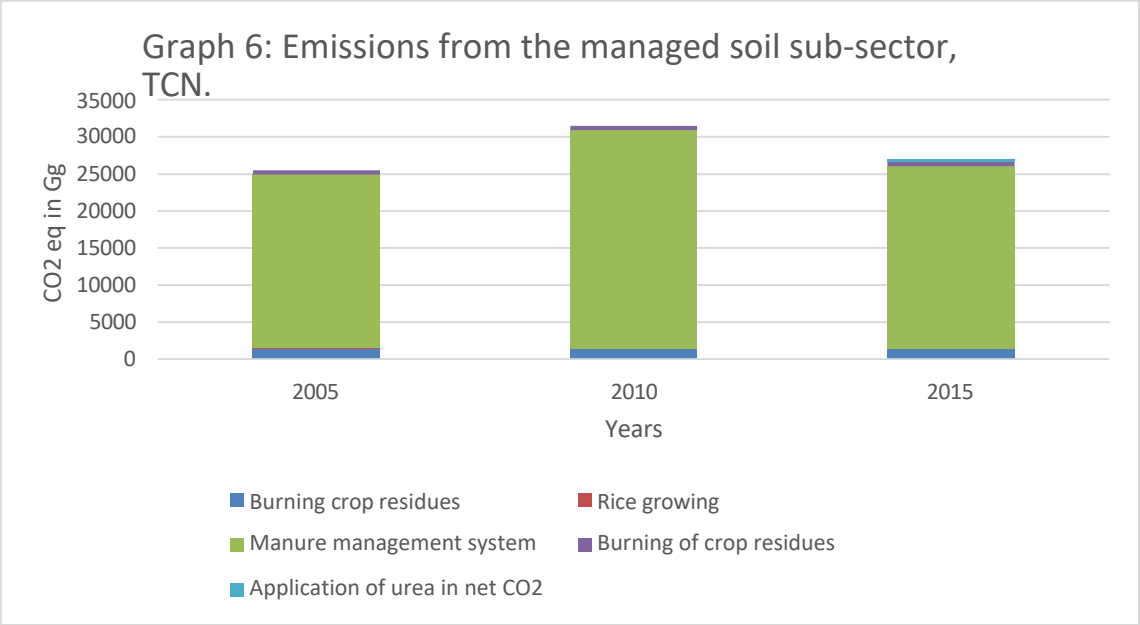


Emissions from managed soils are mainly due to manure management systems. Table 16 and graph 5 show CH_4 emissions from managed soils in CO_2 equivalent in Gg.

Table 16: Emissions from managed land in CO_{2e} in Gg.

Categories	**2005**	**2010**	**2015**
Burning crop residues	1475,04	1424,43	1480,92
Rice	29,54	12,34	10,27
Manure management system	23 398,78	29 463,12	24 515,58
Burning crop residues	564,2	545,6	567,3
Application of urea in net CO_2	0	0	390,17
Total managed land	**25 467,56**	**31 445,49**	**26 964,24**

Graph 6: Emissions from managed soils



Analysis of Table 16 shows that $_{CO2e}$ emissions in Gg from the manure management system are high. This is due to an error in accounting for $_{non\text{-}CO2}$ emissions from this manure management system. For this reason, the reliable results that can be considered for the agriculture sector are those in table 12.

2.1.4.4 Forestry and other land uses (FAT)

Table 17 and Graph 6 present the results of Burundi's 3rd national inventory for the FAT sector, distinguishing between emissions and removals resulting from changes in carbon stocks in the various reservoirs and from changes in land use.

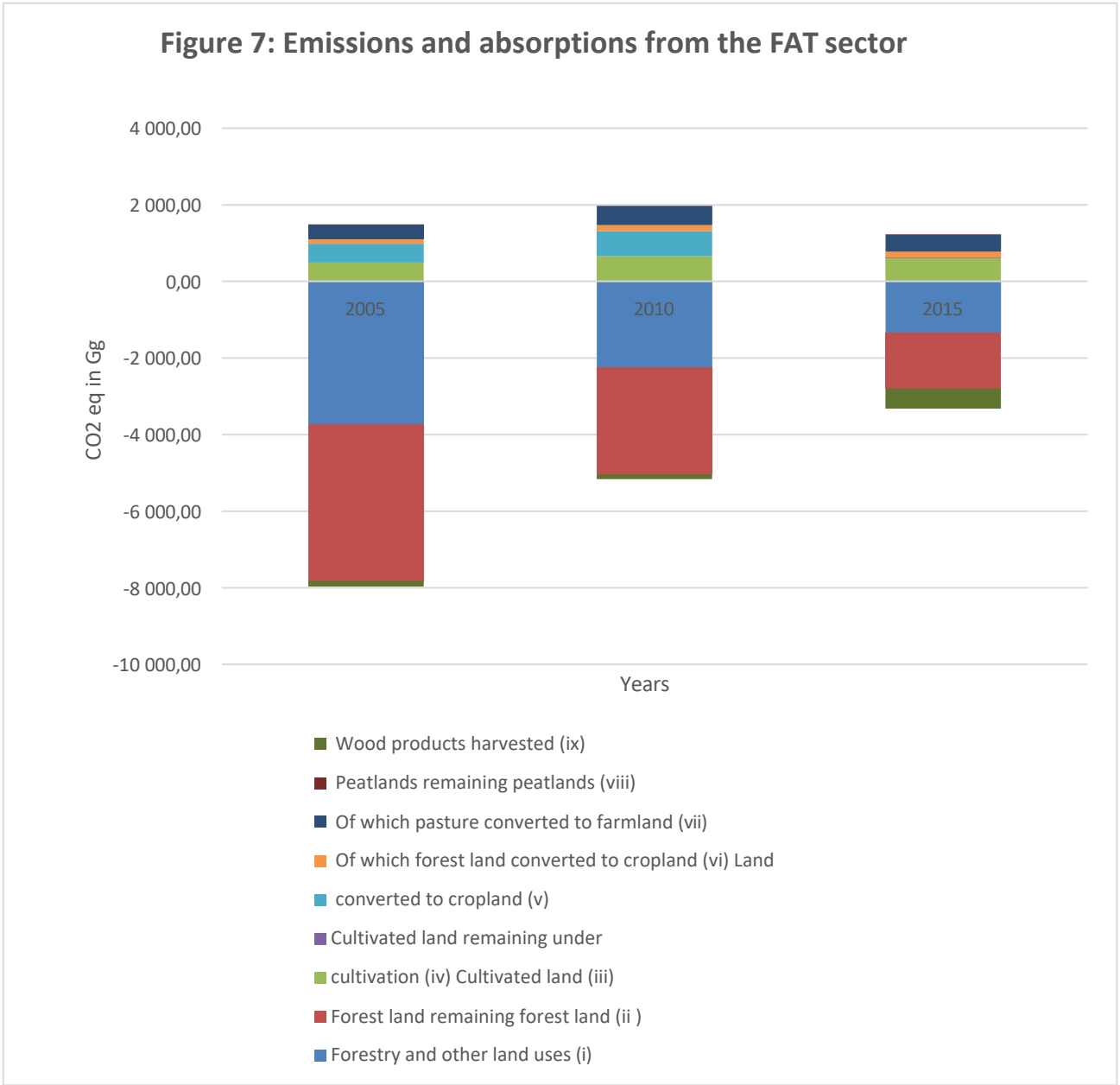
Table 17: Summary of results for FAT emissions/absorptions.

Sub-categories in the FAT sector	Emissions /CO_2 emissions in Gg 2005	Emissions /CO_2 emissions in Gg in 2010	Emissions /in Gg in 2015 CO_2
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
Cultivated land (iii)	490,77	655,40	610,45
Land cultivated remaining cultivated (iv)	0,16	0,16	0,16
Land converted cultivated (v)	490,61	655,25	610,29
Of which Land converted into land cultivated (vi)	112,83	160,46	170,94

Of which converted pasture 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); Cultivated land= (iv)+(v)+(vi)+(vii).

Figure 7: Emissions and absorptions from the FAT sector



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

emissions and 27.5% of the sector's total emissions, while the contribution of peatlands to FAT sector emissions remains low (around 2%).

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

deforestation for agriculture, housing and public infrastructure. These figures show that the data used for the inventories do not reflect reality. The evolution of GHG emissions from the FAT sector depends on the use of wood, either for cooking or construction, which has an impact on forest degradation, and on the conversion of forest land for agriculture or construction. Demographics is therefore one of the causes that accentuates the increase in emissions from the FAT sector. On the other hand, the increase in carbon sinks is a function of the increase in forest area and good conservation and management practices for forest ecosystems.

Reforestation and the fight against the conversion of forest land and grazing land to other crops are important ways of mitigating climate change through the REDD+ process.

2.1.4.5 Waste Sector

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

Table 18: Summary of GHG emissions from the waste sector

Year	2005		2010		2015	
Sources of emissions	CH4	N2O	CH4	N2O	CH4	N2O
Emissions from solid waste landfills	0,01	-	0,01	-	0,01	-
Emissions 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 Emissions in $_{EqCO2}$ in Gg per Gas	**28,52**	**146,32**	**2,26**	**163,06**	**42,44**	**188,64**
Total Emission in $_{EqCO2}$ in Gg	174,26		166,61		231,31	

Figure 8: Emissions from the waste sector

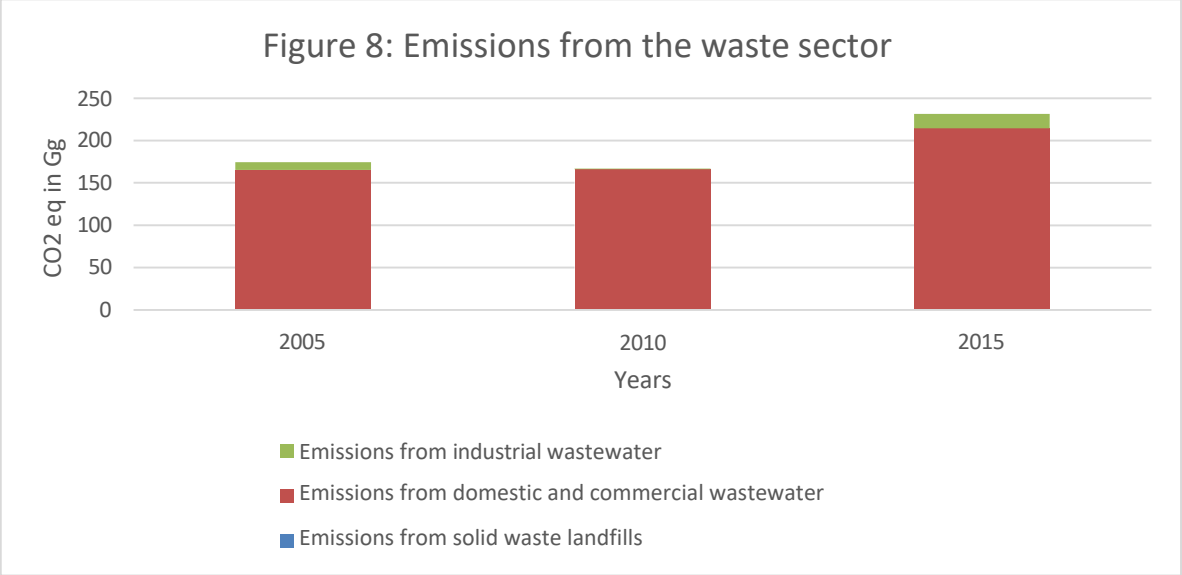


Table 18 shows that emissions from the waste sector accounted for 10.88% in 2005, 7.22% in 2010 and 4.21% in 2015 respectively of total GHG emissions in the third greenhouse gas inventory (see Table 12).

2.2 2020 NDC mitigation scenarios

2.2.1. Indicator, reference year and target year(s)

In the context of the 2020 NDC, the reference indicator is a **quantitative** GHG emission indicator, **relating to** a "Business as Usual" (BAU) scenario incorporating all sectors of the 3rd national GHG inventory and **annual** for 2 target years.

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

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

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

The reference scenario used is the Business As Usual (BAU) scenario, which corresponds to the trend in GHG emissions in the event that Burundi takes no mitigation measures, whereas the mitigation scenario involves the implementation of actions contributing to the reduction of GHG emissions.

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

2.2.2. Perimeter

The scope of the 2020 NDC projections covers the entire national territory of Burundi. The CDN 2020 takes into account all the sectors accounted for in the 3rd national GHG inventory for the calculation of target values. In particular, the sub-sectors of cultivated land, peatlands and harvested wood products of the FAT, the Industrial Products and Product Use (IPUP) 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 demonstrates an increase in Burundi's ambition. The sectors covered by the updated NDC are shown in Table 19.

Table 19: Sectors accounted for

Sectors	Sub-sectors	Gases concerned
Energy and Transport	Stationary combustion of fuels	CO_2, CH_4 and N2O
	Transport	
PIUP	Mineral industry	CO_2, CH_4 and N2O
	Metallurgical Industries	
AFAT	Agriculture and Livestock	CO_2, CH_4 and N2O
	Forestry and Other Land Use	CO_2, CH_4 and N2O
Waste	Treatment of solid and liquid waste	CO_2, CH_4 and N2O

For these sectors, all the gases considered in the 3rd inventory are also taken into account in the calculation of the target value, i.e. CO_2, CH_4 and N2O. The gases HFCs, PFCs, SF6 and NF3 have not been taken into account because they are not estimated in the 3rd national GHG inventory.

