Republic of Guinea-Bissau
Ministry of Environment, Biodiversity and Climate Action

GUINEA-BISSAU'S FIRST BIENNIAL CLIMATE CHANGE TRANSPARENCY REPORT (BTR1)


ENERGY


AFOLU


IPPU


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DATASHEET

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  ** Mr Viriato Luís Soares Cassamá – Minister for Environment and Biodiversity*

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- National Institute of the Environment (INA)
  ** João Lona Tchedná – Director General of the National Environment Institute*

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- GEF – Global Environment Facility
- UNFCCC – United Nations Framework Convention on Climate Change
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PREFACE

First Biennial Transparency Report (BTR1) under the Paris Agreement on the New Climate Regime

It is with a deep sense of responsibility and national pride that we present the First Biennial Transparency Report (BTR1) of Guinea-Bissau, within the framework of the Paris Agreement on the New Climate Regime. This is a historic milestone in our commitment to climate transparency, global accountability and concerted action for a sustainable future.

The preparation of this report is the result of unprecedented interinstitutional collaboration, involving the Government, the private sector, academia, civil society and local communities. We would like to thank all major national institutions:

- For systematisation of climatic and economic data;

- Civil society organisations, for their role in participatory data validation.

- And community leaders, who have brought local realities and traditional knowledge to this agenda.

The materialisation of this report was only possible thanks to the technical and financial support of international partners, who have been essential pillars in our climate journey.

We highlight:

The United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Environment Programme (UNEP) and the Global Environment Facility (GEF), for methodological support and capacity building of national teams; and to the sister countries of the Economic Community of West African States (ECOWAS) for sharing good regional practices.

This report reinforces our commitment to the principles of the Paris Agreement on the new Climate Regime but also highlights the importance of South-South and triangular cooperation. Guinea-Bissau, despite its structural challenges, is based on:

- Active voice of Small Island Developing States (SIDS) and the most vulnerable African countries;

- Advocate for fair and accessible climate finance mechanisms;

- The bridge between scientific knowledge and local solutions.

Looking to the future, BTR1 is not just an accountability document – it is a strategic

roadmap for:

1. Strengthen national climate governance;

2. Accelerate the implementation of our Nationally Determined Contributions (NDCs);

3. Attract green investments aligned with our vision of a blue and sustainable economy.

We invite all partners to continue with us, turning these commitments into tangible actions. The climate crisis knows no borders and only with global solidarity can we protect our planet for future generations.

Bissau, August 2025

Viriato Luis Soares Cassamá

Minister of Environment, Biodiversity and Climate Action

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LIST OF ABBREVIATIONS

PA	Paris Agreement
AFOLU	Agriculture, Forestry and Other Land Use
APs	Protected Areas
BDUT	Land use database
BM	World Bank
RTB	Biennial Transparency Report
RTB	Biennial Transparency Report
BUR	Biennial Update Report
BUR1	First Biennial Update Report
CH4	Methane
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CMGB	Municipal Council of Guinea-Bissau
CO2	Carbon dioxide
CO2eq	Carbon dioxide equivalent
COP	Conference of the Parties
CRT	Common Reports Table
WFC	Common tabular format
AD	Activity data
DENARP	National Poverty Reduction Strategy Paper
DGE	Directorate General for Energy
FGD	Directorate General for Forests
HRMD	Directorate General of Water Resources
LCY	Guidelines
DSEA	Directorate of the Office for Agricultural Statistics
EAGB	Guinea-Bissau Electricity and Water Company
EE	Energy Efficiency
RE	Renewable energy
ETF	Enhanced Transparency Framework
FAITH	Emission factor
ITF	Intertropical Front
FM	Methodological sheet
FREL	Baseline for forest emissions
GACMO	Greenhouse Gas Reduction Cost Model
GHG	Greenhouse gas
GEF	Global Environment Facility
GTT	Technical Working Group
GWP	Power of Global Warming
HFC	Hydrofluorocarbon
IBAP	Institute of Biodiversity and Protected Areas
IGEE	Greenhouse Gas Inventory
INA	National Environment Institute

INEC	Instituto Nacional de Estatística e Censos
INITE	National Institute of Applied Research and Technology
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ITMO	Internationally Transferred Mitigation Result
LD	Guidelines
LULUCF	Land Use, Land Use Change and Forests
MABAC	Ministry of Environment, Biodiversity and Climate Action
MADR	Ministry of Agriculture and Rural Development
MPGs	Modalities, Procedures and Guidelines for the Transparency Framework
MRV	Monitoring, Reporting and Verification System
N2O	Nitrous oxide
NC4	Fourth National Communication on Climate Change
NDC	Nationally Determined Contribution
NF3	Nitrogen trifluoride
NIR	National Inventory Report
ODA	Official Development Assistance
SDG	Sustainable Development Goals
OMVG	Gambia River Improvement Organisation
OTO	Other official transmissions
PANA	National Climate Change Adaptation Plan
PANEL	National Energy Efficiency Action Plan
PANER	National Renewable Energy Action Plan
PCI	Lowest calorie value
PFC	Perfluorocarbon
PGRU-GB	Urban Waste Management Plan of Guinea-Bissau
GDP	Gross domestic product
PIES	Sustainable Energy Investment Plan
SNE	National Development Plan
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
QA/QC	Quality Assurance/Quality Control
REDD+	Reduce emissions from deforestation; reduce emissions from forest degradation; conserve forest carbon stocks; manage forests sustainably; and increase forest carbon stocks.
MSW	Municipal Solid Waste
SCN	Second National Communication on Climate Change
SF_6	Sulphur hexafluoride
TCN	Third National Communication on Climate Change
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

Guinea-Bissau, in accordance with Article 13 of the Paris Agreement, presents its First Biennial Transparency Report (BTR1), consolidating an unprecedented technical and institutional effort to strengthen transparency, monitor progress in the implementation of its Nationally Determined Contribution (NDC) and report its greenhouse gas (GHG) emissions, adaptation actions, as well as its support needs in financing, capacity building and technology.

The BTR1 represents a decisive milestone for the integration of climate transparency in the National Plan, being the result of a participatory process led by the Ministry of Environment, Biodiversity and Climate Action, in collaboration with several sectoral institutions, civil society organisations and development partners.

The national inventory covers the period from 2010 to 2022 and was developed based on the 2006 IPCC Guidelines, using Level 1 methods and emission factors adapted to the national reality.

The total national GHG emissions in GgCO2eq in Guinea-Bissau, without LULUCF, in 2010 were 2,095.6 GgCO2eq; in 2015, 2,440.5 GgCO2eq and in 2022, 3,449.7 GgCO2eq . This represents a progress rate of 64.62%. If this trend continues, by 2030 the sector will emit 4,809.46 GgCO2eq and reach 11,037.86 GgCO2eq in 2050.

The total national emissions of GgCO2eq in Guinea-Bissau with LULUCF in 2010 are -25122.2 Gg CO2eq in 2015 are -19294.8 GgCO2eq and in 2022 are -19095.0 Gg CO2eq . If this trend continues, by 2030 the sector will emit -15903.56 GgCO2eq and reach -10067.7 GgCO2eq in 2050.

BTR1 reports on the degree of implementation of the updated targets of Guinea-Bissau's NDCs, which cover conditional and unconditional mitigation actions, aiming to reduce emissions by 2030.

Renewable energy: Expanding solar energy in rural areas and isolated communities.

Forest sector: Launch of mangrove restoration and reforestation programmes in degraded areas.

Resilient agriculture: dissemination of agroecological practices and agroforestry systems.

Pilot projects integrating mitigation and social co-benefits.

Adaptation is a strategic priority for Guinea-Bissau, given its high vulnerability to the impacts of climate change, especially in coastal and island areas.

Construction of community forest nurseries and irrigation systems; Establishment of natural barriers and dikes to curb erosion and saline intrusion; Access to drinking water through drilling of climate-resistant wells; Inclusion of adaptation in sectoral health, agriculture and water resources plans.

Guinea-Bissau has identified and reported on its needs for climate finance, technology transfer and institutional capacity building. Technical and financial support from the GEF, UNEP, UNDP, GCF and the European Union, among others. Training of national technicians in MRV, GIS, remote sensing and reporting. Implementation of pilot projects focussing on social and environmental co-benefits.

Financing: Needs exceed $200 million by 2030.

Technology: access to automatic weather and hydrological stations, drones, digital tools for MRV and climate detection.

Training: continuous training of national technicians, especially in the energy, forestry, agriculture and climate analysis sectors.

Guinea-Bissau has managed, with limited resources, to produce a technical and transparent report in line with the principles of the Paris Agreement. The progress achieved is significant, but the continuity of actions depends heavily on international support.

BTR1 provides the technical and institutional foundation for future reporting and for the enhancement of NDC3.0. This process contributes to the national ownership of the climate agenda, promoting the mainstreaming of climate in public policies.

INTRODUCTION

The Republic of Guinea-Bissau, as a State Party to the Paris Agreement, presents its First Biennial Transparency Report (BTR1), in accordance with Article 13 of the said Agreement and the modalities, procedures and guidelines (MPGs) adopted in Decision 18/CMA.1. This report is part of the Enhanced Transparency Framework (ETF), which is designed to ensure clarity and mutual trust between the Parties and to enable collective monitoring of global progress in the fight against climate change.

This first BTR marks a historic milestone in Guinea-Bissau's journey towards more structured, transparent and evidence-based climate governance, strengthening the country's capacity to monitor greenhouse gas (GHG) emissions, report progress in implementing its Nationally Determined Contribution (NDC) and assess efforts to adapt to climate impacts, as well as support needs in financing, capacity building and technology transfer.

The preparation of BTR1 was led by the Ministry of Environment, Biodiversity and Climate Action (MABAC), through its National Climate Transparency Unit, with technical support from national sectoral institutions, local and international experts, as well as development partners. This process involved interinstitutional consultations, data collection and consolidation of reporting methodologies, in accordance with the principles of accuracy, completeness, consistency, comparability and transparency (ACCRU).

The report presents:

- A national GHG inventory covering the period 2010-2022, with sectoral breakdown (energy, waste, industrial processes, agriculture, forests and land use);

- An assessment of progress in the implementation of the NDCs for the period 2021-2030, focussing on mitigation and co-benefits;

- A comprehensive description of climate adaptation actions, including implemented measures, ongoing plans and barriers faced;

- Identification of financial, technological and training support needs, as well as support already received since 2020;

- A reflection on the institutional advances towards the consolidation of a National Monitoring, Reporting and Verification System (MRV) compatible with the ETF.

BTR1 should be understood as a dynamic and evolving instrument, which provides the technical and institutional basis for future reports, allowing the progressive improvement of data quality, the internalisation of transparency practices and the alignment of public policies with international commitments.

Through this report, Guinea-Bissau reiterates its commitment to the principles of global climate solidarity, common but differentiated responsibility, and the promotion of resilient and low-carbon national development centred on people, nature, and climate justice.

CHAPTER I - NATIONAL INVENTORY OF ANTHROPOGENIC EMISSIONS BY SOURCES AND REMOVALS BY GREENHOUSE GAS SUPPLIES

1.1. Basic information on greenhouse gas inventory

Guinea-Bissau, as a Least Developed Country (LDC) and a Small Island Developing State (SIDS), is particularly vulnerable to climate change due to its geographical location, low altitude and dependence on natural resources. While responsible for a minimal fraction of global greenhouse gas (GHG) emissions, it faces significant impacts from climate change, such as rising sea levels, changing precipitation patterns (floods and droughts), mangrove degradation and biodiversity loss. Guinea-Bissau is committed to reducing its GHG emissions by presenting its Nationally Determined Contributions (NDCs) under the Paris Agreement. It has also developed several national GHG inventories in line with the requirements of the United Nations Framework Convention on Climate Change (UNFCCC). These inventories are crucial for monitoring progress and adjusting climate policies based on national needs and international commitments.

The source sectors of emissions/absorptions include Energy, Industrial Processes and Product Use (IPPU), Agriculture, Land Use, Land Use Change and Forests (LULUCF) and Waste.

Greenhouse gas (GHG) inventories are essential tools for identifying, mapping and quantifying the sources of greenhouse gas emissions that contribute to global warming. These inventories allow the accurate monitoring and recording of emissions-related data, contributing to the understanding and mitigation of the phenomenon of climate change.

1.2. Institutional arrangements for the inventory of GHG emissions

In Guinea-Bissau, the national GHG inventory system is based on several categories of stakeholders:

The national entity responsible for coordinating actions related to climate change and GHG inventories is the Ministry of Environment, Biodiversity and Climate Action (MABAC) / National Institute of the Environment (INA).

The National Focal Point for the United Nations Framework Convention on Climate Change (UNFCCC) is MABAC, an entity designated by the Government to coordinate and report on the country's commitments under the UNFCCC and the Paris Agreement. This focal point is responsible for climate reporting – including National Communications; Biennial Reports (BUR and BTR) and NDC, which present GHG inventories and mitigation and adaptation measures.

MABAC is responsible for: i) leading the process of collecting, analysing and reporting data; ensuring that the inventory complies with the IPCC and UNFCCC guidelines; mobilising financial and technical resources for the development of the inventory.

In addition to the coordinating body, there are entities and technical institutions that play key roles in the inventory process.

- The National Technical Coordinator: has the mission to organise the national coordination of the inventory, validate the priorities according to the available resources, approve the methods implemented by the inventory of the Unit and validate the report before transmission to the UNFCCC. This function is not necessarily technical, but involves general and cross-cutting management and the approval of the various results.

- The inventory team, consisting of a Technical Coordinator and Sector Inventory Consultants, has the mission of defining the methods to be applied, organising data collection, performing emissions calculations at the sector level in collaboration with focal points, compiling the inventory and writing reports. This function is highly technical and requires significant stakeholder involvement.

- Data Providers and Consultants: are responsible for transmitting the information at their disposal to the inventory team in case of direct request;

- Other sectoral experts, civil society, researchers, etc.: monitor and occasionally participate in sectoral working groups at the request of the inventory team.

The national GHG inventory is a continuous improvement process where the data collection phase is an essential link to its success. The elaboration of the national GHG inventory is an inclusive and participatory process, in which the division of specific responsibilities between the institutions participating in the elaboration of the inventory is established, in order to ensure that the collection of sufficient data on the activities, the selection and development of methods, emission factors and other parameters are in accordance with the IPCC guidelines and the MPGs.

1.2.1. Information Archiving

The inventory archiving process consists of the following: In time published the parent report for the inventory, for the methodological chips (FM), which were used to compile the national inventory, are archived to track the versions that they were used to produce the inventory of an edition whose purpose is to ensure the traceability of inventory. The National GHG Inventory Coordinator is responsible for all information for the reported historical series, including all disaggregated emission factors and activity data, all documentation on data generation and aggregation, review results, and planned improvements to the inventory. Each National Sectorial Consultant will execute its own archive.

Archiving is carried out on electronic media and facilities which guarantee the integrity of the Information (especially losses over time, accidental risks, etc.) and are therefore stored securely (internal and remote backups, YOU and paper, read-only and dates).

A time published the parent report for the inventory, for the methodological chips (MF), which were used to compile the national inventory, will be archived to track the versions that they were used to produce the inventory of an edition, whose purpose is to ensure the traceability of inventory.

The coordinator is responsible for archiving inventory as a whole. Each National Sectorial Consultant will execute its own archive.

To make this work easier, you'll all need industry experts to work on a common file architecture. A working tree and proposal below:

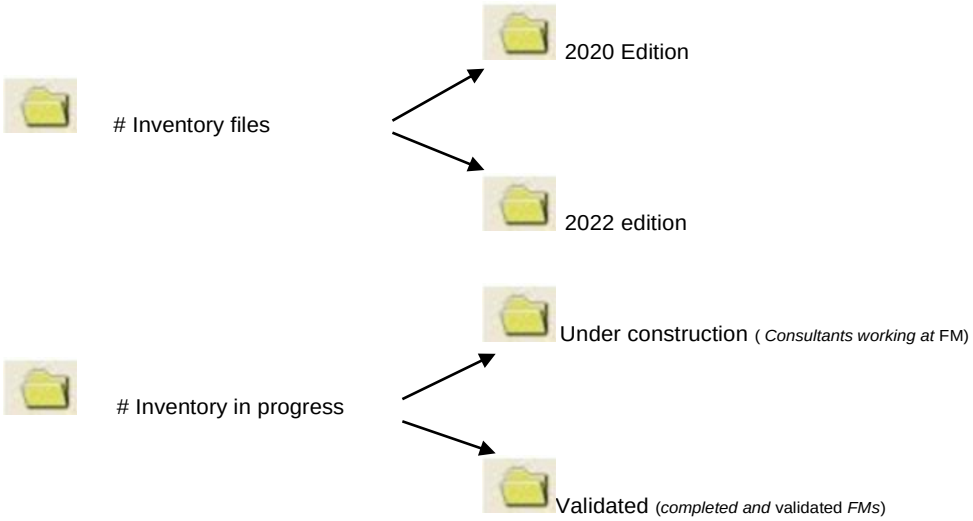


Figure 1: GHG inventory storage system

A source put directory is created and the name of this directory matches the name of the methodological record.

This directory also contains a "references" subdirectory that allows you to store the references used to create the worksheet. You all have another element of interest that is related to this inventory edition should also be kept there.

Result files are also stored.

Everyone for the inventory edits will be retained.

Archiving performed on electronic media and installations ensures the integrity of the Information (especially losses over time, accidental risks, etc.) and is therefore stored securely (internal and remote backups, YOU and paper, read-only and dates).

1.2.2. Procedures for official examination and inventory approval

After the steps of collecting, processing and analysing data on GHG emissions, a draft of the NIR document is developed by the national coordination of the GHG inventory, in direct

collaboration with industry experts. This document is submitted to Quality Control (QC) by the team of specialists and Quality Assurance (QA) by the National Technical Coordination in a workshop. This document is submitted for evaluation by the heads of the working groups of national experts and the National Technical Coordinator.

The process of evaluating and officially approving a GHG inventory involves several important steps to ensure accuracy, transparency and compliance with international standards.

The steps are: i) Preparation of the inventory; ii) Internal verification and validation; iii) Public consultations; iv) Submission to review/validation bodies, such as: United Nations Environment Programme (UNEP) and Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC); v) Official approval; v) Publication and international submission.

1.3. Overview of the Methodology

Guinea-Bissau's national greenhouse gas inventory is prepared according to the recommended methods for individual categories of sources and sinks, as described in the 2006 IPCC guidelines.

For this inventory, Guinea-Bissau used the time series from 2010 to 2022. In general, all GHG estimates were made using the Tier 1 methodology.

$$C_{gt} = DA*FE$$

Where:

C_{gt} = category, gas and annual emissions.

DA = Category activity data

FE = Category and emission factors of gases

Generally, when the available activity data units do not match the emission factor units used, the conversion is performed to adjust the units.

$$\text{of } C_{gt} = DA*FE* FC$$

Where:

FC = Conversion factor

To ensure the completeness of the analysis, important notifications were used when numerical data were not available.

NO (does not occur): an activity or process that does not exist in the country.

NE (not estimated): Emissions or removals that occur but have not been reported.

NA – (not applicable): Activity or categories exist, but emissions and removals are not relevant.

1.4. Description of the main categories

According to the IPCC, a key category is one that is considered a priority within the national inventory system because the national inventory system considers that it has a significant impact on a country's entire GHG inventory in terms of (i) absolute level; (ii) trend; and (iii) uncertainty rate in emissions and absorption.

The method used for the analysis of the main categories is consistent with the IPCC best practices for GHG Emission Inventories and the guidelines in paragraph 25 of Decision 18/CMA.1.

As part of this Inventory, the identification of the main categories of sources, including the trend assessment of these categories, is carried out based on the level 1 method (cf. Volume 1, Chapter 4 of the IPCC).

Key categories are identified by a predefined cumulative emission limit. These are those that, added in descending order of importance, represent more than 95% of the total level of emissions (IPCC, 2006 - Volume 1, Chapter 4 of the IPCC Guidelines).

Subsequently, the analysis of the key categories is carried out according to three (3) cases:

- All major categories (sources), except the LULUCF sub-sector, are identified;

- The analysis of the main categories is repeated for the complete inventory, including the LULUCF categories;

- The trend analysis of the main categories is carried out with the LULUCF sector.

1.4.1. Results of analysis without LULUCF

Analysis of the key categories without LULUCF in 2022 revealed ten (10) key categories covering 95% of total GHG emissions.

Enteric fermentation (CTR 3.A): Enteric fermentation is the main source of CH4 emissions, with 51.95% of total emissions, or 1,735.85 GgCO2eq. This demonstrates the importance of agriculture, and more specifically livestock, in the country’s GHG balance.

Solid waste deposit (CTR 5.A): This is the second main category, with CH4 emissions representing 14.29% of total emissions, i.e. 358.19 GgCO2eq.

Road Transport (CTR 1.A.3.b): CO2 emissions from liquid fuels contribute 7.37% of total cumulative emissions, or 184.73 GgCO2eq.

Rice cultivation (RTC 3.C): CH4 emissions from rice cultivation represent 5.24% of total emissions, or 131.35 GgCO2eq.

Industrial energy (CTR 1.A.1): Liquid fuel (heavy oil, petrol and diesel) from industrial energy accounts for 3.95% of total CO2 emissions, or 99 GgCO2eq.

Other sectors – Solid biomass (CTR 1.A.4): CH4 emissions from solid biomass account for 3.89% of total emissions, or 97.57 GgCO2eq.

Savanna burning (CTR 3.E): CH4 emissions from savanna burning represent 2.25% of total emissions, or 56.43 GgCO2eq.

Manure management (CTR 3.B): CH4 emissions from manure management represent 2.24 % of total emissions, or 56 GgCO2eq.

Wastewater discharge and treatment (CTR 5.D): CH4 emissions from waste water discharge and treatment account for 2.12% of total emissions, or 53.00 GgCO2eq.

Incineration and open burning of waste (CTR 5.C) : CH4 emissions from the incineration and open burning of waste account for 1.78% of total emissions, or 44.6 GgCO2eq.

The analysis of the non-LULUCF key categories in 2010 revealed nine (9) key categories covering 95% of total GHG emissions.

Enteric fermentation (CTR 3.A): Enteric fermentation is the main source of CH4 emissions, with 63.00% of total emissions, or 1,020.45 GgCO2eq. This demonstrates the importance of agriculture, and more specifically livestock, in the country's GHG balance.

Rice cultivation (RTC 3.C): CH4 emissions from rice cultivation represent 7.22% of total emissions, or 93.12 GgCO2eq.

Road Transport (CTR 1.A.3.b): CO2 emissions from liquid fuels contribute 5.75% of total cumulative emissions, or 93.12 GgCO2eq.

Other sectors - Solid biomass (CTR 1.A.4): CH4 emissions from solid biomass account for 5.16% of total emissions, or 83.53 GgCO2eq.

Savanna burning (CTR 3.C): CH4 emissions from savanna burning represent 4.63% of total emissions, or 74.95 GgCO2eq.

Manure management (CTR 3.A.2): CH4 emissions from manure management represent 2.59 % of total emissions, i.e. 41.90 GgCO2eq.

Wastewater discharge and treatment (CTR 4.D): CH4 emissions from waste water discharge and treatment account for 2.44% of total emissions, or 39.57 GgCO2eq.

Incineration and open burning of waste (CTR 4.C): CH4 emissions from the incineration and open burning of waste account for 2.19% of total emissions, or 35.55 GgCO2eq.

Savanna burning (CTR 3.C): NO2 emissions from savanna burning represent 2.11% of total emissions, or 34.12 GgCO2eq.

1.4.2. Results of LULUCF analysis

The analysis revealed that in the GHG inventory for the year 2022, including the LULUCF sector, emissions are dominated by two (2) main categories, representing 95.89% of the cumulative contribution.

The subcategory "Forest remnants", associated with carbon dioxide (CO2), alone represents 84.39% of total emissions, with 51,951.45 GgCO2. Next comes the category "Land converted into agricultural land", associated with CO2, which represents 11.5% of total accumulated emissions, with 7,099.42 GgCO2eq.

1.4.3. Results of trend analysis with LULUCF

In terms of Level I trend analysis, three (3) categories cover 96.2% of total emissions.

Table 1: Key Category Trend from 2010 to 2022

IPCC Category code	IPCC Category	Greenhouse gas	2010 Year Estimate Ex0 Gg (CO2 Eq)	2022 Year Estimate Ext Gg (CO2 Eq)	Trend Assessment (Txt)	% Contribution to Trend	Cumulative Total of Column G
3.B.1.a	Forest Remaining Land	CARBON DIOXIDE (CO2)	-30818.7	-29644.1	0.153132	0.618289	0.618289
3.B.2.b	Land Converted to Cropland	CARBON DIOXIDE (CO2)	3600.87	7099,427	0.075376	0.304341	0.92263
4A	Solid Waste Disposal	METHANE (CH4)	0	358,1944	0.009939	0.04013	0.96276

CO2 emissions from the category "Forest land remaining as forest land" appear first, with a contribution to the trend of about 61.82%, followed by CO2 emissions from "Forest land converted to agricultural land", which represent 30.4% of the contribution to the trend, or 92.22% of the total cumulative. The disposal of solid waste, which contributes to CH4 emissions, represents 4% of the contribution.

1.4.4. Brief overview of the QA/QC Plan and its implementation

Guinea-Bissau does not yet have a Quality Assurance / Quality Control Plan and has made use of flexibility in the light of its capabilities, according to paragraph 34 of the MPG.

1.5. General assessment of uncertainties

For this national inventory, Guinea-Bissau, in view of its limited capacities as a developing country, used the flexibility provided for in paragraph 29 of the GMP for the time series referred to in paragraphs 57 and 58 of the GMP. The country has estimated the overall inventory uncertainties and trends for each sector, and has reserved quantitative estimates and qualitative discussions for the uncertainties of emissions estimates and removals of all categories of sources and sinks, for the next GHG inventory cycles.

1.6. General evaluation of comprehensiveness

1.6.1. Integrity information

Under this inventory, the assessment of comprehensiveness covers the sectors of activity concerned. The method of analysis is in line with the guidance in paragraphs 30, 31 and 33 of Decision 18/CMA.1. Standard notifications are used to notify the emission/absorption categories and sources for which emissions have been estimated and those for which

emissions have not been estimated, either due to lack of data or the lack of the category at national level.

Undeclared categories and subcategories are recorded in the Tables: Energy; Agriculture; LULUCF and Waste. In fact, these are categories for which, on the one hand, activities are non-existent at the national level and, on the other hand, data and information referring to the inventory period are not available.

Table 2: Completeness analysis for the energy sector

Categories Sources and sinks of GHG	(Gg) Emissions			Notes
	CO2	CH_4	N2O	
ENERGY				
1.A.1. Energy industries				
1.A.1.b. Petroleum refining	NO	NO	NO	This activity does not exist in the national territory
1.A.1.c. Manufacture of solid fuels and other energy industries	NO	NO		This activity does not exist in the national territory
1.A.2. Manufacturing and construction industries				
1.A.2.a. Iron and steel	NO	NO	NO	This activity does not exist in the national territory
1.A.2.b. Non-ferrous metals	NO	NO	NO	This activity does not exist in the national territory
1.A.2.c. Chemicals	NO	NO	NO	This activity does not exist in the national territory
1.A.2.d. Cellulose, paper and printing	NO	NO	NO	This activity does not exist in the national territory
1.A.2.e. Processing of food, beverages and tobacco	NOS	NOS	NOS	This activity exists at national level, but data and information are inaccessible
1.A.2.g. Others	NO	NO	NO	This activity does not exist in the national territory
1.A.3. Transportation				
1.A.3.a. Domestic aviation	NOS	NOS	NOS	The activity exists at national level, but the data and information are inaccessible
1.A.3.c. Railways	NO	NO	NO	This activity does not exist in the national territory
1.A.3.d. Home Navigation	NOS	NOS	NOS	This activity exists at national level, but data and information are inaccessible
1.A.3.e. Other transport	NO	NO	NO	This activity does not exist in the national territory
1.A.5. Others				
1.A.5.a. Stationary	NO	NO	NO	This activity does not exist in the national territory
1.A.5.b. Mobile	NO	NO	NO	This activity does not exist in the national territory

Categories Sources and sinks of GHG	(Gg) Emissions			Notes
	CO2	CH 4	N2O	
1.B.1. Solid fuels				
1.B.1.a. Coal mining and handling	NO	NO		This activity does not exist in the national territory
1.B.1.b. Fuel transformation	NO	NO	NO	This activity does not exist in the national territory
1.B.1.c. Others	NO	NO	NO	This activity does not exist in the national territory
1.B.2. Oil and natural gas and other emissions from energy production				
1.B.2.a. Oil	NO	NO	NO	This activity does not exist in the national territory
1.B.2.b. Natural gas	NO	NO	NO	This activity does not exist in the national territory
1.B.2.c. Ventilation and burning	NO	NO	NO	This activity does not exist in the national territory
1.B.2.d. Others	NO	NO	NO	This activity does not exist in the national territory
1.C. Carriage and storage of CO2				
1.C.1. Carriage of CO_2	NO			This activity does not exist in the national territory
1.C.2. Injection and storage	NO			This activity does not exist in the national territory
1.C.3. Others	NO			This activity does not exist in the national territory
1.D.1. International bunkers				
1.D.1.a. Aviation	NOS	NOS	NOS	This activity exists at national level, but data and information are inaccessible
1.D.2. Multilateral operations	NOS	NOS	NOS	
1.D.4. Captured CO2	NO	NO	NO	This activity does not exist in the national territory
1.D.4.a. For home storage	NO	NO	NO	This activity does not exist in the national territory
1.D.4.b. For storage in other countries	NO	NO	NO	This activity does not exist in the national territory

Table 3: Completeness analysis for Agriculture and LULUCF

Code	Category	Subcategories	(Gg) Emissions			Notes
			CO2	CH 4	N2O	
3	Agriculture					

Code	Category	Subcategories	(Gg) Emissions			Notes
			CO2	CH_4	N2O	
3.A.		- Enteric fermentation			NOS	
3.B		- Manure management			NOS	NE because the country does not have an advanced process of waste management.
Note:	Other conversions are not observed in the country		NO	NO	NO	There are no other forms of conversion in the country.
3.E		Burning in the savannas	NOS	E	NOS	Software anomalies
3.F		Waste burning	NOS	E	E	Software anomalies
3.E.2		Burning in pastures	NOS	NOS	NOS	No data available
3.C.1.d		Burning in other lands	NOS	NOS	NOS	No data available
3.G		Liming	NO			Practices not observed in the country.
3.H		Urea application	E			Emissions are estimated
3.D.1		Direct emission of N2O from soil management			E	They are calculated, but tiny.
3.D.2		Indirect N2O emission from soil management			E	They are calculated, but tiny.
3.D.1.b		Indirect N2O emission from manure management			NOS	Software anomalies
3.C		Cultivable rice		E		Calculated emissions
Note:	Thereafter the remaining subcategories of 3.C.8,9,10,11,12,13,14,		NO	NO	NO	These practices are not observed in the country.

