

# REPUBLIQUE DU TCHAD



MISE A JOUR DE LA  
CONTRIBUTION DETERMINEE NATIONALE  
(CDN)

OCTOBRE 2021

# Table of Contents

<b>1</b>	<b><u>INTRODUCTION</u></b>	<b>9</b>
<b>2</b>	<b><u>CHAD NDC BACKGROUND</u></b>	<b>9</b>
2.1	NEW ELEMENTS CONTRIBUTING TO THE UPDATE	10
2.2	NDC UPDATE PROCESS	11
2.3	VISION OF CHAD'S NDC	12
<b>3</b>	<b><u>NATIONAL CIRCUMSTANCES</u></b>	<b>12</b>
3.1	CLIMATE CHANGE AND VARIABILITY IN CHAD	13
3.1.1	ANNUAL CHANGE IN PRECIPITATION IN THE SAHEL	14
3.1.2	CLIMATE PROFILE IN CHAD	14
3.1.3	RAINFALL	15
3.1.4	TEMPERATURES	15
3.1.5	OBSERVED EXTREME WEATHER EVENTS	16
3.1.6	CLIMATE PROJECTIONS	16
3.2	POLICIES, STRATEGIES AND INSTITUTIONAL FRAMEWORKS	16
<b>4</b>	<b><u>THE UPDATED CONTRIBUTION TO MITIGATION</u></b>	<b>17</b>
4.1	BASELINE	17
4.1.1	NDC COVERAGE	17
4.1.2	GHG EMISSIONS INVENTORY	18
4.1.1	THE BASELINE SCENARIO	19
4.2	MITIGATION OBJECTIVES	21
4.2.1	APPROACH	21
4.2.2	RESULTS	21
<b>5</b>	<b><u>THE UPDATED CONTRIBUTION TO ADAPTATION</u></b>	<b>23</b>
5.1	STATUS OF ADAPTATION IN CHAD	24
5.2	CLIMATE RISKS, AND VULNERABLE SECTORS	25
5.3	PRIORITY AREAS FOR ADAPTATION	27
<b>6</b>	<b><u>CROSS-CUTTING ISSUES AND PRIORITIES ADAPTATION AND MITIGATION</u></b>	<b>33</b>
6.1	THE GENDER DYNAMICS	33
6.2	SPATIAL PLANNING	34
6.3	MEASURES GENERATING CO-BENEFITS	34
6.4	CONTRIBUTIONS TO THE RIO CONVENTIONS AND SDGs	35
<b>7</b>	<b><u>MEANS OF IMPLEMENTATION</u></b>	<b>36</b>
7.1	MONITORING OF ACTIONS AND NEEDS IN TERMS OF SUPPORT	36

7.1.1	MONITORING OF MITIGATION ACTIONS.....	36
7.1.2	INVESTMENT NEEDS.....	36
7.2	ADAPTATION FUNDING NEEDS .....	36
7.3	CAPACITY BUILDING AND TECHNOLOGY TRANSFER.....	39
7.4	POLICY AND INSTITUTIONAL MECHANISMS.....	41
7.5	USE OF VOLUNTARY COOPERATION UNDER ARTICLE 6 OF THE PARIS AGREEMENT .....	42
ANNEX 1	.....	43

## List of Figures

Figure 1.	Index of annual variation of rainfall in the Sahel between 1900 and 2010 .....	14
Figure 2.	Three major bioclimatic zones in Chad .....	15
Figure 3.	GHG emissions (kt CO <sub>2</sub> e – including sinks) .....	18
Figure 4.	Share of emissions (excluding LULUCF) in 2018 .....	18
Figure 5.	Chad's GHG emissions under Chad's unconditional and conditional scenarios over the period 2010-20130 .....	21

## List of Tables

Table 1	GHG emissions (kt CO <sub>2</sub> eq) in the 2018-2030 Reference Case .....	19
Table 2	GHG emissions (kt CO <sub>2</sub> eq) and impacts of the different scenarios over the period 2018-2030 .....	22
Table 3	Priorities identified in the NAPAA, the first NDC, the NTCS and the GCF Country Programme .....	24
Table 4	Main hazards and climate impacts in Chad .....	25
Table 5	Chad's bioclimatic zones, hazards and priority sectors .....	26
Table 6	Investment required for the implementation of NDC mitigation actions .....	36
Table 7	Summary of adaptation financing needs (top-down approach) .....	37