The 2020 UNFCCC takes into account Article 5 of the Paris Agreement relating to the enhancement of GHG sinks and reservoirs as provided for in Article 4, paragraph 1 (d) of the Convention, in particular forests and the REDD+ mechanism. Paragraph 1 of Article 5 invites the Parties to take measures to conserve and enhance carbon sinks.

2.2.3. Method for calculating emissions/absorptions for the different scenarios

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

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

The mitigation scenario is established by implementing mitigation actions aimed at reducing GHG emissions. Avoided emissions are calculated by deducting the emissions calculated per mitigation action from the BAU emissions.

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

For conversion into CO2 equivalents, the Global Warming Potential (GWP) values corresponding to a period of 100 years recommended in the IPCC's 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 likely to change as a result of methodological changes and improvements in the compilation of future greenhouse gas inventories.

The BAU reference scenario is established if no action is taken to implement policies, plans and strategies that could contribute to GHG mitigation. The BAU considered is that of the TCN, which is projected to 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 GHG emissions projections

The projection assumptions are based on the population growth rate, economic growth (GDP) and the country's policy and strategy measures relating to socio-economic and environmental development.

2.2.4.3 GHG impacts / BAU scenario.

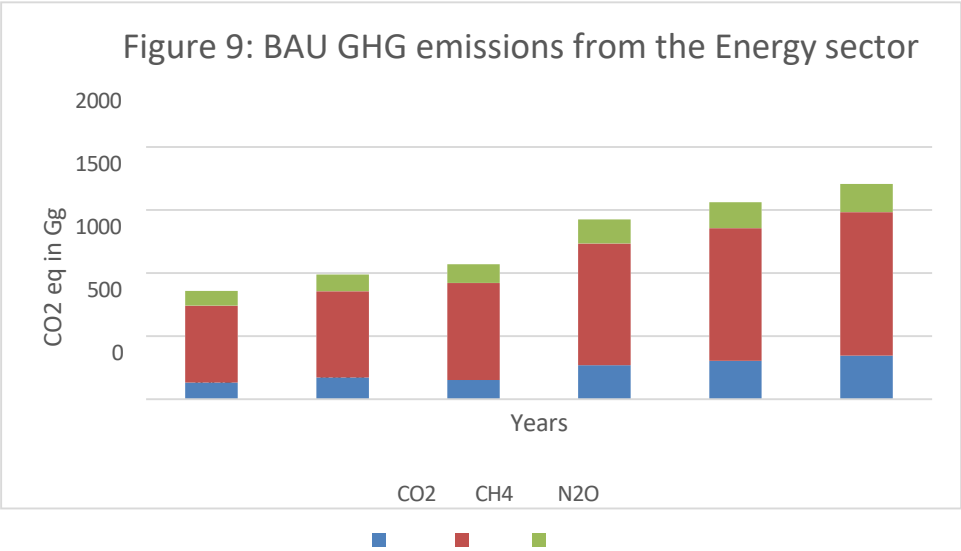
Table 21 shows the historical and projected GHG emissions for the BAU scenario in the Energy sector for 2025 and 2030.

Table 20: GHG emissions from the energy sector in the BAU scenario

Gas	2005	2010	2015	2020	2025	2030
CO_2	133,22	172,19	152,24	269,54	304,99	345,58
CH_4	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 CO_2 eq 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 Industrialisation Policy is specific to the UPIP sector.

2.2.4.2.2. Assumptions and projection parameters

The projection assumptions for the OUI sector are based on economic growth and the rate of industrialisation.

The parameters are the quantities of lime used in tonnes, and the quantities of iron and steel used in tonnes. Emission factors have been taken into account as parameters for calculating emissions.

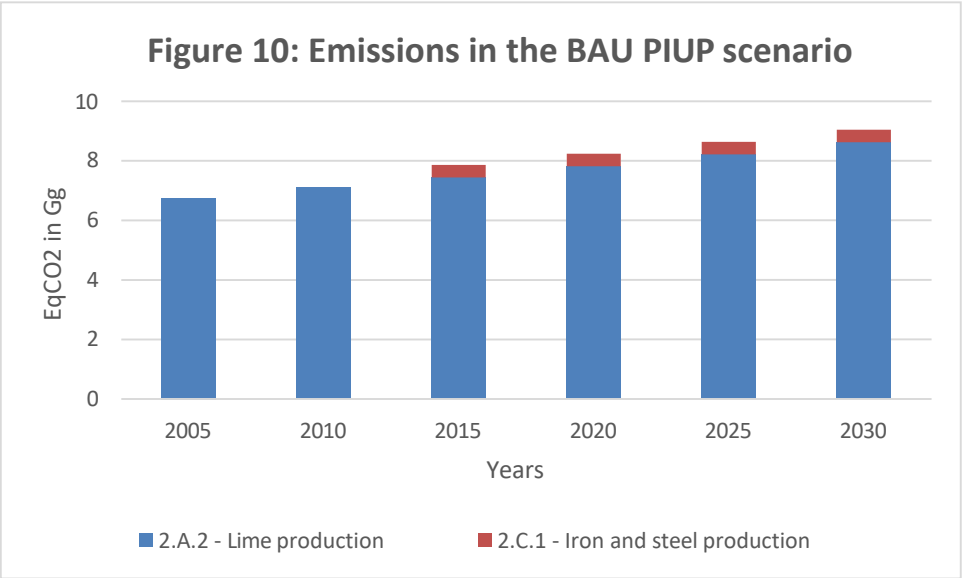
2.2.4.2.3 GHG impact

Emissions from the BAU scenario for the PIUP sector are shown in Table 22.

Table 21: Emissions in Gg of CO_{2eq} in the BAU scenario for 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 CO_2 eq in Gg	6,75	7,09	7,86	8,24	8,63	9,04

Figure 10: Emissions in the BAU PIU scenario



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, Vision Burundi 2025, National Policy on Climate Change), some Plans, Policies and Strategies are specific to the Agriculture sector.

- Document d'Orientation de la Politique de l'Environnement, de l'Agriculture et de l'Elevage (DOPEAE),
- National Agricultural Investment Plan (PNIA) 2018-2022,
- National Agricultural Strategy (SAN) 2018-2025,
- Seed Subsidy Programme,
- Mineral fertiliser subsidy programme,
- Vaccination programme against the main domestic animal diseases,
- Artificial insemination programme for animals,
- Stock restocking programme,

2.2.4.3.2. **Assumptions and projection parameters**

As part of the 3rd National Climate Communication, the BAU scenario for the agriculture sector was defined and emissions projected to 2050.

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

The projected parameters for the BAU scenario are linked to changes in the numbers of cattle, goats and sheep for domestic livestock. As for managed soils, the parameters are linked to the surface areas of the

the area sown to rice, the area harvested for sugar cane, and the quantities of nitrogen and urea fertiliser used on managed soils.

For the purposes of the 2020 NDC, the assumptions and parameters of the TCN reference scenario for the Agriculture sector for 2025 and 2030 have been retained.

2.2.4.3.3 GHG impact

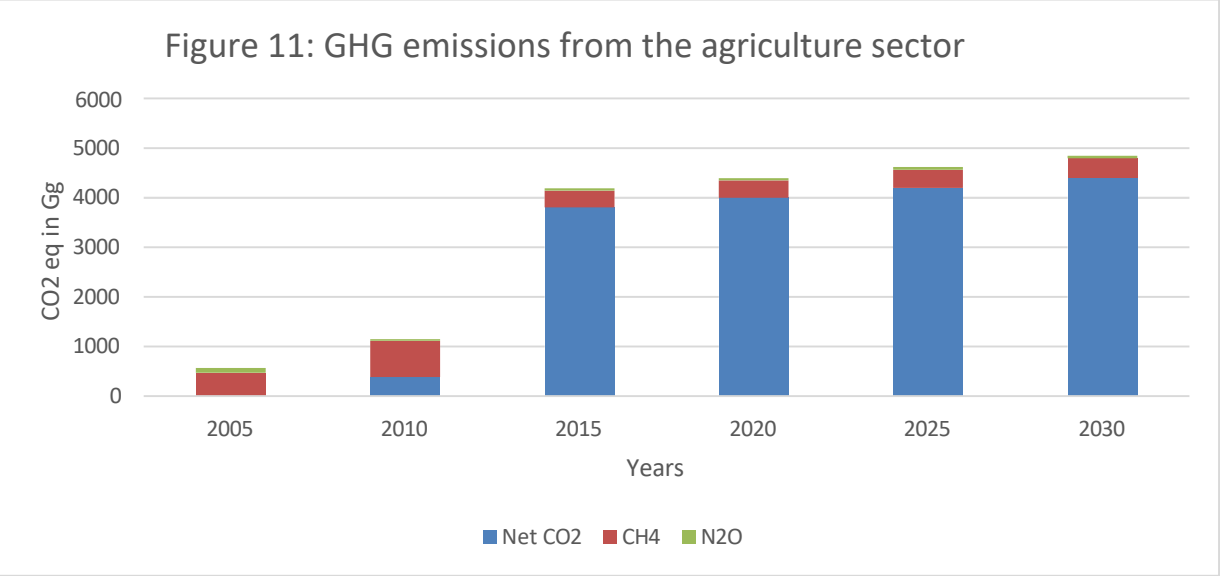
In the CDN 2020 framework, the emissions of the reference scenario (BAU) of the TCN Agriculture sector have been retained for 2025 and 2030.

In this situation, the projected emissions from 2005 to 2050 are shown 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 $_{ECO2}$ in Gg	567,41	1 150,37	4 186,21	4 395,52	4 615,30	4 846,06

Figure 11: Emissions from the BAU scenario for the Agriculture sector



2.2.4.4 Forestry and Other Land Use Sector (FAT) 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, Burundi Vision 2025, National Policy on Climate Change), certain Plans, Policies and Strategies are specific to the FAT sector:

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

2.2.4.4.2Hypotheses and projection parameters

As part of the 3rd National Communication, the BAU scenario for the FAT sector was defined and projections of sectoral emissions up to 2050 were calculated.

In the FAT sector, the assumptions for the BAU scenario projections of emissions are based on a decrease in the rate of forest cover and an increase in the need for forest products either for 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 strengthening of carbon stocks. The projection parameters are based on population data, deforested and/or degraded forest areas, the wood consumption ratio, demographic and economic growth and activity data for the reference year.

For the purposes of the 2020 CDN, the assumptions and parameters of the TCN FAT sector reference scenario for 2025 and 2030 have been retained.

Table 24 highlights the input data that have an impact on changes in emissions from the FAT sector.

Table 23: Data for the BAU scenario by sub-category

Sub-categories	Assumptions	Parameters
Forest area	Conversion of forest land for speculation	Reduced areas of woodland and their effect on increasing emissions of GHG
	Illegal cuts	Ditto
Pastures	Conversion of grazing land for agricultural or other purposes	Reduction of area of grazing land

In terms of forest area, the two hypotheses mentioned in Table 27 show that these areas will decrease and pine and Callitris woodlands will be the most affected, as shown in Table 25.

Table 24: Evolution of pine and Callitris trees

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

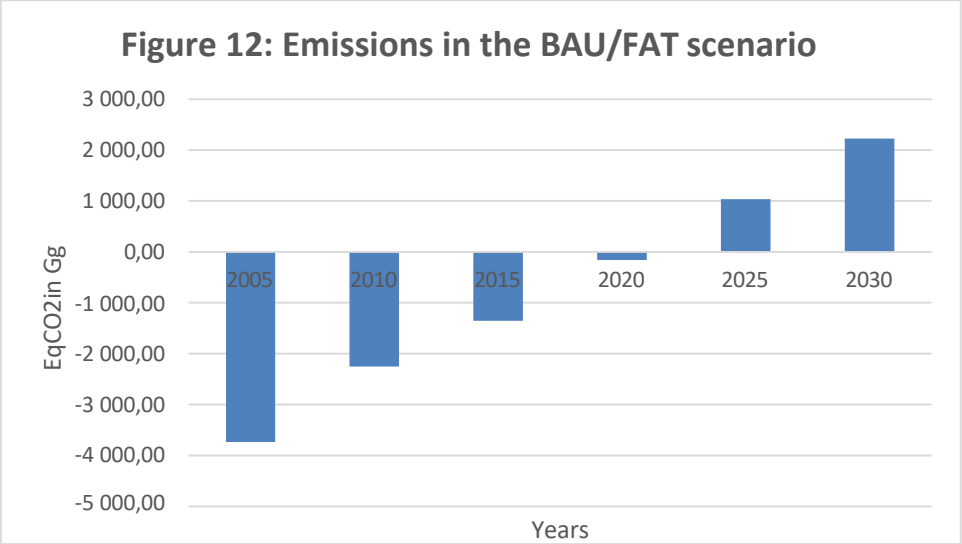
As part of the 3rd National Communication (TCN), emissions from the BAU scenario in the FAT sector were projected on the basis of assumptions relating to the conversion of forest and grazing land to other crops.

Table 26 and Figure 12 show historical and projected GHG emissions for the BAU scenario in the FAT sector up to 2030.

Table 25. Evolution of FAT emissions / BAU scenario

Year	2005	2010	2015	2020	2025	2030
Emissions in $_{EqCO2}$ in Gg	- 3 732,43	- 2 249,77	-1348,48	-156,505	1035,47	2227,45

Figure 12: Emissions in the BAU/FAT scenario



2.2.4.5 Waste sector

2.2.4.5.1 P&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), the National Sanitation Policy and its 2025 strategy for the waste sector is specific to the waste sector.

2.2.4.5.2 Assumptions and projection parameters

As part of the 3rd National Communication, the BAU scenario for the waste sector was defined and projections of sectoral emissions up to 2050 were calculated.