The national inventory of greenhouse gases for the agricultural sector, drawn up between 2010 and 2022, is incomplete for direct gases CH4 and N20 . In this inventory, we sought to estimate all direct emissions of greenhouse gases for all categories of sources in agriculture. Estimated and non-estimated emission tables for the categories considered are presented in detail in the respective sections. Despite the efforts, greenhouse gas emissions for some

categories and subcategories were not included in this inventory, mainly due to the lack of baseline data.

1.7. Metrics

In the context of the production of this inventory, the global warming potential values are those referring to the IPCC Fifth Assessment Report (AR5). These values are, respectively, one (1) for CO2; twenty-eight (28) for CH4 and two hundred and sixty-five (265) for N2O.

The equivalent emission of CO2 is obtained by multiplying the emission of a GHG by its global warming potential (GWP) for the considered time horizon. In the case of a GHG mixture, the equivalent CO2 emission is obtained by adding the equivalent CO2 emissions of each of the gases.

The table below provides the Global Warming Power (GWP) values used to calculate GHG emissions in equivalent CO2.

Table 4: GWP values used to calculate emissions in CO2 equivalents

GHG	GWP
CO2	1
CH_4	28
N2O	265

Source: IPCC (AR5)

1.8. Summary of any flexibility applied

The application of the flexibility afforded by GMP to developing countries Parties to the Convention that need it, taking into account their capabilities, should be self-determined.

Thus, within the scope of this inventory, and in application of the provisions on GMPs for the purposes of the Enhanced Transparency Framework (ERF), contained in paragraphs 29; 34 ; 35 ; 48 and 57 of Decision 18/CMA.1, these flexibilities were used. In fact, all sectors of activity were covered and emissions were calculated over the time series 2010-2022, with an in-depth analysis of the year 2022. In addition, the direct gases covered by this inventory are CO2, CH4 and N2O.

The flexibilities in paragraphs 25; 32 and 58 were not applied.

IPCC 2006 software, version 2.92, which is part of the Common Table Report (CTR) published on July 2, 2024, was used. The table below presents the different paragraphs related to the issue of flexibility in the scope of this inventory.

Table 5: Application of flexibility

MPG Reference (Annexe to Decision 18/CMA.1)	Provision of flexibility offered to developing countries that are parties to and need the Convention, taking into account their capabilities	Comments and Applicability
Paragraph 25	Each Party shall identify key categories for the first and last year considered in accordance with the provisions of Chapter II.E.3, including or excluding categories of	Not applied Within this inventory, the analysis of the main categories is applied

MPG Reference (Annexe to Decision 18/CMA.1)	Provision of flexibility offered to developing countries that are parties to and need the Convention, taking into account their capabilities	Comments and Applicability
Analysis of the main categories of sources	land use, land use change, and forests (LULUCF), using Approach 1 for the assessment of levels and trends, conducting a key category analysis consistent with the IPCC Guidelines mentioned in paragraph 20; Parties in developing countries that require some flexibility in this regard, taking into account their capabilities, may identify key categories by applying a minimum threshold of 85% instead of the 95% threshold provided for in the IPCC Guidelines mentioned in paragraph 20, which allows them to focus on improving fewer categories and prioritising resources.	to the 95% threshold and concerns the two cases "with LULUCF" and "without LULUCF".
Paragraph 29 *Uncertainty assessment*	Each Party shall conduct a quantitative and qualitative analysis of uncertainty in estimates of emissions and removals for all categories of sources and sinks, including at the level of inventory totals, at least during the first year and the last year of the inventory time series mentioned in paragraphs 57 and 58. Each Party shall further analyse the uncertainty in the trend of emissions and removals estimates for all source and sink categories, including the level of totals, between the first year and the last year of the inventory time series mentioned in paragraphs 57 and 58, applying at least approach 1 as set out in the IPCC Guidelines mentioned in paragraph 20; Developing country Parties that require flexibility for this purpose, taking into account their capabilities, are invited to provide at least a qualitative uncertainty analysis for the main categories conducted in accordance with the IPCC Guidelines. The IPCC mentioned in paragraph 20, where quantitative data are not available for a quantitative estimate of uncertainty, is requested to provide a quantitative estimate of uncertainty for all categories of sources and sinks in the GHG inventory.	It has been applied. In fact, as part of this inventory, a qualitative and quantitative examination of uncertainty was carried out at the levels of specific categories and subcategories of the global, sectoral and national context, following the level 1 approach.

MPG Reference (Annexe to Decision 18/CMA.1)	Provision of flexibility offered to developing countries that are parties to and need the Convention, taking into account their capabilities	Comments and Applicability
Paragraph 32 *Completeness assessment*	Each Party may use the standard term "NE" (not estimated) if the estimates are insignificant in terms of the level of emissions, based on the following consideration: emissions in a category shall only be considered insignificant if their likely level is less than 0.05% of the total national level of GHG emissions excluding the LULUCF sector, or 500 kilotons of carbon dioxide equivalent (kt CO2 equivalent), whichever is lower, with the number of deaths being maintained. The overall national value for estimated emissions for all gases in the categories considered negligible shall remain below 0,1% of the overall national value for emissions. GES, UTCATF sector is deleted. The Parties shall use approximate activity data and standard IPCC emission factors to calculate a likely level of emissions for the category. Developing countries that require some flexibility to this end, taking into account their capabilities, are encouraged to consider emissions as negligible if their likely level is less than 0.1% of the total national level of GHG emissions excluding the LULUCF sector, or 1,000 kt CO2 equivalent, whichever is lower. The national total estimated emissions for all gases in categories considered insignificant shall in this case remain below 0.2% of the national total GHG emissions excluding the LULUCF sector.	Not applied Within this inventory, although the categories whose emissions are considered negligible have been determined in accordance with the guidelines of the above mentioned paragraph, the national party decided to report them on the total GHG emissions at the national level. This choice is justified by the lack of total control of the data and information linked to these categories and subcategories at the time of reporting.
Paragraph 34 *Quality Assurance and Quality Control*	Each Party shall establish a Quality Assurance/Quality Control (QA/QC) plan for the inventory in accordance with the IPCC Guidelines mentioned in paragraph 20, including information on the body responsible for implementing such plan; Parties that are developing countries and that require flexibility for this purpose, taking into account their capabilities, are encouraged to establish a QA/QC plan for the inventory in accordance with the IPCC Guidelines mentioned in paragraph 20,	It has been applied. In fact, as part of the improvement process of the National GHG Emissions Inventory System, Guinea-Bissau does not have a QA/QC system.

MPG Reference (Annexe to Decision 18/CMA.1)	Provision of flexibility offered to developing countries that are parties to and need the Convention, taking into account their capabilities	Comments and Applicability
	including information on the organisation responsible for implementing such plan.	
Paragraph 35 Quality Assurance and Quality Control	Each Party shall apply general inventory quality control procedures in accordance with its QA/QC plan and the IPCC Guidelines referred to in paragraph 20, and provide information relating to such procedures; Developing countries that require flexibility in this regard, taking into account their capabilities, are encouraged to apply general inventory quality control procedures in accordance with their QA/QC plan and the IPCC Guidelines referred to in paragraph 20, and to provide information relating to such procedures. In addition, the Parties shall apply specific quality control procedures in accordance with the IPCC Guidelines referred to in paragraph 20 for the major categories and for any categories that have been subject to methodological changes and/or major revisions of data. Finally, the Parties shall apply quality assurance procedures based on the basic peer review of their inventories in accordance with the IPCC Guidelines mentioned in paragraph 20.	Has been applied The country does not have a QA/QC model
Paragraph 48 *Gas*	Each Party reports data on seven (7) gases (CO2, methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3); Parties requiring flexibility for this purpose, taking into account their capabilities, are invited to provide data on at least three (3) gases (CO2, CH4 and N2O), as well as on any of the other four (4) gases (HFCs, PFCs, SF6 and NF3) that are taken into account in the Party's NDC under Article 4 of the Paris Agreement, are covered by an activity covered by Article 6 of this text or have been previously declared.	Has been applied In fact, within this inventory, only three (3) gases at least (CO2, CH4 and N2O) were reported.
Paragraph 57 *Time series*	Each Party shall report a uniform annual time series from 1990 onwards; Parties that are developing countries and require	Has been applied

MPG Reference (Annexe to Decision 18/CMA.1)	Provision of flexibility offered to developing countries that are parties to and need the Convention, taking into account their capabilities	Comments and Applicability
	flexibility for this purpose, taking into account their capabilities, shall be able to report data covering at least the reference year or period of their NDC pursuant to Article 4 of the Paris Agreement, as well as a uniform annual time series from at least 2020 onwards.	Within this inventory, the time series considered is the one of 2010-2022 for all sectors of activity considered.
Paragraph 58 *Year considered*	For each Party, the last year considered shall not be more than two years before the year of submission of its national inventory report; for Parties that are developing countries and require some flexibility for this purpose, taking into account their capabilities, the last year considered may be three years before the year of submission of its national inventory report.	Not applied Guinea-Bissau has committed to present its First Biennial Transparency Report by 31 December 2024, together with a National Inventory Report whose reference year is 2022.

1.9. Trends in greenhouse gas emissions and removals

1.9.1. Overall emissions for the base year

The National Inventory Report (NIR) focused on annual emissions from sources not regulated by the Montreal Protocol resulting directly from human activities in Guinea-Bissau for the 2010-2022 time series, with an in-depth analysis of the situation in the year 2022, considered the reference year before the submission of the NIR.

The results of the aggregate emissions and absorptions for the year 2022 show the following situation for direct gases:

· CO2: (-) 22 211,414 Gg;

· CH4: 2799.96 GgCO2eq;

· N2O: 77.33 GgCO2eq.

Table 5 provides an overview of emissions and absorptions by sectors of activity, as well as related categories and subcategories.

Table 6: GHG Emissions Inventory Results for Base Year 2022

Inventory year: 2022

	Emissions (Gg)			Emissions CO2 equivalent (Gg)		Equivalent CO2 emissions (Gg)			Emissions CO2 equivalent (Gg)		TOTAL
Categories	Net CO2 (1)(2)	CH4	N2O	HFC	NMVOC	Net CO2	CH4	N2O	HFC	NMVOC	CO2 eq
Total National Emissions and Removals	-22211.41487	99.9984	0.2918			-22211.41487	2799.96	77,332	0	0	-19334.1278
1 - Energy	307.9892098	4.68424	0.0717			307.9892098	131,159	19,003	0	0	458.1510328
1.A - Fuel Combustion Activities	307.9892098	4.68424	0.0717			307.9892098	131,159	19,003	0	0	458.1510328
1.A.1 - Energy Industries	99.0141645	0.00388	0.0008			99.0141645	0.10869	0.2057	0	0	99.32858001
1.A.2 - Manufacturing and Construction Industries	5.129943	0.00021	4E-05			5.129943	0.00582	0.011	0	0	5.14676589
1.A.3 - Transport	184.7343687	0.0294	0.0094			184.7343687	0.82311	2.4971	0	0	188.0545744
1.A.4 - Other Sectors	19.1107336	4.65075	0.0615			19.1107336	130,221	16,289	0	0	165.6211125
1.A.5 - Unspecified	0	0	0			0	0	0	0	0	0
1.B - Fuel fugitive emissions	0	0	0			0	0	0	0	0	0
1.B.1 - Solid Fuels	0	0	0			0	0	0	0	0	0
1.B.2 - Oil and Natural Gas	0	0	0			0	0	0	0	0	0
1.B.3 - Other emissions from Energy Production	0	0	0			0	0	0	0	0	0
1.C - Carbon Dioxide Transport and Storage	0	0	0			0	0	0	0	0	0
1.C.1 - Transport of CO2	0	0	0			0	0	0	0	0	0
1.C.2 - Injection and Storage	0	0	0			0	0	0	0	0	0
1.C.3 - Other	0	0	0			0	0	0	0	0	0
2 - Industrial Processes and Product Use	0	0	0			0	0	0	0	0	0
2.A - Mineral Industry	0	0	0			0	0	0	0	0	0
2.A.1 - Cement production	0	0	0			0	0	0	0	0	0
2.A.2 - Production of lime	0	0	0			0	0	0	0	0	0

Inventory year: 2022

2.A.3 - Glass Production	0	0	0			0	0	0	0	0	0
2.A.4 - Other uses of carbonates in processes	0	0	0			0	0	0	0	0	0
2.A.5 - Other (please specify)	0	0	0			0	0	0	0	0	0
2.B - Chemical Industry	0	0	0			0	0	0	0	0	0
2.B.1 - Ammonia Production	0	0	0			0	0	0	0	0	0
2.B.2 - Nitric Acid Production	0	0	0			0	0	0	0	0	0
2.B.3 - Production of Adipic Acid	0	0	0			0	0	0	0	0	0
2.B.4 - Production of Caprolactam, glyoxal and glyoxylic acid	0	0	0			0	0	0	0	0	0
2.B.5 - Production of Carbides	0	0	0			0	0	0	0	0	0
2.B.6 - Production of Titanium Dioxide	0	0	0			0	0	0	0	0	0
2.B.7 - Production of Sodium Carbonate	0	0	0			0	0	0	0	0	0
2.B.8 - Petrochemical and Carbon Black Production	0	0	0			0	0	0	0	0	0
2.B.9 - Fluorchemical Production	0	0	0			0	0	0	0	0	0
2.B.10 - Hydrogen Production	0	0	0			0	0	0	0	0	0
2.B.11 - Other (please specify)	0	0	0			0	0	0	0	0	0
2.C - Metallurgical Industry	0	0	0			0	0	0	0	0	0
2.C.1 - Iron and Steel Production	0	0	0			0	0	0	0	0	0
2.C.2 - Production of Ferroalloys	0	0	0			0	0	0	0	0	0
2.C.3 - Aluminium production	0	0	0			0	0	0	0	0	0
2.C.4 - Magnesium production	0	0	0			0	0	0	0	0	0
2.C.5 - Lead Production	0	0	0			0	0	0	0	0	0
2.C.6 - Zinc Production	0	0	0			0	0	0	0	0	0
2.C.7 - Rare Earth Production	0	0	0			0	0	0	0	0	0
2.C.8 - Other (specify)	0	0	0			0	0	0	0	0	0

Inventory year: 2022

2.D - Non-energy products from the use of fuels and solvents	0	0	0			0	0	0	0	0	0
2.D.1 - Use of Lubricants	0	0	0			0	0	0	0	0	0
2.D.2 - Use of Paraffin	0	0	0			0	0	0	0	0	0
2.D.3 - Solvent Use	0	0	0			0	0	0	0	0	0
2.D.4 - Other (specify)	0	0	0			0	0	0	0	0	0
2.E - Electronic Industry	0	0	0			0	0	0	0	0	0
2.E.1 - Integrated Circuit or Semiconductor	0	0	0			0	0	0	0	0	0
2.E.2 - TFT Flat Panel	0	0	0			0	0	0	0	0	0
2.E.3 - Photovoltaics	0	0	0			0	0	0	0	0	0
2.E.4 - Heat Transfer Fluid	0	0	0			0	0	0	0	0	0
2.E.5 - Other (please specify)	0	0	0			0	0	0	0	0	0
2.F - Uses of products as substitutes for ozone-depleting substances	0	0	0			0	0	0	0	0	0
2.F.1 - Refrigeration and Air Conditioning	0	0	0			0	0	0	0	0	0
2.F.2 - Foam expansion agents	0	0	0			0	0	0	0	0	0
2.F.3 - Fire protection	0	0	0			0	0	0	0	0	0
2.F.4 - Aerosols	0	0	0			0	0	0	0	0	0
2.F.5 - Solvents	0	0	0			0	0	0	0	0	0
2.F.6 - Other Applications (specify)	0	0	0			0	0	0	0	0	0
2.G - Manufacture and use of other products	0	0	0			0	0	0	0	0	0
2.G.1 - Electrical Equipment	0	0	0			0	0	0	0	0	0
2.G.2 - SF6 and PFCs of other product uses	0	0	0			0	0	0	0	0	0
2.G.3 - N2O from product uses	0	0	0			0	0	0	0	0	0
2.G.4 - Other (specify)	0	0	0			0	0	0	0	0	0
2.H - Other	0	0	0			0	0	0	0	0	0

Inventory year: 2022

2.H.1 - Pulp and Paper Industry	0	0	0			0	0	0	0	0	0
2.H.2 - Food and Beverage Industry	0	0	0			0	0	0	0	0	0
2.H.3 - Other (specify)	0	0	0			0	0	0	0	0	0
3 - Agriculture, Forestry and Other Land Use	-22526.81256	73.6068	0.1293			-22526.81256	2060.99	34,261	0	0	-20431.5606
3.A - Livestock	0	64.6647	0.0328			0	1810.61	8,686	0	0	1819.296641
3.A.1 Enteric Fermentation	0	61.9946	0			0	1735.85	0	0	0	1735.847456
3.A.2 - Manure Management	0	2.67011	0.0328			0	74,7631	8,686	0	0	83.4491845
3.B - Earth	-22544.70013	0	0			-22544.70013	0	0	0	0	-22544.7001
3.B.1 - Forest land	-29644.12689	0	0			-29644.12689	0	0	0	0	-29644.1269
3.B.2 - Farmland	7099.426767	0	0			7099.426767	0	0	0	0	7099.426767
3.B.3 - Pasture	0	0	0			0	0	0	0	0	0
3.B.4 - Wetlands	0	0	0			0	0	0	0	0	0
3.B.5 - Settlements	0	0	0			0	0	0	0	0	0
3.B.6 - Other Land	0	0	0			0	0	0	0	0	0
3.C - Aggregate sources and sources of non-CO2 emissions on land	17.8875664	8.94216	0.0965			17.8875664	250.38	25,575	0	0	293.8428644
3.C.1 - Burning	17.6675664	2.6874	0.0828			17.6675664	75.2472	21,952	0	0	114.8666065
3.C.2 - Liming	0	0	0			0	0	0	0	0	0
3.C.3 - Application of urea	0.22	0	0			0.22	0	0	0	0	0.22
3.C.4 - Direct N2O emissions from managed soils	0	0	0.0032			0	0	0.8464	0	0	0.846446017
3.C.5 - Indirect N2O emissions from managed soils	0	0	0.0105			0	0	2.7766	0	0	2.776551173
3.C.6 - Indirect N2O emissions from waste management	0	0	0			0	0	0	0	0	0
3.C.7 - Rice cultivation	0	6.25476	0			0	175,133	0	0	0	175.1332606
3.C.8 - CH4 of Organic Soil Drained	0	0	0			0	0	0	0	0	0
3.C.9 - CH4 of drainage ditches in organic soils	0	0	0			0	0	0	0	0	0

Inventory year: 2022

3.C.10 - CH4 of Organic Soil Rewetting	0	0	0			0	0	0	0	0	0
3.C.11 - CH4 emissions from rewetting of mangroves and tidal marshes	0	0	0			0	0	0	0	0	0
3.C.12 - Aquaculture N2O emissions	0	0	0			0	0	0	0	0	0
3.C.13 - CH4 emissions from rewetted and reared wetlands in mineral soils of inland wetlands	0	0	0			0	0	0	0	0	0
3.C.14 - Other (please specify)	0	0	0			0	0	0	0	0	0
3.D - Other	0	0	0			0	0	0	0	0	0
3.D.1 - Harvested Wood Products	0	0	0			0	0	0	0	0	0
3.D.2 - Other (specify)	0	0	0			0	0	0	0	0	0
4 - Waste	7.408484072	21,7074	0.0908			7.408484072	607,806	24,068	0	0	639.2818371
4.A - Disposal of Solid Waste	0	17.0569	0			0	477,593	0	0	0	477.5925149
4.B - Biological Treatment of Solid Waste	0	0	0			0	0	0	0	0	0
4.C - Incineration and Open Burning of Waste	7.408484072	2.12648	0.0348			7.408484072	59.5413	9.2335	0	0	76.18331157
4.D - Wastewater Treatment and Disposal	0	2,524	0.056			0	70,672	14,834	0	0	85.50601065
4.E - Other (specify)	0	0	0			0	0	0	0	0	0
5 - Other	0	0	0			0	0	0	0	0	0
5.A - Indirect N2O emissions from atmospheric nitrogen deposition in NOx and NH3	0	0	0			0	0	0	0	0	0
5.B - Indirect CO2 emissions from atmospheric oxidation of CH4, CO and NMVOC	0	0	0			0	0	0	0	0	0
5.C - Other	0	0	0			0	0	0	0	0	0
	0	0	0			0	0	0	0	0	0
Memo Items (5)	0	0	0			0	0	0	0	0	0
International Bunkers	1280.969071	0.12101	0.0346			1280.969071	3.38826	9.1621	0	0	1293.519456

Inventory year: 2022

1.A.3.ai - International Aviation (International Bunkers)	0	0	0			0	0	0	0	0	0
1.A.3.ai - Indirect N2O emissions from atmospheric nitrogen deposition in NOX and NH3	0	0	0			0	0	0	0	0	0
1.A.3.ai - Indirect CO2 emissions from atmospheric oxidation of CH4, CO and NMVOC	0	0	0			0	0	0	0	0	0
1.A.3.di - International water navigation (International Bunkers)	1280.969071	0.12101	0.0346			1280.969071	3.38826	9.1621	0	0	1293.519456
1.A.3.di - Indirect N2O emissions from atmospheric nitrogen deposition in NOX and NH3	0	0	0			0	0	0	0	0	0
1.A.3.di - Indirect CO2 emissions from atmospheric oxidation of CH4, CO and NMVOC	0	0	0			0	0	0	0	0	0
1.A.5.c - Multilateral Operations	0	0	0			0	0	0	0	0	0
1.A.5.c - Indirect N2O emissions from atmospheric nitrogen deposition in NOX and NH3	0	0	0			0	0	0	0	0	0
1.A.5.c - Indirect CO2 emissions from atmospheric oxidation of CH4, CO and NMVOC	0	0	0			0	0	0	0	0	0

1.9.2. Total national emissions

Total national greenhouse gas (GHG) emissions, excluding the Land Use, Land Use Change and Forests (LULUCF) sector, were estimated at 2,075.3 GgCO2010, 2,425.7 GgCOe in 2015 and 2,848.5 GgCO22. These values correspond to an increase of approximately 64.62% over the period analysed. Maintaining this trend, emissions are projected to reach 4,809.46 GgCOand in 2030 and 11,037.86 GgCO·and in 2050.

Including the LULUCF sector, total national emissions were negative, reflecting the role of a carbon sink. In 2010, net emissions were -25,122.2 GgCOe; in 2015, -19,294.8 GgCOe; and in 2022, -19,095.0 GgCOe. If this trajectory is maintained, net emissions are estimated to reach -15,903.56 GgCOand in 2030 and -10,067.72 GgCO and in 2050, indicating a progressive reduction in the sector's net carbon absorption capacity.

In relation to total greenhouse gas emissions:

In 2010, CO_2 emissions, including the LULUCF sector, were estimated to be -27,090 $GgCO_2$ eq, while CH_2 emissions totalled 1,884.2 $GgCO_2$eq and NO emissions were 63 GgCOeq.

In 2015, CO_2 emissions were -21,554 $GgCO_2$ eq; CH ∈ emissions increased to 2,164.7 GgCOeq; and NO emissions to 73 GgCOeq.

In 2022, CO_2 emissions were -22,211 $GgCO_2$ eq; CH㎡ emissions reached 2,448.8 $GgCO_2$ eq; N_2 O emissions were 66 GgCOeq; and, additionally, HFCs emissions were recorded to the value of 600.7 GgCOeq.

The detailed data of the emissions of these gases, by sector, are presented in Table 8.

Table 7: Summary of emissions for the period 2010 to 2022 (in GgCO2eq)

Year	Energy	IPPU	Agriculture	LULUCF	Waste	Total - without LULUCF	Total - with LULUCF
2010	233	NOS	1717.5	**-27217.8**	124.8	2075.3	-25142.5
2011	256.9	NOS	1358.8	**-29148**	158.8	1774.5	-27373.5
2012	273	NOS	1871.5	**-27866.8**	183.9	2328.4	-25538.4
2013	271.4	NOS	1882.7	**-16753.8**	202.9	2357	-14396.8
2014	283.9	NOS	1548.5	**-21075.4**	217.7	2050.1	-19025.3
2015	309.2	NOS	1887	**-21735.3**	229.5	2425.7	-19309.6
2016	328.5	NOS	1590.9	**-18261.1**	239.7	2159.1	-16102
2017	356.3	NOS	1882.4	**-17278.5**	248.5	2487.2	-14791.3
2018	372	NOS	1858.4	**-17852.6**	256.6	2487	-15365.6
2019	436.6	NOS	1999	**-17697.7**	264.2	2699.8	-14997.9

Year	Energy	IPPU	Agriculture	LULUCF	Waste	Total - without LULUCF	Total - with LULUCF
2020	417.4	NOS	2030.2	-16606	273.9	2721.5	-13884.5
2021	449.3	NOS	2035.1	-20147.8	281	2765.4	-17382.4
2022	458.2	NOS	2102.2	-22544.7	288.1	2848.5	-19696.2

Between 2010 and 2022, national greenhouse gas (GHG) emissions, excluding the Land Use, Land Use Change and Forests (LULUCF) sector, showed a continuous growth trend. In fact, emissions increased from 2,075.3 GgCOαeq in 2010 to 2,848.5 GgCOαeq in 2022, which represents an increase of 37.26%. Maintaining this trajectory, national emissions are estimated to reach 3,518.09 GgCOeq in 2030 and 5,963.92 GgCOeq in 2050.

In the Energy sector, emissions increased from 233.0 GgCOα and in 2010 to 309.2 GgCOeq in 2015, an increase of 32.62%. Between 2015 and 2022, the figure rose to 458.2 GgCOeq, which represents an additional increase of 48.22%. In total, between 2010 and 2022, the sector's emissions nearly doubled, with cumulative growth of 96.6%.

For the LULUCF sector, net emissions decreased from -27,217.8 GgCOeq in 2010 to -22,544.7 GgCO·eq in 2022, reflecting a 17.16% reduction in carbon sequestration capacity.

In the Waste sector, emissions increased from 124.8 GgCOeq in 2010 to 229.5 GgCOeq in 2015, remaining almost constant at 228.1 GgCOeq in 2022. In the period from 2010 to 2022, the cumulative increase was about 130%.

Overall, national GHG emissions show an increasing trend in the period between 2010 and 2022, with an estimated average annual growth rate of approximately 8%.