## List of abbreviations and acronyms

AFAT:	Agriculture, Forestry and Other Land Uses
ACT:	Global Alliance for Resilience
SMAC :	Global Climate Change Alliance
	AfDB : African Development Bank
Crossbeam:	baseline scenario or "business-as-usual" BET
:	Borkou-Tibesti-Ennedi
CC:	Climate change
UNFCCC :	United Nations Framework Convention on Climate Change
(UNFCCC) :	Nationally Determined Contribution
GrOW:	Convention on the Elimination of All Forms of Discrimination against Women
CH4 :	Methane emissions
CILSS:	Inter-State Committee for Drought Control in the Sahel
CNA:	Normal Business
CNSC :	National Climate Change Communication
	CNS: Sovereign National Conference
COP :	Conference of the Parties
CO2:	Carbon dioxide (carbon dioxide) INDCs
::	Intended National Determined Contribution
DEELCC :	Directorate of Environmental Education and the Fight against Climate Change
FAO :	Food and Agriculture Organization of the United Nations
:	11th EDF
WEF:	European Development Fund
GEF-AFD :	Global Environment Facility
IFAD:	Lake Chad Preservation Project: Contribution to the Lake Development Strategy
Development (ILCF) :	International Fund for Agricultural Development
GCF:	Least Developed Countries Fund
GACMO:	Green Climate Fund
GES :	Greenhouse Gas Abatement Cost Model
Gg:	Greenhouse Gases
GHI:	Gigagram
IPCC :	World Hunger Index
HDI :	Intergovernmental Panel on Climate Change (IPCC)
INSEED:	High National Committee for the Environment
CDM:	Human Development Index
MRV/MRV :	National Institute of Statistics, Economic and Demographic Studies
and Verification :	LEAP : Greenhouse Gas Calculation Software
N2O :	Clean Development Mechanism
ODD :	Measurement, Reporting and Verification/ MW Measurement, Reporting and Verification
NGO :	Mega Watt
	Nitrous oxide
	Sustainable Development Goals
	Non-governmental organizations

PACNSC :	Action Plan for the Implementation of Chad's National Framework for Climate Services
PANA :	National Adaptation Programme of Action
PAN-LCD:	National Action Programme to Combat Desertification PARSAT : Project to Improve the Resilience of Agricultural Systems in Chad
GDP:	Gross domestic product
PNA :	National Adaptation Plan NDP : National Development Plan
SOPs :	National Environmental Policy
PNISRT :	National Investment Plan for the Rural Sector of Chad
UNEP:	United Nations Environment Programme UNDP : United Nations Development Programme
PRESAO:	Seasonal Forecasts in West Africa, Cameroon and Chad PRG: Global Warming Potential
PRODEBALT :	Lake Chad Basin Sustainable Development Programme
P2RS :	Strengthening Resilience to Food and Nutrition Insecurity in the Sahel Project
PRRRPS :	Regional Programme for the Strengthening of the Resilience of the Sahel
Countries TFP :	Technical and Financial Partners
RCA:	Central African Republic
REDD+ :	Reducing Emissions from Deforestation and Forest Degradation SBN: Nature-based solutions
SDDER :	Master Plan for the Development of Renewable Energy in Chad
NCRS :	National Strategy for the Fight against Climate Change in Chad EU : European Union
ASTRONOMICAL UNIT:	African Union
UNSD:	United Nations Statistics Division

## Foreword

The Government submits the Republic of Chad's updated Nationally Determined Contribution (CON) for the period 2021-2030, in response to the call under Article 3, 4.2, 4.6, and 4.11 of the Paris Agreement despite the challenges of the Covid-19 pandemic.

To meet its international climate commitments, Chad, through this update of its ONC, confirms its participation in the collective ambition to keep the increase in the global average temperature to less than 2°C, ideally 1.5°C above pre-industrial levels, as well as in the overall objective of strengthening adaptive capacities to increase the resilience of natural systems and human responses to the adverse effects of climate change.


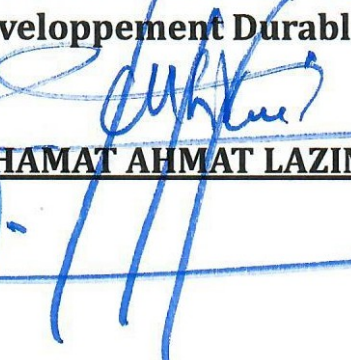
In Chad's updated CON, significant proposals to avoid 71% (CDN, 2015) of our business-as-usual emissions by 2030. This requires substantial support from partners to achieve zero carbon reduction beyond 2030. The CON of Chad also focuses on resilience through improved adaptation to current and future threats of climate extreme risk to our populations and their livelihoods. The aim is to increase resilience through a range of priority adaptation measures based, among others, on agro-sylvo-pastoral and fisheries activities. In addition, this CON encourages efforts to achieve the government's vision of balanced economic development while safeguarding the biophysical environment.

The CON of Chad represents a decisive and reference document for the implementation of adaptation and commitments to reduce greenhouse gas emissions. It was developed through a consultative process and designed in the context of national development priorities. This CON is aligned with all the strategies, plans and visions of the Republic of Chad.