For the purposes of the 2020 NDC, the assumptions and parameters of the reference scenario for the TCN waste sector for 2025 and 2030 have been retained. The projection assumptions are based on the growth rate of the population, the national economy and urbanisation.

2.2.4.5.3 Impact in terms of GHG

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 the stocks of waste.

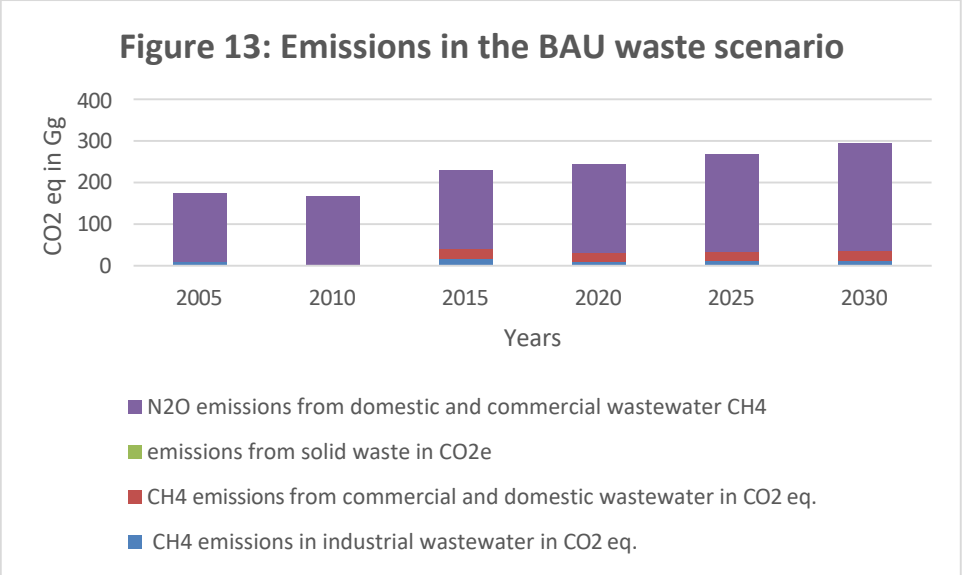
Table 27 and Figure 13 show historical GHG emissions (from the 3rd national GHG inventory) and projected GHG emissions (from the TCN) for the BAU scenario in the waste sector up to 2030.

Table 26: GHG emission trends for the BAU scenario for the waste sector

Emissions	2005	2010	2015	2020	2025	2030
CH_4 emissions in industrial wastewater in CO_2 eq.	8,82	0,63	16,84	11,26	12,43	13,61
CH_4 emissions from commercial and domestic wastewater in CO_2 eq.	0	0	25,12	19,59	21,65	23,69
CH_4 emissions from solid waste in CO_2 eq.	0,21	0,20	0,14	0,21	0,24	0,26
Emissions of N2O water and commercial wastewater	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 in the BAU waste scenario



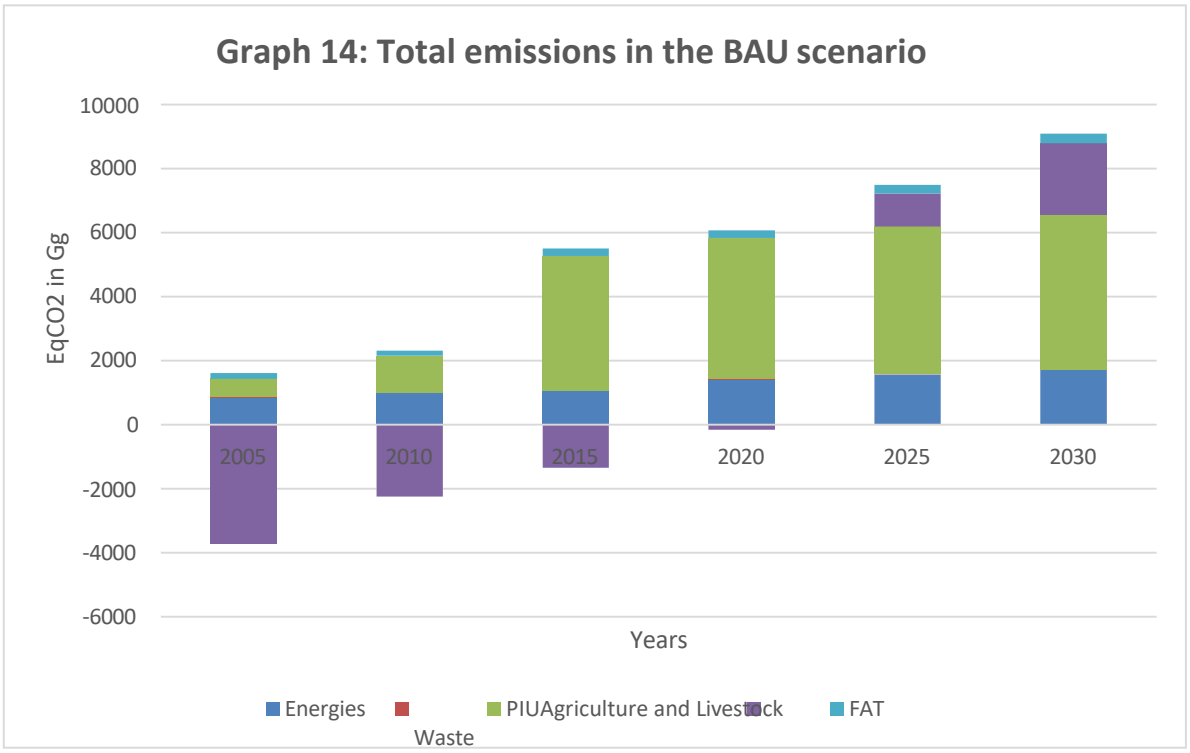
2.2.4.6. Summary of the BAU Scenario

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

Table 27: Emissions in Gg CO2eq from 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
FAT	-3 732,43	-2 249,77	-1348,48	-156,505	1035,47	2227,45
Waste	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

Graph 14: Total emissions in the BAU scenario



2.2.5. Unconditional scenario

2.2.5.1 Energy sector (excluding Transport sub-sector)

2.2.5.1.1 P&M, Plans and selected mitigation actions

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

Burundi's National Development Plan 2018-2027, the national policy on climate change, the national strategy for adaptation to climate change, the three National Communications on climate change and the policy letter as well as the sectoral strategy for the energy sector provide for measures and technologies that are essential for mitigating greenhouse gas emissions. They emphasise the introduction of new technologies and measures aimed at improving the conditions for the production and use of energy sources that emit little or no 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 carbonisation techniques, the promotion of improved domestic charcoal stoves in urban and rural areas, the promotion of biogas in schools and prisons, and the improvement of energy efficiency.

In the 2020 NDC, a number of actions to implement these priority programmes that have an impact in terms of mitigation are retained in the unconditional scenario and are described in table 28.

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

National priorities	Objective	Actions	IOV	Costs xUSD 1,000	Start date	Date end	Status progress to March 2021
1- Increase hydroelectric of hydroelectric power	45.4 MW installed	Develop three hydroelectric power stations 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 under the Public Private Partnership framework	Develop the RUVYI HEC 102 and MULE 037 (10.65MW)	Number of new hydroelectric power stations in operation - New hydroelectric production capacity	56100	2022	2026	0%
		Develop power stations in cascade on DAMA (8.8MW) and SIGUVYAYE		46600	2022	2026	
	300KW karonke micro power station are	Develop the	Installed capacity	0,8	2022	2026	0%

	setting at service (private)	Karonke (300KW)					
2- Increase the energy of the photovoltaic system	7.5MW are installed	Developing the Mubuga solar power plant	Installed capacity	18	2018	2022	0%
	50 public institutions off-grid power from photovoltaic solar energy (total 200kW)	Electrify public establishments off the electricity grid usin g photovoltaic solar energy	Number of electrified establishments	7,9	2022	2025	99%
3- Promote the use of biogas digesters in schools at boarding to offset the use of wood for cooking	20 schools with boarding facilities are equipped a biogas biogas digester	Building biogas bioga s à 20 establishments with regime boarding	Number of establishments equipped with digester d igester.	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 Burundi's National Development Plan 2018-2027, the National Transport Sector Planning and Management Strategy 2018-2027, the sectoral policy of the Ministry of Transport, Public Works and Equipment and the National Industrialisation Policy. The mitigation strategies set out in these documents are mainly the promotion of electric vehicles, public transport using large buses, and the development of pedestrian and cycle paths.

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

Table 29: National mitigation priorities in the transport sub-sector

National priority	Target	Cost (X1000USD)	Monitoring moni toring and evaluation	Observations/Considerations	Start date	End date	Progress to March 2021
Improvements on an d increase ion of the	From here 2030, 300 big	30 518	Number of large bus es acquired	This action will contribute à mitigation of GHG emissions	202 2	203 0	5%

park automobile from	bus in			from cars individual.			
transport in common.	circulation						

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

2.2.5.1.2. Assumptions and projection parameters

A. Energy sector excluding Transport sub-sector.

The mitigation priorities selected consist of implementing technologies or fuels that emit less GHGs to replace technologies or fuels that do not perform well in terms of mitigation, namely :

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

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

Table 30: Mitigation priorities and parameters for emissions accounting

No	Mitigation priorities	Parameters for calculating emissions
1	Construction of hydroelectric power stations	- Generating capacity ; - Annual operating hours of the power plant (4000h) ; - Equivalent of 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	- Generating capacity ; - Annual operating hours of the power plant (1200h) ; - Annual production equivalent in tera joules - Emissions from a diesel power plant of the same capacity

3	Promoting the use of biogas digesters in boarding schools	- Volume of biogas digester (^{50m3}) ; - Energy production in kWh per ^{m3} of a digester (1.25kWh) - Emissions from wood used 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 as the difference between the two.

Table 31: Mitigation priorities and parameters for calculating emissions from the transport sub-sector

Mitigation priorities	Calculation parameters
Improving and increasing the public transport fleet	- Number of 60-seater buses (200 buses in 2025 and 300 buses in 2030) ; - Bus fuel consumption (50l/100km); - daily journey in km (28km/day) ; - Quantity of bus fuel per day in litres ; - 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 quantity of fuel saved from consumption

Priorities	Quantity of diesel not consumed due to the share (in TJ)		FE (kg /GJ)	Emissions in Gg Eq CO_2		Source
	2025	2030		2025	2030	
Improving and increasing the vehicle fleet public transport.	65,82	98,73	74100 Kg $CO_{2/TJ}$; 3kg $CH_{4/TJ}$ and 0.6Kg N2O/TJ	4,963	7,445	PND

2.2.5.1.3. Impact in terms of GHG

A. Energy sector excluding Transport sub-sector

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 implementing the actions. The IPCC Tools 2006 software was used to quantify these emissions to be avoided by entering the activity data for each project in relation to the practice in place. This methodology has been applied to all the actions included in the CDN 2020.

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

Table 32: Avoided emissions by national priority

National priorities	Priorities	Emissions avoided in Gg CO2eq	
		2025	2030
1 Increase hydroelectric power generation capacity	Developing the Ruzibazi hydroelectric power station (15MW), the Kabu 16 hydroelectric power station (20MW) and the Mpanda hydroelectric power station (10.4MW)	48,6	48,6
	Developing the RUVYI 102 and MULE 037 HEC (10.65MW)	0	11,4
	Setting up cascade power stations on DAMA (8.8MW) and SIGUVYAYE	0	9,42
	Developing the Karonke micropower station (300KW)	0	0,32
2) Increase energy production capacity by the photovoltaic system	Developing the Mubuga solar power plant (7.5MW)	2,41	2,41
	Using photovoltaic solar energy to power off-grid public facilities	0,06	0,06
3 Promoting the use of biogas digesters in boarding schools	Build of digesters à biogas digesters à 20 electrical plants	0,004	0,004
Total		**51**	**72,22**

B. Transport sub-sector

Table 33 shows the avoided GHG emissions in the Transport sub-sector by 2025 and 2030.

Table 33: Avoided emissions

Gas	CO_2 (Gg)	CH_4 (Mg)	N2O (Mg)	CO_2 (Gg)	CH4 (Mg)	N2O (Mg)	Total CO_2 eq in Gg	
	2025	2025	2025	2030	2030	2030	2025	2030
Emissions from the bus	2,889	0, 15	0, 15	1,4445	0,075	0,075	52,54	26,26
Emissions from cars out of circulation	7,766	0, 41	0, 41	3,883	0,205	0,205	143,47	71,74
Emissions avoided Eq CO_2 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 Use Sector (IPUP)

2.2.5.1.4.1. P&M, Plans and selected mitigation actions

In the OUI sector, no action is prioritised in the updated NDC to reduce emissions by unconditional target due to the lack of well-defined indicators. However, there are plans, policies and strategies that can help to 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 projection parameters are not necessary.

2.2.5.1.5. Impact in terms of GHG

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

2.2.5.1.6. Agriculture sector

The Ministry of Agriculture and Livestock has drawn up a policy document for the Environment, Agriculture and Livestock. This document is based on the NDP 2018-2027 and the PNIA 2018-2022. To implement the strategic measures set out in these documents, the Ministry plans to develop a national policy for permanent-stall livestock farming.

However, the conditional objective does not include any action to support this policy.