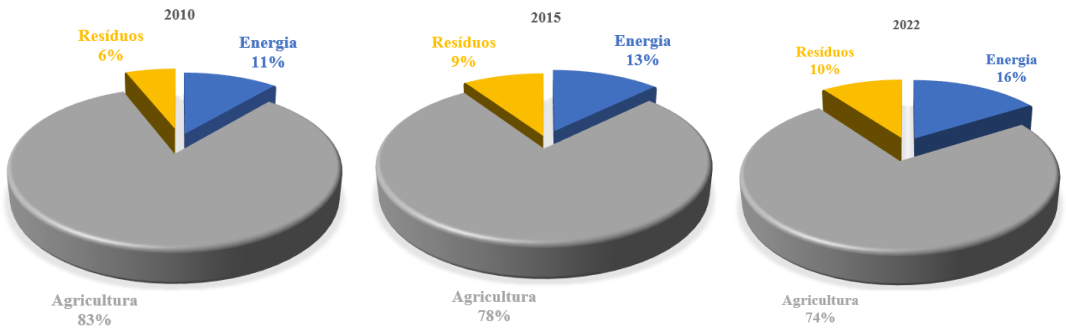
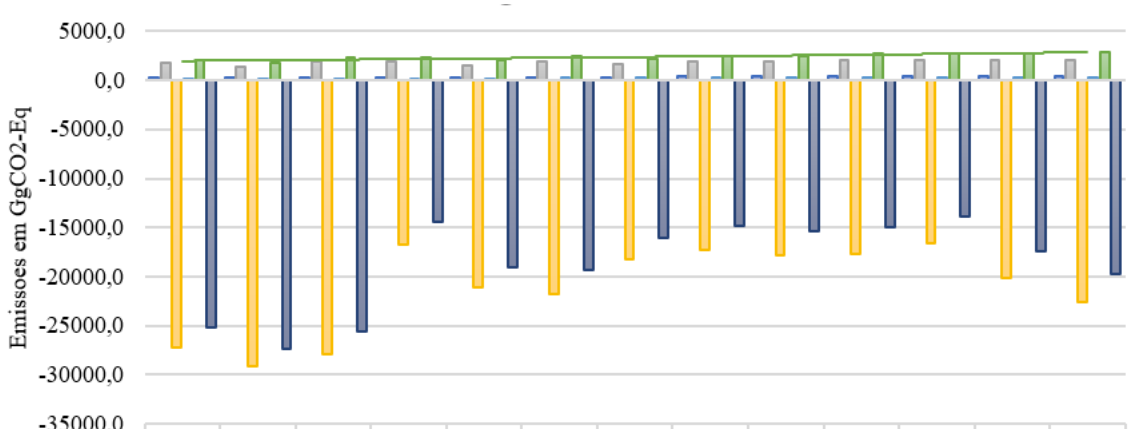


Figure 2: Total GHG emissions by sector; 2010 - 2015 - 2022



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Energia	233,0	256,9	273	271,4	283,9	309,2	328,5	356,3	372,0	436,6	417,4	449,3	458,2
Agricultura	1717,5	1358,8	1871,5	1882,7	1548,5	1887,0	1590,9	1882,4	1858,4	1999,0	2030,2	2035,1	2102,2
FOLU -LULUCF	-27217	-29148	-27866	-16753	-21075	-21735	-18261	-17278	-17852	-17697	-16606	-20147	-22544
Lixo	124,8	158,8	183,9	202,9	217,7	229,5	239,7	248,5	256,6	264,2	273,9	281,0	288,1
Total - sem LULUCF	2075,3	1774,4	2327,9	2357,0	2050,1	2425,7	2159,1	2487,2	2487,0	2699,8	2721,5	2765,4	2848,5
Total - com LULUCF	-25142	-27373	-25538	-14396	-19025	-19309	-16102	-14791	-15365	-14997	-13884	-17382	-19696

Figure 3: GHG emissions trend; 2010 – 2022

In Guinea-Bissau, the GHG emitting sectors, without LULUCF, in order of importance, are agriculture, energy, waste and industrial processes.

In 2010, the main GHG emitting sectors were: agricultural sector (82%), energy sector (11%), waste sector (5.95%).

In 2015, the main GHG emitting sectors were the agricultural sector with (77.3%), the waste sector with (9.4%), the energy sector (12.6%) and the industrial processes sector with (0.6%).

In 2022, the main GHG emitting sectors were the agricultural sector (76%), the waste sector (10%) and the energy sector (14%) of total emissions, as illustrated in Figure 2.

CHAPTER II - INFORMATION NEEDED TO MONITOR PROGRESS IN THE IMPLEMENTATION AND REALISATION OF NATIONALLY DETERMINED CONTRIBUTIONS (NDCs) UNDER ARTICLE 4 OF THE PARIS AGREEMENT

2.1. National circumstances and institutional arrangements

2.1.1. National Circumstances

Guinea-Bissau formally adopted its first Nationally Determined Contribution (NDC) following the signing of the Paris Agreement on 22 April 2016 and its ratification by the parliament of Guinea-Bissau on 22 October 2018.

This first NDC, while expressing Guinea-Bissau's commitment to combating climate change, did not present a quantified GHG mitigation target. Today, Guinea-Bissau is determined to be even more proactive on climate by adopting a quantified and ambitious target when updating its first NDC in line with the recommendations of Article 4.3 of the Paris Agreement.

Compared to the initial NDC, the updated NDC in 2021 is marked by a significant increase in ambition, although Guinea-Bissau contributes only insignificantly to global emissions:

- A commitment to a quantified emissions reduction target that concerns the main sectors: AFOLU, energy and waste.
- An ambitious GHG emission reduction target of 30% in 2030 compared to the baseline scenario.
- An unconditional target, using the country's own resources, to reduce emissions by 10 percent by 2030 compared to the baseline. This goal is considered ambitious, given the country's economic situation and level of development.

The updated NDC is part of a broader vision for low-carbon, climate-resilient development. It also aligns with national demands for economic and social development, including through:

- The integration of aspects related to gender equality and women's empowerment in the two components of the NDC: mitigation and adaptation to climate change.
- Alignment of the NDCs with the United Nations Sustainable Development Goals (SDGs), in particular with regard to SDGs 1, 3, 6, 7, 8, 9, 11, 12, 13 and 17; the African Union Agenda 2063, the SAMOA Path and New Delhi, and the National Development Programme (NDP) - Tchiga Time.
- The desire to position the country in the new carbon market mechanisms provided for in Article 6 of the Paris Agreement, to facilitate investments in mitigation.
- A first articulation of the country's adaptation needs in key sectors such as agriculture, livestock, coastal and low-lying area management; fisheries and ocean ecosystems, energy, water resources, as well as forest conservation and protected area management (including dense and open forests and mangrove areas), human health, infrastructure and urban areas, and disaster risk management.

2.1.1.1. Energy Sector

The lowest electrification rates and highest electricity costs in Africa. The country is heavily dependent on petroleum products, despite having great potential for the development of renewable energy. The national electrification rate is estimated at 37.4% (World Bank, 2022), with a large disparity between urban and rural areas. In urban areas, the electrification rate is 61%, while in rural areas it is less than 16%, which means that the majority of the rural population does not have access to electricity (World Bank, 2022). Energy consumption in Guinea-Bissau is extremely low at approximately 0.3 toe (ton oil equivalent) per capita per year, one of the lowest rates in the world. Most of the final energy consumption is dominated by traditional biomass, representing about 84% of the total energy consumed (AFREC, 2022).

In recent years, the country has taken significant steps to reduce its energy deficit. An important step was the arrival of KARPOWER in 2019, a company specialised in floating power generation. KARPOWER operates a ship anchored in the port of Bissau that generates electricity using fuel oil. While this temporary fix helped increase installed power capacity and reduce the frequency of power cuts in the capital, it still relies on fossil fuels but has contributed to more stable electricity supplies. Another important development in Guinea-Bissau's energy sector is its participation in the regional project of the Organisation for the Valorisation of the Gambia River (OMVG). This initiative aims to connect the electrical systems of four countries: Guinea-Bissau, Senegal, Gambia and Guinea. OMVG's project includes the construction of a 1,677 km electrical interconnection network, which allows the exchange of electricity between member countries, with a focus on access to the clean energy source of hydroelectric energy. Electricity from OMVG hydroelectric sources is already available and is gradually reducing the need for power

generation by KARPOWER. In September 2024, OMVG will completely replace power generation with KARPOWER, but the company's future in energy supply in the country has not yet been defined.

According to the National Renewable Energy Action Plan (PANER 2017), the country has the following energy sources:

· **Biomass energy:** Biomass energy, such as firewood and charcoal, is an area with great potential in Guinea-Bissau, especially due to the abundance of agricultural waste in the country. Guinea-Bissau generates a significant amount of agricultural waste that can be used for energy production. It is estimated that the country produces about 239,760 tons of biomass annually, with a predominance of rice (35.4%) and cassava (34.8%) residues, followed by groundnut (12.4%) and sorghum (7%). The use of biomass helps to reduce emissions of greenhouse gases (CO2), contributing to the mitigation of climate change. Biomass can provide a local and sustainable source of energy, reducing dependence on fossil fuel imports (energy security). The production of energy from biomass can create ecoNOmicas opportunities in rural areas, promoting local development.

· **Fossil Fuels** (Oil, Coal, Natural Gas): these resources have not been identified in the country, although the results of the surveys carried out so far raise some hope for the existence of oil in offshore areas;

· **Hydroelectric power**: the country has a very large river basin that, if well used for energy purposes, can contribute to overcoming the electricity deficit. In the study of the Energy Master Plan carried out by the company CABIRA, using the computer tool SIMAHPP Professional version 4.8, used to analyse the land retained by PAGIRE for the construction of dams for agricultural purposes, 19 microdams were identified that can be used for the production of electricity, whose potential was estimated at 2.94 MW, with an expected annual production of 25.91 GWh. In addition to these, the study also identifies: the production of electricity through tidal energy and waves, whose potential is around 4 MW, and an annual production of 35 GWh; and the Saltinho, Cussilinta and Surire dams (rapids), with an estimated power of 27 MW, totalling 33.94 MW and an annual production of 300.91 GWh.

· **Solar and wind energy:** being a tropical country, it has strong solar radiation estimated at 5.5 kW/m2/day and average wind speed ranging from 2.5 to 5.3 m/s.

2.1.1.2. Agricultural and Livestock Sector

Agriculture and livestock are key sectors for the economy and livelihood of Guinea-Bissau's population. Here are some key points about these sectors:

Major crops include rice, cashew and vegetables. Rice is a staple food, while cashew is the main export crop, accounting for more than 90% of the country's exports. Cashew nuts are crucial to the economy, providing a livelihood for most Guinean families. However, over-reliance on cashew can be an obstacle to agricultural diversification.

Agriculture faces challenges such as lack of infrastructure, limited access to modern technologies and climate change. Food insecurity is also a concern, affecting about 14.5% of families, especially in the Oio and Tombali regions.

Livestock products account for about 30% of agricultural GDP. Despite the importance of livestock in economic, socio-cultural and nutritional levels, the share of public investment for this subsector remained relatively low and has steadily decreased over the past 30 years. However, the government has adopted some measures that contribute to mitigate the effects of climate change. Among them, the following stand out:

· The draft Charter for Livestock Development Policy, which provides for, among other things, vocational areas and the design of water retention structures;

· Studies to support the development of short-cycle animal production, mainly by women, which can also reduce CH4 emissions from enteric fermentation.

2.1.2. Institutional Device

The governmental framework for the implementation of Guinea-Bissau's Nationally Determined Contribution (NDC) involves various institutions and coordination mechanisms to ensure that climate commitments are met in an effective and integrated manner.

The Ministry of Environment, Biodiversity and Climate Action (MABAC) is the main entity responsible for the implementation, monitoring and evaluation of the NDC. It coordinates climate policies, mobilises resources and is the Focal Point of the United Nations Framework Convention on Climate Change (UNFCCC).

MABAC is the leading body providing guidance on policies, legal issues and other documents related to the Environment, biodiversity, including climate change.

The Ministry develops adaptation and mitigation policies and strategies to ensure that the NDC commitments are implemented in all relevant sectors, such as agriculture, forestry, energy and water resources. Acts actively in mobilising national and international funding for mitigation and adaptation actions, with the support of development partners.

The Interministerial Commission on Climate Change brings together representatives from various ministries (such as Agriculture, Fisheries, Natural Resources, Infrastructure, Energy, and Finance) to ensure that the NDC is implemented in an integrated manner. The Commission is responsible for decision-making and promotes the alignment of actions across sectors with national climate targets, ensuring that adaptation and mitigation are integrated into sectoral policies.

The National Environment Institute (INA) is not only responsible for ensuring the quality, relevance and compliance of NDC processes, but also ensures the delivery of NDCs and their communication under the leadership of MABAC.

In line with this mandate, the department has established institutional arrangements to implement climate change-related projects, such as National Communications (NCs), Nationally Determined Contribution (NDC), and Biannual Update Report (BUR). In this context, the ad hoc Technical Working Group (GTT) on Climate Change was created, which provides technical advice to the National Environment Institute (INA) in the execution of its mandates on issues related to climate change.

The NDC was drawn up on the basis of extensive consultations with key stakeholders involved in the issue of climate change in Guinea-Bissau, including in particular public

institutions, civil society and experts working in the various areas and sectors involved in reducing greenhouse gases (GHG). The consultations took place under the auspices of the Climate Change Focal Point, within the framework of a Ministerial Order that created a National NDC Group, composed of representatives of the following institutions:

- Ministry of Agriculture and Rural Development;
- Ministry of Natural Resources:
- Ministry of Energy;
- Ministry of Transport and Communications / National Institute of Meteorology;
- Ministry of Environment, Biodiversity and Climate Action;
- National Institute of Statistics;
- Ministry of Regional Plan and Integration / General Directorate of the Plan; and
- Ministry of Finance / Directorate General for Budget.

The preparation of the NDC was also largely based on existing sectoral and horizontal strategies, such as the Strategic and Operational Plan 2015-2020 (vision 2025), the Third National Communication, the First Biennial Update Report (BUR1), the National Action Plan for Renewable Energy (PANER), the National Action Plan for Energy Efficiency (PNEE), the Guinea-Bissau Urban Waste Management Plan (PGRU-GB), the Forest Emissions Reference Line (FREL), the Sustainable Energy Investment Plan (PIES) in Guinea-Bissau 2015-2030, among other documents.

Guinea-Bissau is developing an MRV system to monitor greenhouse gas emissions as well as the impacts of mitigation and adaptation actions. This system is essential to ensure transparency and accountability. The MRV system will be used to produce periodic reports on the progress of the NDCs, sending reliable data to international organisations such as the UNFCCC.

Guinea-Bissau faces institutional challenges in the implementation of the NDC, such as: The lack of qualified personnel in the areas of monitoring and implementation, which hinders the implementation of climate policies; The NDC depends largely on international funding, which can be unstable and limited in continuity; Coordination between the various ministries and local agencies requires the strengthening of cooperation and communication mechanisms.

The government structure to implement the NDC in Guinea-Bissau is organised around inter-ministerial coordination, stakeholder involvement and international financial support.

2.2. DESCRIPTION OF GUINEA-BISSAU'S NATIONALLY DETERMINED CONTRIBUTION (NDC) UNDER ARTICLE 4 OF THE PARIS AGREEMENT, INCLUDING UPDATES

(a) target(s) and description, including target type(s) (e.g. absolute economy-wide emission reduction, emission intensity reduction, emission reduction below a projected baseline, co-benefits of mitigating adaptation actions or plans, economic diversification policies and measures and others);

2.2.1 Presentation of the revised NDC

Compared to the initial NDC, the updated NDC is marked by a significant increase in ambition, although Guinea-Bissau contributes only insignificantly to global emissions:

- A commitment to a quantified emissions reduction target that concerns the main sectors: AFOLU, energy and waste.
- An ambitious GHG emission reduction target of 30% in 2030 compared to the baseline scenario.
- An unconditional target, using the country's own resources, to reduce emissions by 10% by 2030 compared to the baseline scenario. This goal is considered ambitious, given the country's economic situation and level of development.

2.2.2. Description of reference and objectives

(b) the target year(s) or period(s), and whether they are annual or multiannual targets;

A single target year: 2030.

(c) point(s) or period(s), level(s), baseline(s), base year(s) or starting point(s), and their respective values;

The year 2019 was considered the base year for projecting emissions for the period 2021-2030.

The benchmark is expressed as the percentage reduction in GHG emissions relative to the mitigation scenario in 2030. GHG emissions in 2019 were 409 kteCO2.

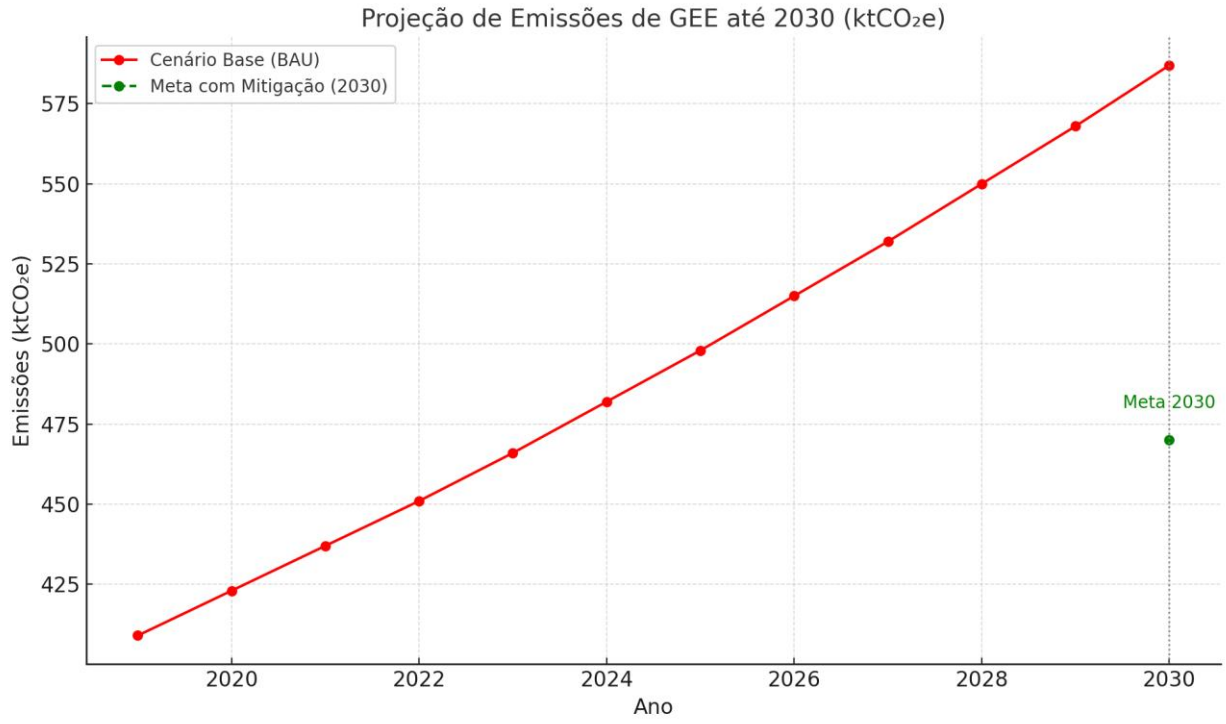


Figure 4: Projected GHG Emissions by 2030 (KtCO2eq)

Guinea-Bissau notes that the submitted NDC document contains some internal inconsistencies. While the NDC ICTU table refers to emissions of 409 kteCO2 for the year 2019, Figure 2 of the same document refers to emissions of 9,5 MtCO2e and Section 3.2.1 also refers to 11,6 MtCO2e for the same year. Similarly, Figure 2 refers to 13.7 MtCO2e for the year 2030, while Section 3.2.1 indicates 18.2 for the same year.

Guinea-Bissau does not have the capacity to resolve this inconsistency in the context of the preparation of this BTR, but is convinced that this will be resolved in the context of the preparation of NDC3.0 to be submitted in 2025.

To this end, Guinea-Bissau will use the inventory data included in this report, which should henceforth more accurately represent the reality of the country.

Guinea-Bissau believes that BTR2 may provide more accurate and coherent information.

To this end, technical support, including training and coaching, will be essential in two areas: the preparation of the greenhouse gas inventory and emission projections.

(d) implementation period(s) and/or periods;

2021–30

(e) scope and coverage, including, where relevant, sectors, categories, activities, sources and sinks, reservoirs and gases;

The NDC of Guinea-Bissau covers:
- Greenhouse gases: CO2, CH4 and N2O
- The entire national territory
- All sectors except industrial processes which account for a very small share of emissions
- All sub-categories and emission sources of each sector, according to the 2006 IPCC guidelines
- All *Carbon Reservoirs* covered by the LULUCF sector (soils and biomass, depending on land use activities) according to the 2006 ICGS guidelines.

(f) Intention to use cooperative approaches involving the use of mitigation results transferred internationally under Article 6 to the NDCs under Article 4 of the Paris Agreement;

In order to finance the conditional part of the NDC, Guinea-Bissau aspires to make full and voluntary use of the cooperation mechanisms provided for in Article 6 of the Paris Agreement, whether market-based (Article 6(2) and (4)) or non-market-based (Article 6(8)).

In general, Guinea-Bissau wishes to engage in such cooperative approaches with respect to all sources eligible for Article 6 mechanisms, in particular to develop energy saving and especially electricity production from renewable energy sources.

To this end, Guinea-Bissau intends to strengthen its capacities in the area of carbon pricing, implementing a specific training programme for the actors involved.

(g) any updates or clarifications of previously reported information (e.g., recalculation of previously reported inventory data or further details on methodologies or use of cooperative approaches).

The level of (net) greenhouse gas emissions is the only indicator to monitor progress in the implementation of the NDC and the national inventory as a source of information for the indicator.

Guinea-Bissau notes that the current inventory estimates are inconsistent with the estimates used in the NDC and that the available information on which the NDC relied is not sufficient to reconstruct the calculations. Therefore, the new inventory estimates published in this report will be used in the preparation of NDC 3.0, to be presented in 2025.

2.3. INFORMATION NECESSARY TO MONITOR THE PROGRESS MADE IN THE IMPLEMENTATION AND IMPLEMENTATION OF ITS NATIONALLY DETERMINED CONTRIBUTION UNDER ARTICLE 4 OF THE PARIS AGREEMENT

(a) Selected indicator

The benchmark is expressed as the percentage reduction in net GHG emissions compared to the baseline in 2030. The source of the indicator selected to monitor the progress made in implementing the NDC is the greenhouse gas (GHG) emissions inventory.

(b) Latest information on the nominee

As described above (see point c of the NDC description), the internal inconsistencies of the NDC document do not allow, without its review, an assessment of the progress made in its implementation.

It is also considered that, since it is not possible to reconstruct the calculations underlying the NDC, it is not possible, at the date of preparation of this BTR, to make a comparison between the values of the inventories and the values of the NDC, due to the high probability of methodological differences resulting in inconsistent values and, as such, not comparable.

Based on the experience gained in the preparation of the 2021 NDC and in the preparation of this BTR, Guinea-Bissau is convinced that it will be possible to respond adequately to this MPG requirement in BTR2.

To this end, Guinea-Bissau will need technical support (including training and technical assistance) in the preparation of NDC3.0, in the preparation of projections and in the preparation of the GHG inventory.

(c) NDC accounting information

The accounting of anthropogenic emissions and absorptions of greenhouse gases is in accordance with the IPCC guidelines of 2006.

The metrics used are the IPCC constants AR4: CO2 = 1; CH4 = 25; N2O = 298.

In its accounting of anthropogenic emissions and absorptions corresponding to the NDC, Guinea-Bissau relied on paragraph 14 of Article 4 of the Paris Agreement, which refers to Article 13 of the Paris Agreement, which places emphasis on environmental integrity, transparency, accuracy, completeness, comparability and coherence and on avoiding any double counting.

(d) Methodology used to monitor the implementation of NDC

Since the NDC submission, Guinea-Bissau has lacked the technical capacity to develop robust methodologies to monitor the implementation of the NDC.

This is reflected in the situation described above, referring to the inconsistency between the methodologies and the basic inventory data included in this BTR and the methodologies and the basic data used in the NDC. This barrier to monitoring the implementation of the NDC was only identified late, at an advanced stage of the BTR elaboration.

Likewise, a robust mechanism to identify and monitor the implementation of mitigation measures that contribute to the achievement of the emission reduction target established in the NDC was not developed. Although the indicator selected to monitor the implementation of the NDC was exclusively the level of GHG emissions compared to the baseline situation, Guinea-Bissau considers it essential to develop a monitoring system for mitigation measures in order to identify as early as possible the most successful measures and those facing the greatest obstacles.

In this context, having learned from the experience of the current NDC, Guinea-Bissau should be guided by the principle of simplicity in the process of preparing NDC 3.0, adopting an NDC whose implementation has the capacity to monitor. To this end, Guinea-Bissau will need technical support, aware that the NDC can be updated at any time, whenever the country's implementation and monitoring capacity shows relevant improvements.

2.4. MITIGATION POLICIES AND MEASURES, ACTIONS AND PLANS, INCLUDING THOSE WITH MITIGATION CO-BENEFITS RESULTING FROM ADAPTATION ACTIONS AND ECONOMIC DIVERSIFICATION PLANS, RELATED TO THE IMPLEMENTATION AND ATTAINMENT OF A NATIONALLY DETERMINED CONTRIBUTION UNDER ARTICLE 4 OF THE PARIS AGREEMENT

The NDC, updated in 2021, is part of a broader vision for low-carbon, climate-resilient development. It also aligns with national needs in terms of economic and social development, in particular through:

- The integration of aspects related to gender equality and women's empowerment in the two components of the NDC: mitigation and adaptation to climate change.

- Alignment of the NDCs with the United Nations Sustainable Development Goals (SDGs), in particular with regard to SDGs 1, 3, 6, 7, 8, 9, 11, 12, 13 and 17; the African Union Agenda 2063, the SAMOA Path and the New Deal, and the National Development Programme (NDP) - Tchiga Time.

- The desire to position the country in the new carbon market mechanisms provided for in Article 6 of the Paris Agreement, to facilitate investments in mitigation.

- A first articulation of the country's adaptation needs in key sectors such as agriculture, livestock, coastal and low-lying area management; fisheries and ocean ecosystems, energy, water resources, as well as forest conservation and protected area management (including dense and open forests and mangrove areas), human health, infrastructure and urban areas, and disaster risk management.

The adaptation measures proposed in the 2021 NDC need to be redefined at the national level. In fact, the country's development context has evolved and there is a significant lack of in-depth analyses of climate vulnerability and risk, whether in different sectors or geographical areas. Even surface hydro-meteorological observations, which are necessary for climate risk management at the local level, have many gaps. In addition, several mitigation measures have the potential to also contribute to adaptation and vice versa.

It will therefore be important in the coming years to optimise Guinea-Bissau's access to funds so that the country can increasingly address its climate challenges in an integrated manner.

Guinea-Bissau envisages that NDC3.0 may include more detailed information on the measures necessary to achieve the targets set out therein. To do so, the country will need technical support to estimate the emission reduction potential of each measure.

However, the NDC includes some information that gives a general indication of the sectors with the greatest reduction potential: forestry and land use (87%), followed by energy (9%) and agriculture (3%). This distribution of the emission reduction potential served as a guide both in defining national policies and in defining collaboration with our main cooperation partners.

Guinea-Bissau has several policies and measures to mitigate and adapt to climate change, in line with the Paris Agreement. Here are some key points:

- Mitigation: Reduction of greenhouse gas emissions through national plans and regulatory instruments.
- Adaptation: Implementation of local and national actions to address climate change impacts.
- Co-benefits: Measures that simultaneously mitigate and adapt, such as economic diversification.
- National Contribution: Specific commitments to achieve emission reduction targets under Article 4 of the Paris Agreement.

Guinea-Bissau is committed to achieving its objectives of reducing greenhouse gas concentrations in the atmosphere to a level that prevents dangerous anthropogenic interference with the climate system. It has developed several policies and strategies that guide its development agenda, promoting sustainable development by minimising the social, environmental and ecoNOmic impacts of anthropogenic activities that contribute to greenhouse gas emissions and, consequently, to global warming.

It is important to note that, as mentioned, Guinea-Bissau has not yet adopted a plan for implementing the NDCs. It should also be noted that it does not yet have a Long-Term Strategy and that a NAP (*National Adaptation Plan*) is in the preparation phase.

In this context, Guinea-Bissau hopes to obtain the support of international partners to define an implementation plan and develop a long-term strategy immediately after the adoption of NDC3.0, considering that the NAP is already being developed with the support of UNDP.

Guinea-Bissau has been involved in several projects and activities aimed at reducing GHG emissions and increasing its absorption capacity, notably through its programmes in the Energy, Forestry and Biodiversity Sectors.

2.4.1. Mitigation measures in the agricultural and forestry sector

In Guinea-Bissau, the agricultural and forestry sector plays a crucial role in the economy and people's livelihoods, but it also faces significant challenges related to climate change. Mitigation measures in these areas are essential to reduce GHG emissions and protect the country's natural resources.

The mitigation strategies in these sectors are:

- Agroforestry: integration of trees into agricultural practices to promote carbon capture, improve soil fertility and reduce erosion. Agroforestry systems increase biodiversity and can be adapted to local crops such as cashew.

- Sustainable forest management: implement sustainable forest management plans to prevent deforestation and forest degradation, promoting responsible use of timber and non-timber resources. This includes the creation of forest reserves and protected areas, as well as support for reforestation initiatives.