The CON of Chad is guided by principles presented by the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. The implementation of the CON should not be seen as the responsibility of the government alone, but its successful implementation will require concerted efforts with the participation of all stakeholders including non-governmental organizations (NGOs), civil society, the private sector, academia and the general public.

The Ministry of the Environment, Fisheries and Sustainable Development through the Directorate of Environmental Education and the Fight Against Climate Change (DEELCC), in its capacity as UNFCCC Focal Point for Chad, will coordinate the implementation of the CON. The DEELCC will involve all stakeholders in the implementation of various aspects of the ONC and report on the same, in order to reflect the progress of implementation. This is the Government's hope for a successful execution that materializes the planned results.

**Le Ministère de l'Environnement, de la Pêche et du Développement Durable**

   
**MAHAMAT AHMAT LAZINA**

## Executive Summary

In accordance with Articles 4.1, 4.2 and 4.3 of the Paris Agreement, paragraphs 23 and 24 of decision 1/CP.21 and other relevant provisions of the Agreement, Chad submits the update of its Nationally Determined Contribution (NDC). It is divided into two main areas with a view to confirming its participation in the collective ambition to keep the increase in the global average temperature to less than 2°C, ideally 1.5°C above pre-industrial levels, as well as in the overall objective of strengthening the adaptive capacities, resilience and reducing vulnerabilities to climate change of populations.

This NDC combines the vision of an emerging Chad with a climate-resilient and low-carbon development pathway, focused on the water, agriculture/agroforestry, livestock and fisheries sectors as well as cross-cutting axes (capacity building, technologies, rainfall forecasting, risk management, etc.). It appears from this strategic document that Chad's ambitions are being revised upwards and this is pending the support of the various technical and financial partners in the priority sectors for both mitigation and adaptation to climate change. This strategic document is also aligned with Chad's 2030 vision with the main objective of its axis 4, which is to improve the living conditions of the population and reduce social inequalities while ensuring the preservation of natural resources and adaptation to climate change.

This NDC provides for the cumulative reduction of GHG emissions by 2030 to 88,350 kt CO<sub>2</sub>eq (unconditional and conditional measures) with an overall mitigation target of 19.3% compared to the baseline scenario. The investment required for the implementation of the NDC mitigation actions is estimated at USD 6,700.2 million.

Thus, the financing needs to meet the high level of climate risks expected in Chad could amount to more than USD 375 million as early as 2021 (i.e. based on an estimate of 3% of the Gross Domestic Product) to reach the annual cost of USD 645 million by 2030. On this basis, projections for the period 2021-2030 could amount to more than USD 5 002 billion. Without neglecting the importance of domestic and private sources of financing, the international financial contributions of Technical and Financial Partners will have to play a very significant role.

International priority flows for adaptation are estimated at around 75% of financing needs, and are expected to amount to more than USD 281 million/year by 2021 to reach more than USD 483 million/year by 2030. It should be noted that the Green Climate Fund Country Program has an estimated budget of US\$ 2,280 billion for eleven (11) adaptation projects by 2030, and that the program addresses only part of the priority sectors identified by this updated NDC. To facilitate the strengthening of climate governance within the Government of Chad, the feasibility of implementing a Chadian Climate Fund (CTF) should be explored based on national and international experiences that could be tasked with mobilizing funding opportunities for the implementation of NDC activities and other activities related to long-term climate change mitigation and adaptation.

In addition, the Covid-19 pandemic has had a significant economic impact in the country and has contributed to delaying the implementation of planned mitigation and adaptation actions. This pandemic has also amplified the vulnerabilities of rural communities to climate change, especially those most exposed and marginalized, including women.

# 1 Introduction

The Government of Chad presents here an update of its 2015 NDC for the period 2120-2030, in accordance with Articles 4.2 and 4.1 of the Paris Agreement, paragraphs 23 and 24 of decision 1/CP.21 and other relevant provisions of the Agreement.

To meet its international climate commitments, Chad, through this update of its NDC, confirms its participation in the collective ambition to keep the increase in the global average temperature to less than 2°C, ideally 1.5°C above pre-industrial levels, as well as in the overall objective of strengthening adaptive capacities. build resilience and reduce vulnerabilities to climate change.

The NDC, National Communications and the National Adaptation Plan (NAP) are the main means of communication that the Government uses to inform the international community of the actions it intends to take to address climate change. The preparation of the first NAP was carried out jointly and contributed to the process of updating this NDC.

The adaptation contribution integrates data collected during national and provincial consultations and climate change vulnerability analysis studies in sensitive priority sectors that identified key climate risks and impacts, vulnerable groups, affected sectors, and proposals for adaptation measures. It also reflects the co-benefits of adaptation interventions, as well as the potential synergies with the Rio conventions and the Sustainable Development Goals (SDGs)/2030 Development Agenda.