2.2.5.1.7. Forestry and other sector Land use 2.2.5.1.7.1.

Mitigation plans, strategies and actions adopted

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

- The National Development Plan 2018-2027, which, in its strategic direction 3, envisages environmental protection, adaptation to climate change and improved land-use planning.
- The Environment, Agriculture and Livestock Policy Guidance Document,
- Specific objective 2 of the National Forestry Policy aims to increase forest cover to 20% by 2025,
- The National Strategy for Reducing Emissions from Deforestation and Forest Degradation, (+) the role of the Conservation of Forest Ecosystems and Sustainable Forest Management as well as the improvement of carbon stocks,

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

These plans, policies and strategies have been considered to define the actions of the FAT sector to be retained as part of the unconditional scenario of the 2020 NDC.

The two priority actions selected in the 2020 NDC for the unconditional scenario are set out in Table 34.

Table 34: Priority actions selected by unconditional objective

Priority strategies	Objective	Actions	Cost x1000USD	Start date	End date	Progress report 2021.
1 Developing rural forestry	Increase the cover rate 15.74%, i.e. increase f orest cover by 160.000 ha by 2025 (PND 2018-2027)	Produce and plant 85344000 plants13 on 53,340 ha of 5334 ha/year of 2021 à 2030.	8.001	2021	2030	0
2.to develop of the sector bamboo at Burundi	2500 ha of bamboo grove created in ten years at 250ha/year.	Protecting the banks of rivers by the plantation of bamboo on 2500 ha at a rate of 250ha/year à from 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. Assumptions and projection parameters

For the FAT sector, the input parameters for the 2 actions selected are shown 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	Area planted per year (in ha)	Areas planted cumulative in 2025 (in ha)	Cumulative area planted in 2030 (ha)	Source of figures
1	Development of forestry rural (reforestation of 53340 ha over 10 years)	5334	26670	53340	Area validation workshops

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 Level 1 methodology of the 2006 IPCC Guidelines was used to calculate the additional GHG absorptions resulting from the mitigation actions retained in the unconditional scenario. It consists of multiplying the activity data by the absorption factors.

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

Table 36: Results of removals from the forestry sector in $_{EqCO2}$ in Gg

Actions	Absorptions in $_{CO2e}$ in Gg		
	2021	2025	2030
Forest 53340ha in 2030 at a rate of of 5334 ha/year from 2021.	0	-1068,01	-2128,01
Protect riverbanks by planting bamboo over an area of 2,500ha by 2030 at a rate of 250ha/year starting in 2010. 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., all 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, with the exception of a few sites identified in the third greenhouse gas inventory located in the city of Bujumbura.

2.2.5.1.8.2. Assumptions and projection parameters

As there is no action planned per unconditional scenario in the 2020 NDC, the assumptions and projection parameters are not necessary.

2.2.5.1.8.3. Impact in terms of GHG

As an unconditional objective, no priority has been selected. Consequently, the waste sector has no impact in terms of reducing GHG emissions,

2.2.5.2 Target definition

The target for the unconditional scenario is to reduce national emissions by 1.58% compared with the BAU scenario by 2025 and by 3.04% by 2030**.**

2.2.5.2.1 Calculation method

The methodology for calculating the target for each sector is to first add up the emissions avoided or absorbed by all the 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/absorptions resulting from the implementation of the priority actions in all the sectors. In percentage terms, the target value is the ratio between the sum of the sectoral emissions of the unconditional scenario and the sum of the sectoral emissions of the Business As Usual (BAU) scenario.

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

Where X= ∑sectoral emissions of the unconditional scenario in $_{EqCO2}$ in Gg.

Y = ∑ of the sectoral emissions of the Business As Usual (BAU) scenario in $_{EqCO2}$ in Gg.

2.2.5.2.2 Summary of emissions avoided and additional absorption

Table 37 provides a summary of emissions avoided and absorbed in all sectors.

Table 37: Summary of emissions avoided and additional absorption

	GHG emissions avoided (in Gg Eq $_{CO2}$)	GHG emissions avoided (in Gg Eq $_{CO2}$)
Sectors	2025	2030
1. Energy excluding transport	51,08	72,22
2. Transport	50,9	136,4
3. FAT	-1117,87	-2227,45
Total of emissions with absorptions	-1015,89	-2018,83
Total of emissions without absorptions	102	209

2.2.5.3. Percentage target value

Table 38: Target value by unconditional objective

Unconditional objective	2025	2030
Scenario scenario unconditional	102	209
BAU scenario	6 453,8	6 854,6
Attenuation (%)	**1,58**	**3,04**

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

2.2.6. Other impacts

The actions selected in the unconditional target scenario will have an impact on health, particularly by reducing illnesses caused by wood-burning fumes and air pollution caused by gases from vehicle emissions. Other impacts on the improvement of living conditions are significant thanks to increased access to electrical energy, in particular the growth in household income through job creation and modernisation, as well as the diversification of income-generating activities. They also have a positive impact on the conservation of biodiversity, in particular soil conservation, increased water availability, 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 also apply to the conditional scenario.

The actions in the conditional scenario for the energy sector, which differ from those in the unconditional scenario, focus on the construction of hydroelectric power stations, the construction and rehabilitation of national electricity transmission and distribution lines, and the promotion of renewable energies. Some actions that depend on international funding are additional to those in the unconditional scenario. They are accounted for separately from those in the unconditional scenario. Those selected for the energy **sector are** shown in table 39.

Table 39: National priorities in the Energy sector

Actions/projects selected	Target	Activities	IOV	Costs x USD 1,000	Date St art date	End date	Status advance
Increase th e capacity of production of energy hydroelectric	141,5 MW are installed	Design three hydroelectric power stations : Jiji - Mulembwe (49MW) ;	-Number of new power plants hydroelectric	708100	2018 Jiji - Mulembw e; 2021 Rusumo Falls	2025	35%

		Rusumo Falls (27MW) and Kirasa (16 MW)	functional unit - New hydroelectric generation capacity		(27MW) and 2022 Kirasa (16 MW)		
		Develop the Ruzizi III hydroelectric power station (147 MW), i.e. 49MW for Burundi		579000	2021	2026	0%
	Four (4) micro power stations are built and commissioned	Develop four sites at Waga, Gikuka, Moyovozi and Nyamvyondo with a capacity of 1MW power		8105	2022	2025	0%
Electrify the country's centres	28 chefs-locations of communes are electrified	Building power lines to serve the 28 communes and centres not yet electrified in the country	Number of main towns with electricity	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-networks solar	Install mini-grids in 48 centres in the interior of the country of the country by (15.07MW)	Number of electrified centres	114000	2021	2024	0%
	40940 households with solar equipment	Distributing solar kits to 40940 rural households (capacity of 491.28kW)	Number of households received from kits solar		2021	2024	0%
	455 health establishments will be electrified for energy solar	Install to 455 energy health facility (1820kw)	Number of electrified health facilities		2021	2024	0%

	454 schools schools will be electrified to	Install to 454 health schools e nergy (1816kw)	Number of schools electrifi ed		2021	2024	0%
	solar energy						
	331000 households are equipped with impro ved fireplaces	Build 33,1000 improved stoves in ho useholds rural	Number of households rece ived from impro ved fireplaces		2021	2024	0%
	12 multiservice solar platforms installed (18kw)	Install 12 multi-service solar platforms	Number of multiservice solar platforms		2021	2024	0%
	14 impro ved fireplaces in at schools t oSchool canteen installed	Build 14 improved stoves in th e schools à School canteen	Number of improved fireplaces built		2021	2024	0%
Support the production and dissemination of impro ved stoves	By 2025, 50% rural households use improved impro ved stoves for the cooking.	Build the capacity of technicians to manufacture improved stoves and Organise exhibition fairs for impro ved stoves to **develop new markets a nd establish contact with potential customers**	Number of rural households wh o uses im proved fireplaces for the cooking.	78000	17/10/201 8	31/12/20 24	20%
	By 2025, 85% of urban households use improved stoves for heating. the cooking		Number of urban households wh o uses im proved fireplaces for		2021	2026	74%

			the cooking.				
	By 2030, 75% of rural households use improved stoves for the cooking.		Number of rural households who uses improved fireplaces for the cooking.		Jul-21	2024	0%
	By 2030, 90% households		Number of urban households who		2021	2026	0%
	use improved stoves to heat their homes the cooking		uses improved fireplaces for the cooking.				
Construction and equipping of a factory for the assembly and production of photovoltaic solar panels capable of producing 12MWp/year	By 2025, photovoltaic panels from 48MW are produced	Building and equipping a factory for the assembly and production of photovoltaic solar panels	Capacity of panels produced	43200	2022	2025	0%
Solar photovoltaic systems to supply energy to rural peace villages	27 peace villages are supplied in energy from photovoltaic solar systems	108	Number of villages electrified by the solar system	108000	2022	2025	0%
Total				1611758,2			

2.2.7.1.2. Assumptions and projection parameters

The calculation of greenhouse gas emissions from different energy sources is based on a number of parameters, including the population, the 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 multiplied by the energy values. The IPCC Tools 2006 software was used to quantify the emissions to be avoided by entering the activity data for each action in relation to the practice in place. This methodology was applied to all the actions identified as part of the 2015 NDC update. Table 47 shows the parameters used to calculate these emissions.

Table 40: Emissions accounting parameters

No	Technologies used	Parameters for calculating emissions
1	Construction of hydroelectric power stations	- Generating capacity ; - Annual operating hours of the power plant (4000h) ; - Equivalent of 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	- Generating capacity ; - Annual operating hours of the power plant (1200h) ; - Annual production equivalent in tera joules - Emissions from a diesel power plant of the same capacity
3	Electrify the 28 main towns in the interior of the country	- Project beneficiaries ; - Consumption average consumption per dwelling (30kWh/dwelling/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 at 455 health and school establishments from solar energy	- Total power installed at the solar and health facilities (1820kw for health and 1816kw for schools); - number of operating hours per day (4h) ; - average annual energy production ; - The amount of diesel used to produce the same amount of energy;
6	Build of improved fireplaces in households	- Total population projections (13604766 in 2025 and 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 person per day (2.93kg) ;
		- Average amount of coal consumed per person per day (0.68) ; - Quantity of energy generated by one kilo of wood (4.5kWh) - Quantity of energy generated by one kilo of coal (8.89kWh) ; - Proportion of the population using wood and charcoal. In urban areas, charcoal is used and in rural areas, wood. - Efficiency of improved fireplaces (20%)
7	Install 12 multi-service solar platforms	- Total power of multiservice solar platforms ; - Number of operating hours per day (4h) ; - Average annual energy production ; - The amount of diesel used to produce the same amount of energy
8	Building 14 improved fireplaces in schools at School canteen	- Number of steres consumed per year (800) ; - Number of kilos per stere (600kg) ; - Quantity of energy generated by one kilo of wood (4.5kWh)

		- Efficiency of improved fireplaces (20%)
9	Building and equipping the solar panel assembly and production plant photovoltaic systems capable of producing 12MWp/year	- Total annual production capacity ; - 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 household size (5 persons) ; - Average energy consumption per person per day (30kWh/house/day) ; - The amount of oil used to produce the same amount of energy
	Developing a thermal power plant using municipal waste: Bujumbura	- Quantity of waste/person/year (kg/pers/year) - Population projection for Bujumbura town hall :
		➢ 839854 in 2025 ➢ 899042 in 2030 - Annual quantities of waste (tonnes) ; - Fermentable waste (57%) - Quantity of energy waste (25,000 tonnes/MW); - Annual production (MWh) ; - Annual production(TJ)

2.2.7.1.3 GHG impact

Table 41: Emissions avoided by actions identified in the energy sector

					Emissions avoided in Gg Eq CO2

Actions/projects selected	Target	activities	IOV	Cost x USD 1,000	2025	2030
1. increase hydroelectric hydroelectric power production capacity e	141.5 MW installed	Develop three hydroelectric power stations: Jiji - Mulembwe (49MW); Rusumo Falls (27MW) and Kirasa (16 MW)	-Number of new hydroelectric power stations in operation - New hydroelectric production capacity	267000	99,03	99,03
		Develop the Ruzizi III hydroelectric power station (147 MW) 49MW for Burundi		579000	52,46	52,46
	Four(4) micro power stations are built and commissioned commissioned	Develop four 4 waga sites, Gikuka, Moyovozi, Nyamvyondo with a capacity of 1MW		8105	1,071	1,071
2. electrify the country's centres	Electrification of 28 main towns in communes	build power lines serving the 28 municipalities and non still	Number of chief towns of communes electrified	43000	1,12	1,12
		electrified in the country				
3. promote renewable renewable energy in rural areas through the Nyakiriza sun project and Umucowiterambere	48 centres in the interior of countries are electrified by mini-grids solar	Install solar mini-grids in 48 centres at the interior of the country (15.07MW)	Number of electrified centres	114	5,06	5,06
	40940 households of solar equipment	distribute solar kits to 40940 rural households (capacity of 491.28kW)	Number of households receiving solar kits		0,147	0,147

	455 health establishments to be electrified using solar energy	Install to 455 healthcare healthcare of energy (1820kw)	Number of establishments of electrified		0,703	0,703
	454 schools will be electrified for solar energy	Install to 454 schools of health from energy (1816kw)	Number of schools electrified		0,701	0,701
	331000 households are equipped with improved stoves	Build 33,1000 improved stoves in households rural	Number of households receiving improved stoves		10,58	10,58
	12 multi-service solar platforms installed (18kw)	Install 12 multi-service solar platforms	Number of multiservice solar platforms		0,00522	0,00522
	14 improved fireplaces in schools à School canteen are installed	Build 14 improved fireplaces in schools à School canteen	Number of improved fireplaces built		0,17825	0,17825
4.Supporting the production and dissemination of improved stoves	By 2025, 50% of of rural households use improved stoves for cooking.	Building the capacity of fireplace manufacturing technicians and Organise	Number of rural households who uses fire places for cooking.	78	39,062	
		improved fireplaces to develop new markets new markets and establish contact with potential customers				