- Reforestation and adoption of native species: promote reforestation projects with native species adapted to the local climate and efficient in carbon capture. These projects can help restore degraded areas and increase carbon sequestration.

- Sustainable agricultural practices: Introduce sustainable agricultural techniques such as crop rotation, green manure and composting to reduce dependence on chemical fertilisers and improve soil health. This helps reduce emissions of nitrous oxide, a potent greenhouse gas.

- Efficient water use: implement efficient irrigation systems and water conservation techniques to reduce excessive consumption and minimise water stress in crops. Water conservation is essential, especially in periods of prolonged drought.

- Alternatives to burning agricultural waste: encourage composting and other practices to reuse agricultural waste instead of burning. This reduces carbon dioxide and methane emissions, contributing to more sustainable agriculture.

- Education and environmental awareness: empowering farmers and local communities on sustainable agricultural and forestry practices, as well as on the importance of preserving ecosystems. Education is an essential tool to ensure the success of any mitigation measures.

- Strengthening infrastructure and green policies: develop incentive policies and regulations to promote low-carbon practices in agriculture and forest management. Investments in green infrastructure, such as nurseries and research centres, are also important to support mitigation initiatives.

- Climate-resilient agriculture: encouraging climate-resilient crops adapted to degraded soils. This reduces the need for deforestation for new farmland and increases food security in the face of climate change.

Given that mitigation actions such as natural regeneration, short rotation forestry and bioenergy to replace fossil fuels are not currently viable mitigation options, the Government of Guinea-Bissau has capitalised on mitigation efforts in forest protection actions focussing on the establishment and effective management of protected areas (PAs), having developed some adaptation projects with mitigation co-benefits:

2.4.2. Adaptation projects with mitigation co-benefits

2.4.2.1. Agricultural and Forestry Sector Rice and Mangrove Project (for our food security):

Financing: Global Environment Facility, designated GEF6.

Framing

Mangrove ecosystems cover much of Guinea-Bissau's coastal zone and the services they provide to the local population are extremely valuable. However, these ecosystems are at risk and face several challenges. In the past, many mangrove areas have been converted into rice paddies by the local population. During the Guinea-Bissau War of Independence (1963–1974), many of these mangrove rice paddies were abandoned but never restored, leading to degradation of the mangrove's natural habitat and soil, with its associated impacts in terms of biodiversity loss, natural productivity and local food insecurity.

In response to the above challenges, the aim of the project is "to support the restoration and rehabilitation of degraded mangrove ecosystem functionality and services to improve food security and climate change mitigation."

Project duration: 5 years.
Starting date: 2019
End date: 2024

The expected results of the Project are:

- 1,500 hectares of mangroves to be restored;
- 1 200 ha of rehabilitated rice paddies: PVC pipes, technical assistance to producers and distribution of adapted rice seeds,

Description of the measures

The main measures implemented by the project are:

- Infrastructure rehabilitation: Rehabilitation and construction of dikes, irrigation canals and drainage systems to improve water management and increase the productivity of rice plantations.
- Farmer Empowerment: train and educate local farmers on sustainable agricultural techniques, including efficient water use and farming practices that preserve the mangrove ecosystem.
- Distribution of agricultural inputs: Supply of high quality seeds, fertilisers and other inputs needed to improve rice production.
- Promotion of Biodiversity: Implementation of agricultural practices that promote biodiversity and the health of mangrove ecosystems, such as crop rotation and the use of natural pest control methods.

- Monitoring and Evaluation: Establishment of monitoring systems to assess the impact of the measures implemented and adjust strategies as necessary to ensure long-term sustainability.
- Miscellaneous training: solar salt production, oyster production with online collectors, improved stoves; environmental education for teachers, students and communities

Climate Risk Adaptation and Resilience Capacity Building Project for Communities in Guinea-Bissau's Coastal Vulnerable Areas (Coastal Project):

Framing

Officially named "Strengthening Communities' Adaptation and Resilience Capabilities in Guinea-Bissau's Coastal Vulnerable Zones to Climate Risks" (also known as the Coastal Project), it is a crucial initiative to address climate challenges in the country's coastal zones.

The objectives of the Project are:
- Strengthening climate resilience : Increasing the capacity of coastal communities to adapt and resist the impacts of climate change.
- Sustainable Development : Promoting sustainable solutions for climate risk management and long-term development.

This project is funded by the Global Environment Facility (GEF) and implemented with the support of the United Nations Development Programme (UNDP).

Project duration: 5 years.
Starting date: 2018
End date: 2023 (extension to 2025)

The expected results of the Project are:

The Coastal Project, in its component 2 on investments for coastal protection, aims at the following results:

- Climate protection, rehabilitation and/or climate protection of key fisheries and local coastal transport infrastructure against sea level rise and coastal degradation;
- The cultivation of rice in lowlands is protected from climate risks;
- A total of 2,500 hectares of mangrove forests restored and maintained in selected coastal areas;
- Restoration and management of at least 1,500 hectares of coastal wetlands to strengthen resilience against resettlement and salinisation risks.

Description of the measures

- Reducing Vulnerability : Reducing the risks associated with climate change for coastal communities.
- Improved quality of life : access to better infrastructure and greater food and water security.
- Environmental Conservation : Protection of coastal ecosystems and promotion of biodiversity.

2.4.2.2. Mitigation Measures in the Energy Sector

1- Interconnection Project - OMVG

Framing:

The Organisation for the Exploitation of the Gambia River (OMVG) Interconnection Project is a subregional initiative that aims to improve electricity infrastructure and promote energy integration among its member countries: The Gambia, Guinea, Guinea-Bissau and Senegal.

The main components of the Project are:

1. Sambangalou Hydroelectric Power Plant:
- Located on the Gambia River in Senegal.
- Capacity of 128 MW and annual production of 402 GWh.

2. Interconnection Network:
- Transmission lines of 225 kV, with a total length of 1,677 km.
- 15 processing substations in the four member countries.
- Thermal transit capacity of 800 MW.

Expected results:

- Clean Energy Production : 1,348 GWh/year, contributing to the growing energy demand in the region.
- Sub-Regional Integration : Creation of an integrated electricity market, improving the reliability of the electricity sector.
- Cost reduction - Reduction of electricity production costs through resource sharing.
- Positive Environmental Impact - Reduction of CO2 emissions.
- Economic development: job creation and currency economy.

Impact on Guinea-Bissau:
- Local infrastructure : The interconnection line in Guinea-Bissau will be 218 km long and will include four transformation substations with a total capacity of 170 MVA.
- Sustainable Development The project provides opportunities for the use of renewable energy and sustainable development in the country.

Description of the measures

The OMVG Interconnection Project is an ambitious initiative that aims to connect the electricity grids of The Gambia, Guinea, Guinea-Bissau and Senegal. Here is a detailed description:

The Project aims to:
- Improve the electrical infrastructure: construction of transmission lines and substations to interconnect member countries.
- Promoting energy integration: facilitating electricity trade between countries by increasing energy security and efficiency.
- Increase Energy Production Capacity: Use of water resources to generate clean and sustainable energy.

2.5. GREENHOUSE GAS EMISSIONS AND REMOVALS SUMMARY

Since NIR is integrated with BTR (as Chapter 1), we will integrate the following charts and tables:

- Total emissions with and without LULUCF for the entire available time series
- Emissions by sector for the entire available time series
- Gas emissions for the entire available time series.

Table 8: Emissions by Sector for the entire time series 2010 - 2022

Year	Energy	Industry	Agriculture	LULUCF	Garbage	Total - without LULUCF	Total - with LULUCF	Annual rate (%)
2010	233.0	20.3	1717.5	-27217.8	124.8	2095.6	-25122.2	
2011	256.9	16.3	1358.8	-29148.0	158.8	1790.8	-27357.2	9
2012	273	15.3	1871.5	-27866.8	183.9	2343.2	-25523.6	-7
2013	271.4	14.6	1882.7	-16753.8	202.9	2371.6	-14382.2	-44
2014	283.9	14.4	1548.5	-21075.4	217.7	2064.5	-19010.9	32
2015	309.2	14.8	1887	-21735.3	229.5	2440.5	-19294.8	1
2016	328.5	15.5	1590.9	-18261.1	239.7	2174.6	-16086.5	-17
2017	356.3	16.5	1882.4	-17278.5	248.5	2503.6	-14774.9	-8
2018	372.0	17.7	1858.4	-17852.6	256.6	2504.7	-15347.9	4
2019	436.6	336.5	1999	-17697.7	264.2	3036.3	-14661.4	-4
2020	417.4	461.1	2030.2	-16606.0	273.9	3182.6	-13423.3	-8
2021	449.3	540.1	2035.1	-20147.8	281.0	3305.5	-16842.3	25
2022	458.2	601.2	2102.2	-22544.7	288.1	3449.7	-19095.0	13

Table 9: Gas emissions for the whole time series 2010 - 2022

	CO2				TOTAL CO2	CH4				TOTAL CH4
Year	Energy	IPPU	AFOLU	Waste		Energy	IPPU	AFOLU	Waste	
2010	107.0	0.5	-27203.02	5.89	-27090	111.6	0	1672.4	100.2	1884.2
2011	125.2	0.5	-29147.73	6.00	-29016	116.5	0	1334.3	133.7	1584.5
2012	138.4	0.5	-27846.52	6.10	-27702	118.5	0	1812.1	158.3	2088.9
2013	134.4	0.5	-16753.25	6.19	-16612	121.3	0	1857.9	176.8	2155.9
2014	144.1	0.5	-21060.90	6:30	-20910	123.7	0	1502.7	191.0	1817.4
2015	166.8	0.6	-21720.85	6.40	-21547	125.9	0	1836.5	202.3	2164.7
2016	175.1	0.6	-18244.25	6.5	-18062	135.5	0.0	1550.2	212.0	1897.6
2017	199.6	0.6	-17266.02	6.6	-17059	138.3	0.0	1843.6	220.3	2202.2
2018	211.9	0.5	-17839.46	6.7	-17620	141.3	0.0	1815.4	227.9	2184.6
2019	287.7	0.6	-17681.13	6.8	-17386	131.1	0.0	1955.2	234.9	2321.1
2020	273.4	0.4	-16590.01	7.2	-16309	126.8	0.0	1987.6	243.6	2358.0
2021	302.1	0.7	-20130.81	7.3	-19821	128.9	0.0	2001.0	250.1	2380.1
2022	308.0	0.5	-22526.81	7.4	-22211	131.2	0.0	2061.0	256.6	2448.8

	N2O					
Year	Energy	IPPU	AFOLU	Waste	Total N2O	TOTAL GHG
2010	14.4	0	30.3	18.80	63	-25122.19
2011	15.13	0	24.2	19.19	59	-27357.17
2012	15.59	0	39.1	19.60	74	-25523.55
2013	15.8	0	24.1	20.01	60	-14382.21
2914	16.16	0	31.2	20.42	68	-19010.87
2015	16.6	0	36.0	20.84	73	-19294.66
2016	17.9	0.0	23.9	21.25	63	-16086.49
2917	18.4	0.0	26.3	21.65	66	-14774.84
2018	18.9	0.0	29.9	22.06	71	-15347.80
2019	17.8	0.0	27.3	22.47	68	-14661.43
2020	17.2	0.0	26.6	23.19	67	-13423.32
2021	18.3	0.0	17.0	23.61	59	-16842.30
2022	19.0	0.0	23.4	24.07	66	-19094.95

The Energy Sector

The assessment of base emissions was based on the anticipated demand for primary energy, taking into account two factors:

- The extent of the trend in the evolution of primary energy intensity, observed in the period 2010-2019
- Forecasts of economic activity (GDP) and population developments over the next decade

Primary energy intensity evolved at a rate of -0.4% between 2010 and 2019, based on detailed energy balances (SIE UEMOA) and detailed socioeconomic data. For the baseline scenario, this trend was extended from 2019, considered the base year, to 2030. The 2020 real values were integrated into the projections as observational data.

In the absence of official published forecasts for the period 2021-2030, the establishment of the economic growth scenario was based on the IMF long-term forecasts, according to the latest report (July 2021, Reference Programme - SMP) prepared after discussions with Guinea-Bissau authorities in May 2021. Thus, the economic scenario taken into account is one of accelerated development, characterised by an average annual growth rate of real GDP of 4.7% in the period 2020-2030.

Regarding access to electricity, the scenario adopted is the one officially considered by the State of Guinea-Bissau. Under this scenario, the electrification rate will increase from 45% in 2020 to around 80% in 2030.

Based on this forecast, the demand for primary energy would increase from 489 ktoe in 2020 to 745 ktoe in 2030, equivalent to an average increase of 4.3% per year. The combustion-based reference emissions were then evaluated year by year, from 2021 to 2030, leading to the application of the 2006 IPCC guidelines as a reference approach.

This approach covers CO2, CH4 and N2O. The annual reference emissions are expressed in tons of CO2 equivalent, based on the GRPs of the ICEG Fourth Assessment Report (AR5).

For the specific case of fugitive emissions associated with charcoal production, the 2019 refinement of the 2006 IPCC guidelines was used to calculate these emissions. Emissions were then calculated year by year, during the period from 2021 to 2030, based on the primary energy matrix of the year 2019. Based on this, total emissions in the reference scenario would increase from 372 ktéCO2 in 2020 to approximately 706 ktéCO2 in 2030, which corresponds to the multiplication of the 2020 emission level by two and an average annual evolution of 6.6% in the same period.

Waste

The quantities of waste produced are estimated on the basis of an average per inhabitant increasing from 295 kg/ha/year in 2020 to 310 kg/ha/year in 2030.

The baseline provides for the continuation of the same waste management practices observed today, with about 45% of the waste quantities going to landfills and the rest being burned in the open.

Under these conditions, emissions, calculated on the basis of the 2006 IPCC guidelines, would increase from 195 kteCO2 in 2020 to around 300 kteCO2 in 2030, which corresponds to an average increase of 4.4% per year over the period. For wastewater, the quantities of BOD produced are estimated at 33 kt per year in 2030 compared to 26 kt in 2020.

Continued current management practices lead to GHG emissions of 200 kteCO2 in 2030, compared to 158 kteCO2 in 2020. Emissions from the two subsectors together are estimated at around 500 kteCO2 in 2030, compared to 353 kteCO2 in 2020, which corresponds to an average annual increase of 4.4%.

The Affection of Forest and Land

Historically, Guinea-Bissau's land-use sector has been a net carbon sink. However, after the events of 2012, the country's forests came under unprecedented pressure. Foreign interest in the African rosewood (Pterocarpus erinaceus), along with political instability, resulted in the massive extraction and export of this species. As a result, the sector has become a net source of GHG emissions. The government’s enactment of a 5-year moratorium on all logging and export in 2015 stabilised logging rates and associated emissions in subsequent years. However, forest deforestation between 2013 and 2020 remained much higher than before 2012. The average annual emissions in 2013-2020 were close to 4 Mt CO2e, which represents a surprising increase considering that the sector was a net sink between 2006 and 2012 (with an average annual absorption of 230 kteCO2).

The baseline emissions projection for 2021-2030 takes into account the end of the five-year moratorium on the exploitation and export of forests, the reopening of trade, and

persistent restrictions that hamper effective forest management. The area of forests under phytosanitary containment in 2021-2030 is expected to gradually increase to 2013 levels by 2030. Deferred emissions from soils and increased firewood consumption also contribute to an increasing trend, reaching 8 MteCO2 in 2030 compared to emissions of around 5 MteCO2 in 2020.

Agriculture

Greenhouse gas emissions from agriculture in Guinea-Bissau are mainly associated with livestock farming, with CH4 from enteric fermentation and N2O from animal grazing. They also come from rice production, the (very moderate) use of fertilisers and the burning of agricultural waste.

- Cattle numbers are estimated on the basis of data available for 2009 and projected from 2009 onwards. For all herds and herds except cattle, livestock populations are projected using the trend proposed by the FAO for the period 2009 to 2019. For cattle, whose population is growing strongly (annual growth of 6.4% in the period 2000 to 2009), the historical growth rate decelerated in the period 2010 to 2020. Thereafter, livestock numbers are assumed to be constant from 2021 and over the period from 2021 to 2030. This evolution is assumed taking into account the resources needed to feed a large population of cattle. The emission factors associated with livestock are also assumed to be constant.

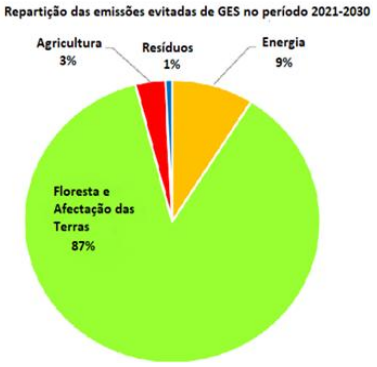
- Cultivation areas and production are based on FAO estimates and have been considered stable as of 2020.

- The consumption of fertilisers is little known, and the quantities reported in the 2010 greenhouse gas inventory have been used and considered stable since 2010.

Based on these assumptions, emissions from the agricultural sector remain stable at about 4.5 MteCO2 per year throughout the period 2021-2030.

Avoided greenhouse gas (GHG) emissions

In the period 2021-2030, the implementation of the NDC will reduce about 22 MteCO2, mainly from the forestry and land use sector (87%), followed by energy (9%) and then agriculture (3%), as shown in the following graph:



Graph 3: Sector structure of cumulative GHG emissions avoided by the NDC in the period 2021-2030

2.6. GREENHOUSE GAS EMISSIONS PROJECTIONS AND REMOVALS, AS APPLICABLE

The following table provides a summary of projections for greenhouse gas emissions and removals:

Table 10: Summary of Greenhouse Gas Emissions Projections

Emissions/Removals	Years	
	2020	2030
Energy Sector	372 KtCO2	706 kteCO2
Agriculture	4.5 MteCO2	4.5 MteCO2
Allocation of forests and land	5 MteCO2	8 MteCO2
Waste Sector	195 kteCO2	300 kteCO2
Evolution of emissions	11.6 MteCO2	18.2 MteCO2

Source: MABAC; NDC Guinea-Bissau; 2021.

The base emissions were calculated by aggregating the base emissions of the four main sectors, namely:

- Energy
- Allocation of forests and land
- Agriculture
- Waste

According to this scenario, Guinea-Bissau's GHG emissions will increase from 11.6 MteCO2 in 2020 to about 18.2 MteCO2 in 2030, which equates to an average increase of 4.6% per year between 2020 and 2030.

In preparing this report, Guinea-Bissau encountered a number of difficulties related to the methodological reconstruction of the projections included in the NDC, notably due to the country's lack of technical capacity (considering that the projections included in the NDC were prepared by an international consultant, under specific circumstances and with tight deadlines that did not allow for knowledge sharing with national experts).

Therefore, this chapter transcribes the key information about scenarios and projections contained in the NDC document. The reading should be made in the light of the issues mentioned above regarding internal inconsistencies in the NDC document as well as inconsistencies between projections and the inventory included in this report, especially with regard to the reference year.

Guinea-Bissau notes that paragraph 92 of the GMP encourages developing countries that require flexibility based on their capabilities to submit projections of greenhouse gas emissions and removals. In this sense, and observing all the barriers described above, the presentation of information on projections is made mainly with the objective of acquiring experience and facilitating the identification of areas for improvement and training needs.

Guinea-Bissau considered developing new emission projections as part of the preparation of the BTR, but decided not to do so for the following reasons. First, the projections could only be made after completion of the GHG inventory, so that it could

serve as a basis for them. Secondly, as there is no capacity on the part of national experts to develop projections, in particular to deal with the GACMO model, specific training for the team is required.

Given the proximity of the NDC review process and in order to avoid the hasty preparation of projections that could result in less reliable values and that would not be appropriate by the different relevant national entities, Guinea-Bissau opted for the following approach.

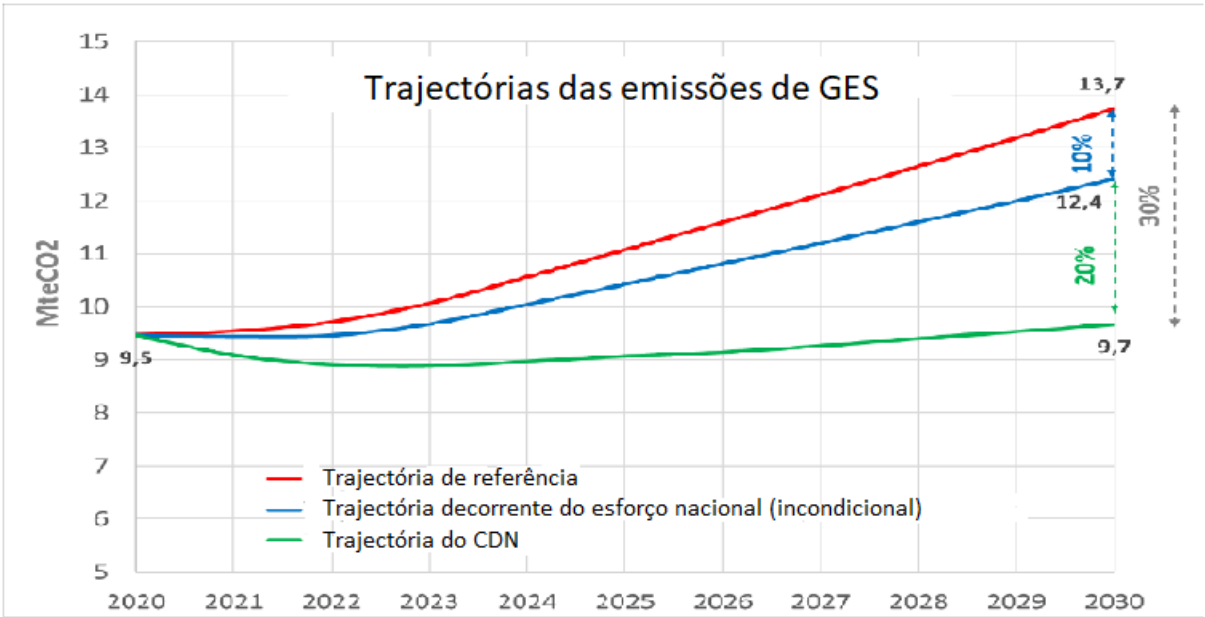
1. Train national technicians, including during the preparation period of BTR1 and using GEF resources for this purpose, for the preparation of projections and use of GACMCO;
2. Perform projections, in the context of the NDC3.0 preparation process, using the inventory data presented in this BTR as the basis for the baseline;
3. Publish projections in document NDC3.0 and BTR2.

With this approach, Guinea-Bissau is convinced that it will take an important step towards continuous improvement over time, including by efficiently linking the different processes of the Paris Agreement's cycle of ambition.

2.7. EMISSION SCENARIOS

Three emission scenarios were designed:

1. Reference scenario (scenario equivalent to scenario without measures)
2. Scenario of unconditional national effort (scenario equivalent to scenario with measures)
3. NDC scenario (scenario equivalent to the scenario with additional measures – conditioned on receiving international support).



Graph 4: Projected emissions scenarios (2020 – 2030)

Detailed information on the scenarios, including assumptions, used in Guinea-Bissau's emissions projections can be found in the country's NDC document, available in the NDC Registry at https://unfccc.int/NDCREG.

This involves updating, if necessary, the emission trajectories recommended by the NDC based on actual emissions observed each year.

Monitoring consists of the periodic comparison of actual GHG emissions with the emission level predicted by the NDC scenario (see figure above). To do so, GHG inventories need to be conducted regularly, ideally annually, but perhaps every two years if Guinea does not have the means to do so.

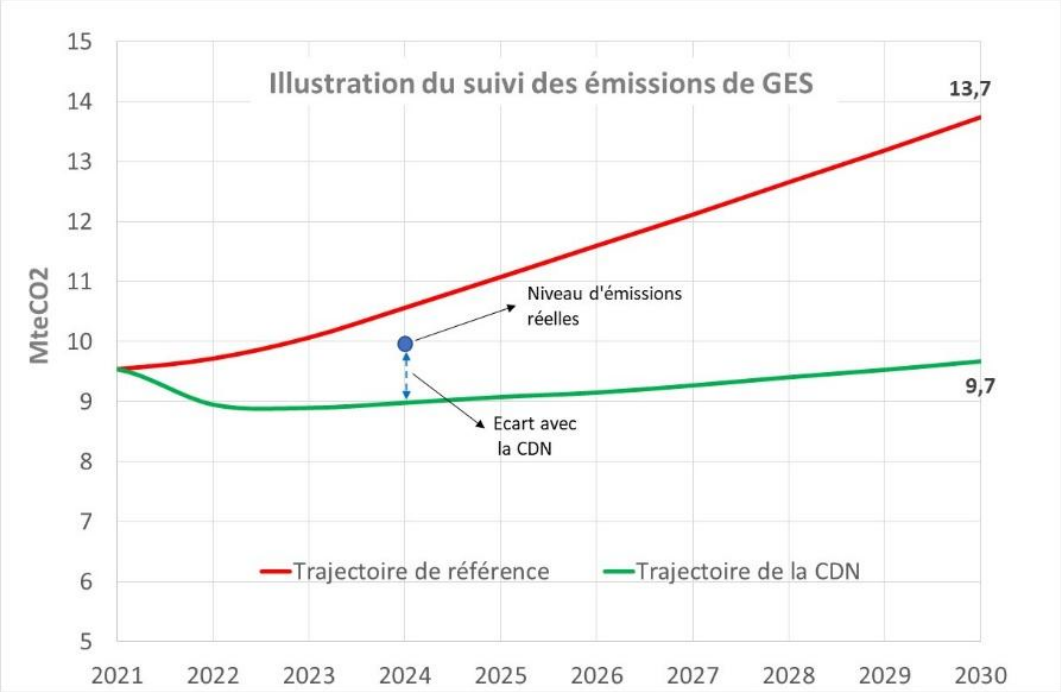


Figure 6: Emissions monitoring illustration

Discrepancies, if any, should be explained, and the sectors that cause them should be identified.

This is why annual targets should be broken down by sector, or even sub-sector, if necessary. The following table presents the annual GHG emissions projected by the NDC scenario up to 2030.

Table 11: Emission scenarios and projections for the period 2021-2030

GHG emissions (ktCO2eq)	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy	433	416	399	392	384	346	359	372	383	393
Allocation of Forests and Land	4,200	3,600	3,563	3,672	3,794	3,922	4,044	4,186	4,316	4,467
Agriculture	4,537	4,551	4,538	4,511	4,484	4,457	4,340	4,402	4,375	4,348
Waste	367	378	390	402	413	425	435	446	455	465
Global	9,538	8,945	8,890	8,977	9,075	9,149	9,268	9,406	9,530	9,673

The actual emissions obtained through the GHG inventory in each sector are then compared with those predicted by the NDC. Any gaps, if any, should be explained by assessing the progress of implementing mitigation measures in each of the sectors involved.

The annual monitoring of NDC also requires the design and development of a specific methodology to assess the progress achieved by sector in terms of mitigation policy.

Therefore, it is recommended to use the effects decomposition methodology (international methodology often used in the evaluation of climate and energy transition policies), which allows the establishment of a data collection process dedicated to the monitoring of NDC by sector of activity.

CHAPTER III - INFORMATION RELATED TO CLIMATE CHANGE AND ADAPTATION IMPACTS UNDER ARTICLE 7 OF THE PARIS AGREEMENT

3. NATIONAL CIRCUMSTANCES, INSTITUTIONAL ARRANGEMENTS AND LEGAL FRAMEWORK

3.1. National circumstances

Guinea-Bissau has signed and ratified the main agreements of the United Nations Framework Convention on Climate Change (UNFCCC). In 1995, it ratified the UNFCCC; in 2005, it ratified the Kyoto Protocol (RGB, 2011), and in 2016, it signed the Paris Agreement. Guinea-Bissau has made significant progress: in 2001, it published its First National Communication on Climate Change, which served as the basis for the most concise document of the National Action Plan for Adaptation to Climate Change (PANA), published in December 2006.

PANA is a set of diagnoses on the socio-environmental context of the country, as well as proposals for technical solutions to climate challenges. The PANA identified the rural regions and the productive activities developed in them, such as agriculture, fishing, livestock and forest extraction, as the most susceptible to changes in rainfall patterns and the occurrence of extreme events (RGB, 2006).

The document on Strengthening the Resilience and Adaptation Capacity of the Agricultural and Water Sectors to Climate Change in Guinea-Bissau (PRCASAHMC-GB) (RGB, 2011) highlights that sea level rise, as well as the construction of coastal settlements, can contribute to the loss of coastal floodplains and mangroves, causing crop losses due to the salinisation of rice paddies. Possible changes in rainfall patterns can impact current food security strategies, increase child malnutrition, and cause an increase in cases of heat wave-related illnesses and deaths, floods, storms, and similar events.

3.2. Institutional arrangements

The Ministry of Environment and Biodiversity (MABAC) is the leading body providing guidance on policies, legal issues and other documents related to the Environment and biodiversity, including climate change. The National Environment Institute (INA) plays a key technical role in the National Committee on Climate Change (NCCC). The INA is responsible for providing technical and scientific support, coordinating activities related to environmental impact assessment, contributing to the development of adaptation policies and strategies, and assisting in the practical implementation of adaptation measures, in collaboration with other institutions involved.