This NDC was designed to integrate gender equality into its planning, supporting the inclusion of gender-responsive adaptation and mitigation measures that have been recommended in consultations at national and regional levels and that will contribute to more effective climate action.

It also draws on the analysis of the convergence of the priorities of the Green Climate Fund (GCF) and Chad to develop the country programme in terms of interventions in priority sectors for both mitigation and adaptation to climate change.

The conclusions and recommendations of this NDC reflect the inputs of all relevant stakeholders at the national and regional level who have provided an update on the different climate risks faced by communities in different regions of the country, who have expressed their concerns and provided options to improve their well-being and income-generating activities in order to increase their resilience to the impacts of change climatic.

## 2 Background to Chad's NDC

Chad is one of the Least Developed Countries (LDCs) in the world. About 3/4 of its territory is desert. It is also recognized as one of the warmest countries and is counted among the most vulnerable countries to climate variability and change. This is due to the fact that Chad is particularly affected by low yields and declining harvests, which are exacerbated by weak forecasting, preparedness, response and adaptation.

The country ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto Protocol in 2009. As part of its commitments to the UNFCCC, the country developed two National Communications on Climate Change in 2001 and 2012 respectively, its National Adaptation Programme of Action (NAPAA) in 2010, and submitted its first NDC in 2015. Through its NDC, and the ratification of the Paris Agreement on climate change in 2016, Chad has committed itself to the new dynamic of international cooperation on the



climate change, to contribute to the global effort to reduce greenhouse gas emissions and build resilience to climate change.

The first NDC in 2015 combined the vision of an emerging Chad by 2030 with a climate-resilient, low-carbon development pathway, focused on the water, agriculture/agroforestry, livestock, and fisheries sectors. The NDC also identified key adaptation priorities, both sectoral (water, agriculture, livestock and fisheries) and cross-cutting (capacity building, technology, precipitation forecasting, risk management, etc.).

The NDC anticipated the implementation of a dozen adaptation programmes and a dozen priority programmes in the mitigation sector. The estimated opportunities to achieve the NDC targets included: (i) Adaptation: US\$14.17 billion in total over the 2030 commitment period, of which US\$11.38 billion to meet the conditional target (with contributions from the international community), (ii) Mitigation: US\$7.063 billion in total over the commitment period, of which US\$6.54 billion to meet the conditional target. The total cost of implementing the NDC amounted to USD 21.23 billion, of which USD 17.92 billion was to meet the conditional targets. In the medium and long term, the Green Climate Fund will provide a substantial part of the financing for the implementation of Chad's NDC.

Based on studies carried out in the framework of the National Adaptation Programme of Action (NAPAA), the 2015 NDC defined cross-cutting and sectoral adaptation priorities. This NDC aims to update these priorities. In the area of adaptation, the update should build on the work done under the NAP process, as the NAP process would provide a mechanism to improve capacity and ownership in adaptation planning, budgeting, implementation and monitoring. The NAP process will also improve individual and institutional capacities to provide climate services for adaptation planning in priority sectors.

In accordance with the orientations of the Government of Chad's development policy, Chad aspires to become an emerging country by 2030. In this regard, the Government intends, among other things, to strengthen environmental protection, mitigation of GHG emissions and adaptation to the effects of climate change.

Covid-19 has had a significant economic impact in the country and has contributed to delaying the implementation of mitigation and adaptation actions. This pandemic has also amplified the vulnerabilities of rural communities to climate change, especially those most exposed and marginalized.

## **2.1 New elements contributing to the update**

According to the above-mentioned policy guidelines of the Government of Chad, national commitments on climate change are included in the policy and strategy documents drawn up defining the strategic axes to guide the Government's action in this area.

Since the publication of the NDC, important policies and strategies have been adopted to support the country's efforts in the fight against climate change, such as the "Vision 2030, the Chad we want". From this Vision, the 2017-2021 NDP stems from this Vision, which is a model for integrating the "climate change" dimension into a development policy. The National Investment Plan for the Rural Sector of Chad (2016 - 2022), the National Strategy for the Fight against Climate Change (2017), the National Environmental Policy (2017) currently being validated, the Action Plan for the Implementation of the National Framework for Climate Services in Chad (2016-2020) and the Master Plan for the Development of Renewable Energy in Chad (2018) are all other frameworks for the implementation of this vision.

In addition, following the adoption of the new framework for action in Sendai, a National Action Plan for Capacity Building for Disaster Risk Reduction, Emergency Preparedness and Response (2015-2020) was developed by the Ministry of Territorial Administration and the Ministry of Economy and Development Planning with technical support from the United Nations Development Programme (UNDP). It recommends the establishment of a specific National Strategy for Disaster Management Preparedness that clarifies the roles and responsibilities of existing structures in the event of an emergency operation

The process of updating the NDC thus provided an opportunity to assess, adjust and strengthen national strategies and align them with national priorities. It was also an opportunity to better integrate climate issues into national development planning and to reassess mitigation and adaptation options for the years 2020-2030 while strengthening stakeholder participation.