	By 2025, 85% of of urban households use improved stoves for cooking	Manufacture and sell improved fireplaces à 85% of the rural population in 2025	Number of urban households who uses fire places for cooking.		3,4221	
	By 2030, 75% of of rural households use improved cooking stoves.	Manufacture and sell improved fireplaces à 75% of rural population by 2030	Number of rural households who uses improved fireplaces to cooking.			64,1107
	By 2030, 90% of of urban households use improved stoves for cooking	Manufacture and sell improved fireplaces à 90% of the population urban in 2030	Number of urban households who uses improved fireplaces to cooking.			3,964
5. Construction and equipping of factory for the assembly and production of photovoltaic solar panels for produce 12MWp/year	By 2025, 48MW photovoltaic panels will be produced	Build and equip a factory at assembly and production of photovoltaic solar panels	Capacity of panels produced	43.2	0,0432	0,0432
6.energy supply for the villages of rural peace by system	27 peace villages are supplied with energy by solar systems	Install photovoltaic solar systems	Number of peace villages electrified by the solar system	108000		81,51

solar photovoltaic es	photovoltaic s					
7.develop a therma l power based waste municipal :	6.4MW in 2025 and 8.38MW in 2030 are produced	Build t he power plant	Installed capacity	0	17,43	23,04
Total				1240305	231,01	343,72

2.2.7.2 Industrial Processes and Product Use (IPUP).

2.2.7.2.1 P&M, plans and priority actions selected

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

Table 42: Priority actions in the PIUP sector

Priority actions	Targets	Activities	Monitoring indicators	Costs (x1000USD)	Start year	End date
1 Project to support the development of research and innovation in the industrial sector (PADRI).	10 innova tive industrie s	Revitalising emerging industries an d supporting ind ustries existing	Number of industries	1562,5	2021	2025
Total				1562,5		

Source: TCNCC.

2.2.7.2.2. Assumptions and projection parameters

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

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

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

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

2.2.6.2.3 Impact in terms of mitigation.

As the inventory experts did not have any field data, the mitigation actions were calculated by reducing the 2015 inventory emissions by 3% every 5 years, i.e. a reduction of 2% compared with the reference scenario.

Table 43: Emissions avoided by identified action

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

2.2.7.3. Agriculture sector

2.2.7.3.1 P&M, plans and priority actions.

The Ministry of Agriculture and Livestock has drawn up an Environment, Agriculture and Livestock Policy Guidance Document. This is based on the NDP 2018-2027 and the NIPA 2018-2022. To implement the strategic measures set out in these documents, the Ministry plans to draw up a national policy for permanent-stall livestock farming. The success of this policy will be based on agro-sylvo-zootechnical systems, which will make it possible to increase feed for livestock by increasing the area under fodder crops, silage and organic manure through the composting system. Improving the composition of livestock feed by adopting integrated agro-sylvo zootechnical systems has therefore been identified as a national priority.

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

Table 44: Priority action in the agriculture sector.

Priority strategies	Objective	Actions	Cost x1000USD	Start date	End date	Progress report 2021.
Improving composition of food for the livestock by adopting systems integration agro sylvo zootechnical	Improve the food for the cattle at permanent stabling and reduce the emissions from managed soils.	Improve the composition of food for the livestock	387,17	2021	2030	In progress

2.2.7.3.2 Assumptions and projection parameters.

The parameters for the agricultural sector are based on projected animal 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 heads N(T) in 2025	Number of heads N(T) 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 head, EF: Emissions factor, CH4: Total CH_4 emissions.

The emissions factor for each animal category is shown in table 48.

Table 46: Emissions 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. Impacts in terms of GHG.

Table 47: Impact of the action in terms of reducing GHG emissions

		Emissions avoided in Gg Eq CO_2	
Actions /projects priority	Target	2025	2030
Improving composition cattle feed by adopting agro-sylvo-zootechnical integration	Reduce by 2025 and 2030 emissions by 3%. CH_4 from from from enteric fermentation from 2015 (22.6Gg of CH_4)	504,39	519,99

2.2.7.4 Forestry and other sector Land use

2.2.6.4.1 P&M, plans and priority actions.

The national policies, plans and strategies used in the 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 set out in table 48.

Table 48: National priorities in the FAT sector

Actions /Priority projects	Target	Activities	IOV	Costx1000 USD	Date of start	Date of end	State of progress
1 Developing rural forestry	Increase forest cover to 15.74%, i.e. increase forest cover by 160,000ha by 2027 (NDP 2018-2027)	**Create forest and agroforestry and agroforestry plantations covering 106,680 ha at at a rate of 10668ha/year from 2021 onwards**	Surface areas created	16 002	2021	2030	0%
2 Rehabilitating degraded environments in Mumirwa and Bugesera	9000 ha woodland created and/or restored and 18,000 ha of catchment protected against erosion	**Create forest and agroforestry** 22375 ha at a rate of of 2275.5 ha/year From 2021	Number of ha installed	8 019	2021	2030	0%
3 Protecting water sources by planting bamboo	22,500 ha of bamboo groves created in ten years	Plant along rivers, around water sources and in at farms 22500ha in 2030 at a rate of 2250 ha from in 2021.	Number of ha installed	37154	2021	2030	0%
4 Development of Moringa cultivation	10 ha /region created and 5 cuttings/household distributed to half of Burundian households (916 667), i.e. 428 ha/year	Create of planting Moringa on 4280 ha at a rate of 428ha/year from 2021.	Number of ha installed	705,65	2021	2030	0%

TOTAL				61881			

2.2.7.4.2 Assumptions and projection parameters.

In the FAT sector, the assumptions used to project GHG emissions up 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: Impacts by action in the FAT sector

		Emissions in Gg Eq CO2	
Actions /Priority projects	Target	2025	2030
1 Developing forestry rural	Target 160.000 ha of afforestation created	-2128,01	-4256,02
2 Project to rehabilitate degraded environments in the Congo Basin and Bugesera	9,000 ha of woodland created or restored and 18,000 ha of catchment areas protected against erosion	-468,75	-892,65
3.project of development of the bamboo industry in Burundi	2250 ha of 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 the households householdsBurundian households(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 is making a twofold contribution by avoiding emissions from waste in landfill sites (waste sector) and emissions from the diesel-fired power station (energy sector).

2.2.7.5.1 P&M, plans and priority actions.

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

Table 50: Priority actions identified

Actions priority	Target	Activity	IOV	Cost x 1000USD
Design a thermal power plant	8.38MW	Build a thermal power plant	Capacity c apacity	13900
based on waste municipal Bujumbura		based on municipal waste		
				13900

2.2.7.5.2 Assumptions and projection parameters.

The projection assumptions are based on economic growth (GDP), population growth and the rate of urbanisation. The projection parameters are shown in table 51.

Table 51: Parameters for the waste sector

Projects	Parameters: waste sector
Developing a thermal power plant using municipal waste from the city of Bujumbura	- Population projection for Bujumbura town hall : ➢ 839854 in 2025 ➢ 899042 in 2030 - Quantity of waste/person/year (kg/pers/year) - methane correction factor(%) :46 - DOCF: 50%. - Delay time (months) :6 - Emissions from waste in the landfill ; - Emissions from the biogas plant

2.2.7.5.3 Impact in terms of GHG

Table 52: Impacts by action in the waste sector

		Emissions in Gg Eq CO_2	
Action	**Target**	**2025**	**2030**
Developing a thermal power plant using 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. The Parties to the Paris Agreement listed in Annex I must 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 support Burundi in carrying out the actions identified.

As the implementation of certain actions requires technical expertise, capacity building in the various areas of intervention is essential. The aim is to build the capacity of all those involved in the transfer of knowledge for the acquisition of funding and the transfer of technologies.

Achieving results will depend on putting in place a robust implementation mechanism that builds on existing institutional, legislative and financial arrangements. These must be strengthened if they are to be operational and effective.

The involvement of all stakeholders is essential if the expected results are to be achieved. Taking gender and social inclusion into account is encouraged.

Carrying out these actions, identified as conditional objectives, will give a boost to our country's socio-economic and environmental development.

2.2.7.7 Target definition

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

2.2.7.8 Calculation method

The methodology for calculating the target for each sector is to first add up the emissions avoided or absorbed by all the priority actions in the sector. The value of the national target in CO_2 Equivalent in Gg per conditional objective corresponds to the sum of the emissions/absorptions resulting from the implementation of the priority actions in all the sectors. In percentage terms, the target value is the ratio between the sum of the sectoral emissions of the conditional scenario and the sum of the sectoral emissions of the Business As Usual (BAU) scenario.

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

Where X= ∑sectoral emissions of the conditional scenario in CO_{2eq} in Gg.

Y = ∑ of the sectoral emissions of the Business As Usual (BAU) scenario in CO_{2e} in Gg.

2.2.7.9 Summary of emissions avoided and absorbed

Table 53 provides a summary of emissions avoided and absorbed in all sectors.

Table 53: Summary of GHG emissions avoided and absorbed.

	GHG emissions avoided in Gg CO_2 eq	GHG emissions avoided in Gg Eq CO_2
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 of emissions with absorptions	-2395,18	-5352,67
Total of emissions without absorptions	735,78	864,39

NB: The FAT sub-sector is not included in the GHG emission mitigation targets, but it does play a major role in increasing carbon stocks.

3. TARGET VALUE IN PERCENTAGE

The percentage target value is 12.61% in 2030 and 11.40 in 2025 and these values correspond to greenhouse gas emission reductions of 864.39 CO2eq in Gg in 2030 and 735.78 CO2eq in Gg in 2025 compared to the BAU reference scenario in 2030 and 2025. Table 54 shows the details of the target values.

Table 54: Target value by conditional objective

Conditional objective	Emissions in CO_{2e} in Gg	Emissions in CO_{2e} 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 selected in the conditional objective scenario have an impact on health, particularly by reducing illnesses caused by wood-burning fumes and air pollution caused by gases from vehicle emissions. Other impacts on the improvement of living conditions are significant thanks to the increase in access to electrical energy, **in particular the** growth in household incomes through job creation and modernisation, as well as the diversification of the economy.

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

3.2. ICTU

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

Table 55: ICTU

1. Quantifiable information on the reference point (including, as appropriate, a year of reference)	
a. The reference year(s), reference period(s) or other starting point(s)	Reference years: 2025 (intermediate reference year) and 2030 (target year) (case of an indicator defined in relation to a Business as Usual (BAU) scenario)
b. Quantifiable information on the reference indicators, their values during the reference year(s), reference period(s) or other starting points and, where appropriate, the target year.	The reference indicator is an annual quantitative indicator, relative to the GHG emissions of the "Business as Usual" (BAU) scenario, for the target years "emissions 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 $_{CO2eq}$. • in 2025 (BAU): 6,453.8 Gg $_{CO2eq}$. • in 2030 (BAU): 6,854.6 Gg Gg $_{CO2eq}$.
c. With respect to strategies, plans and measures referred to in paragraph 6 of Article 4 of the Paris Agreement, or policies and measures forming part of nationally determined contributions, where paragraph 1 (b) above does not apply, Parties shall provide other relevant information.	Not applicable (Burundi is on 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, for example as a percentage or an amount of reduction.	Target values for the reference indicator (relative reduction in GHG emissions compared with 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 reference point(s)	The historical emissions (2005, 2010 and 2015) used as a basis for the projections are those of the 3rd GHG inventory report used in Burundi's 3rd National Communication (TCN) submitted in 2019. The projection assumptions are linked to the national economy (PIP) and population growth. For the FAT, wood energy

f. Information on the circumstances in which the Party may update the values of the benchmark indicators.	The value of emissions in the base year may be updated as a result of methodological changes and improvements in the preparation of future greenhouse gas inventories.

2. Timeframe and/or implementation period	
a. The timetable and/or period of 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 runs from 1 January 2021 and ends on 31 December 2030. The time horizon is 10 years, but an intermediate stage is planned after 5 years.
b. Whether the objective is annual or multiannual, as appropriate	The objectives defined in the CDN 2020 are annual.

3. Scope and field of application	
a. 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 soil sub-sector of Agriculture, for the target years 2025 and 2030 and 2 mitigation scenarios (unconditional and conditional).
b. Sectors, gases, categories and tanks targeted by the determined at national level, including where applicable, in accordance with directors of Group of Intergovernmental Panel on Climate Change (IPCC)	All sectors and sub-sectors and GHGs included in the Burundi's 3rd national GHG inventory has been taken into Burundi's 2020 NDC, namely :

Sectors	Gas
Agriculture , managed soils	CO_2, N_2O, CH_4
Forestry and Other Land (FAT)	CO_2
Energy	CO_2, CH_4, NO_2
Industrial processes and use of Products :	CO_2, CH_4
Waste	N_2O, CH_4

With regard to greenhouse gases, emissions of PFCs, HFCs, SF_6 and NF_3 are not estimated in the inventory and are therefore not taken into account.
account in the CDN.

c. The manner in which the Party has taken into account subparagraphs (c) and (d) of 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 included in either the BAU or the mitigation scenario. In the FAT sector, carbon monoxide has not been calculated due to the lack of global warming potential. Emissions/absorptions are taken into account in the BAU and the mitigation scenario. In the Waste sector, emissions from open combustion, composting and methanisation are not estimated in the inventory. Compared to the previous NDC, the new NDC takes into account actions in two new sectors (Agriculture and Waste) in both mitigation scenarios. Absorption in the FAT sector is not taken into account when calculating the target values and the indicator.
d. Benefits for the mitigation resulting from adaptation measures and/or economic diversification of the Parties, including including a description of projects, actions and initiatives relating in particular to adaptation measures and/or economic diversification of the Parties	The adaptation measures and/or economic diversification plans of the Republic of Burundi 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 the sectors covered by this NDC. These measures have been identified and quantified in the Third National Communication on Climate Change (TCNCC), the National Development Plan (NDP) 2018-2027, the Burundi National Development Plan (BNDP) 2018-2027, the Burundi National Development Plan (BNDP) 2018-2027 and the Burundi National Development Plan (BNDP) 2018-2027. l'Environnement Agriculture et Elevage (DOPEAE), etc.