The National Committee on Climate Change (CNAC) of Guinea-Bissau is composed of several government institutions and relevant organisations that collaborate in the formulation and implementation of policies related to climate change. The main entities that make up the CNAC include:

- Ministry of Environment, Biodiversity and Climate Action (MABAC): Body responsible for the overall coordination of the country's environmental and biodiversity policies.
- National Environment Institute (INA): Provides technical and scientific support, coordinating activities related to the assessment of environmental impacts and contributing to the development of adaptation strategies.

In addition to these institutions, the NCCC may include representatives from other relevant ministries and entities, such as the Ministries of Agriculture, Fisheries, Water Resources, Health and Energy, as well as non-governmental organisations (NGOs), research centres and institutes, civil society and international partners involved in climate issues. This multidisciplinary approach allows an integrated and effective response to the challenges posed by climate change in Guinea-Bissau.

Below is an organisation chart that clearly illustrates how the various institutions and institutional arrangements are linked to key policies and processes related to adaptation, such as the NAPA, the NDC, the NAP process, and interactions with the Green Climate Fund (GCF) and the Global Environment Fund (GEF).

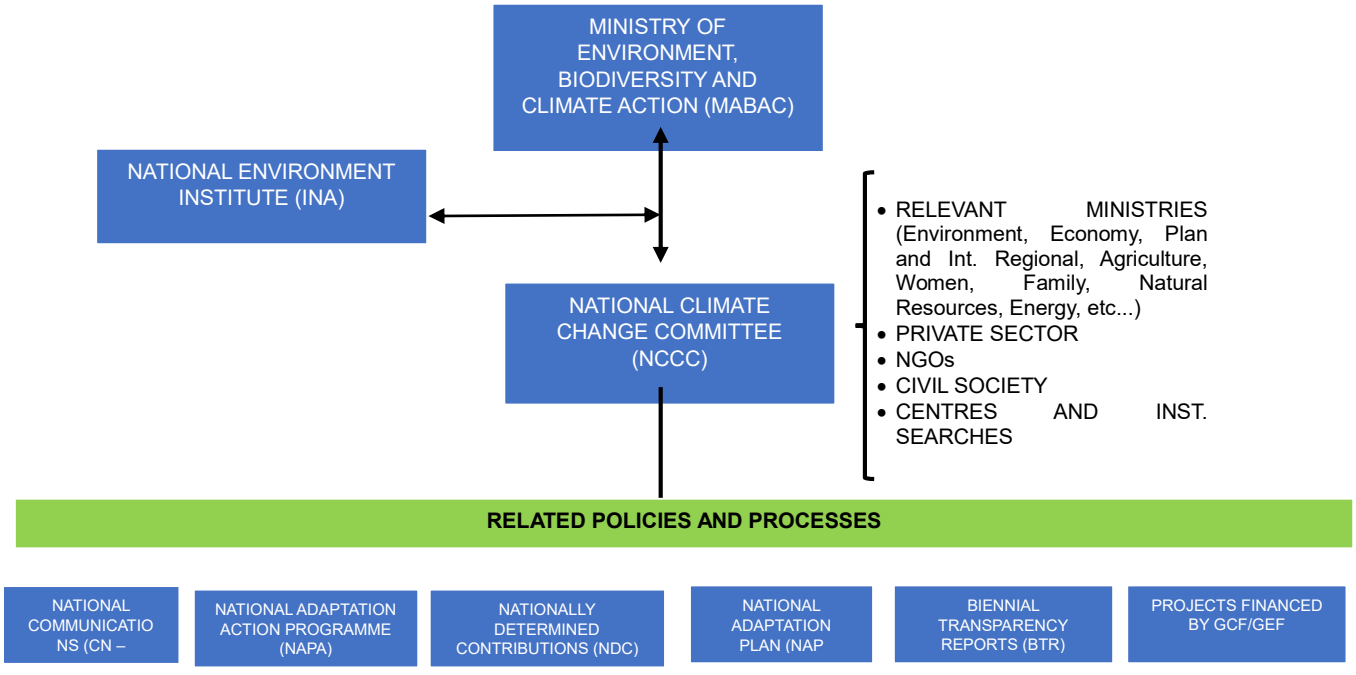


Figure 5: Organisation Chart of Institutional Arrangements related to Climate Change Adaptation issues.

Current institutional arrangements have been instrumental in facilitating coordinated adaptation actions. The National Committee on Climate Change (NCCC) plays a central

role in coordination among relevant government institutions. Despite these efforts, there are still challenges related to limited institutional capacity and the need for a more robust integration of adaptation actions into the regular operations of public institutions. Strengthening institutional capacity and improving inter-institutional communication are priority areas for ensuring the effectiveness of adaptation actions.

The effectiveness of current institutional arrangements is also related to the technical and administrative capacity of the government institutions involved, especially in terms of specialised human resources, adequate infrastructure and access to the necessary technologies. Continuous improvement of these capabilities is essential to ensure that institutions are able to effectively implement adaptation actions and integrate them into their routine operations.

3.3. Legal framework related to climate change

Considerations and planning for adaptation to climate change in Guinea-Bissau are at an early stage of development. Although some climate change integration activities have been carried out in the framework of the implementation of the project "Strengthening Climate Change Resilience and Adaptive Capacity in Guinea-Bissau's Agricultural and Water Sectors", the country faces major challenges, mainly due to the absence of a national climate change policy framework and an established national adaptation planning process. It is therefore necessary to create an enabling environment to facilitate the integration of adaptation measures into national development objectives and to strengthen the capacity of the Ministry of Environment, Biodiversity and Climate Action, which is responsible for the development of environmental and climate change adaptation policies.

Table 12 below presents some policies and plans on climate change:

Table 12: Policies and Plans on Climate Change:

Policies/Plans	Description
Paris Agreement.	Guinea-Bissau is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and ratified the Paris Agreement in April 2016.
National Determined Contribution (NDC).	Guinea-Bissau submitted its National Contribution (Expected) in September 2015. The document includes mitigation and adaptation components. The NDC was inspired by the National Poverty Reduction Strategy (DENARP II) and is aligned with the Strategic and Operational Plan - Terra Ranka 2015-2025. Guinea-Bissau's contribution to mitigation includes the implementation of policies and planned actions in the forestry and energy sectors. Its contribution to adaptation broadly identifies agriculture, the coastal zone, cross-cutting areas, disaster risk management, education, energy, environment, health and tourism as areas requiring adaptation

	actions. It also identifies gaps and needs, as well as high-level adaptation objectives. One of these gaps is the need to carry out a cost-benefit analysis of adaptation measures. According to the updated 2021 NDC, the implementation of adaptation and mitigation measures depends on external partners that provide financial resources, technology, and capacity building. Although the impacts and vulnerabilities of climate change are presented, they are based on NAPA (2006) and are therefore considered outdated.
National Action Plan for Adaptation (NAPA, 2006).	PANA has defined several priority strategic actions to address the risks and impacts of climate change in Guinea-Bissau. These actions aim to increase food security for rural populations in order to increase their resilience, reduce pressure on forest and fisheries resources, and improve access to drinking water. PANA prioritises agriculture and tourism, as well as water resources, coastal erosion, and biodiversity.
Third National Communication (TNC).	The 2018 TCN presents, among other things, the climate-induced impacts and suggested adaptation needs for the main sectors of agriculture and livestock, energy, forestry, biodiversity, fisheries and water resources. The TCN proposes a series of adaptation measures. For the water sector, it proposes the establishment of a coherent and consistent strategy, using an integrated approach to water resources management and the increase of rainwater harvesting and storage capacity to increase surface and groundwater reserves. For the agricultural sector, it proposes a series of adaptation measures that vary according to ecosystems. These ecosystems are those of the mangrove swamps, those of the Bas-Fonds (fresh water), those of the plateau, and those of backyard agriculture.
Hyogo Frame/Sendai Frame.	Under the Hyogo Framework/Sendai Framework, Guinea-Bissau has been making efforts since 2010 to develop its capacity in Disaster Risk Reduction/Disaster Risk Management (DRR/DRM), which led to the adoption of the National Strategy for Disaster Risk Reduction and the creation and operationalisation of the National Civil Protection Service (SNPC).

3.4. IMPACTS, RISKS AND VULNERABILITIES

3.4.1. Analysis of projected past and future climate change

Available information on past climate change indicates general trends, such as increasing average annual temperature and changes in precipitation patterns, reported mainly by the Intergovernmental Panel on Climate Change (IPCC) in its global and regional assessment reports (IPCC, 2014; IPCC, 2021) and the new climate scenarios for Guinea-Bissau 2016 - 2045, provided by the National Institute of Meteorology (INM), there is a gradual increase in temperatures, accompanied by increasing variability in precipitation regimes and a higher frequency of extreme events, such as droughts and intense rainfall.

Looking ahead, climate projections indicate the continuation of these trends, with further increases in average temperatures, intensification of extreme weather events, and changes in precipitation patterns. Specifically, the IPCC climate models suggest that Guinea-Bissau could face significant increases in average annual temperature, ranging from 1.5 °C to 3 °C by 2100, depending on the emissions scenario considered (IPCC, 2021).

The new climate scenarios project significant changes in the climate of Guinea-Bissau. Systematic increases in average daily temperature are expected to reach +1.4 °C in the period 2016-2045 and +2.2 °C in 2046-2075, according to Scenario CRP4.5 (*low emissions*); and from +1.6 °C to +3.1 °C in the period 2046-2075, according to Scenario RCP8.5 (*high emissions*).

For the maximum daily temperature, the average of the regional climate models used indicate an increase in the order of **+1.2 °C** [+0.8 °C to +1.7 °C] on the coast (Bissau and Bolama) to **+1.4 °C** [+1.0 °C to +1.6 °C] in the interior and east zone, according to Scenario RCP4.5 (*low emissions*), for the period 2016-2045 compared to Normal 1961-1990. An increase from **+1.3ºC** [+0.9ºC to 2.0ºC] on the coast to **+1.5ºC** [+1.2ºC to 2.1ºC] inland, according to Scenario RCP8.5 (*high emissions*), for the period 2016-2045 compared to Normal 1961-1990 (see Figure 33).

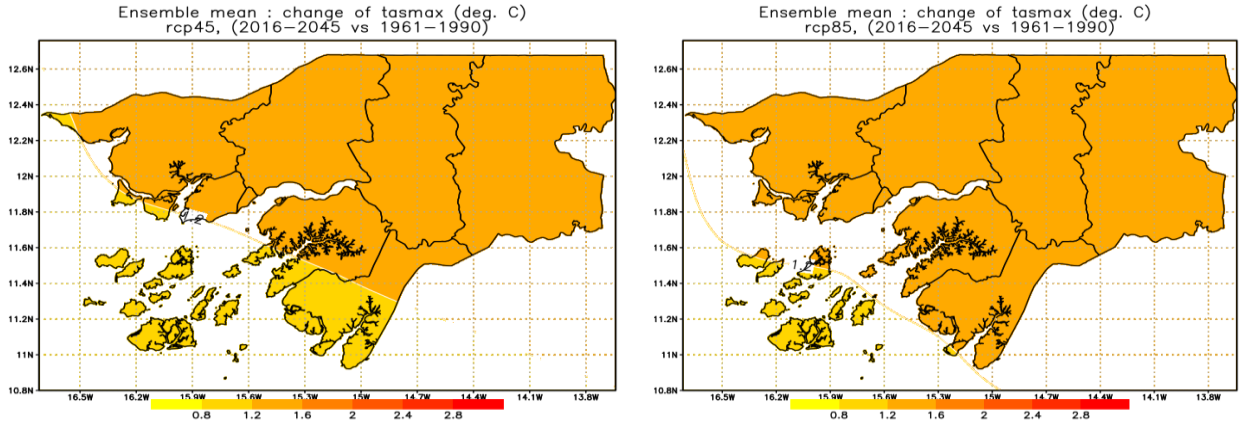


Figure 6: Projected changes in the maximum daily temperature (ºC) for the period (2016-2045): a) RCP4.5 scenario (*low emissions*) and b) RCP8.5 scenario (*high* emissions).

Regarding precipitation, the average of the fourteen models used in the simulations indicate a slight increase in average daily precipitation of **+10% for the period 2016-2045,** according to Scenario RCP4.5 (*Low emissions*). For the RCP8.5 Scenario ("*High emissions*"), a climatologically identical situation to Normal is expected (without significant variations from the reference period: 1961-1990), with the exception **of the southwestern part of the Bijagós Archipelago and the southern part of the Tombali Region (Cacine Sector) where an increase of +5% is expected**.

Average Daily Precipitation (in %) 2016-2045 **;** Scenario RCP4.5 ("*low emissions*"), the average of the set of models used in the simulations projects a slight increase in average daily precipitation, in the order of **+3%** [+2% to +5%] in almost all the national territory,

with the exception of the southwestern part of the Bijagós Archipelago, where an increase between +5% and +10% is expected. For the RCP8.5 Scenario ("*high emissions*"), a climatologically identical situation to Normal is expected (without significant variations from the reference period: 1961-1990), with the exception of the southwestern part of the Bijagós Archipelago and the southern part of the Tombali Region (Canine Sector) where a slight increase of about + **2%** to **+5%** is expected.

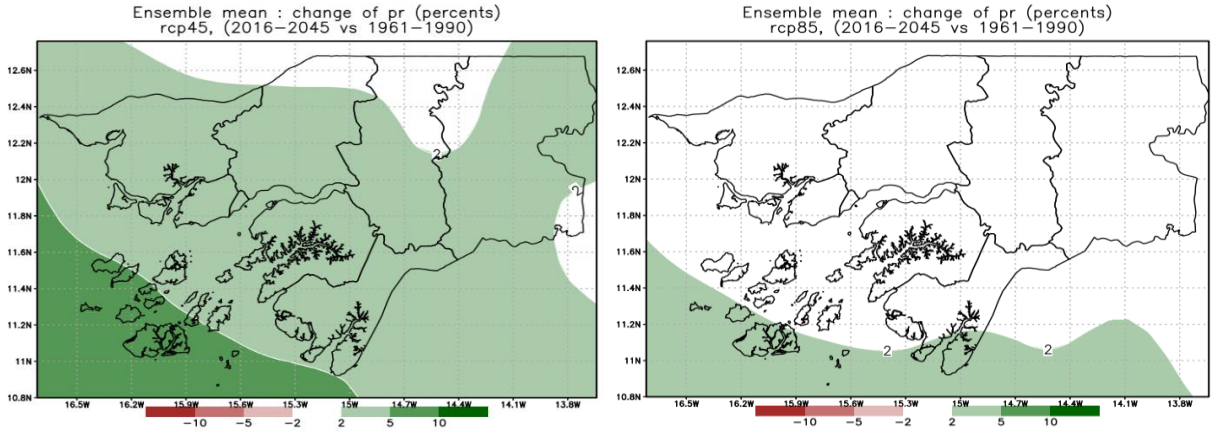


Figure 7: Projected changes in average daily precipitation (in %), for the period (2016-2045): a) Scenario RCP4.5 *(low emissions)* and b) Scenario RCP8.5 *(high emissions)*

However, it is important to highlight the significant uncertainties associated with these projections, especially due to the scarcity of detailed historical data and the limited spatial resolution of the climate models available for the region. In addition, the absence of specific national studies contributes to additional uncertainty regarding the exact magnitude of the projected changes and their detailed impacts on Guinea-Bissau's territory and communities (UNDP, 2020; GEF, 2021).

For the scenarios of average sea level rise, according to the MAGICC SCENGEN Model, version 5.1, an increase of approximately 1.5 million is expected by 2020 6.5 cm and will reach 1.5 million by 2050. 20 cm. These sea level rises, combined with coastal erosion, can have drastic consequences for low-lying countries and small islands such as Guinea-Bissau, particularly affecting the country's economy, especially populations living in coastal areas and their livelihoods.

3.5. IMPACTS, RISKS AND VULNERABILITIES IN KEY SOCIO-ECONOMIC SECTORS

Available assessments, including reports produced by the Third National Communication of the United Nations Framework Convention on Climate Change (UNFCCC) and other international organisations, highlight significant impacts on Guinea-Bissau's key socio-economic sectors resulting from current and future climate risks.

The agricultural sector is particularly vulnerable to climate change, with prolonged droughts, irregular rainfall and frequent flooding reducing productivity and affecting food

security. Small farmers in rural areas are most affected due to their direct dependence on climatic conditions for subsistence and commercial cultivation.

Figure 8Subject: Horticulture for adapting agriculture to climate change

The fishing sector, critical to the national economy and food security of coastal communities, faces significant risks due to rising sea levels, rising ocean temperatures and extreme weather events. These changes directly threaten marine and coastal ecosystems, which are essential for the reproduction and maintenance of fishing species.

Figure 9Subject: Market offer / Artisanal fishermen

Urban areas, particularly the capital, Bissau, are increasingly vulnerable to frequent flooding and flooding, impacting critical infrastructure, housing and public health services. Vulnerable urban populations, including women, children, and marginalised communities, face increased risks due to lack of adequate infrastructure and limited capacity to respond to climate emergencies.

Figure 10Subject: Flooding in urban areas of Guinea-Bissau

Rural populations and vulnerable social groups, especially women and children, face additional challenges due to direct exposure to extreme events and limited adaptability. Women, who are responsible for much of family farming and natural-resource management, are disproportionately affected by climate change.

These analyses emphasise the urgent need for integrated policies and concrete actions for adaptation and resilience, considering the socioeconomic and cultural particularities of Guinea-Bissau, to protect and strengthen the sectors and communities most vulnerable to the adverse effects of climate change.

3.6. PRIORITIES AND BARRIERS TO ADAPTATION TO CLIMATE CHANGE IN GUINEA-BISSAU

Guinea-Bissau has made progress in implementing climate change adaptation strategies despite structural and financial challenges. National priorities reflect the need to protect ecosystems, ensure food security, strengthen infrastructure and promote sustainable development.

3.6.1. National priorities for climate adaptation

Guinea-Bissau's national priorities for climate change adaptation are outlined in a number of policy and strategic documents that reflect the country's commitment to addressing the challenges posed by climate change. The main document that defines these priorities is the National Action Plan for Adaptation to Climate Change (PANA), drawn up in 2006. This plan identified three sectors as the most vulnerable:

- Agricultural Sector : Developing the adaptability of agropastoral and forestry production systems.
- Water Resources : Promoting integrated water resources management.
- Coastal Zone : Protect and prevent degradation of coastal zones resulting from climate change.

In addition to PANA, Guinea-Bissau has integrated climate change into other national strategies, such as the National Development Plan 2020-2023, prioritising the sustainable management of natural resources and adaptation to climate change.

The country also developed its Nationally Determined Contribution (NDC), updated in 2021, which aligns climate action with sustainable development goals, emphasising gender integration and the preservation of national carbon sinks.

These documents reflect Guinea-Bissau's commitment to mainstream climate change adaptation into public policy, aiming to reduce the vulnerability of critical sectors and promote sustainable and resilient development.

3.6.2. Barriers to adaptation

Guinea-Bissau faces several barriers that hinder its ability to adapt effectively to climate change. The main constraints include a lack of specialised technical capacity, insufficient financial resources and institutional challenges. These constraints undermine the implementation of adaptation strategies needed to address adverse climate impacts.

To overcome these barriers, the country needs specific support in several areas:

- Institutional Strengthening and Technical Training **:** It is crucial to develop and enhance the technical capabilities of national institutions to plan and implement adaptation actions. This includes the ongoing training of professionals and the strengthening of government structures responsible for environmental and climate management.

- Access to International Climate Finance **:** Obtaining financial resources from international funds is essential to enable adaptation projects. Guinea-Bissau needs assistance to prepare competitive bids and meet criteria required by global funders.

- Transfer of Appropriate Technologies : The introduction of sustainable and locally adapted technologies can increase the resilience of vulnerable sectors such as agriculture and water management. This includes climate-resilient farming practices and efficient water-use systems.

- Community Engagement and Public Awareness: Involving local communities in the adaptation process is essential. Education and awareness programmes can empower populations to adopt adaptive practices and actively participate in the implementation of solutions.

Meeting these specific needs will allow Guinea-Bissau to strengthen its resilience to climate change and promote sustainable and inclusive development.

3.7. ADAPTATION STRATEGIES, POLICIES, PLANS, TARGETS AND ACTIONS TO INTEGRATE CLIMATE CHANGE ADAPTATION IN GUINEA-BISSAU

Ongoing national adaptation policy processes often include strategic initiatives coordinated by different instruments and approaches, such as National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs), National Adaptation Action Programmes (NAPs) and the integration of adaptation into national development plans. Here is a detailed description of each of these processes:

3.7.1. National Climate Change Adaptation Plan (NAP)

The NAP is currently under development in Guinea-Bissau with the support of international partners such as the United Nations Development Programme (UNDP) and the Green Climate Fund (VCF). The central objective of the NAP is to strengthen the national capacity to identify, prioritise and implement effective adaptation measures in key sectors. This process involves:

a) Diagnosis and assessment of climate vulnerabilities especially in priority sectors such as agriculture, water, forestry, coastal zone, health and infrastructure;

(b) national and regional multi-stakeholder consultations to ensure social inclusion, gender equity and community participation in adaptation decisions;

(c) developing sector-specific adaptation strategies**,** including detailed programmes and actions, with clear timelines and budget estimates;

(d**)** identification of financing and capacity-building needs **including** the development of technical, institutional and human capacities for the effective implementation of the NAP;

e) Integrating the NAP into sectoral and regional policies and plans**,** enhancing coherence with sustainable development policies, poverty reduction strategies and local territorial plans.

3.7.2. Nationally Determined Contributions (NDCs)

The NDCs represent a strategic commitment of Guinea-Bissau under the Paris Agreement (UNFCCC). The country submitted its first NDC in 2015, recently updated in 2021. As regards adaptation, the NDC sets out priority actions to increase national resilience to climate impacts, involving:

a) Restoration and protection of coastal and marine ecosystems **with** particular attention to mangroves, which are essential for natural defence against floods and coastal erosion;

(b) promoting resilient and climate-adapted farming practices, including drought-resistant varieties, sustainable water management and agro-ecological techniques;

c) Strengthen national early warning and climate risk management systems by increasing institutional capacity for a rapid and effective response to climate emergencies;

d) Strengthening technical and scientific capacity **by** investing in applied climate research, environmental education and specialised technical training;

e) Mobilising international climate finance to complement national resources for the effective implementation of the proposed measures.

3.7.3. National Action Programmes for Adaptation (NAAPs)

Guinea-Bissau's National Climate Action Plan (PANA), developed in 2006, was the first strategic approach to address the challenges of climate change in the country, serving as an emergency plan for immediate priority actions. PANA initially identified the most vulnerable sectors and areas and proposed concrete actions to reduce climate vulnerability. Key actions highlighted include:

a) Integrated water resources management to ensure safe and sustainable access to water, especially in periods of prolonged drought;
(b) promoting food security through crop diversification, introducing climate-resilient farming techniques and improving traditional farming practices;
c) Protecting and restoring forests and **mangroves,** recognising the importance of these ecosystems for local and regional climate stability;
d) improving public health systems**,** especially in the management of climate-sensitive diseases such as malaria and diarrheal diseases;
e) Awareness raising and community empowerment for participatory management of natural resources and adaptation to climate change.

Currently, many actions initiated by NAPA continue to be developed and deepened in NAP and NDCs, creating continuity and strategic complementarity.

3.7.4. Integrating Adaptation into National and Sectoral Development Plans

Guinea-Bissau has adopted an integrated approach to adaptation, aligning climate objectives with national policies and sectoral development plans, such as:

a) Strategic and Operational Plan "Terra Ranka" (2015–2025)**:** This document includes adaptation as one of the pillars to promote sustainable development and ecoNOmica and environmental resilience;

b) National Strategy for Poverty Reduction and Inclusive Growth **:** Highlights actions to reduce social, environmental and economic vulnerabilities in the face of climate change;

c) Agricultural and Rural Sector Master Plan **:** explicitly provides for integrated climate actions to increase agricultural productivity and food security by reducing the negative impacts of climate extremes;

d) National Plan for Integrated Water Resources Management **:** Aims to ensure the availability and quality of water, especially in the face of climate variability;

e) Strategic Coastal Management Plan **:** Incorporates adaptation strategies, including coastal protection and ecological restoration, to mitigate erosion and flooding.

3.7.5. Institutional Strengthening and Intersectoral Coordination

To implement these processes, Guinea-Bissau has strengthened its institutional climate governance mechanisms, including:

a) Creation and strengthening of the National Committee on Climate Change (**CNMC**)**,** body responsible for coordinating national climate policies;

b) Strengthen the capacity of the National Institute of the Environment (INA) and the Institute of Biodiversity and Protected Areas (IBAP), responsible for the implementation and monitoring of environmental and climate policies;

c) Implementation of Climate Project Management Units**, such** as the Coastal Project and the Early Warning Project, Energy Mini-Networks Project, which play an essential role in the practical implementation of adaptation measures on the ground.

These processes together illustrate Guinea-Bissau's coordinated, coherent, and integrated approach to addressing climate change and strengthening national resilience in all sectors critical to sustainable development.

3.7.6. Adaptation targets

Guinea-Bissau's national adaptation targets are clearly defined at three main levels:

1. International commitments (NDCs – Nationally Determined Contributions);

2. The National Adaptation Plan (NAP); and 3. National and sectoral sustainable development plans and strategies.

These policies are interlinked to set concrete short-, medium-, and long-term goals and guide the country in strengthening climate resilience.

3.8. PROGRESS IN THE IMPLEMENTATION OF ADAPTATION

Guinea-Bissau has taken significant steps to consolidate adaptation to climate change as a national priority. The Nationally Determined Contribution (NDC), presented in 2021, sets clear adaptation targets in key sectors such as water, agriculture, forests, health and coastal areas. These commitments are aligned with the Paris Agreement, in its Article 7.

At the same time, the country started to formulate its National Adaptation Plan (NAP), with technical and financial support from the United Nations Development Programme (UNDP) and the Green Climate Fund (GCF). The activities carried out so far include

climate vulnerability assessments, cross-sectoral consultation workshops and the definition of criteria to prioritise adaptive measures.

Adaptation has also been gradually integrated into the main national and sectoral planning instruments, including the Strategic Development Plan "Terra Ranka II", the Master Plan for the Agricultural and Rural Sector (PDSAR) and the National Plan for Integrated Water Resources Management (PNGIRH).

The table below presents progress on Adaptation Policy and the Strategic Framework.

Table 13: Progress in the Adaptation Policy Framework and Strategy

Instrument	Progress
NDC (Nationally Determined Contribution)	The 2021 NDC integrates adaptation commitments across water, agriculture, forests, coastal areas and health. Preparations for the submission of the second version (updated NDC) are in **progress.**
PAN (National Adaptation Plan)	In the formulation phase, with the support of UNDP/UNEP in the framework of the Green Climate Fund (GCF) Preparation programme, vulnerability diagnostics and sector prioritisation workshops were held.
Sector Adaptation Plans	They include the Agricultural and Rural Sector Master Plan (PDSAR)**,** the National Plan for Integrated Water Resources Management (PNGIRH) and the National REDD+ Strategy **.** These documents incorporate adaptive goals and actions.
Integration into Development Policies	Integration of adaptation into national plans (Strategic and Operational Plan – Terra Ranka II) is underway, especially in the areas of resilient agriculture, renewable energy and coastal management.

Over the period under review, Guinea-Bissau has implemented a number of adaptation measures in priority sectors such as agriculture, water, coastal areas, biodiversity, health and gender. Interventions were carried out at both community and institutional level, with the aim of reducing climate vulnerability and increasing the resilience of human and ecological systems.

In addition to the description of the actions, measurable progress has been made, with emphasis on the following indicators:

- ✓ Resilient Agriculture:
  +1,600 farmers trained in agroecological practices and sustainable use of water;
  Implementation of 12 solar irrigation systems in arid areas of Oio, Cacheu and Gabú.
- ✓ Water Resources Management:
  Rehabilitation of 23 holes and construction of 10 new community water points;
- ✓ Coastal Protection and Ecosystems:
  Rehabilitation of 981 ha of wetlands and mangroves (Coastal Project);
  Raising awareness among 54 coastal communities on climate risks and nature-based solutions.

- ✓ Education and Gender:
  Inclusion of climate change issues in the curriculum of 32 basic education pilot schools;
  Support for 135 women in climate cooperatives with access to microfinance for resilient activities.

These data demonstrate not only the scope of the actions, but also the concrete positive impacts on people's lives and ecosystems. One of the main lessons observed is the importance of community participation and the integration of adaptation into local and sectoral policies. The continuity and scaling-up of these actions depends, however, on the mobilisation of additional funding and the consolidation of institutional capacity.