At the same time, the NAP was initiated by the Government of Chad in October 2019 and will eventually cover 19 provinces in the Sahel and Sudanian zones. This initiative will address short-, medium- and long-term climate change risks, establish policy and capacity building efforts, integrate climate change into planning and development budgeting processes, and catalyze investments for climate change adaptation.

## 2.2 NDC Update Process

The Ministry of Environment, Fisheries and Sustainable Development through the Directorate of Environmental Education and the Fight against Climate Change, which is responsible for the development of the NDC, has organized national and regional consultations to prepare the 2021 NDC, using participatory and interactive approaches with stakeholders. These include various public and private institutions, regions, traditional leaders and local communities, technical services of decentralized sectoral ministries, higher education, leaders of civil society organizations, representatives of the private sector, heads of media outlets, associations of producer organizations, women's organizations, youth and communal authorities. technical and financial partners.

The objective of these consultations was to inform and consult stakeholders on the two ongoing processes related to climate change. These consultations were designed to validate the analysis of the climate change situation in Chad, gather additional information, and discuss and agree on strategic priorities for adaptation and mitigation.

The regional workshops took place in the provinces of Logone Occidental (Moundou), Logone Orientale (Doba), Tandjilé Est (Lai), Mayo Kebbi Est (Pala) and Moyen-Chari (Sarh), the Province of Hadjer-Lamis (Massakory), Kanem (Mao), Bahr el Gazal (Moussoro) and Lac (Bol), the Province of Guerra (Mongo), Batha (Ati), Ouaddaï (Abéché) and Biltine (Biltine). These workshops were very important not only to raise awareness and involve local authorities and communities in the process, but also to gather additional information on mitigation and adaptation from stakeholders in the regions. The process was complemented by a national pre-validation workshop, which allowed national and regional stakeholders to validate and complement the data used in the NDC's analyses and priority actions on adaptation and mitigation.

The development of the NDC has also contributed to training and technical capacity building in terms of learning how to use a GHG trajectory modelling tool (LEAP). The NDC scenarios and impacts of the mitigation measures considered were developed on the basis of the national GHG inventory updated in 2021 for the period 2010-2018 and the GACMO (Greenhouse Gas Abatement Cost Model) tool.

The update of this NDC has taken into account the priorities set out in the NAPAA, the first NDC, and the vulnerability analyses of climate-sensitive sectors. In addition, an analysis was carried out on the basis of national studies, reports, strategies and plans, in order to integrate the most recent information in terms of climate risks and vulnerabilities and key vulnerable sectors. As such, the 2017 National Strategy to Combat Climate Change is important in the context of the revised NDC as it elaborates on the main key sectors impacted by climate change. In this context, the 2019 Green Climate Fund Chad Country Program is also important as it provides vulnerability and vulnerability impact assessments by sector.

An analysis of recent studies on gender and climate change and gender mainstreaming was carried out and showed the low understanding of the concept of gender by the different actors and the links with climate change. It is also important to note the role of women in ecological management and the inequalities in access to and control of resources that exacerbate their vulnerability remain poorly recognized.

This update was mainly supported by the Climate Action Transparency Initiative (ICAT), the UNDP (GEF-NAP Project, Climate Promise and NAP GLOBAL SUPPORT PROGRAMME, PAG-NAP), the NAP Global Network and the European Union, and the coordination of the NDC Partnership.

## 2.3 Vision of Chad's NDC

Continuing to contribute to the fight against climate change under the Paris Agreement, Chad remains firmly committed to increasing its ambition compared to its previous commitments, which has been reflected in the vision of this updated NDC for mitigation and adaptation and expresses itself in these terms:

*"Support, by 2030, a diversified and climate-resilient economy that is part of a development trajectory that emits less greenhouse gases for the well-being of the Chadian population, while protecting ecosystems and an economy that is resilient to climate change, capable of anticipating, managing and reducing environmental and climate risks and extreme events, while reducing social inequalities and ensuring the preservation of natural resources."*

This vision is in line with Chad's Vision 2030 "an emerging middle-income country, driven by diversified and sustainable sources of growth and value addition". It is also aligned with the main objective of its axis 4, which is to improve the living conditions of the population and reduce social inequalities while ensuring the preservation of natural resources and adaptation to climate change (Vision 2030).

In this context, it is important to guide and converge institutional, technical, scientific and financial policy initiatives to address climate change. More specifically, promote energy efficiency and renewable energy, including solar, wind and biogas, in all sectors. Encourage sustainable management of land and forests to reduce emissions from degradation and deforestation. As well as to integrate gender dynamics throughout the process of developing and implementing NDCs.