4. Planning process	
a. Information on the planning processes that the Party has followed in developing its Nationally Determined Contribution and, if available, the Party's implementation plans, including, where applicable, on :	
	Institutional arrangements : The French Ministry of the Environment, Agriculture and Food l'Elevage is the institutional framework responsible for the updating and implementation of the 2020 NDC at through its administrative administrative and technical

i. National institutional arrangements, public participation and collaboration with local communities and indigenous peoples, taking gender issues into account ;	structures deconcentrated. To this end, it has set up a national commission responsible for monitoring the updating of the 2015 CDN. It is made up of managers from different sectors (AFAT, Energy including transport, PIUP and Waste). Frameworks involved in related issues (health, gender) have were also integrated into the Commission. Working closely with the UNDP, this commission is responsible for monitoring the process of updating the CDN since the Bureau recruitment and implementation phases (validation of the methodology, organisation of retreats, etc.) for technical sessions and stakeholder consultation and validation workshops, and submission of the updated NDC for adoption and approval). On a technical level, the 2020 NDC was carried out by a PREFED/CAREPED Consortium which brought together 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 the technical and civil society stakeholders, with the involvement of local communities and indigenous peoples, and took account of the gender and social inclusion dimension. Another aim of the workshops was to communicate on the actions selected and to ensure that stakeholders take ownership of their implementation. The 2020 NDC was approved by the Burundi authorities before being released.
ii. Contextual issues, including, inter alia, as appropriate :	
- The national situation, in particular the geography, the climate, economy, the	**Burundi** is a country in Central Africa with a population of more than 1 million. area of 27,834 km2. It is located between 28° 50 and 30° 54
sustainable development and poverty eradication	Longitude East between the Congo Basin and the eastern high plateaux, and between 2°30 and 4°28 Latitude South, at the crossroads of Central Africa, East Africa and even Southern Africa. The country has a hot, humid tropical climate influenced by altitude and characterised by an alternating rainy season (October to May) and dry season (June to September). Rainfall and temperature are strongly influenced by the relief, the altitude of the country (772-2670 m) and climate

	From a socio-economic point of view, Burundi will have a population of around 12.3 million in 2020, over 90% of whom will live in rural areas and 51% of whom will be women. As a Least Developed Country (LDC), its annual per capita income is estimated at USD 280, and its economy is essentially based on agriculture. With a population density of **480.99 people per km²,** population growth of 2.4% is putting pressure on land and water resources and exacerbating the situation of deforestation. According to the TCN, the sectors that emit the most are agriculture, energy and waste, with emissions of 4,186.21 Eq $_{CO2}$ in Gg respectively, 1072.4 Eq $_{CO2}$ in Gg and 230.73 Eq $_{CO2}$. For the other sectors, GHG emissions are insignificant.
-Best practice and experience from the development of the nationally determined contribution	Best practice and experience from the development : ✓ Participatory approach to the planning process for the development of the CDN (Collection data, data processing, calculation using IPCC 2006 software, requirements, prioritisation of measures, etc.); ✓ Consideration of Decision 4/CMA.1
- Other aspirations and contextual priorities recognised when signing up to the Paris Agreement	The updated 2020 NDC is in line with the objective of the Paris Agreement, in its provisions of Article 4 paragraphs 2 and 3, Article 4, Article 5 and 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 paragraph 4 of Article 9 of the Paris Agreement, which highlights areas for cooperation and facilitation and aims to improve understanding, action and support. These areas include early warning, emergency preparedness, etc.
b. Specific information applicable to Parties, including regional economic integration organisations and their member States, that have agreed to act jointly in accordance with Article 4, paragraph 2 of the Paris Agreement, including the Parties that have decided to act jointly, and the terms of the relevant agreement, in accordance with Article 4, paragraphs 16 to 18 of the Paris Agreement. the Paris Agreement	Not applicable *The updated NDC is not developed within the framework of regional economic integration organisations and their member states to act jointly pursuant to Article 4, paragraph 2 of the Paris Agreement. Paragraphs 16, 17 and 18 are not relevant to the Republic of Burundi's updated NDC.*

c. How the Party's preparation of its nationally determined contribution has been informed by the results of the global stocktaking, in accordance with Article 4, paragraph 9, of the Paris Agreement	The steps taken for the 2020 UNFCCC have not been informed by the global report card, as the first global report card on climate action will be published in 2023. However, the global balance sheet will take into account emissions avoided through the implementation of the 2020 NDC.
d. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement, consisting of adaptation measures and/or economic diversification plans leading to benefits in the area of mitigation in accordance with paragraph 7 of Article 4 of the Paris Agreement,	Not applicable

5. Assumptions and methodological approaches, including those relating to the estimation and accounting for anthropogenic greenhouse gas emissions and, where appropriate, anthropogenic removals :	
a. The methodological assumptions and approaches used to account for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, in accordance with paragraph 31 of decision 1/CP.21 and the accounting guidelines adopted by the CMA	The calculation of GHG emissions (historical and BAU projection) and emissions avoided by conditional and unconditional action in 2025 and 2030 was carried out for the 5 forecast sectors (energy, PIUP, agriculture excluding managed soil sub-sector, FAT and waste) using the Tier 1 methodologies presented in the 2006 IPCC Guidelines (LD 2006). Assumptions are based on economic growth and population data. The IPCC Tools 2006 software is used to calculate emissions. The calculation of target values as a percentage of the indicator by 2025 and 2030 for the conditional targets and the
	The unconditional emissions of the 2020 NDC were calculated by summing the emissions avoided thanks to the actions retained in the NDC. The sum of the emissions avoided is then divided by the emissions of the BAU scenario and multiplied by 100 to obtain a percentage. Attainment 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 land sub-sector) and the emissions projected in the CDN's BAU scenario. In the event of changes in methods and improvements to the inventory, the BAU will be recalculated.

b. The methodological assumptions and approaches used to account for the implementation of policies and measures or strategies in the contribution determined at national level.	National policies and programmes for socio-economic development and environmental protection were used as a reference for identifying mitigation actions. All mitigation actions under the proposed **unconditional target** are compatible with national socio-economic development programmes and are feasible. Mitigation actions under the **conditional target** are dependent on international financial support. These mitigation actions were validated during workshops with stakeholders from the various sectors. The avoided emissions of the actions selected in the NDC were calculated using the IPCC methodology (IPCC Tool , 2006). As there are no emission factors specific to Burundi, the use of Tier 1 EFs was recommended in the 2006 IPCC GL.
c. Where applicable, information on how the Party will take into account existing methodologies and guidelines under the Convention for accounting anthropogenic emissions and removals, 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: Calculation/monitoring : - **2006 IPCC Guidelines** - **IPCC, 2006 Software** Reporting : - **Annexes 1 and 2 of Decision 4 / CMA.1**: Information to be provided to improve clarity, transparency and transparency understanding of nationally determined contributions, as referred to in paragraph 28 of decision 1/CP.21
d. IPCC measurement methods and parameters used to estimate anthropogenic greenhouse gas emissions and removals	The methods used to calculate emissions/removals are those recommended by the IPCC and are based on the **2006 IPCC Guidelines.** **Parameters** for estimating GHG emissions/absorptions 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 into CO_{2eq} (21 for CH_4 and 310 for N_2O)
e. Assumptions, methods and approaches specific to a sector, category or activity, consistent with IPCC guidelines, as appropriate including, where appropriate :	

i. The approach used to deal with emissions and subsequent absorptions natural disturbances on farmland	Ongoing monitoring and evaluation of the implementation of projects/programmes/measures designed to mitigate emissions and subsequent absorption of natural disturbances on farmland
ii. The accounting process emissions and absorptions of harvested wood products	Daily monitoring of harvested areas wood products (SOSUMO sugar cane plantations)
iii. The approach used to deal with the effects of age class structure in forests	The approach is to carry out periodic inventories every five years (classification of forests at 5 years, 10 years, 15 years, 20 years, etc.). Carbon stocks can be calculated by age class.
f. Other assumptions and methodological approaches used to understand the contribution determined at national level and, where appropriate, to estimate emissions and removals. including :	
i. The way in which the reference indicators, reference level(s), including, where appropriate, sector, category or activity specific reference levels, are constructed, including, for example, the main parameters, assumptions, definitions, methods, data sources and models used.	The baseline indicators (BAU scenario) of the 2020 NDC are constructed on the assumption that no plans, policies or strategies are put in place to mitigate emissions or increase removals. For the 2020 NDC, these BAU indicators are those defined in **the 3rd National Communication on CC** submitted in 2019 by Burundi and projected to 2050 from 2005. Emissions from the managed soil sub-sector are not included in BAU emissions. The same applies to the reference levels for the various sectors. To this end, the GHG emissions of the BAU scenario have been calculated for all sectors. sectors (energy, PIUP, agriculture (excluding managed land), FAT and waste) using Level 1 methodologies
	presented in the **2006 IPCC Guidelines** (GL 2006). Mitigation action indicators for 2025 and 2030 have been defined for each sector. The main parameters are specific to each sector. They include activity data and emission factors specific to each sector. **The main assumptions** for all sectors are those relating to the economy, population growth, energy consumption per household, etc. The BAU scenario is a scenario that gives indicators of changes in greenhouse gas emissions over the time horizon if no plans, policies or strategies are taken to mitigate these emissions. It is established by making projections **from the year 2015 onwards** on the basis of economic growth and **population** growth rates**,** but assuming that no action is taken to implement plans, policies and strategies contributing to the mitigation of GHG emissions. **The data sources** used to determine the indicators include : • The TCNC (2019), • The Third GHG Inventory-2015

ii. For Parties whose Nationally Determined Contributions contain elements other than greenhouse gases, information on the assumptions and methodological approaches used in relation to these elements, as required	Not applicable *Burundi's NDC only covers greenhouse gases from the various sectors.*
iii. For those 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 covers greenhouse gases from the various sectors.*
iv. Other technical information, as required	Access to NDC funding in accordance with Article 5 of the Paris Agreement Implementation of the 2020 NDC could be achieved through regional cooperation (EAC and COMIFAC).

g. The intention to have recourse to voluntary cooperation under Article 6 of the Agreement of Paris, where applicable	Yes under Article 6 of the Paris Agreement to access funding for the implementation of the 2020 NDC

6. How the Party considers its nationally determined contribution to be fair and equitable. ambitious given its national situation	
a. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	During the preparation of the NDC, the vulnerability of the sectors (Agriculture, Forestry and Other Land, Energy, Health, PIUP) was analysed. The negative impacts of climate change were identified, and mitigation and/or adaptation measures to deal with these impacts were identified for each sector, with priority projects highlighted. The 2020 NDC was drawn up using the most recent TCN data, and other sectors were also taken into account, such as waste, UPIP and transport.
b. Equity considerations	Gender and social inclusion are taken into account in the CND 2020. In addition, the actions included have been identified on the basis of national policy and strategy documents.
c. How the Party has taken into account paragraph 3 of Article 4 of the Paris Agreement14	The 2020 NDC is more ambitious than the previous NDC, taking into account actions in sectors and sub-sectors not included in the 2015 NDC, such as transport and waste. In addition, the themes of health, gender and social inclusion have been integrated into the prioritisation of actions. The 2020 NDC therefore represents an improvement on 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 CND 2020 has defined precise indicators for monitoring and evaluation and recommends a capacity-building plan to ensure greater ownership by the various parties. stakeholders.
d. The manner in which the Party has taken into account paragraph 4 of Article 4 of the Convention. the Paris Agreement.	Although Burundi is not an emitting country, it is developing mitigation actions through its policies. emissions.
e. The way in which the Party has taken into account paragraph 6 of Article 4 of the Paris Agreement4	Burundi is strengthening its mitigation efforts 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 Burundi Climate Change Planning Policy and the Burundi Climate Change Strategy are all part of the NDC. Environment, Agriculture and Livestock, the

14 How does the NDA represent a progression beyond the Party's previous NDA and reflect its highest possible ambition?

	development of new and renewable energies (solar, wind, hydroelectric power stations under construction, etc.), increasing the internal budget to finance mitigation and adaptation measures.

7. The way in which the contribution determined at national level contributes to achieving the objective of the Convention as set out in Article 2	
a. The way in which the contribution determined at national level contributes to the achievement of the objective of the Convention as set out in the Convention. as set out in Article 215	The CND 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(1)(a) and Article 4(1) of the Paris Agreement16	- The revised NDC contributes to paragraph a) of article 2 of the PA. Between 2021 and 2025, it plans to implement the following projects /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 policy and strategy measures and mitigation plans/programmes. - Existing policies take account of the climate plan and the SDGs with the aim of developing in a sustainable manner. low-carbon way to contribute to the overall objective.