3.9. Adaptation Progress Indicators

Table 14: Adaptation Progress Indicators

Sector	Action Implemented	Indicator	Value	Period	Source/Project
Agriculture	Training of farmers	Number of beneficiaries	1,600	2021–2024	WACA Project, FAO
Water Resources	Infrastructure rehabilitation	Number of water points rehabilitated	23	2022–2025	HRMD / UNDP
Back & Mangroves	Ecological rehabilitation	Restored area (ha)	981 ha	2023–2025	Coastal Project
Education & Gender	Curriculum inclusion and support for women	No. of schools / No. of women supported	32/135	2022–2024	MABAC / local NGOs

3.9.1. Implementation of Projects and Actions on the Ground

At the operational level, Guinea-Bissau implements a number of projects that directly contribute to climate adaptation. One of the most emblematic is the Coastal Project which aims to protect coastal areas and subsistence farming. This project promotes actions such as the rehabilitation of protection dykes, reforestation of mangroves, installation of irrigation systems and formation of communities in climate resilient agricultural practices.

Another strategic project is the Early Warning Project which aims to strengthen national climate information and early warning systems. With funding from the Green Climate Fund (GCF), the installation of new meteorological stations, the strengthening of the National Directorate of Meteorology and the technical training of national experts in climate modelling and forecasting are under way.

Other initiatives include the Functional Literacy Programme focussing on climate resilience**,** targeting women and youth in the most vulnerable areas, and the **WACA** Project**,** with interventions focused on integrated coastal zone management and erosion reduction.

In the energy sector, the country is betting on the promotion of solar energy as an adaptation strategy, guaranteeing energy supply in remote communities and reducing vulnerability to climate shocks.

The table below shows the status of the Implementation of Adaptation Projects and Concrete Actions.

Table 15: Implementation of Projects and Concrete Actions of Adaptation.

Project/Programme	Sector	Actions in progress	Financiers
Coastal Project	Coastal areas and agriculture	Dam rehabilitation, mangrove reforestation, support for resilient agriculture and water security	GEF, UNDP
Quick Alert Project	Meteorology and resilience	Strengthening of climate information systems, installation of weather stations, early warning training	Green Climate Fund, UNDP
Functional Literacy Project	Gender and local resilience	Functional education for women and youth, focussing on sustainable agriculture and adaptation to climate change	Coastal
WACA Project	Coastal management	Strengthening the resilience of coastal communities and protecting against erosion	World Bank, UEMOA
Solar Programme for Resilience	Energy	Promotion of solar panels in rural areas as an energy resilience strategy	UNDP, Ministry of Energy

3.9.2. Advances in Governance, Monitoring and Evaluation

Guinea-Bissau created and operationalised the National Committee on Climate Change (CNCM) responsible for coordinating the implementation of climate policies, including adaptation actions under the NDC and the future PAN. This committee is inter-ministerial and also includes representatives of civil society, the private sector, universities and technical partners.

The Monitoring, Reporting and Verification System (MRV) for Adaptation is under development, with methodological proposals for data collection, definition of indicators and institutional coordination arrangements. This system will be essential to measure progress and report to UNFCCC international mechanisms.

In addition, efforts are being made to integrate climate data from various institutions, improve the technical capacity of the National Environment Institute (INA) and the National Institute of Meteorology (INM) and digitise the databases of historical series and projections.

The table below presents the governance, monitoring and evaluation framework.

Table 16: Governance, Monitoring and Evaluation Framework

Component	Current status
Creation of the NCCC (National Committee for Climate Change)	It works with inter-ministerial representatives, NGOs, civil society and the private sector. Coordinates NDC/NAP actions.
MRV Adaptation System	In the development phase. Methodological proposals and indicators already exist in priority sectors (water, agriculture, health).
Climate data integration	Advances in the installation of meteorological infrastructure. Digitisation of hydro-meteorological data begins.
Community participation	Strengthened with local workshops, involvement of traditional leaders and grassroots associations in pilot projects.

3.10. MONITORING AND EVALUATION OF ADAPTATION MEASURES AND PROCESSES IN GUINEA-BISSAU

Guinea-Bissau is currently in a process of structuring and gradual operationalisation of its national MRV system, focussing on both mitigation (actions to reduce GHG emissions) and adaptation (actions, impacts and results). This process is driven by the commitments made under the Nationally Determined Contribution (NDC) **of** the National Adaptation Plan (NAP) and the preparation of the Second Biennial Transparency Report (BTR2) **.**

The table below shows the progress made so far in the adaptation process.

Table 17: Progress made so far in the adaptation process

Component	Current status
Institutional Structure	✓ The National Committee on Climate Change (NCCC) was created**,** which leads the coordination of MRV actions.
	✓ Established a technical working group for MRV under BTR2.
Legal and Regulatory Framework	⚠ In development. It is planned to adopt national regulations on climate MRV, integrating the UNFCCC guidelines.
Technical Training	✓ Technical training on GHG emission inventories, REDD+ MRV and adaptation was carried out with the support of FAO, UNDP and GEF.
	⚠ need for continuing training and the creation of a permanent base of national experts.
MRV Mitigation System	✓ National GHG Inventory (1990–2019) completed in the TCN (Third National Communication).
	⚠ In the process of updating to integrate data by 2022 in BTR2.
	⚠ There is still no national integrated system of digital emissions MRV, but there is a proposal for its creation.
MRV Adaptation System	⚠ Developing . Preliminary indicators of sectoral adaptation were defined in BTR1.
	⚠ Absence of a standardised and systematised methodology to measure the progress and impact of actions.
	✓ Some projects (Coastal, Early Warning, REDD+) have their own M&E systems that power the national MRV.
MRV for Climate Finance	⚠ Not yet in operation. The traceability of climate resources is done by project, without a unified database.

	⚠ A financial module for MRV in the context of BTR2 is being prepared.

3.11. PREVENTING, MINIMISING AND DEALING WITH LOSSES AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS IN GUINEA-BISSAU

Guinea-Bissau, as a small island developing state and a West African country with low adaptation capacity, is among the nations most vulnerable to the impacts of climate change. Major threats include sea level rise, coastal erosion, flooding, prolonged droughts, and changes in precipitation patterns, which significantly affect agriculture, fisheries, food security, public health, and basic infrastructure.

To prevent and minimise these impacts, the Government adopted several strategies. The updated Nationally Determined Contribution (NDC) incorporates explicit commitments related to loss and damage management. Initiatives are underway, such as the Coastal Project (focused on community resilience and vulnerable coastal areas) and the WACA Project, which works on protecting against erosion and restoring coastal ecosystems. These projects integrate preventive actions such as mangrove rehabilitation, community awareness, building resilient infrastructure and improving early warning systems.

Despite these efforts, losses and damages are already felt in several regions. Coastal communities face forced displacement due to loss of land and housing; farmers suffer from unpredictable rainfall and crop failure; and unique ecosystems such as the Bijagós Archipelago are threatened. The institutional response still faces structural challenges, including weak cross-sectoral coordination, insufficient data, lack of adequate climate finance, and lack of compensation mechanisms or insurance for losses and damages.

Given this scenario, the country recognises the urgent need to move forward with a national mechanism for losses and damages that integrates the identification of risks, the quantification of impacts and the mobilisation of resources. Strengthening technical and institutional capacities, implementing robust monitoring and early warning systems, and access to international funding, including the new Loss and Damage Fund established under the UNFCCC, are also priorities.

With a focus on vulnerable communities and nature-based solutions, Guinea-Bissau is determined to protect lives, livelihoods and ecosystems by strengthening national climate resilience and contributing to a just and sustainable transition.

3.12. COOPERATION, GOOD PRACTICES, EXPERIENCE AND LESSONS LEARNED ON CLIMATE RESILIENCE IN GUINEA-BISSAU

3.12.1. Cooperation

Guinea-Bissau has strengthened its response to climate change through strategic partnerships, implementation of good practices and continuous learning from local and international experiences. Cooperation with multilateral organisations, partner countries, and local communities has been essential to drive adaptation and mitigation actions.

The following table presents the list of National and International Cooperation

Table 18: List of National and International Cooperation

Type of Cooperation	Institutions/Partners	Key Contributions
Multilateral Cooperation	UNDP, FAO, GEF, GCF, World Bank	Technical and financial support for adaptation, resilience and strategic planning projects
Regional Technical Cooperation	OMM, CILSS/AGRHYMET	Weather data, early warning systems, technical training
Bilateral Cooperation	EU, German Cooperation	Financing of water infrastructure and institutional support
Conservation Partnerships	MCRP, IUCN	Coastal protection, ecosystem-based management
Regional Mechanisms	ECOWAS, WACA, CPLP	Integration into regional climate response networks and sharing of best practices

Guinea-Bissau has accumulated relevant and promising experiences in climate adaptation, especially through pilot projects implemented in vulnerable areas and with strong community participation. These best practices demonstrate local solutions with tangible impact on improving the resilience of livelihoods, infrastructure and ecosystems and can serve as a model for scaling up and replicating on a national and regional scale.

The following table presents Implemented Best Practices.

Table 19: Good Practices Implemented

Intersection Domain	Good Practices
Agriculture and Food Security	Introduction of resistant crops, agroecological practices, consortia and agroforestry systems
Water resources	Tanks, small reservoirs, National Plan for Integrated Water Resources Management
Coastal areas	Reforestation of mangroves, construction of adapted ramps, community resource management
Education and Awareness	Climate-focused functional literacy for women and youth in vulnerable areas
Monitoring and Prevention	Strengthening the early warning system, environmental databases, GIS in the INA and IBAP

3.12.2. Experiences and lessons learned

During the implementation process of climate actions in Guinea-Bissau, especially in the field of adaptation, several relevant experiences have been accumulated. These experiences have generated practical lessons that may be useful for other developing countries, particularly small island states and West African countries with similar socioeconomic and ecological characteristics.

1. Integrating Adaptation into Local and Sectoral Policies

Lesson learned: Adaptation is most effective when integrated with local and sectoral planning tools.

Experience has shown that the adaptation pilot projects with the greatest impact were those that were linked to Local Development Plans (LDPs) and Protected Area Management Plans. This increased local acceptance, facilitated the mobilisation of resources and reinforced sustainability after the end of projects.

2. Community participation from the diagnostic phase

Lesson learned: Involving communities in designing and monitoring adaptation actions significantly improves their effectiveness and acceptance.

During the Coastal Project, coastal communities were involved in identifying climate risks and nature-based solutions. This increased the relevance of interventions and reduced resistance. It also facilitated the appropriation and maintenance of results, such as mangrove plantations and drainage infrastructure.

3. Importance of Technical and Institutional Capacity Building

Lesson learned: Investing in continuous training of national technicians and community actors is essential to ensure continuity and replicability of adaptation actions.

It was found that local technicians trained during the projects (e.g. water management, resilient agricultural practices, use of climate tools) became multiplier agents in their regions. However, in some cases, the high turnover in the public sector has compromised the retention of knowledge.

4. Monitoring and Evaluation: Gaps and Opportunities

Lesson learned: The absence of robust systems for monitoring the impacts of adaptation actions makes it difficult to assess progress and mobilise climate finance.

Despite the implementation of several actions, such as mangrove rehabilitation or promoting resilient agriculture, the lack of harmonised impact indicators and real-time data has compromised the ability to report results to technical and financial partners.

5. Fragmented and Short-Term Financing

Lesson learned: The fragmentation of financial resources and the short duration of projects limit sustainable impacts.

Many adaptation projects in Guinea-Bissau operate with short funding (2–3 years), making it difficult to consolidate results. The dispersion of funding sources and the complexity of reporting requirements also overwhelm local capacities.

3.13. ANY OTHER INFORMATION RELATED TO THE IMPACTS OF CLIMATE CHANGE AND ADAPTATION UNDER ARTICLE 7 OF THE PARIS AGREEMENT.

Article 7 of the Paris Agreement recognises adaptation as a global challenge with local, subnational, national and international dimensions and is essential for protecting populations, livelihoods and ecosystems . Guinea-Bissau, as a highly vulnerable country with low adaptive capacity, has sought to develop consistent actions to integrate adaptation into the core of its national development planning.

Guinea-Bissau recognises that adaptation is a national priority and requires a strategic, participatory and coordinated approach.

The following table provides information related to the adaptation under Article 7 of the Paris Agreement in Guinea-Bissau.

Table 20: Information related to adaptation under Article 7 of the Paris Agreement in Guinea-Bissau

Category	Detailed description
Observed impacts	- Increasing frequency and intensity of **seasonal floods** (e.g. floods in Bafatá, Gabu and Bissau in 2022-2024) - Increased salinisation of coastal soils and mangrove degradation - Reduction of agricultural productivity - Decreased access to drinking water in rural areas
Vulnerable Sectors	- Agriculture and food security - Water resources - Coastal infrastructure - Public health - Biodiversity and fragile ecosystems (mangroves, estuaries, wetlands)
Limited adaptive capabilities	- Poor institutional and technical capacity to respond - Low availability of hydro-meteorological data - Insufficient financial resources - Poor integration of adaptation into sectoral and local policies
National Adaptation Priorities	1. Strengthening the resilience of rural communities and farming systems 2. Strengthening integrated water management 3. Protect coastal areas and fragile ecosystems. 4. Improving climate information and early warning systems.
Policy Instruments	- Updated NDC (2021)**:** includes adaptation commitments in agriculture, water, forests and coastal areas **-** National Adaptation Plan (NAP) – in development **-** PDSAR and PNGIRH as sectoral plans with adaptation components
Projects in progress	**-** Coastal Project (GEF/UNDP) - Coastal Protection and Community Adaptation **-** Draft Early Warning (UNDP/WMO) – strengthening of forecasting and warning systems - Ecosystem-based Adaptation (EbA) Project **-** FAO projects for food resilience
Territorial Integration	Adaptation is gradually being integrated into municipal plans and **local** development plans**,** with technical support from MABAC and partners.
Gender-based approach	Adaptation actions include specific initiatives for women's empowerment, such as climate literacy, access to resilient seeds, and representation on local water and land management committees.
Support and Future Needs	- Need for additional climate finance including direct access to the Green Climate Fund - Strengthening the institutional capacity of MABAC, INA, IBAP, DGRH - Technical support to finalise the NAP - Development of MRV tracking and adaptation systems
Contributions to the Global Adaptation Goal (GGA)	Guinea-Bissau contributes to AMG by strengthening systemic resilience **by** reducing the vulnerability of coastal and agricultural populations **and** improving climate alert and response systems.

CHAPTER IV: INFORMATION ON THE FINANCIAL SUPPORT, DEVELOPMENT AND TRANSFER OF TECHNOLOGY AND TRAINING SUPPORT REQUIRED AND RECEIVED UNDER ARTICLES 9 TO 11 OF THE PARIS AGREEMENT

4.1. NATIONAL ECONOMIC SITUATION, INSTITUTIONAL ARRANGEMENTS AND COUNTRY-DRIVEN STRATEGIES

4.1.1. Economic situation of the country

Guinea-Bissau's economy is recovering moderately following external shocks in recent years. Gross Domestic Product (GDP) has been growing steadily, with an estimated rate of about 4.8% in 2024, driven mainly by the agricultural sector, namely by the production and export of cashew nuts, which remains the main ecoNOmico engine in the country.

Despite progress, the economy remains vulnerable. Inflation, which reached high levels in 2023, began to fall in 2024, nearing the goal of the West African Economic and Monetary Union (WAEMU). However, food and fuel prices continue to put pressure on the cost of living.

Public finances face significant challenges, with high fiscal deficits and public debt exceeding 80% of GDP. Fiscal consolidation is underway, with the support of international partners, but depends on more efficient management of public revenues and expenditures.

The current account deficit is structural, reflecting the country's strong dependence on imports and limited export base. The economic concentration in the primary sector, especially in cashew, makes the country highly exposed to climate shocks and variations in international markets.

Institutional problems, such as political instability and corruption, continue to limit investment and the effectiveness of public policies. The economy is also hampered by poor infrastructure and the fragility of human capital.

Despite these restrictions, the economic outlook is positive, provided that efforts to stabilise macroeconomic, productive diversification and structural reforms are maintained. External support, good governance and political peace will be crucial to turn the country's economic potential into concrete benefits for the population.

4.1.2. Institutional Arrangement

The institutional architecture of Guinea-Bissau in the economic and financial field involves several key bodies:

Macroeconomic institutions:

- Ministry of Economy, Plan and Regional Integration : Development Plan, economic policy coordination.

- Ministry of Finance : Tax management, revenue collection, budget execution and control of public debt.

- Central Bank of West African States (BCEAO) : Responsible for monetary policy in the context of the WAEMU.

- National Institute of Statistics (INE): Production and dissemination of macroeconomic and social data.

Development support institutions:

- Investment Promotion Agency (APIB) : Attraction of private investments.

- Sectoral regulatory institutions, such as in the areas of energy, telecommunications, agriculture and environment.

Coordination with international partners:

- Close relations with the IMF, World Bank, ADB, UNDP, European Union, BOAD and other bilateral and multilateral partners that finance a large part of public investment.

4.1.3. Country-orientated strategies

Guinea-Bissau has been structuring a set of strategies and reforms to promote more inclusive and sustainable growth:

a) Development Strategies

- ✓ National Development Plan (NDP) 2025–2030 (under development): Aims at economic diversification, improving infrastructure and creating decent jobs.
- ✓ National Economic Transformation Agenda prioritises value-added agriculture, renewable energy, fishing and tourism.
- ✓ Programme for Modernisation of Public Administration and Tax Reform, focussing on digitisation, transparency and control of spending.

b) Sectoral Strategies

- ✓ Promote climate resilient agriculture through projects such as the Coastal Project , WACA and PNIA.
- ✓ Energy transition: investments in solar and renewable energy to reduce dependence on fossil fuels.
- ✓ Investing in sustainable value chains (rice, horticulture, fishing) to generate rural jobs and food security.
- ✓ Promotion of the private sector and youth entrepreneurship with technical support and access to microcredit.

c) Economic and Institutional Reforms

- ✓ Fiscal consolidation (cost containment, tax base expansion).
- ✓ Strengthening economic governance (budget transparency, combating corruption).
- ✓ Public-private partnerships for infrastructure (roads, ports, energy).
- ✓ Revision of the investment policy to attract foreign capital.

4.1.4. Systems and processes used to notify incoming and required support

In Guinea-Bissau, the monitoring and accountability of the support received and needed is ensured by a set of institutional mechanisms that are still in the consolidation phase. The main instrument used is the Integrated System of Public Finance Management (SIGFIP), which allows the Ministry of Finance to register the support channelled through the State Budget. However, much of the support continues to be managed outside the budget, making it difficult to obtain a complete and integrated view of external aid.

In addition to SIGFIP, there are Project Management Units (PMUs) in the different sectors that monitor and report the funding received, based on the needs of donors. These units produce periodic technical and financial reports, but the integration of this information into national systems is still limited.

The country also has structures such as the Directorate-General for Cooperation and thematic coordination mechanisms, which collect information on funding needs and support received, especially in the areas of climate and international cooperation. However, the use of digital tracking systems is still incipient, and manual tools such as Excel spreadsheets are often used.

Despite progress, challenges remain such as institutional fragmentation, low digitalisation and weak integrated analysis and reporting capacity. Therefore, strengthening interinstitutional coordination and implementing a unified national monitoring support system is a strategic priority to improve transparency, the Plan, and effective resource mobilisation.

4.1.5. Difficulties and challenges in monitoring and reporting the support needed and received

Guinea-Bissau faces several structural and operational challenges when it comes to effectively monitoring and reporting the financial support needed and received, both in the context of development aid and climate finance.

One of the main obstacles is institutional fragmentation. Different ministries and project management units operate in a relatively isolated manner, with little coordination and systematic sharing of information. Much of the support received is managed outside the State Budget (off-budget), making centralisation and transparency of data difficult.

Another significant challenge is the lack of a unified national digital system that allows the automatic and real-time recording of the funds received and the needs expressed. In many cases, data is manually collected and shared using Excel spreadsheets, scattered reports, and ad hoc communications.

The limited technical and human capacities in the responsible institutions, namely the Directorate-General for Cooperation, the Ministry of Finance and the sectoral technical units, represent an additional obstacle. There is a lack of resources, training in monitoring and reporting systems, as well as standardised methodologies for classifying, validating and communicating support.

The lack of specific tools for monitoring climate finance, as well as the difficulty of distinguishing between new finance and the reuse of old funds, undermines the quality of reporting to international bodies such as the UNFCCC or the OECD.

Finally, institutional instability and frequent turnover of technicians and decision makers compromise the continuity of processes and the institutionalisation of good practices.

These challenges undermine not only the effectiveness of resource mobilisation, but also the country's credibility with international partners. Overcoming them requires coordinated reform, focused on digitisation, capacity-building, and harmonisation of monitoring and reporting mechanisms for foreign aid and climate finance.

4.1.6. National priorities and strategies of Guinea-Bissau

Guinea-Bissau has defined the achievement of sustainable, inclusive and climate resilient development as a strategic priority. At the national level, the country is committed to integrating adaptation and mitigation objectives into ecoNOmico development policies, with a focus on poverty reduction, food security, environmental preservation, and institutional strengthening.

Key national strategies include:

- Promoting resilient and sustainable agriculture that ensures food security and the livelihoods of rural communities;

- Protection of coastal and marine ecosystems through projects such as the WACA and the Coastal Project;

- Expanding renewable energies, especially solar energy, to improve access to energy and reduce dependence on fossil fuels;

- Improving the management of natural resources and protected areas with community participation;

- Strengthen climate governance, including Climate Plan, Finance and Transparency mechanisms.

4.1.6.1. Aspects of the CDN that require support

In its updated CDN, Guinea-Bissau reaffirms its commitment to the Paris Agreement by taking mitigation and adaptation measures, with objectives conditioned on the mobilisation of financial, technological and international support.

Mitigation

The country is committed to reducing its GHG emissions by 30 per cent by 2030 (conditional). The focus is on:

- Energy transition (investments in solar energy, improvement of energy efficiency);

- Sustainable forest management and reduction of deforestation;

- Treatment and recovery of waste.

Support needs:

- Financing of renewable energy infrastructure;

- Technologies for waste management and clean energy;

- Transfer of knowledge about MRV (measurement, reporting and verification).

Adaptation

Adaptation is a top priority, focussing on:

- Agriculture and food security;

- Integrated water management and combating coastal erosion;

- Resilience of communities vulnerable to climate impacts.

Support needs:

- Technical and financial support for climate-smart agriculture;

- Coastal protection projects (green and grey infrastructure);

- Strengthening early warning systems and climate monitoring.

Means of implementation

The CDN specifies that almost all conditional goals can only be met with outside support, including:

- Additional, predictable and long-term climate financing;

- Transfer of green technology adapted to the local reality;

- Institutional and technical training in Climate Plan, transparency, governance and community participation;

- Support for the operationalisation of the National Strategy for Low Carbon Development currently under formulation.

4.2. INFORMATION ON THE NECESSARY FINANCIAL SUPPORT TO DEVELOPING COUNTRY PARTIES UNDER ARTICLE 9 OF THE PARIS AGREEMENT

4.2.1. Financial support needed

The NDC of Guinea-Bissau estimates that the costs of implementing the mitigation component will be approximately US$ 664 million during the period from 2021 to 2030, of which US$ 531 million, or 80% of the total investment needs, are financial support needs (conditional element of the NDC). The sectoral breakdown of financial support needs is detailed in Table 90 below.

Table 21: International financial support needs to implement the updated NDC (Mitigation Component)

Sectors	Value in millions of US dollars in 2021
Energy	240
Forests and Land Use	264
Agriculture	22
Waste	5
TOTAL	531

There is no information available on the methodological approach to estimate the costs of implementing NDCs.

Guinea-Bissau will strive to report more robust information on financial support needs in the upcoming BTR, noting the upcoming development and adoption of NDC3.0.

Guinea-Bissau needs to mobilise financial support from the GEF/UNEP, worth an estimated US$ 1,233,000, for the preparation and presentation of the Second Biennial Transparency Report (BTR2) and the Third Biennial Transparency Report and Fifth National Communication (BTR3/NC5).

Find *CTF support needs in the attachment,* in Excel format.

4.2.2. Financial support received

The main projects identified are mostly managed by institutions under the auspices of the Ministry of Environment, Biodiversity and Climate Action (MABAC), including the Institute of Biodiversity and Protected Areas (IBAP), the National Institute of the Environment (INA) and the Competent Authority for Environmental Assessment (AAAC). The Ministry of Energy is responsible for major energy projects, and the Bissau Municipal Council is responsible for waste management projects.

For the preparation of its first Biennial Transparency Report (BTR1), Guinea-Bissau received from the GEF, through UNEP, an amount of US$600,000, for a period of 27 months (April 2023 to March 2025).

Table 22: Support received from GEF/UNEP for the BTR1 Project

Project Objectives	Cost $US
i. Preparation of PIP BTR1 and project initiation activities	50,000
ii. Preparation and submission of BTR1 report to UNFCCC	530,000
iii. Completing an application for GEF funding for subsequent BTRs and/or combined BTR/NC	20,000
Total project cost	600.00

Likewise, for the preparation of the UNFCCC Fourth National Communication (NC4), the country benefited from financial support from the GEF through UNEP, amounting to US$500, for a period of 36 months (October 2022 to May 2025).

Table 23: Support received from GEF/UNEP for the Fourth National Communication Project (NC4)

Project Cost	2022	2023	2024	2025	Total	%
GEF Trust Fund available to the Executive Agency	67,750	198,700	199,550	34,000	500.00	83
Co-financing in kind/government contribution		50,000	50,000		100.00	17
Total cost ($)	67,750	248,700	249,550	34,000	600,000	100

Guinea-Bissau urgently needs support to develop, adopt and implement a systematic approach to collect data on the financial, technological and training support received and

is considering including it in a future CBIT project proposal to be submitted for GEF financial support.

Guinea-Bissau has not developed an implementation plan for the NDC. As such, priority needs have not been systematically identified. Other needs have also not been systematically identified and addressed programmatically.

Guinea-Bissau will make an additional effort, for which capacity-building support is needed, to address these gaps in the development process of NDC3.0 as well as the national adaptation plan, both in preparation at the time of the preparation of this BTR1.

Guinea-Bissau has received technical and financial support from a number of organisations to develop and improve its Nationally Determined Contribution (NDC), including:

1. Global Climate Change Alliance Plus (GCCA+)

- Implemented by: Expertise France and CILSS (AGRHYMET Regional Centre)
- Focus: Development of technical capacities for adaptation and integration of climate resilience in strategic sectors
- Financial instrument used: Grant

    - The GCCA+ initiative is funded by the European Union as non-refundable assistance, channelled through implementation agencies such as Expertise France.
    - There is no obligation for Guinea-Bissau to repay.

2. UNDP – Climate Promise

- Implemented by: United Nations Development Programme (UNDP)
- Focus:

    - Technical and financial support for updating the NDC
    - Climate policymaking
    - Mobilising Climate Finance
    - Strengthening environmental governance

    - Financial instrument used: Grant

    - Financial and technical support was provided to the Government of Guinea-Bissau as a donation within the framework of international development assistance.
    - The funding comes from multiple partners (including Germany, Sweden, the European Union, among others), with no mandatory financial contribution from the beneficiary country.