## 3 National circumstances

Chad, the fifth largest country in Africa, is a landlocked country in Central Africa that includes the Saharan, Sahelian and Sudanese zone. The relief is varied and contrasting. It consists mainly of a vast basin bordered by mountain ranges.

The hydrographic domain remains dominated by rivers and lakes, the permanent ones of which are the Chari and the Logone. These rivers form the Chari-Logone system with a catchment area of 600,000 km<sup>2</sup>.<sup>1</sup> Lake Chad, a fraction of a vast inland sea, is the largest body of open water in Chad.

Chad's tropical climate is distributed in the major bioclimatic zones, Saharan in the north, Sahelian in the centre, Sudanian in the south. As far as biodiversity is concerned, the main plant formations from North to South are *the following* : (i) shrub to thorny steppes and annual herbaceous plants; (ii) wooded and shrubby to thorny and non-thorny and annual herbaceous steppes; (iii) wooded and shrubby to combretaceous savannahs with annual herbaceous and perennial herbaceous plants and (iv) wooded savannahs and open forests dominating a perennial herbaceous stratum.

Chad shares its biomes with its neighboring countries: (a) Sahara desert biomes with Libya, Sudan, and Niger; (b) Sahelian biomes with Sudan, Niger and Nigeria ;(c) dry savannahs with Sudan, Central African Republic (CAR), Cameroon and Nigeria and (d) wet savannahs with CAR and Cameroon.

The structure of the country's economy, which remains very undiversified, is strongly dominated by the primary sector (oil, agriculture, livestock and mining). The agricultural sector, which is limited to food crops, particularly cereals, and cash crops, including cotton, sugar cane and gum arabic, is highly vulnerable to climatic hazards. The private sector consists only of small and medium-sized enterprises, most of which operate in the informal economy.

The effects of vulnerability in the agriculture, forestry and land use sector will manifest themselves in significant reductions in yields and production (-10 to -25%) of food crops (millet, sorghum, maize) due to water deficits caused by successive droughts, high temperatures, late onset of the rainy season and/or early shutdowns. In addition, vulnerability due to poor irrigation, desertification, and land and forest degradation has significant effects on the entire food chain of the Chadian population.<sup>2</sup>

Extreme weather events, such as droughts, floods and heatwaves, have a severe impact on the natural resources from which the mostly rural Chadian population derives their livelihoods.

Chad is home to a population estimated at nearly 15 million in 2018. It is composed of 50.6% women, 78.1% rural and 50.6% young people under 15 years of age. Women and girls in Chad have unequal access to resources (education, land) in a general context of socio-cultural constraints: customs, norms and traditions weigh on women and hinder the effective implementation of their rights<sup>3</sup>. In addition, women are not in the same position as men to deal with the negative impacts associated with climate change and do not have the same capacities and opportunities to deal with them, making them more exposed or vulnerable.<sup>4</sup>

### 3.1 Climate change and variability in Chad

The evolution of Chad's climate, like other countries in the Sahel region, has experienced ruptures in recent decades marking very distinct phases. This evolution is measured in relation to the climate profile, which will highlight the main observed and future climatic hazards, vulnerable groups and sectors, impacts and adaptive capacities that are the components of vulnerability.

---

<sup>1</sup> Atlas of Chad, August 2013.

<sup>2</sup> Green Climate Fund Country Programme, 2019

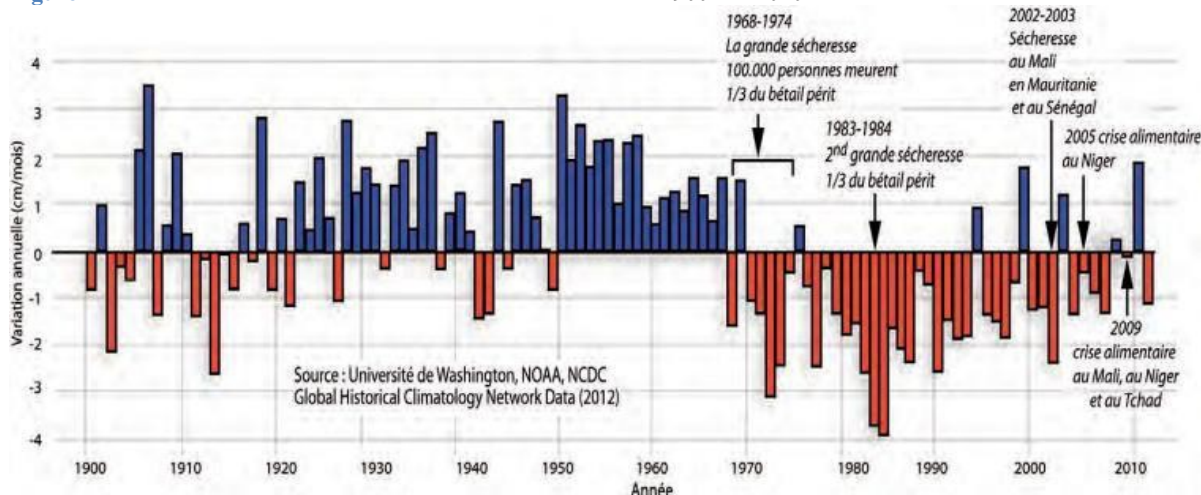
<sup>3</sup> Study on the integration of gender in the NAP process in Chad, 2021.