4. COMMUNICATION ON ADAPTATION

4.1. National situation, institutional arrangements and legal frameworks

4.1.1. National situation

Burundi is a Central African country with a surface area of 27,834 square kilometres. It lies between 28° 50 and 30° 54 longitude east, between the Congo Basin and the eastern high plateaux, and between 2° 30 and 4° 28 latitude south, at the crossroads of Central Africa, East Africa and even Southern Africa. Burundi has a hot, humid tropical climate.

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

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

16 Article 2.1(a) of the Paris Agreement includes two global temperature targets - "well below 2 degrees" and "1.5 degrees". Article 4.1 qualifies these by stating that "Parties aim to achieve the global cap on greenhouse gas emissions as soon as possible, recognising that this will take longer for developing country Parties, and to undertake early reductions of such emissions. and to undertake early reductions thereafter 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 in the Bugesera natural region; in the north-east, receiving the lowest annual rainfall of between 800 and 1000 mm.

Economically, Burundi is a Least Developed Country (LDC). Its annual per capita income is estimated at USD 202, and its economy is essentially based on agriculture. With a population of 11.9 million and a population density of **480.99 people/km²,** population growth of 2.4% is putting pressure on land and water resources and exacerbating the situation of deforestation.

4.1.2. Institutional framework

In Burundi, the Ministry of the Environment, Agriculture and Livestock (MINEAGRIE), through the Directorate General for the Environment, Water Resources and Sanitation, is responsible for coordinating the implementation of sectoral climate change policies. The central government departments and public establishments of the Institut Géographique du Burundi (IGEBU) and the Office Burundais pour la Protection de l'Environnement (OBPE) provide support.

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

In the context of climate change, the IGEBU is responsible for collecting, analysing, processing and disseminating meteorological and hydrological data. As for the OBPE, its missions are to (i) implement environmental and climate change policies and strategies and (ii) put in place mechanisms to mitigate and adapt to climate change (implementation of the NAP).

In addition to MINEAGRIE, other ministries responsible for energy, public health, trade, transport, industry and tourism are also involved in climate change issues.

Given that climate change has a cross-cutting impact on all the key sectors of the national economy, effective resilience in the face of this problem requires the adoption of a multisectoral and multidisciplinary approach. This will help to strengthen cooperation between stakeholders, facilitate the establishment of a harmonised framework for future action and mobilise financial resources for the implementation of the NAPA and the NDC.

Contributions to other international frameworks and/or conventions 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, in particular Articles 164(4) and 35 thereof
- Law n°1/10 of 30 May 2011 on the creation and management of protected areas in Burundi
- Law n°1/010 of 30 June 2000 on the Environment Code
- Law No. 1 /07 of 15 July 2016, revising the Forestry Code
- Law n°1/02 of 26 March 2012 on the water code in Burundi;
- Protection of the quality (art. 43 to 47) and quantity of water resources (art. 48 to 50).
- Law n°1/13 of 9 August 2011 revising the Burundi land code, article 451 paragraph 1,
- Law n°1/13 of 23 April 2015 on the reorganisation of the electricity sector
- Law n°1/012 of 30 May 2018 on the Code for the provision of health care and services in Burundi, especially articles 137 and 138
- Decree-Law no. 100/241 of 31 December 1992 regulating the disposal of waste water in urban areas.
- The Code was promulgated by law no. 1/010 of 30 June 2000.
- Decree no. 100/ 292 of 16 October 2007 on the creation, mission, composition, organisation 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 phenomena is low, due to limited technical and financial capacity.

According to TCNCC data, Burundi also has thermal variations according to its geographical zones. The higher regions have colder temperatures on average than the lowlands.

An analysis of inter-decadal mean, maximum and minimum temperature trends shows that warming began in the decade from 1986 to 1995, with the record high occurring in the decade from 2006 to 2015, followed by the decade from 1996 to 2005. The record average maximum temperature was recorded during the decade 1996-2005 and the average temperature

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

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

- In 2009, torrential rains threatened almost the entire country, especially the Imbo plain, the Mumirwa, the Buyenzi region and the centre-east of the country in the Mugamba and Kirimiro regions.
- In 2010, torrential rains hit the city of Bujumbura, affecting the Bujumbura international airport among other facilities.
- In 2011, torrential rains flooded three of Bujumbura's urban districts, causing extensive damage.
- In February 2014, following flooding in the northern districts of Bujumbura Mairie, in and around Gatunguru, almost 1,000 houses collapsed, leaving 20,000 people homeless and 77 dead.
- Since September 2015, more than 4 million people have been affected by torrential or torrential rain, water shortages, strong winds, flooding and landslides. These climatic events destroyed more than 30,000 hectares of crops, more than 5,000 homes, more than 300 classrooms and around fifty bridges. More than 42,000 people have been displaced and are still 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) around 31,000 people were displaced by climatic events during 2019. Torrential rains, strong winds and landslides caused the displacement of 13,856 people.
- Heavy rains in 2019 also destroyed crops and affected livelihoods. As a result, 15% of Burundi's population suffered from severe food insecurity in April 2019.

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

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

According to the TCNCC (2019), increases or intensities in total rainfall are likely to cause flooding in the western Imbo plains and erosion in the southern zone and central plateau with the following consequences for hill and plain dwellers:

- Exposure to disasters ;
- Decrease in agricultural production ;
- Affecting public infrastructure, biodiversity and the silting up of dams;
- An increase in the risk of vector-borne diseases on the Imbo and Kumoso plains and in the lowlands of the marshes.

4.3. National priorities, strategies, policies, plans, objectives and adaptation measures

Drawing on lessons learned from existing adaptation projects and programmes, this section sets out the priority adaptation measures to address the main impacts, vulnerability factors and risks of climate change.

Since the previous NAPA was drawn up in 2007, Burundi has implemented several adaptation projects and programmes, particularly in the agriculture and natural resources, energy and water management sectors. The lessons learned from their implementation can be used for future projects and programmes, particularly in terms of: potential for scaling up, information on climate change, awareness-raising and capacity-building, adaptation planning at sub-national level and strengthening the commitment of the private sector, among others.

The implementation of adaptation initiatives has suffered from shortcomings linked to the identification of sectors, the inadequacy of adaptation priorities, the lack of continuity of support for projects and weak capacity building.

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

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

The adaptation programmes were determined after examining strategic documents such as the Burundi NDP 2018-2027, the NAPA, the NDC and the TCNCC. After carrying out a sectoral vulnerability analysis based on a participatory approach, the team of experts selected the criteria for prioritising the activities in the various sectors selected, using, among other things, the Multi-Criteria Analysis (MCA), which made it possible to take into account variables and factors that could have a significant impact on the vulnerability of the various sectors.

qualitative parameters, and which incorporate the necessary information concerning the degree of adverse effects of climate change. Six prioritisation criteria have been selected and used to establish a hierarchy at sector level:

1. Risk of loss of life ;
2. Risk of loss of Quality of Life ;
3. Evidence of the impact of climate change ;
4. Contribution to the fight against poverty / Sustainable development ;
5. Feasibility / Sustainability / Safety ;
6. Benefits for the environment.

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

1°. Agriculture and livestock

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

Water resources

4°. Health

5°. Energy

6°. Infrastructure

Priority areas have also been proposed, notably in the National Policy on Climate Change (2012), the National Strategy and Action Plan on Climate Change (2012) and the National Development Plan 2018-2027, the overall strategic objective of which is "To promote development that is resilient to the adverse effects of climate change". The SNPACC defines six strategic areas relating to adaptation. These are :

1. Adapting to and managing climate risks,
2. Promoting research and development and technology transfer ;
3. Capacity building ;
4. Knowledge management and communication ;
5. Involvement of gender, youth and vulnerable groups;
6. Mobilising finance

On the basis of these strategic axes, a series of priority adaptation programmes have been identified in various documents, including: the NDP 2018-2027, Priority Action Programmes (2018), the

PANA (2007), SNPACC (2013), CDN (2015), TCNCC (2019), Document d'Orientation de la Politique Environnementale, Agricole et d'Elevage (2020), and sectoral documents such as the PNIA 2016-2020.

5. ADAPTATION

Overall, the aim of implementing adaptation measures is to increase the resilience of ecosystems and populations to the impacts of climate variability and change. On the basis of the projection model for the two key parameters of temperature and precipitation and according to the prioritisation criteria, the following priority actions have been selected in 2 unconditional and conditional scenarios.

5.1 Unconditional scenario

Proposed priority actions by sector

SECTOR	SHARE PRIORITIES	TARGET	ACTIVITY	INDICATEUR	COST IN USD
AGRICULTURE AND LIVESTOCK	1 Enhancing and promote medicinal, nutritional and honey-producing and honey plants	By 2023, priority medicinal, nutritional and melliferous native plants will be installed and supplied to users.	Produce of seeds medicinal, nutritional and honey-producing plants and melliferous plants identified as priorities, install gardens botanical stations and centres or protected areas in the country and make them available to local users.	Number of types of plant installed	51 500
	2 Promote the use of bio-pesticides in agriculture to reduce pollution and improve health. health human)	By 2023, the bio-pesticide plants collected will be installed at the Mahwa and Bukemba stations.	Install a collection of plants bio-pesticides at the Mahwa and Bukemba stations;	Number of biopesticide species installed and registered	55 940

	3 Carry out plant health inventory research on diseases and pests crops in Burundi	By 2023, diseases and pests in Burundi will be inventoried	Taking stock of the diseases and pests present in the country	List of diseases and pests inventoried	12 608
	4. develop farming practices that mitigate the effects of hazards climatic	By 2025, cultivation practices that mitigate climatic hazards will be developed	Introduce cultivation practices to cope with climatic hazards	Number of cultivation practices initiated	100 000
HEALTH	Raising awareness the population of adverse effects of climate change on human health	By 2025, at less 700 sessions will be carried out in at hospitals and CDS	Awareness-raising workshops in hospitals and CDSs	Number of household awareness-raising sessions	1 283 290
TRANSPORT AND INFRASTRUCTURE BUILDINGS	4 Developing infrastructure for non-motorised transport in Bujumbura	By 2027, 7.5 km will be developed for non-motorised transport	Develop non motorised	Number of km developed	1 345 500
WASTE	5 Rational management of chemical waste	By 2025, a document management management and treatment of chemical waste will be developed	Develop management strategies	Strategy document available	20 491 800
	Total				27 840 638

5.2. Conditional scenario

SECTOR	PRIORITY ACTIONS	TARGET	ACTIVITY	INDICATORS	COST (USD)
AGRICULTURE AND LIVESTOCK	1 Developing and evaluating n ew varietiesof culture	By 2025, 5 new, more productive varieties of priority crops are provided in	Put à the availability of seeds and seedlings and plants for	Number of new varieties introduced/area	8 800 000
	high-yielding food crops yi eld and a nd nutritional potential to climate change	all ecological zones	5 selecte d crops		
	2 . Producing and distributing ad apted to to climatic hazards	By 2027, quality seeds will be available to all BPEAEs	Ensure the availability of quality toall BPEAE	The number of Kgs of quality seeds available	1 140 156
	3 Promoting of fish in ponds	By 2029, at least an increase of 13,000 tonnes in fisheries production 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 strategic stock of veterinary inputs will be operational	Set up a stock strategy for veterinary inputs	Number of functional strategic stocks	13 185 017

	5 Improving the genetic effect à Through t he widespread use of artificial insemination	By 2027, an autonomous management structure for artificial insemination, genetic improvement and support ser vices is functional	Put in place of a structure manage ment structure for artificial insemination genetic improvement and support central services in the fields of	A functional structure	53 003 438

5.3. Implementation and support needs

	6 **Agro-sylvo-zootechnical integration and sustainable of natural resources: 18 392 856**	By 2027, at at least 3,000 pilot sites will be set up	Put in place des sites pilot sites for agro-sylvo-zootechnical integration s and sustainable managemen t of natural resources	Number of pilot sites set up	18 392 856
	7 Refurbish an d strengthen liv estock infrastructure	By 2029, 9 provincial veterinary centres, 80 Slaughter areas, 2 veterinary quarantine centres and 5 livestock markets will be rehabilitated. and strengthened	Building and renovating basic infrastructure	Number of infrastructures rehabilitated and strengthened	49 566 996
	8 Create in dustrial units for the manufacture of concentrated livestock feed	By 2027, 1 lick block manufacturing plant will be set up in the Imbo region, 4 satellite units will be installed in 4 provinces and 3 will be rehabilitated	Set up manufacturing units for livestock feed supplements	Number of livestock feed supplement manufacturing units installed or rehabilitated	26 795 300
WATER RESOURCES	9 Develop hillside reservoirs to collect rainwater and watercourses for agricultural purposes	By 2027, 11,461 ha will be irrigated by hill reservoirs	Developing water storage facilities for irrigation	Number of hectares irrigated and functional reservoirs developed	17 192 480
	10 Protecting and managing flood-prone areas	By 2027, 90,000 ha of flood-prone areas will be protected	Protecting and managing flood-prone areas	Number of km developed	3 000 000