Table 24: Support received in the period 2015 – 2022

No.	Programme/Project Title	Activity sector	Geographical area Location	Partner(s)	Amount	Execution period (start and end date)	Current Situation	Observation.
1.	Agriculture Smart in East Guinea Bissau	Change Climate Agriculture Cattle and water	Region of Gossip (Industry of Cuntubel and Ganadu)	MADR/DG Agriculture, DG Engineering Rural, INPA, DG, Animal husbandry	$9,970,000	2 June 2019 2 June 2023 (Effective start date 1 June 2020	Installation of Project Team-Gabu/Bafatá - Preparation of the Workplan and baselines.	
2.	RED (Preparing the Guinea-Bissau To the bottom Green Climate)	All projects that play with the adaptation and mitigation	Bissau	OSS (Observatory of Sara in SAEL), Green background Climate	$3,000	August 2019 August 2020	E (Authority) National Designated); -Guide to procedures of the green background and No letter objection Prepare; -And the Programme of Elaborate country.	
3.	National Office Ozone Guinea-Bissau	Training for Technician of Cold and tax guards and other Paramilitary	Sector Self-employed Bissau, North, East and South.	UNEP, UNEP UNIDO, UNDP Various national structures	$85,000	October 1 2019, 30 December 2022	In progress	The Inventory from refrigeration and Climate is done on a level National
4.	Project of Protected Areas and Climate Change Resilience (GCCA)	Conservation, monitoring, community development, institutional support, training...	PHOTO		€ 4.000.000	2016 to 2020	In progress	

5.	Asset Request Process Worldwide	Asset Request Process Worldwide	Bijagós Archipelago	Various national structures	€ 400,000	2017 to 2020	In progress	
6.	Conservation of birds and their habitat (Wetlands) Scientific research and awareness	Conservation of birds and their habitat (Wetlands) Scientific research and awareness	Islands and islands Bijago people	F. Ciências.ID - Association of Research and Development in Sciences of the University of Aveiro University of Groningen Royal Dutch Institute for Marine Research - NIOZ ONG ODZH ONG PALMEIRINHA NGO TINIGUENA	€ 1,000,000	2018 to 2020	In progress Research costs are levied directly on the Partners (62% of research budget)	
7.	Project reinforcement of frame financial and operating system National System Areas of Protected (SNAP) in Guinea-Bissau Bissau - GEF 5	Strengthening the frame financial and operating system National System Areas of Protected (PHOTO)	Park National Cantanhez	Multiple structures National	1,000,000 US dollars	2017 to 2020	In progress	

8.	Consolidation of Conservation of sea turtles in the Bijagós archipelago	Conservation of sea turtles Scientific research and awareness	Islands and islands of the Bijagos	ISPA – University Institute University of Exeter Faculty of Sciences of the University of Lisbon (FCUL) NGO PALMEIRINHA PROGRAMME Association POPPY	13 86 000 €	2018 to 2020	In progress Search costs are allocated directly to partners	
9	Training project for conservation and tracking of birds along the West Coast of Africa (DIOE)	Bird Watchers Training	Bijagós Archipelago	Coastal Plan Office - GPC ONG ODZH	€ 1,000,000	2018 to 2020	In progress	
10	Conservation of seabirds and waders and their main habitats along the West Coast of Africa (Alcyon)	Improve the conservation of bird nesting colonies	Orango National Park	ODZH	€ 50,000	2018 to 2029	In progress	

11	Sustainable exploitation of small pelagics in African marine areas Western (PPAMP)	Conservation of Small Pelagics	amplifier Location chosen: João Vieira and Poilão Marine National Park	CIPA	27 289 225.00 USD	2018 to 2020	In progress	
12	Promoting public health in an agroforestry landscape in Guinea-Bissau	Scientific research on zooNOticas diseases in Primates	Cantanhez National Park	University of Exeter NGO NADEL	?	2019 to 2022	Start August 2019	
13	Protecting and restoring productive mangroves and landscapes to strengthen food security and mitigate climate change	"Supporting the restoration and rehabilitation of degraded mangrove ecosystem functionality and services to improve food security and mitigate climate change "climate change"	Cacheu, Quinara and Tombali Region	IUCN	€ 2.758.000	2019 to 2022	Start: June 11, 2019	

13	Protecting and restoring productive mangroves and landscapes to strengthen food security and mitigate climate change	"Supporting the restoration and rehabilitation of degraded mangrove ecosystem functionality and services to improve food security and mitigate climate change "climate change"	Cacheu, Quinara and Tombali Region	IUCN	€ 2.758.000	2019 to 2022	Start: June 11, 2019	
14	UEMOA Regional Biosafety Programme	Awareness-raising, training and operation of the GMO (organisms) testing laboratory Genetically modified)	At national level	Members of the Coordination Committee (CNC)	23 513 500		Waiting for operation	
15	GCCA+ Capacity building	Multisectoral adaptation	At national level	European Union (via Expertise France)	350000	2021–2023	Completed	GCCA+ implemented by Expertise France and AGRHYMET
16	Climate Promise Policy Support/NDC	Mitigation and Adaptation	At national level	Germany / Sweden / EU (via UNDP)	250000	2020–2021	Completed	Climate Promise - supporting the NDC update

4.3. INFORMATION ON SUPPORT FOR TECHNOLOGY DEVELOPMENT AND TRANSFER REQUIRED AND RECEIVED BY DEVELOPING COUNTRY PARTIES UNDER ARTICLE 10 OF THE PARIS AGREEMENT

Guinea-Bissau is one of the most vulnerable countries to climate change, which occurs in the form of temperature and precipitation changes and the occurrence of intense and frequent extreme weather events (droughts and floods).

The negative impacts of these events are already being felt in the water, coastal and agricultural sectors. These sectors are classified as vulnerable to climate change in the Technology Needs Assessment (TA) process; in the 2006 PANA; as well as in the NDCs documents.

Within the NCA, Guinea-Bissau has selected and prioritised nine (9) climate adaptation technologies: three (3) for the Agriculture sector; three (3) for the Water Resources sector and three (3) for the Coastal Zone sector, which express the necessary support in terms of technology transfer:

For the Agricultural Sector: 1st - Reforestation by communities (mangroves, fast-growing species, etc.); 2nd - Hydroagricultural projects; and 3rd - Use of seeds of short-cycle varieties and

For the Water Resources Sector: 1st - Hydrological and Piezometric Observation Networks; 2nd - Irrigation Dam; and 3rd - Water retention infrastructure for various purposes.

For the Coastal Zone Sector: 1st - Reforestation of coastal vegetation; 2nd - Mapping of areas at risk of flooding and erosion using the Geographic Information System (GIS); and 3rd - Construction / improvement of dykes.

The selected and/or prioritised technologies are aligned with the country's development strategy to ensure that natural resources continue to provide the goods and services on which the country's continued well-being and progress, as well as adaptation to climate change, depend and will serve as the basis for the other stages of the ANT process, i.e. Barrier Analysis, Technological Action Plan Development and project concept notes.
(see link: https://tech-action.unepccc.org/country/guinea-bissau/)

4.4. INFORMATION ON CAPACITY-BUILDING SUPPORT REQUIRED FOR DEVELOPING COUNTRY PARTIES UNDER ARTICLE 11 OF THE PARIS AGREEMENT

The training needs for the implementation of the NDC were detailed in the respective document. Key training needs and a quick assessment to verify whether training support has been received or not are in the table below.

Table 25: Evaluation of training support

Need for training	Support received?
Institutional capacity building to enable Guinea-Bissau to adequately monitor the implementation of NDCs in different sectors. This implies, among other things, the establishment of a transparency system that allows the regular production of GHG inventories, according to IPCC rules, as well as NDC monitoring indicators.	No
Training in energy transition (energy accounting, forecasting, programming of energy management actions, development of indicators, etc.).	No
Training of stakeholders in the implementation of NDC MRV.	Partially (in the context of the preparation of the BTR)
Empowering stakeholders to better leverage carbon market mechanisms, as provided for in Article 6 of the Paris Agreement.	No
Training and transfer of technology for the development of renewable energy and energy efficiency in different sectors of the economy.	No
Training in optimised management of the electrical system to increase its capacity for better integration of renewable energies.	No
Training of actors in the area of forest protection and ecosystem preservation.	Yes
The national and sectoral action plan for the implementation of NDCs.	No
The investment plan in the energy sector.	No
Portfolio of specific projects and financing mechanisms in the energy sector.	No
Updating NDC before 2024.	No
The development of a national low-carbon strategy by 2050.	No
Preparation of the first bi-annual transparency report.	No

In addition to the financial investment needs for the implementation of the NDC, the costs of supporting the necessary training were estimated at US$ 30 million.

Key Training Needs:

- Hands-on training in IPCC inventory software for compiling and reporting emissions.
- Remote Sensing and GIS Training for LULUCF.
- Development of a national system for collecting and managing emissions data.
- Train national experts to lead future inventories.

During the preparation process of this BTR, including NIR, several training needs were identified - related to transparency. The table below summarises the needs identified in the respective sectors of this report.

Guinea-Bissau has specific training needs to improve the preparation of the National Inventory Report (NIR), especially in the following sectors:

Table 26: Training needs

Chapter	Need for training
NIR	
Energy	IPCC 2006 methodologies for calculating emissions. - Monitoring and reporting of CO 2, CH 4 and N 2O emissions in the energy sector. - Integration of fossil fuel and renewable energy data. - Use of tools such as the IPCC Inventory Software and **LEAP** (Long Range Energy Alternatives Plan System).
UPI	- Collection and processing of emissions data from the manufacturing and construction industry. - Methods to estimate fugitive and industrial process emissions. - Application of specific emission coefficients for materials such as cement, glass and chemicals.
Agriculture	- Methodologies to estimate emissions from enteric fermentation and waste management. - Calculation of nitrous oxide (NO) emissions from the use of fertilisers. - Assessment of changes in agricultural productivity and climate impacts.
LULUCF	- Methods to estimate carbon stocks in forests and soils. - Calculation of O2 emissions and C removals in deforested and reforested areas. - Use of GIS and remote sensing technologies for monitoring forest areas.
Waste	- Estimated methane (CH_4) emissions from landfills and sewage treatment. - Monitoring of solid and liquid waste management. - Emissions quantification methods and potential mitigation strategies.
Tools and Methodologies	- LEAP (Plan System of Long Range Energy Alternatives) for modelling energy scenarios. - GACMO (Cost Model of Abatement of Greenhouse Gases) to evaluate costs and benefits of mitigation actions. - IPCC Emission Factors Database (EFDB) for emission coefficient-based projections. - UNDP Climate Promise Tools for Strategic Projections.
NDC	
NDC Trace	- Development of a Monitoring, Reporting and Verification System (MRV) to track NDCs goals. - Use of progress indicators to assess contributions to mitigation and adaptation. - Training in the use of digital tools for tracking and reporting. - Integration of sectoral data (energy, agriculture, waste, LULUCF, IPPU) into a unified system.
Monitoring mitigation actions	- Training in IPCC methodologies to monitor emissions reduced by climate action. - Definition of baseline and alternative scenarios to measure the real impacts of mitigation policies. - Training for transparent progress reports to the UNFCCC. - Use of technologies to measure and validate emission reductions

GHG projections	- Use of GHG emission projection models to plan effective climate action. - Application of bottom-up and top-down approaches in modelling future scenarios. - Integration of projections in the medium and long-term climate policy Plan. - Training to identify **data gaps** and strategies to fill them.
Tools and Methodologies	- IPCC inventory software and Long Range Alternative Power Plan System (LEAP). - MRV techniques for key sectors (energy, waste, agriculture, LULUCF). - Data platforms such as ETF and NDC Registry.
Adaptation improves technical capacity to identify sectors and communities most vulnerable to climate impacts.	
Training	- Use of climate risk assessment models for key sectors (agriculture, water resources, biodiversity, infrastructure). - Application of IPCC (AR6) methodologies for vulnerability and exposure analysis. - Remote sensing tools and GIS (Geographic Information System) for mapping vulnerable areas. - Participatory methods to integrate local and scientific knowledge in climate risk assessment
Tools and Methodologies	UNDP Climate Risk Assessment Framework. - GIS tools (QGIS, ArcGIS) for spatial mapping and analysis. - CMIP6 climate models for climate impact projections.
Support needed and received	
Technical and financial support received from international partners	1. GEF/UNEP - NC4 and BTR1 projects 2. GCCA+ (Global Climate Change Alliance Plus) Implemented by Expertise France **and** CILSS - AGRHYMET Regional Centre - Support in technical training for adaptation and mitigation. - Assistance in the elaboration of the National Inventory of GHG Emissions. - Training in MRV systems (Monitoring, Reporting and Verification). 3. UNDP (Climate Commitment) - Support in updating and implementing the NDC. - Support in the elaboration of the National Adaptation Plan (NAP). - Assistance on access to climate finance (GCF, Adaptation Fund). 4. Lusophone Cluster Centre for Climate Transparency - Technical assistance (training and qualification) - Analysis of BTR1 5. Green Climate Fund (GCF) - Preparedness Programme - Funding for climate adaptation and resilience actions. - Support in strengthening the institutional capacity to raise climate funds. 6. Adaptation **Fund** - Funding for Community adaptation and coastal protection projects.
Support Required	1. Technical and Institutional Training - Advanced training in GHG projections, NDC and MRV tracking. - Training in remote sensing and GIS for environmental monitoring and LULUCF. - Develop local capacities for national transparency reports. 2nd element. Infrastructure Development and Monitoring Systems - Creation of a national climate data platform for emissions tracking and adaptation actions.

	- Strengthening the network of meteorological stations to improve climate projections. - Implementation of early warning systems for natural disasters (floods, droughts, coastal erosion). 3rd element: Mobilising climate finance - Technical assistance for the preparation of financing proposals for the Green Climate Fund (GCF) and the Adaptation Fund. - Creating public-private partnerships for renewable energy and climate resilience projects. - Development of innovative financial mechanisms such as climate insurance and carbon credits. 4th element: Implementation of Local Solutions for Adaptation - Supporting the expansion of Ecosystem-Based Adaptation (EbA), including the restoration of mangroves and forests. Climate-smart agriculture projects to reduce vulnerabilities in the agricultural sector. - Development of water security and sustainable water management initiatives to mitigate the impacts of drought.

4.5. INFORMATION ON THE SUPPORT NEEDED AND RECEIVED BY DEVELOPING COUNTRY PARTIES FOR THE IMPLEMENTATION OF ARTICLE 13 OF THE PARIS AGREEMENT AND TRANSPARENCY-RELATED ACTIVITIES, INCLUDING CAPACITY BUILDING RELATED TO TRANSPARENCY.

4.5.1. Support received from GEF/UNEP for the preparation of NC4 and BTR1

Guinea-Bissau has received financial support from the Global Environment Facility (GEF), implemented by the United Nations Environment Programme (UNEP), for the preparation of its First Biennial Transparency Report (BTR1). This funding, worth 600
1,000 U.S. dollars, was awarded through a comprehensive multi-country project. The project started in February 2023, is expected to last 24 months and the report is expected to be delivered on January 1, 2025.

The preparation of BTR1 Guinea-Bissau is based on the findings and recommendations of its previous National Communication (NC) and Biennial Update Report (BAR), including the results of the International Review and Consultation (ICA). The greenhouse gas (GHG) inventory included in BTR1 represents an improvement over the inventory presented in the previous LU.

Guinea-Bissau has received financial support from the Global Environment Facility (GEF), implemented by the United Nations Environment Programme (UNEP), for the preparation of the Fourth National Communication (NC4). This financing, for a total amount of 500,000 US dollars, is valid for a period of 36 months (October 2022 to May 2025).

Under these projects, the country has benefited from UNEP's technical monitoring, including training and capacity-building sessions on IPCC tools and guidelines, etc., conducted by Mr. Alphonse MUTABAZI - Programme of Enabling Activities | GEF Climate Mitigation Unit.

This effort reflects Guinea-Bissau's continued commitment to strengthening the transparency and accuracy of its climate actions, aligning with the requirements of the Paris Agreement and contributing to global climate change mitigation efforts.

4.5.2. Lusophone Cluster Support for Transparency

The Lusophone Cluster on Transparency is a triangular platform (south-south, north-south and south-north) for cooperation, sharing of information and experiences, training and technical assistance on climate transparency, in Portuguese, implemented by UNDP Climate Promise, with funding from the Government of Belgium; by the Partnership for Transparency of the Paris Agreement, funded by the Government of Germany, and by CBIT-GSP, funded by the GEF.

The Lusophone Cluster has provided fundamental support to Guinea-Bissau in its efforts to produce transparent climate information, in particular this BTR.

Support is provided through many mechanisms, including in-person and online regional seminars with all Portuguese-speaking countries; remote assistance and in-person training and technical assistance.

Regional Seminary

Guinea-Bissau was represented by two experts deeply involved in the preparation of BTR1 at the 7th Face-to-Face Seminar of the Lusophone Cluster dedicated to the debate on "The role of transparency in increasing the ambition of climate action: **the** link between BTR and the **NDC".**

The seminar aimed to encourage the exchange of experiences between Portuguese-speaking countries and increase their respective capacities to respond effectively and efficiently to the results of the Global Stocktake (GST). To this end, the seminar aimed to articulate, through a careful and rigourous Plan, the work of preparing the first Biennial Transparency Report (BTR) and the review of the Nationally Determined Contribution (NDC) - considering the mitigation and adaptation components - as well as, where applicable, the development and approval of the Long-Term Strategy (LTS).

As one of the most advanced countries in this regard, Guinea-Bissau made a presentation on the steps taken for the preparation of BTR1.

Training and technical assistance in the country

The Lusophone Cluster on Transparency offered two two two-week training and technical assistance sessions in Bissau, in August 2024 and January 2025, both with the participation of about 20 specialists from different ministries and institutes, all involved in the preparation of the BTR and/or National Communication.

The first training The objective of the training was to develop the capacity for the elaboration of a transparent BTR1, focussing on the national GHG inventory, taking into account the specific circumstances of each country. The training aimed to ensure that specialists acquired in-depth knowledge of ETF MPGs, including the CRT and CTF tables. The focus was on GHG inventory, including the use of the IPCC GHG Inventory Software. However, in parallel sessions, relevant training and qualification was offered for the preparation of the remaining chapters.

The structure, content and use of the flexibility clause in this report were largely determined by the lessons learned during the training. The country's ability to meet the deadline, clearly set by the Minister of Environment, was also made possible, in large part, thanks to the detailed work plan and recommendations presented by the Lusophone Cluster at the end of the intense work week.

The **second training and technical assistance** carried out in January 2025, after the submission of the mandatory chapters of the BTR, aimed to prepare the country for the TER - Technical Expert Review.

The training included a presentation on MPGs for TER, including key milestones and timelines, and the flexibility offered to developing countries that need it. Expert support was also provided in the preparation and execution of simulations of TER presentations. This was followed by a simulation of the presentation of the review week and question-and-answer sessions.

A detailed cross-check of the consistency between NIR and CRT was performed.
Finally, support was provided for the completion of the required and received support chapter, which was sent along with a compiled BTR file.

Between the two weeks of support in the country, the Lusophone Cluster provided extensive **remote support** including through the revision of successive versions of the NIR and the chapter on NDC.

4.5.3. Other support

UNFCCC Regional Workshop on IPCC Software Usage

- UNFCCC Regional Workshop in Praia, Cape Verde (April 2023): In April 2023, the city of Praia, Cape Verde, hosted a regional practical training workshop organised by the UNFCCC Expert Advisory Group (CGE). The event focused on reporting information on climate change impacts and adaptation, including the support needed and received in relation to adaptation reporting. While specific details about Guinea-Bissau's participation are not available in public records, it is common for countries in the region, including Guinea-Bissau, to send representatives to events of this nature to strengthen their capacities on climate transparency reports.

- Regional Workshop on Capacity Building in Africa to Accelerate Preparation for BTR; Togo, Lomé, 9-11 August 2024

- IPCC Workshop in Baku, Azerbaijan (September 2024): From 4 to 6 September 2024, the IPCC held a workshop in Baku, Azerbaijan, with the participation of experts from approximately 100 countries. The goal was to improve the use of IPCC inventory software among potential users and to promote the dissemination of IPCC methodologies. Guinea-Bissau participated actively in the event.

- Regional Workshops on Article 6 and Carbon Pricing in Praia, Cape Verde (October-November 2024): From October 29 to November 1, 2024, the UNFCCC, in collaboration with the Regional Collaboration Centre for West and Central Africa (RCC WAC Africa) and the West African Alliance for Carbon Markets and Climate and Finance, organised a regional workshop in Praia, Cape Verde. The event brought together key stakeholders, including representatives from government, the private sector and international development agencies, with the aim of deepening understanding of the operational aspects and requirements of Article 6 of the Paris Agreement, as well as promoting regional dialogues on effective carbon pricing strategies. Guinea-Bissau was represented, given its interest in carbon market mechanisms and regional cooperation.

- Regional workshop held in Windhoek, Namibia, from 27 to 31 January 2025. This event was organised by the secretariat of the UNFCCC in collaboration with the IPCC and the United States Environmental Protection Agency (US EPA).

CHAPTER 5: INFORMATION ON FLEXIBILITY

5. Introduction

Guinea-Bissau, as a non-Annexe I Party to the United Nations Framework Convention on Climate Change (UNFCCC) and a developing country with limited capacity, used the flexibility provisions set out in the relevant GMP paragraphs (decision 18/CMA.1). This chapter presents the flexibilities applied, the reasons for its use and how transparency was guaranteed in its application.

5.1. Legal and institutional basis for the use of flexibilities

The use of flexibilities is based on the principle of common but differentiated responsibilities and respective capabilities, recognising national circumstances and the technical and institutional limitations faced by the country.

Guinea-Bissau has institutional capacities still in the process of consolidation in the climate sector, which justifies the need to apply certain flexibilities, namely with regard to the identification of key categories, complete time series, uncertainties and continuous improvement of inventories.

5.2. Implementation of the flexibility provisions of the GMP

The table below summarises the flexibility provisions used, as permitted by MPG:

Table 27: Application of flexibility mechanisms according to MPGs.

Reference in MPG (Decision 18/CMA.1)	Flexibility Provision	Application of Guinea-Bissau	Justification
Paragraph 25	Identification of key categories only for inventory start and end year	Applied	The country's technical and data capacity does not allow for detailed interannual analyses.
Paragraph 29	Use of less stringent methods for emission estimates	Applied	Human resources and limited data justify the use of standard emission factors (IPCC Level 1).
Paragraph 37	Absence of full time series since 1990	Applied	The national data series starts in 2010 due to the unavailability of reliable historical data.
Paragraph 57	Uncertainty estimates provided qualitatively	Applied	The lack of quantitative data prevents the application of statistical analysis of uncertainty.
Paragraph 74	Continuous improvement limited to priority areas	Applied	Priority given to sectors with higher emissions and more accessible data.
Paragraph 32	Estimates of emissions and removals presented for specific geographical areas	Not applied	Geographical segmentation of estimates is not yet possible due to the absence of disaggregated data and regional reporting systems.
Paragraph 45	Sending complete information on international transfers of mitigation results (ITMOs)	Not applied	Guinea-Bissau does not currently participate in mechanisms or market transactions involving ITMOs.
Paragraph 64	Complete reports on support received at all levels (financial, technology and training) with robust methodology	Not applied	The country is still in the process of structuring a comprehensive system for tracking the support received and needed.
Paragraph 70	Complete information on progress in CDN	Not applied	Limitations in the definition of indicators and data

	implementation with quantitative indicators		collection prevent the full application of this requirement.

5.3. Transparency in the Application of Flexibilities

Even with the application of the flexibilities, Guinea-Bissau sought to maintain the maximum possible transparency, explaining clearly:

- The reasons for each flexibility applied;
- The impacts of these flexibilities on the comparability and integrity of data; - Strategies to progressively overcome these limitations, based on the strengthening of technical and institutional capacities, through international cooperation and technical assistance.

5.4. Path to Continuous Improvement

Guinea-Bissau recognises that the use of flexibilities is a transitional measure. It therefore undertakes to:

- Strengthen national climate monitoring systems;
- Develop a more robust national inventory system; - Expand technical training of national experts; - Create and maintain accessible and reliable databases.

CHAPTER VI – IMPROVING REPORTING OVER TIME

6. Introduction

Continued improvement of national climate reports is one of the pillars of the enhanced transparency framework of the Paris Agreement. Guinea-Bissau recognises that as a Least Developed Country (LDC), the progressive development of technical and institutional capabilities is essential to ensure the quality, comprehensiveness and regularity of its climate reports.

This chapter presents the main improvements made in the reporting processes, from the National Communication and the Biannual Update Reports (BURs), to the present Second Biennial Transparency Report (BTR2).

6.1. Developments in Guinea-Bissau's Climate Reports

Table 28: Climate Reports in Guinea-Bissau

Report Type	Submission Year	Key Advances
First National Communication	2005	Basic GHG inventory; overall vulnerability
BUR1 – Biennial Update Report	2020	Updated GHG inventory (base year 2000); mitigation analysis
BTR2 – First Biennial Transparency Report	2025	Fully integrates the requirements of the Paris Agreement

6.2. Methodological and Technical Improvement

Guinea-Bissau has gradually adopted the 2006 IPCC Guidelines for GHG emission inventories. Key improvements include:

- Adoption of Tier 1 methods with greater precision and consistency;

- Use of regional emission factors adapted to the reality of West Africa;

- Improved systematisation of activity data in the agriculture**,** land use and forestry and waste sectors**;**

- Technical training of more than 70 national technicians in MRV, GHG accounting, transparency and climate finance.

6.3. Institutional and governance improvements

Between 2020 and 2025, remarkable progress has been made in the institutional framework for climate communication, including:

- Strengthen the National Commission on Climate Change (CNMC) as a coordinating body;

- Strengthen the capabilities of the National Environment Institute (INA) as a technical focal point for inventories and MRV;

- Better coordination between the Ministry of Environment, the Institute of Biodiversity and Protected Areas (IBAP), the Directorate-General for Agriculture, the National Institute of Statistics and other sectoral bodies.

CONCLUSIONS and RECOMMENDATIONS

CONCLUSIONS

The preparation and presentation of the First Biennial Transparency Report (BTR1) is a key milestone in the Republic of Guinea-Bissau's commitment to the implementation of Article 13 of the Paris Agreement on the Enhanced Transparency Framework (ERF). BTR1 represents a strategic step in the institutionalisation of a national monitoring, reporting and verification system (MRV) and marks a qualitative leap in the national climate reporting process.

An updated inventory was developed, covering the period from 2010 to 2022, with greater methodological rigour and sectoral coverage. The Energy, Agriculture, Land Use, Forestry and Land Use Change (AFOLU), Waste and Industrial Processes sectors were reviewed and updated in accordance with the 2006 IPCC guidelines.

The inventory shows a general trend of increasing GHG emissions, driven mainly by agricultural expansion, fossil energy consumption (particularly diesel) and pressure on forests and mangroves.

The total national GHG emissions in GgCO2eq in Guinea-Bissau, without LULUCF, in 2010 were 2,095.6 GgCO2eq; in 2015, 2,440.5 Gg CO2eq and in 2022, 3,449.7 Gg CO2eq. This represents a progress rate of 64.62%. If this trend continues, the sector will emit 4,809.46 GgCO2eq by 2030 and reach 11,037.86 GgCO2eq in 2050.

The total national emissions of Gg $CO_{2\ eq}$ in Guinea-Bissau with LULUCF in 2010 are -25122.2 Gg $CO_{2\ eq}$; in 2015 they are -19294.8 Gg $CO_{2\ eq}$ and in 2022 they are -19095.0 Gg

$CO2_{eq}$. If this trend continues, by 2030 the sector will emit -15903.56 GgCO2 eq and reach -10067.72 $GgCO2_{eq}$ in 2050.

Between 2010 and 2022, national GHG emissions show an increasing trend. In fact, emissions increased from 2,075.3 GgCO2eq in 2010 to 2,848.5 GgCO2eq in 2022, an increase of 37.26%, without LULUCF. If this trend continues, by 2030 national GHG emissions will be 3,518.09 GgCO2eq, and by 2050, they will reach 5,963.92 GgCO2eq.

In the Energy sector, between 2010 and 2015, emissions increased from 233.0 GgCO2eq to 309.2 GgCO2eq, an increase of 32.62%. From 2015 to 2022, emissions increased from 309.2 to 458.2 GgCO2eq, representing an increase of 48.22%; in total, from 2010 to 2022, emissions almost doubled, with a cumulative increase of 96.6%.

For the LULUCF sector, emissions decreased from -27217.8 GgCFO2eq in 2010 to -22544.7 GgCO2eq in 2022, a reduction of -17.16%.

For the Waste Sector, emissions increased from 124.8 GgCO2eq in 2010 to 229.5 GgCO2eq in 2015 and rose to 228.1 GgCO2eq in 2022. Between 2010 and 2022, waste emissions increased by 130 per cent.

National emissions have a general upward trend between 2010 and 2022, with an average annual rate of increase of 8%.

Guinea-Bissau remains a modest net emitter globally, but faces serious domestic environmental sustainability challenges. The dependence on biomass (firewood and charcoal) and the pressure on forest ecosystems are the main drivers of emissions. Despite mitigation efforts, the rate of deforestation and soil degradation still exceeds the natural regeneration capacity.

BTR1 assesses progress in the implementation of Guinea-Bissau's NDC, highlighting concrete mitigation actions in the renewable energy, forestry and sustainable agriculture sectors. Moderate progress was observed in the implementation of the proposed measures, with emphasis on investments in solar energy, mangrove restoration and pilot projects for resilient agroecology.

Indicators show that, despite the challenges, there are consistent efforts to meet emissions-reduction commitments by 2030, although they still rely significantly on external support.

BTR1 presents a systematisation of the adaptation measures implemented between 2020 and 2024, including community capacity building, building resilient infrastructure (nurseries, drilling holes, dykes) and protecting coastal areas.

Guinea-Bissau has made progress in integrating adaptation into national and sectoral plans, such as the agriculture, water, health and biodiversity sectors. Areas of critical vulnerability (coastal, insular and estuarine zones) were identified, with an urgent need for prevention and response actions to losses and damages.

The report documents efforts mobilised with international partners, including the Global Environment Facility (GEF), UNDP, the Green Climate Fund and the European Union.

There are still large funding gaps to cover mitigation and adaptation actions, with an estimated need of hundreds of millions of dollars by 2030. Challenges persist in technology transfer and access to modern monitoring systems, particularly in the fields of remote sensing, climate data and land management.

The country reinforces the need for technical and financial support to continue improving data quality and expanding mitigation measures.

The institutional and technical capacity is still limited, with a deficit of qualified human resources and fragility of the national systems for collecting, analysing and reporting data.
The development of BTR1 was made possible thanks to an inclusive and participatory process involving sectoral ministries, academia, civil society and development partners. The country has made progress in structuring a National Climate Transparency Unit, and the design of a National Integrated MRV/ETF System is underway.