<sup>4</sup> Study on the integration of gender in the NAP process in Chad, 2021.

### 3.1.1 Annual change in precipitation in the Sahel

Before the 70s, the region went through a succession of wet years, then was severely affected by two decades of drought (1970-80). From the 1990s onwards, rainfall has generally improved, but it is characterised by strong irregularities (Figure 1).

Figure 1. Index of annual variation in rainfall in the Sahel between 1900 and 2010.



Source: Washington University, NOAA, NCDC. Global Historical Climatology National Data (2012)

### 3.1.2 Climate profile in Chad

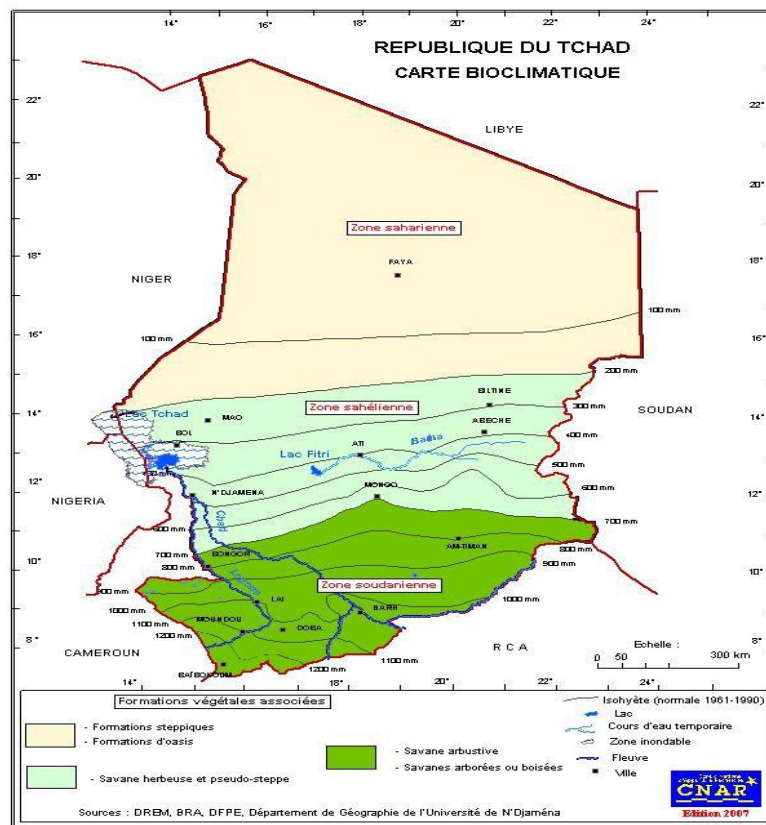
The climate of Chad, of the dry tropical type, located between isohyets 0 and 1,200 mm in three major bioclimatic zones (Figure 2), is strongly contrasted:

**The Saharan or desert zone in the north**, which covers the north, made up of the provinces of Borkou-Tibesti-Ennedi (BET) and the northern parts of the provinces of Kanem and Batha, i.e. 47% of the national territory. With rainfall of less than 100 mm/year, only oasis agriculture and camel and small ruminant breeding can be practiced there. The season lasts two months in the North (almost none in the far North).

**The Sahelian zone in the centre of the country** covers 43% of the national territory. With rainfall of between 100 and 800 mm/year, it presents significant contrasts between the arid northern part (Saharan-Sahelian climate with annual rainfall of between 100 and 200 mm) and the Sahelo-Sudanian zone in the south, characterized by rainfall of between 600 and 800 mm/year.

**The Sudanian zone in the south of the country**, between isohyets 800 and 1,200 mm, represents only 10% of the national territory. However, it concentrates nearly half of the Chadian population. The sub-humid tropical climate - rainfall in the Sudano-Guinean zone in the extreme south of the country is more than 1,200 mm - allows the practice of a wide variety of agricultural production and the breeding of many species (cattle, goats, sheep, pigs, poultry).

**Figure 2.** Three major bioclimatic zones in Chad



Source : PANA, Ministry of Environment and Water, 2009.