	11 Improving waterof water for agricultural and other and other domestic uses and the resilience of waterwater systems, sanitation and hygiene in the face of the risks of change climate	By 2025, at least 10,000 households will be using rainwater for agricultural purposes	Collecting and use rainwater for other purposes agricultural a nd other uses	Percentage of communities or households that have access to an efficient rainwater harvesting system and of WASH projects that take into account the risks climate.	29000000
ENERGY	12 Rehabilitating existing hydroelectric power stations	By 2027, 3 power stations will be rehabilitated	Refurbishing plants in poor condition	Number of plants rehabilitated	200 000 000
	13 Increase de nsification of the city's network of Bujumbura	Between now and 2027, 86.1 km of medium-voltage lines and 1085 km of low-voltage lines will be densified. tension will be made	Densify ex isting lines m edium an d low-voltage lines	Length of densification	15 550 000
	14 Upgrading the city's network of Bujumbura	By 2027, 203.35 km of the medium-voltage line and 772.3 km of the base-voltage line will be rehabilitated	Rehabilitating the lines of medium a nd low voltage	Number of km of lines rehabilitated	17 820 000
	15 Setting up digesters in public infrastructures	By 2027, 30 establishments will be covered	Install the biogas digesters in public establishments	Number of digesters installed	110 000 000
INFRASTRUCTURE, TRANSPORT AND BUILDINGS	16 Developing infrastructure for th e transport no	By 2027, 42.5 km will be developed for non-motorised transport	Developing routes fro m transport no n-motorised	Number of km developed	7 624 500

	n-motorised				

The priorities set out in the table above are designed to fill the gaps identified above and as such enable the recommendations made to this end to be implemented. The focus is on

	17 Developing the transport on Lake Tanganyika	By 2027, 3 modern ports will be developed and 6 boats available	Developing ports on Lake Tanganyika and acquiring 6 boats	Number of ports developed and boats acquired	62 352 500
WASTE	18 Connecting businesses and households to the wastewater treatment network	By 2025, 8 zones comprising of neighbourhoods, industrialists and public institutions aware of the city of Bujumbura will be connected to wastewater networks	Raising awareness and connecting households industrial and public establishments	Number of areas of Bujumbura town hall connected	44 000 000
	19 Managing solid waste in the city of Bujumbura and other main towns	By 2030, the cities of Bujumbura, Gitega, Ngozi and Rumonge will be equipped with transit and final landfill sites for solid waste and sorting and recycling centres	Develop transit sites and final landfill sites for solid waste To setting up sorting and and recycling for target towns ;	Number of transit sites and final landfill sites for solid waste and number of sorting and recycling centres by city	68 320 000
CROSS-CUTTING PRIORITIES	20 Carrying out monitoring of Burundi's environment in real time for sustainable development	By 2027, the technical and human the PUMA, MESA and GMES will be strengthened	Strengthen the technical, material and human capacities of surveillance training tools and 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

building capacity and mobilising funding to help implement sectoral and cross-cutting priorities.

Human resources from the public and private sectors and civil society are essential for implementing climate change adaptation programmes. Building the capacity of

	21 Mapping the areas/communities affected by climate risk and improve resilience of water, sanitation and hygiene systems. nt and hygiene	From 2025 to 2025,250 water sources will be protected	Target areas/ communities affected by climate risk and vulnerable vulnerable sources by providing climate-resilient WASH systems	Percentage of water points with source preservation and protection activities	82000000
	22 Improving knowledge of the climate change, the prevention of climate change-related diseasesand disaster risk reduction at community level community level	From 2021 à 2025,5000 people will have knowledge of climate change and the ability to to prevent themselves from the risks climate change.	Strengthen community capacity to the climate change and the risk prevention and management linked to climate change	Number of hills/sub-hills that have received training on climate change/hazard reduction risks disaster risk reduction	7300000
TOTAL ADAPTATION					1.452.121.891

Stakeholders from target ministries, research institutes, the private sector and civil society form a fundamental part of the NAP's implementation strategy.

To date, Burundi has implemented a series of adaptation programmes financed mainly by bilateral and multilateral donors, such as the GEF, the African Development Bank (ADB), the World Bank and GIZ, as well as national funds for programmes such as the National Reforestation Programme. Environmental funds such as the GEF, the Adaptation Fund, the Blue Fund and the Green Climate Fund are managed by the Ministry in charge of the environment. This is an asset for capitalising on synergies and capacities.

5.4. Implementation of adaptation measures and plans

As part of the implementation of the NAPA, it is essential for political decision-makers to take ownership of the NAPA, to acquire the technical and financial resources needed to implement the NAPA and to develop and implement a strategy for mobilising funds for adaptation in Burundi.

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

- Strengthen the coordination mechanism by adopting a multi-sectoral and multi-disciplinary approach in order to strengthen consultation between stakeholders in the field, facilitate the establishment of a harmonised framework for future action and mobilise financial resources for the implementation of the NAP and the NDC;
- Raising awareness of the importance of adaptation among relevant stakeholders and advocating recognition of adaptation to climate change as a national priority;
- Encourage technical and financial partners to invest in the field of climate change;
- To draw up legislation in the field of climate change and provide it with implementing regulations;
- Aligning sectoral policies with the NDP, taking climate change into account
- Develop awareness-raising and training programmes on climate change.

To Stakeholders :

- Taking ownership of and participating in the implementation of the NAP
- Participating in the development of awareness-raising and training programmes on climate change.

5.5. Progress and results

Burundi submitted its Third National Communication on climate change in 2019 to ~~the~~ UNFCCC Secretariat. The country is currently revising its NDC. The Government of Burundi has recognised that the NAP process and the revision of the NDC are complementary processes which, when brought together, promote action and facilitate the mobilisation of resources for adaptation. The NAP can contribute to the definition of adaptation ambitions within the framework of the NDC.

5.6. Adaptation efforts

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

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

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

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

At the decision-making and institutional levels, adaptation efforts are also being mobilised, despite their ineffectiveness, and are reflected in the introduction of legal texts, strategies and plans proposing adaptation solutions to mitigate the risks induced by climate change.

5.7. Cooperation to strengthen adaptation at national, regional and international levels

At national level, the strengthening of cooperation concerns the involvement of all stakeholders in adapting to climate change at all stages of the planning and implementation of programmes included in the NDC.

At a regional level, cooperation takes the form of regional partnership agreements such as COMIFAC and the Community of East African Nations.

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

5.8. Obstacles, difficulties and gaps

There are a number of gaps, difficulties and obstacles in climate governance with regard to the regulatory frameworks and policies relevant to adaptation:

- Weak multi-sectoral and multi-disciplinary coordination on climate change, including adaptation, due to the lack of a functional and permanent technical working group;
- Limited institutional and individual technical capacity to translate policy priorities into 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 raise and access finance ;
- A regulatory framework that is not sufficiently functional ;
- Lack of climate focal points in all key sectors.

5.9. Best practices, lessons learned and information exchange

In the implementation of adaptation projects and programmes that are underway or nearing completion, good practice and lessons can be learned, particularly in the agriculture and natural resources sectors.

The lessons learned are set out below:

- The NAP process will be able to rely on awareness-raising and capacity-building activities for government players responsible for community development organisations;
- The importance of projects for the regional integration of adaptation, which could be pursued as part of the implementation of the NAP;
- Some projects have helped to achieve shared adaptation and mitigation objectives and to mobilise private sector investment;
- The NAP process will be based on the objectives to produce coordinated results at sub-national levels contributing to the formulation of the national adaptation plan;
- The NAP can rely on capacity-building activities and systems for collecting and disseminating meteorological and hydrological information;
- The NAP process strengthens climate information systems and related capacities;
- The NAP process is strengthening climate information and early warning systems, as well as climate change vulnerability maps.
- The communication strategy can be used as a basis for drawing up a communication plan for the NAP process.

5.10. Monitoring and assessment

As part of its implementation, the monitoring and evaluation (M&E) of the NAP will make it possible to check whether this process is proceeding as planned. Adaptation monitoring and evaluation makes it possible to assess the impact (in the short, medium and long term) of the priority actions taken and whether they are actually helping to achieve the objectives defined for reducing vulnerability. M&E can also be used to learn about adaptation through practice, to redirect actions where necessary, and to monitor financial contributions in the field of climate change.

Burundi does not currently have an M&E framework for climate change. The national plans and strategies for climate change and the environment define neither the M&E system nor 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 targets. There is a National REDD+ Strategy (2019) which proposes a national forest monitoring system based on Measurement,

Notification and Verification (NVM), but its implementation is not effective. A fully-fledged M&E mechanism will have to be put in place.

5.11. Adaptation measures and/or economic diversification plans

These measures relate to the implementation of various plans and strategies, in particular :

- the National Action Plan for Adaptation to Climate Change (PANA 2007);
- Burundi NDP 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. The lessons learned from their implementation can be used for future projects and programmes, particularly in terms of: potential for scaling up, information on climate change, awareness-raising and capacity-building, adaptation planning at sub-national level and strengthening the commitment of the private sector, among others.

5.12. Contributions to other international frameworks and/or agreements

Adaptation in the climate change sector involves a variety of players and establishes a common international conceptual framework in the form of the Paris Agreement.

Since the creation of the Ministry in charge of the Environment in 1988, the Government of Burundi has begun the process of drafting laws relating 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 legislation, on the one hand, and a failure to adequately disseminate information and raise awareness among stakeholders at sectoral level, on the other.

Among the legal tools on which the country can rely to combat climate change, mention should also be made of 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 the Protection of the Ozone Layer and the RAMSAR Convention on Wetlands. These conventions are often sources of funding for adaptation activities.

5.13. Taking into account gender issues, traditional knowledge, the knowledge of indigenous peoples 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 rule book adopted at COP24, calling for greater vigilance over the impact of policies to combat climate change, to ensure that they are not to the detriment of women and vulnerable groups.

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

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

The projects will provide them with the means and techniques to improve their standard of living, climate resilience and food security (income, use of energy sources that do not emit greenhouse gases, improved stoves, solar energy, ..., etc.). During the implementation of forestry projects and those relating to the restoration of land and ecosystems, particular attention will be paid to vulnerable groups, 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 related disasters.

The suggestions of these groups will be collected for the development and implementation of projects and for community-based management of the risks of disasters linked to climate change. The traditional knowledge of the Batwa will be taken into account, as they have a long history of observation and commitment to their environment. Over many years of interaction with their natural environment, they have developed strategies for dealing with the impacts of climate change, and have been able to respond thanks to their know-how and their philosophy of nature.

6. CDN IMPLEMENTATION PLAN

6.1. Institutional aspects

Burundi has an institutional framework for implementing the NDC. It is overseen by the Ministry of the Environment, Agriculture and Livestock (MINEAGRIE) through the Directorate General of the Environment, Water Resources and Sanitation. The latter is responsible for coordinating the implementation of sectoral climate change policies.

Central government departments and public institutions (Institut Géographique du Burundi, IGEBU, and Office Burundais pour la Protection de l'Environnement, OBPE) are providing support. IGEBU and OBPE are also the National Focal Point and Deputy National Focal Point, respectively, of the United Nations Framework Convention on Climate Change (UNFCCC).

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

In the context of climate change, the IGEBU is responsible for collecting, analysing, processing and disseminating meteorological and hydrological data. OBPE's remit includes implementing policies and strategies on the environment and climate change, and setting up mechanisms for mitigating and adapting to climate change (implementation of the NAP).

Other sectoral ministries are also involved in climate change issues, which have a cross-cutting impact on all the key sectors of the national economy. These include the Ministries responsible for Energy, Public Health, Trade, Transport, Industry and Tourism. This justifies the need for a multi-sectoral and multi-disciplinary approach to ensure effective resilience.

Accordingly, the CND 2020 advocates strengthening consultation between stakeholders in the field with a view to facilitating the harmonisation of interventions and the mobilisation of financial resources for the implementation of the NAPA and the CND. To this end, following the example of other countries in the sub-region and around the world, a National Climate Change Council, with technical and financial capacities and high-level decision-making powers, is essential for the purposes of coordination, consultation and mobilisation of the stakeholders involved at all levels, as well as monitoring and evaluation of the state of implementation of the NDC.

On a technical level, a National Technical Committee on climate will have to be set up and chaired by a parastatal agency following the example of other structures in the East African Community. The creation and establishment of the National Council and the Technical Committee will be set out in presidential decrees. The establishment of these structures will have to take into account all the stakeholders 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 17 May 2018, especially articles 164, paragraph 4 and 35. It is supplemented by the following texts:

- Law n°1/10 of 30 May 2011 on the creation and management of protected areas in Burundi
- Law n°1/010 of 30 June 2000 on the Environment Code
- Law No. 1 /07 of 15 July 2016, revising the Forestry Code
- Law n°1/02 of 26 March 2012 on Burundi's water code with regard to the qualitative (art.43 to 47) and quantitative protection of water resources (art.48 to 50).
- Law n°1/13 of 9 August 2011 revising the Burundi land code, article 451 paragraph 1,
- Law n°1/13 of 23 April 2015 on the reorganisation of the electricity sector
- Law n°1/012 of 30 May 2018 on the Code for the provision of health care and services in Burundi, especially 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, organisation and operation of the National Platform for Risk Prevention and Disaster Management.

6.3. Financing mechanisms

The assessment of the financing needs for the actions to mitigate and adapt to the effects of climate change provided for in this NDC is based on the lists of programmes and projects identified as ongoing or planned across the various sectors. An operational implementation and financing strategy will enable the NDC to be implemented within the planned timeframe. The funding mechanisms have requirements to meet 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 arrangements is a guarantee of success in attracting the attention of the providers of the resources needed to implement the NDC.

7. MONITORING/EVALUATION MECHANISMS AND MRV

Under the supervision of the Ministry in charge of the Environment, the NDC will be monitored and evaluated by the sectoral technical services.

Among other things, it will monitor the implementation of the activities set out in this contribution, as well as the various CND indicators.

A capacity-building plan for the sectors concerned by NVD will be drawn up as part of the strategy for implementing the NDC, with the corresponding costs incorporated into the cost of priority actions.

8. CONCLUSION

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

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