The lessons learned and the gaps identified in BTR1 will improve the preparation of the next biennial reports and improve the monitoring of national climate goals.

STRATEGIC RECOMMENDATIONS

1. Strengthen international technical and financial support to ensure the continuity and improvement of the climate transparency system.
2. Consolidate the National MRV/ETF System, with a clear definition of institutional mandates, data flows and responsibilities.
3. Prioritise structural investments in adaptation, especially in high-risk areas such as coastal and island regions.
4. Develop continuous training plans, focussing on technical training in inventories, climate modelling and reporting.
5. Promote greater inter-institutional coordination to ensure coherence in the implementation and reporting of NCDs.

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INVENTORY DOCUMENTS ATTACHED

ANNEXE 1: Key categories
Annexe 1.a

A	B	C	D	E	F	G
IPCC category code	IPCC Category	Greenhouse gas	2010 Ex, t(Gg CO2 Eq)	|Ex,t| Gg (CO2 Eq)	Wx, t	Cumulative total of column F
3.B.1.a	Forest land Remaining Forest land	CARBON DIOXIDE (CO2)	-30818,685	54873.69231	91.31	91.31
3.B.2.b	Land converted into cropland	CARBON DIOXIDE (CO2)	3600.869577	3600.869577	5.99	97.30
3.A.1	Enteric fermentation	METHANE (CH4)	1020.452601	1020.452601	1.70	99.00
3.C.7	Rice cultivation	METHANE (CH4)	116.9814142	116.9814142	0.19	99.19
1.A.3.b	Road Transport - Liquid Fuels	CARBON DIOXIDE (CO2)	93.1213176	93.1213176	0.15	99.35
1.A.4	Other Sectors - Biomass - Solid	METHANE (CH4)	83.5388442	83.5388442	0.14	99.49
3.C.1	Burning	METHANE (CH4)	74.95052867	74.95052867	0.12	99.61
3.A.2	Manure Management	METHANE (CH4)	42.10931382	42.10931382	0.07	99.68
4.D	Wastewater Treatment and Discharge	METHANE (CH4)	39.56562011	39.56562011	0.07	99.75
4.C	Incineration and Open Burning of Waste	METHANE (CH4)	35.55006	35.55006	0.06	99.81
3.C.1	Burning	NITROUS OXIDE (N2O)	34.12875036	34.12875036	0.06	99.86
1.A.4	Other Sectors - Biomass - Solid	NITROUS OXIDE (N2O)	15.29258241	15.29258241	0.03	99.89
4.D	Wastewater Treatment and Discharge	NITROUS OXIDE (N2O)	13.38650814	13.38650814	0.02	99.91
1.A.1	Energy Industries - Liquid Fuels	CARBON DIOXIDE (CO2)	12.6949422	12.6949422	0.02	99.93
3.C.4	Direct N2O emissions from managed soils	NITROUS OXIDE (N2O)	10.15485116	10.15485116	0.02	99.95
4.C	Incineration and Open Burning of Waste	NITROUS OXIDE (N2O)	8.6005935	8.6005935	0.01	99.96
3.A.2	Manure Management	NITROUS OXIDE (N2O)	8.011893655	8.011893655	0.01	99.98
4.C	Incineration and Open Burning of Waste	CARBON DIOXIDE (CO2)	5.893093287	5.893093287	0.01	99.99
3.C.5	Indirect N2O emissions from managed soils	NITROUS OXIDE (N2O)	4.105366029	4.105366029	0.01	99.99
1.A.3.b	Road Transport - Liquid Fuels	NITROUS OXIDE (N2O)	1.506814644	1.506814644	0.00	100.00
1.A.4	Other Sectors - Liquid Fuels	CARBON DIOXIDE (CO2)	1.19325181	1.19325181	0.00	100.00
3.C.3	Urea application	CARBON DIOXIDE (CO2)	0.230266667	0.230266667	0.00	100.00
1.A.3.b	Road Transport - Liquid Fuels	METHANE (CH4)	0.158629338	0.158629338	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	NITROUS OXIDE (N2O)	0.032388924	0.032388924	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	METHANE (CH4)	0.010970442	0.010970442	0.00	100.00
1.A.4	Other Sectors - Liquid Fuels	METHANE (CH4)	0.002913026	0.002913026	0.00	100.00

Annexe 1.b

IPCC category code	IPCC Category	Gas	Year of emissions 2010 Gg (CO2 Eq)	Absolute emissions in 2010 Gg (CO2 Eq)	Contribution up to 2010 (%)	Total cumulative contribution for 2010	2010 ACC Order
3.A.1	Enteric fermentation	(CH4)	1020.4526	1020.4526	63.00	63	1
3.C.7	Rice cultivation	(CH4)	116,9814	116,9814	7.22	70.22	2
1.A.3.b	Road Transport - Liquid Fuels	(CO2)	93.1213	93.1213	5.75	75.97	3
1.A.4	Other Sectors - Biomass - Solid	(CH4)	83,5388	83,5388	5.16	81.13	4
3.C.1	Burning	(CH4)	74.9505	74.9505	4.63	85.76	5
3.A.2	Manure Management	(CH4)	41.9070	41.9070	2.59	88.35	6
4.D	Wastewater Treatment and Discharge	(CH4)	39.5656	39.5656	2.44	90.79	7
4.C	Incineration and Open Burning of Waste	(CH4)	35.5501	35.5501	2.19	92.98	8
3.C.1	Burning	(N2O)	34.1288	34.1288	2.11	95	9

Annexe 1.c

A	B	C	D	E	F	G
IPCC category code	IPCC Category	Greenhouse gas	2022 Ex, t(Gg CO2 Eq)	|Ex,t| Gg (CO2 Eq)	Wx, t	Cumulative total of column F
3.B.1.a	Forest land Remaining Forest land	CARBON DIOXIDE (CO2)	-29644.12689	51951.4561	84.40	84.40
3.B.2.b	Land converted into cropland	CARBON DIOXIDE (CO2)	7099.426767	7099.426767	11.53	95.93
3.A.1	Enteric fermentation	METHANE (CH4)	1301.885592	1301.885592	2.11	98.04
4A	Disposal of Solid Waste	METHANE (CH4)	358.1943862	358.1943862	0.58	98.63
1.A.3.b	Road Transport - Liquid Fuels	CARBON DIOXIDE (CO2)	184.7343687	184.7343687	0.30	98.93
3.C.7	Rice cultivation	METHANE (CH4)	131.3499455	131.3499455	0.21	99.14
1.A.1	Energy Industries - Liquid Fuels	CARBON DIOXIDE (CO2)	99.0141645	99.0141645	0.16	99.30
1.A.4	Other Sectors - Biomass - Solid	METHANE (CH4)	97.5700803	97.5700803	0.16	99.46
3.C.1	Burning	METHANE (CH4)	56.43539371	56.43539371	0.09	99.55
3.A.2	Manure Management	METHANE (CH4)	56.07236103	56.07236103	0.09	99.64
4.D	Wastewater Treatment and Discharge	METHANE (CH4)	53.0040048	53.0040048	0.09	99.73
4.C	Incineration and Open Burning of Waste	METHANE (CH4)	44.655975	44.655975	0.07	99.80

3.C.1	Burning	NITROUS OXIDE (N2O)	25.67952092	25.67952092	0.04	99.84
1.A.4	Other Sectors - Liquid Fuels	CARBON DIOXIDE (CO2)	19.1107336	19.1107336	0.03	99.87
1.A.4	Other Sectors - Biomass - Solid	NITROUS OXIDE (N2O)	17.86993807	17.86993807	0.03	99.90
4.D	Wastewater Treatment and Discharge	NITROUS OXIDE (N2O)	17.35298609	17.35298609	0.03	99.93
4.C	Incineration and Open Burning of Waste	NITROUS OXIDE (N2O)	10.801485	10.801485	0.02	99.95
3.A.2	Manure Management	NITROUS OXIDE (N2O)	10.16102379	10.16102379	0.02	99.96
4.C	Incineration and Open Burning of Waste	CARBON DIOXIDE (CO2)	7.408484072	7.408484072	0.01	99.98
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	CARBON DIOXIDE (CO2)	5.129943	5.129943	0.01	99.98
3.C.5	Indirect N2O emissions from managed soils	NITROUS OXIDE (N2O)	3.248040994	3.248040994	0.01	99.99
1.A.3.b	Road Transport - Liquid Fuels	NITROUS OXIDE (N2O)	2.921132728	2.921132728	0.00	99.99
1.A.4	Other Sectors - Liquid Fuels	NITROUS OXIDE (N2O)	1.185495025	1.185495025	0.00	100.00
3.C.4	Direct N2O emissions from managed soils	NITROUS OXIDE (N2O)	0.990182134	0.990182134	0.00	100.00
1.A.3.b	Road Transport - Liquid Fuels	METHANE (CH4)	0.617331267	0.617331267	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	NITROUS OXIDE (N2O)	0.240663726	0.240663726	0.00	100.00
3.C.3	Urea application	CARBON DIOXIDE (CO2)	0.22	0.22	0.00	100.00
1.A.4	Other Sectors - Liquid Fuels	METHANE (CH4)	0.095712509	0.095712509	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	METHANE (CH4)	0.081515133	0.081515133	0.00	100.00
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	NITROUS OXIDE (N2O)	0.01287678	0.01287678	0.00	100.00
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	METHANE (CH4)	0.00436149	0.00436149	0.00	100.00

Annexe 1. d

IPCC category code	IPCC Category	Gas	Year of emissions 2022 Gg (CO2 Eq)	Absolute value of emissions for the year 2022 Gg (CO2 Eq)	Contribution per year 2022 (%)	Total cumulative contribution for 2022	2022 ACC Order
3.A.1	Enteric fermentation	(CH4)	1301.8856	1301.8856	51.95	51.95	1
4A	Disposal of Solid Waste	(CH4)	358,1944	358,1944	14.29	66.24	2
1.A.3.b	Road Transport - Liquid Fuels	(CO2)	184,7344	184,7344	7.37	73.61	3
3.C.7	Rice cultivation	(CH4)	131.3499	131.3499	5.24	78.85	4
1.A.1	Energy Industries - Liquid Fuels	(CO2)	99,0142	99,0142	3.95	82.8	5

1.A.4	Other Sectors - Biomass - Solid	(CH4)	97.5701	97.5701	3.89	86.69	6
3.C.1	Burning	(CH4)	56,4354	56,4354	2.25	88.94	7
3.A.2	Manure Management	(CH4)	56,0724	56,0724	2.24	91.18	8
5.D	Wastewater Treatment and Discharge	(CH4)	53.0040	53.0040	2.12	93.3	9
5.C	Incineration and Open Burning of Waste	(CH4)	44.6560	44.6560	1.78	95	10

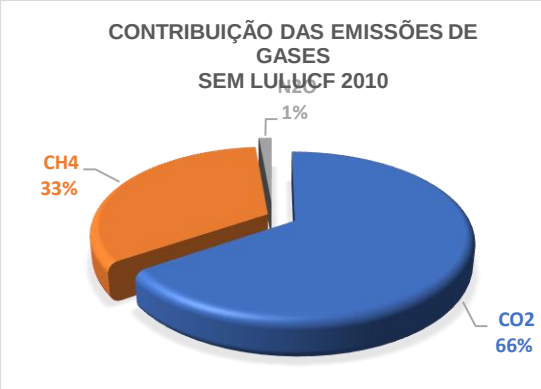
Annexe 1. and

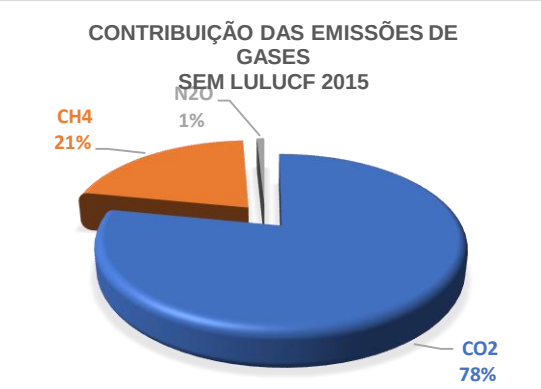
A	B	C	D	E	F	G	H
IPCC category code	IPCC Category	Gas	2010 Estimate Ex0(Gg CO2 Eq)	2022 year estimate Ext(Gg CO2 Eq)	Trend Assessment (Txt)	% Contribution to trend	Cumulative total for column G
3.B.1.a	Forest land Remaining Forest land	(CO2)	-30818,685	-29644.1269	0.15	61.81	61.81
3.B.2.b	Land converted into cropland	(CO2)	3600.869577	7099.42677	0.08	30.44	92.25
4A	Disposal of Solid Waste	(CH4)	0	358.194386	0.01	4.01	96.26
1.A.1	Energy Industries - Liquid Fuels	(CO2)	12.6949422	99.0141645	0.00	0.94	97.20
1.A.3.b	Road Transport - Liquid Fuels	(CO2)	93.1213176	184.734369	0.00	0.80	98.00
3.A.1	Enteric fermentation	(CH4)	1020.452601	1301.88559	0.00	0.67	98.67
3.C.1	Burning	(CH4)	74.95052867	56.4353937	0.00	0.39	99.06
1.A.4	Other Sectors - Liquid Fuels	(CO2)	1.19325181	19.1107336	0.00	0.20	99.26
3.C.1	Burning	(N2O)	34.12875036	25.6795209	0.00	0.18	99.43
3.C.4	Direct N2O emissions from managed soils	(N2O)	10.15485116	0.99018213	0.00	0.13	99.56
3.C.7	Rice cultivation	(CH4)	116.9814142	131.349945	0.00	0.12	99.68
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	(CO2)	0	5.129943	0.00	0.06	99.74
3.A.2	Manure Management	(CH4)	42.10931382	56.3000575	0.00	0.06	99.80
4.D	Wastewater Treatment and Discharge	(CH4)	39.56562011	53.0040048	0.00	0.05	99.85
1.A.4	Other Sectors - Biomass - Solid	(CH4)	83.5388442	97.5700803	0.00	0.05	99.90
3.C.5	Indirect N2O emissions from managed soils	(N2O)	4.105366029	3.24804099	0.00	0.02	99.92
4.C	Incineration and Open Burning of Waste	(CH4)	35.55006	44.655975	0.00	0.02	99.93
1.A.4	Other Sectors - Liquid Fuels	(N2O)	0.002090364	1.18549503	0.00	0.01	99.95
1.A.3.b	Road Transport - Liquid Fuels	(N2O)	1.506814644	2.92113273	0.00	0.01	99.96
4.D	Wastewater Treatment and Discharge	(N2O)	13.38650814	17.3529861	0.00	0.01	99.97
1.A.4	Other Sectors - Biomass - Solid	(N2O)	15.29258241	17.8699381	0.00	0.01	99.98

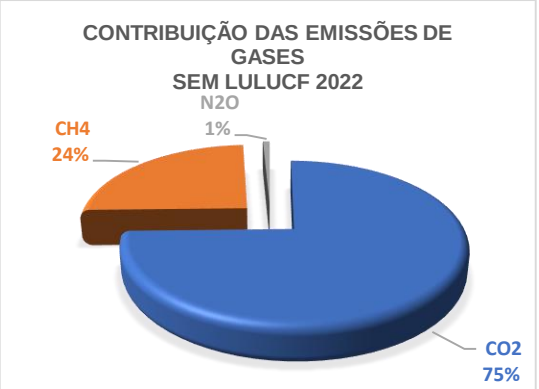
1.A.3.b	Road Transport - Liquid Fuels	(CH4)	0.158629338	0.61733127	0.00	0.00	99.98
3.A.2	Manure Management	(N2O)	8.011893655	10.1610238	0.00	0.00	99.99
4.C	Incineration and Open Burning of Waste	(N2O)	8.6005935	10.801485	0.00	0.00	99.99
4.C	Incineration and Open Burning of Waste	(CO2)	5.893093287	7.40848407	0.00	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	(N2O)	0.032388924	0.24066373	0.00	0.00	100.00
1.A.4	Other Sectors - Liquid Fuels	(CH4)	0.002913026	0.09571251	0.00	0.00	100.00
1.A.1	Energy Industries - Liquid Fuels	(CH4)	0.010970442	0.08151513	0.00	0.00	100.00
3.C.3	Urea application	(CO2)	0.230266667	0.22	0.00	0.00	100.00
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	(N2O)	0	0.01287678	0.00	0.00	100.00
1.A.2	Manufacturing and Construction Industries - Liquid Fuels	(CH4)	0	0.00436149	0.00	0.00	100.00

ANNEXE 2: Contributions to GHG emissions

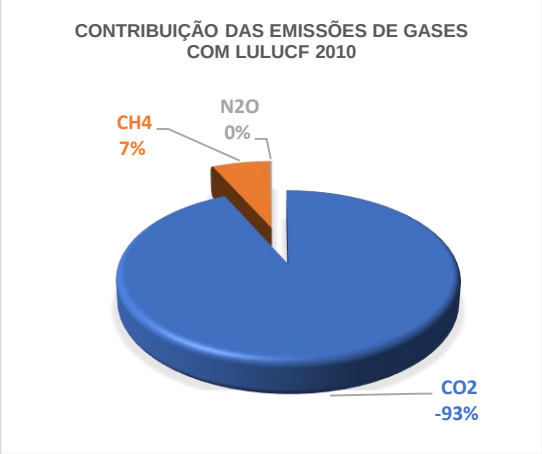
2.1: Non-LULUCF gas emission contributions

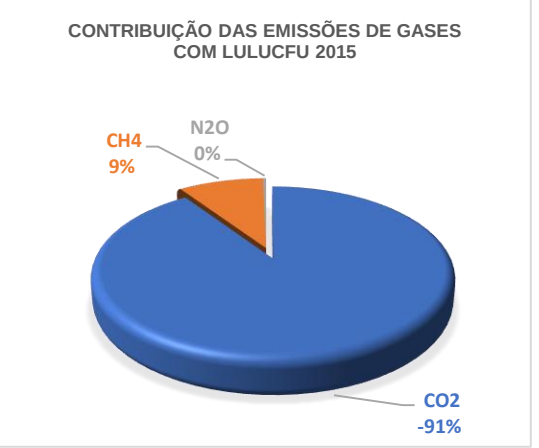


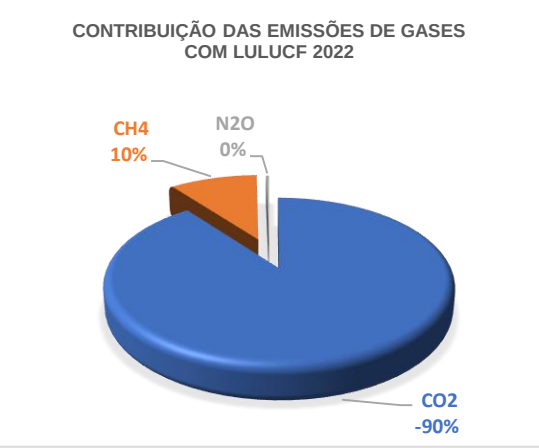


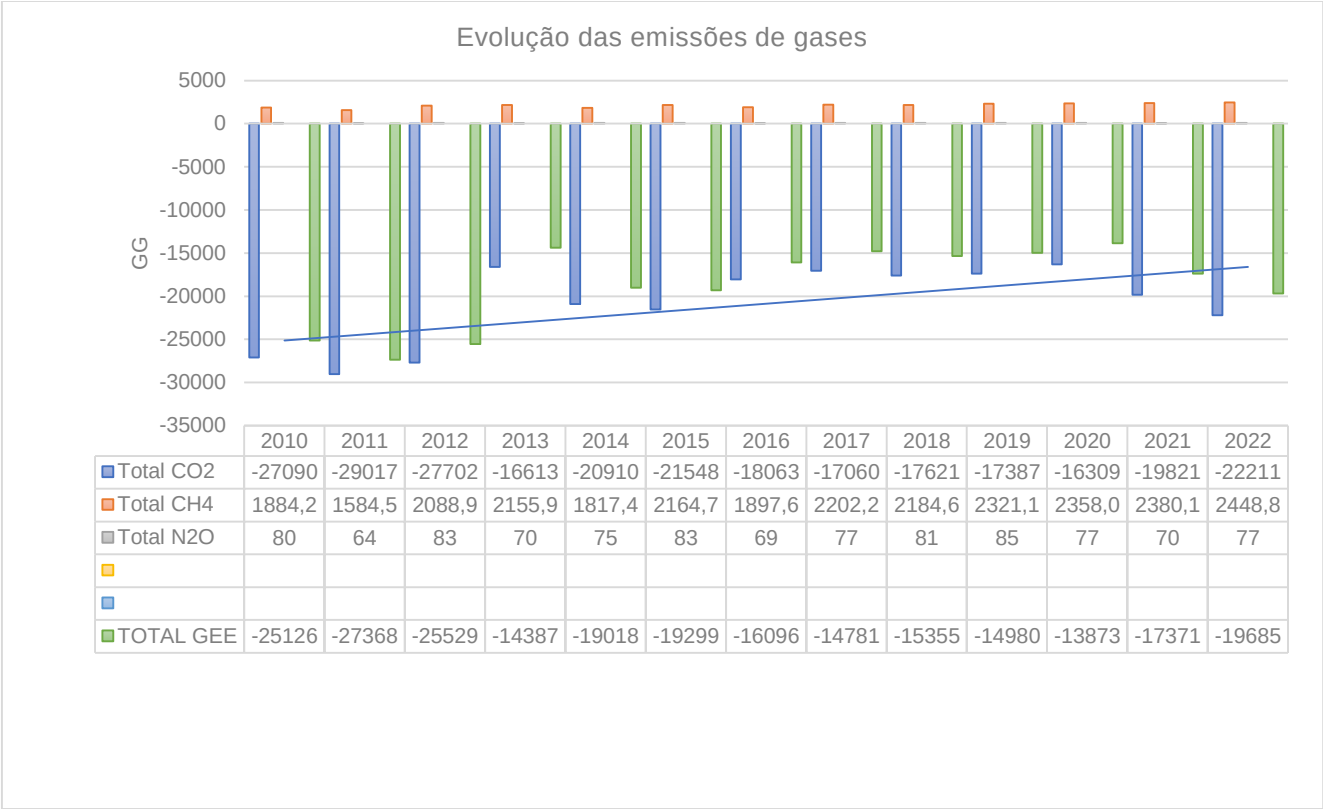


2.2: Gas contributions from LULUCF



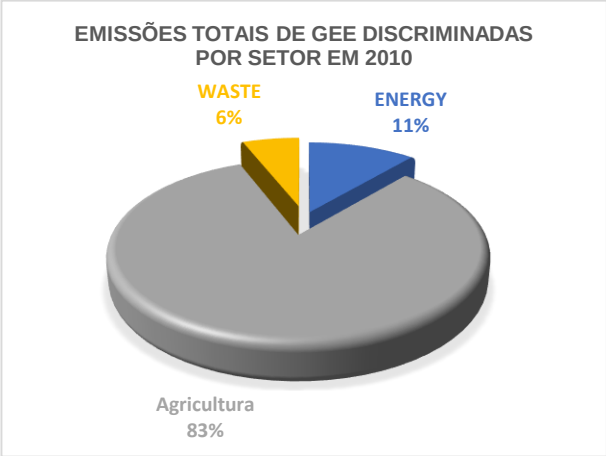


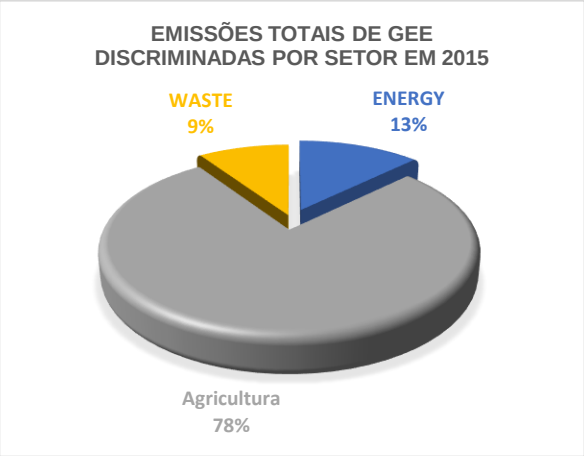


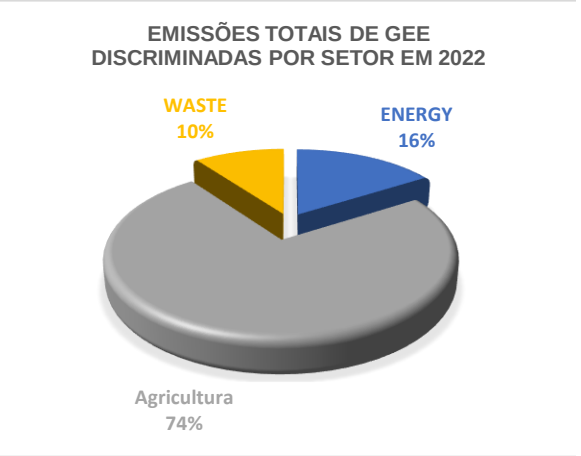


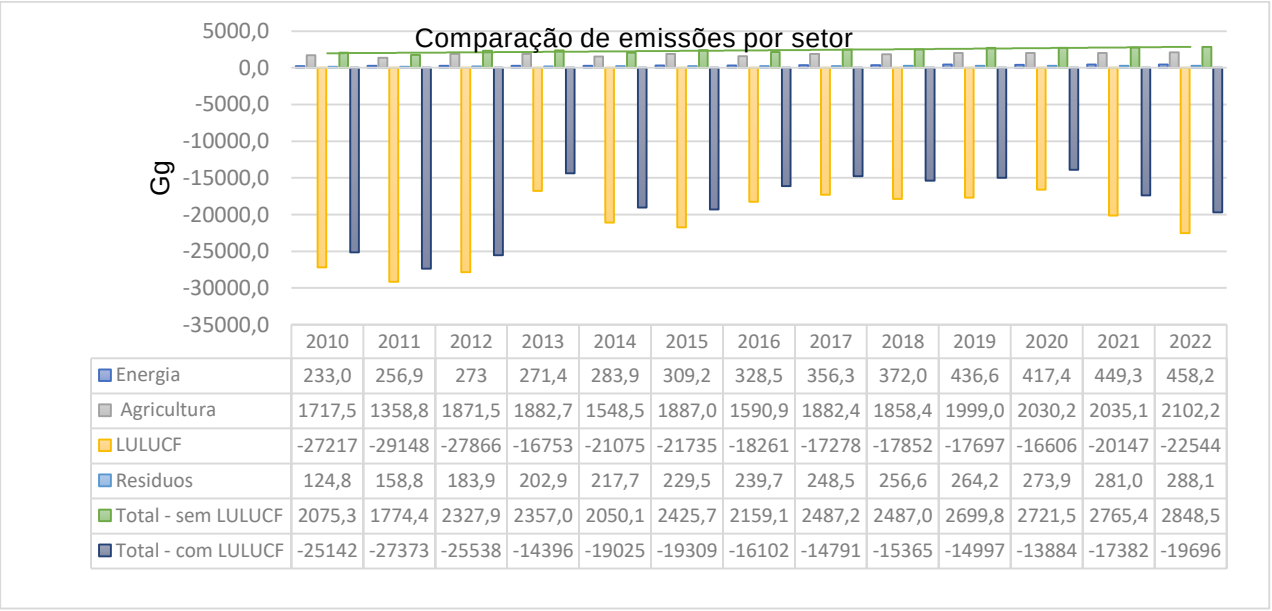
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total CO2	-27090	-29017	-27702	-16613	-20910	-21548	-18063	-17060	-17621	-17387	-16309	-19821	-22211
Total CH4	1884,2	1584,5	2088,9	2155,9	1817,4	2164,7	1897,6	2202,2	2184,6	2321,1	2358,0	2380,1	2448,8
Total N2O	80	64	83	70	75	83	69	77	81	85	77	70	77
TOTAL GEE	-25126	-27368	-25529	-14387	-19018	-19299	-16096	-14781	-15355	-14980	-13873	-17371	-19685

ANNEXE 3: Total GHG emissions broken down by sector (%)









	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Energia	233,0	256,9	273	271,4	283,9	309,2	328,5	356,3	372,0	436,6	417,4	449,3	458,2
Agricultura	1717,5	1358,8	1871,5	1882,7	1548,5	1887,0	1590,9	1882,4	1858,4	1999,0	2030,2	2035,1	2102,2
LULUCF	-27217	-29148	-27866	-16753	-21075	-21735	-18261	-17278	-17852	-17697	-16606	-20147	-22544
Residuos	124,8	158,8	183,9	202,9	217,7	229,5	239,7	248,5	256,6	264,2	273,9	281,0	288,1
Total - sem LULUCF	2075,3	1774,4	2327,9	2357,0	2050,1	2425,7	2159,1	2487,2	2487,0	2699,8	2721,5	2765,4	2848,5
Total - com LULUCF	-25142	-27373	-25538	-14396	-19025	-19309	-16102	-14791	-15365	-14997	-13884	-17382	-19696