### 3.1.3 Rainfall

It should be noted that after the wet years of 1950 and 1960, the decline in rainfall began towards the end of the 1960s, in line with what was observed in the Sahel, and intensified during the 1970s and 1980s before experiencing a slight remission from the 1990s and 2000s. The evolution of the national rainfall index shows a strong variability from 1965 onwards with a downward trend with repercussions on natural and human systems.

The length of the agricultural season is also subject to significant interannual variability, with a marked trend towards shorter seasons. Another trend is the increased frequency of prolonged dry spells during the rainy season

### 3.1.4 Temperatures

In Chad, the interannual evolution from 1950 to 2019 of the temperature index shows a continuous rise in temperature from the early 80s to the present day. Like the globe, the 1990s and 2000s were the warmest years since meteorological records began in Chad. Maximum temperatures have increased by an average of 1.1 °C across the country. Minimum temperatures are estimated to have increased by 2°C over the period 1951-2010 and maximum temperatures by 1°C, with high values between 2002-2010 (Mbaiguedem, 2012).

### 3.1.5 Observed extreme weather events

In Chad, the resurgence of extreme weather events (droughts, floods, heat waves, strong winds, etc.) is one of the highlights of climate change in recent decades in Chad (PANA, 2010). The droughts of the 1970s and 1980s caused a drop in crop and livestock production, loss of human lives and biodiversity, degradation of vegetation cover, migration of people and livestock, and food insecurity (PANA, 2010).

The drought that prevailed during the 2009/2010 season affected nearly 2 million people, with a decrease in the cereal harvest of about 31% compared to the five-year average and more than 50% in the Sahelian zone (FAO, 2011).

The impacts of climate are significant on the major hydrographic systems such as the Lake Chad and Niger basins, as well as natural, agro-sylvo-pastoral, fisheries and human systems. They involve dysfunctional agricultural seasons, disruptions in crop biological cycles, and a decline in cereal production.

### 3.1.6 Climate projections

Climate models show that it is very likely that temperatures in Africa will increase over the 21st century by an average of 3 to 4°C, 1.5 times more than the global average. This temperature increase will be greater in arid continental regions.<sup>5</sup>

The results on the projections of precipitation and temperature changes based on 29 global models of the CMIP6 experiment to 2030 compared to the most optimistic scenario (RCP4.5 or representative profile of greenhouse gas concentrations) and the pessimistic scenario or RCP8.5, indicate a significant increase in surface temperatures relative to the period 1981 to 2010. According to these RCPs, the average temperature in Chad would increase by an average of +1 °C for the optimistic scenario, particularly in the northern part of the Sahel and the entire Saharan area. For RCP8.5 (pessimistic scenario), this increase would be around +1.5 °C by 2030 in the far north of the country. Regarding rainfall, projections indicate widespread increases throughout the country. This increase, which varies from 10 to 20 per cent, will be greater in the northern parts of Chad.<sup>6</sup>

At the N'Djamena station, the temporal evolution of temperatures from 1950 to 2100 relative to the climatological reference of 1981-2010 shows an increase in temperatures around +1 °C in 2030 and to +2 °C in 2100.<sup>7</sup>

However, these climate projections, in particular the one relating to precipitation, present many uncertainties (AGRHYMET, 2015). Between global factors, regional and continental dynamics, the climate of Sahelian Africa is subject to strong uncertainties.<sup>8</sup>

## 3.2 Policies, strategies and institutional frameworks

With regard to the Government's development policy, Chad, which aspires to become an emerging country by 2030, intends, among other things, to strengthen environmental protection, adaptation to the effects of climate change and considerably reduce greenhouse gas emissions.

<sup>5</sup> National Strategy for the Fight against Climate Change in Chad, 2017.

<sup>6</sup> National Strategy for the Fight against Climate Change in Chad, 2017.

<sup>7</sup> National Strategy for the Fight against Climate Change in Chad, 2017.

<sup>8</sup> National Strategy for the Fight against Climate Change in Chad, 2017.

greenhouse effect. However, given the country's high exposure to the effects of climate change, the Republic of Chad has ratified several international agreements on climate change and has also developed several policies, strategies and initiatives aimed at effectively combating the adverse effects of climate change.

Environmental protection is enshrined in the Chadian Constitution (Articles 47 and 52 and Law No. 014/PR/1998). National climate policy is entrusted to the Ministry in charge of the environment - whose name is currently the Ministry of the Environment, Fisheries and Sustainable Development - through the Directorate of Environmental Education and the Fight Against Climate Change (DEELCC).

The Government of Chad, by signing and ratifying the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and 1993 respectively and by ratifying its Kyoto Protocol in 2009 and the Paris Agreement on Climate Change in 2015, committed to making the medium and long-term changes necessary to mitigate greenhouse gas (GHG) emissions and to adapt to the adverse effects of climate change through the development of more resilient and adapted strategies. In this context and in line with commitments, Chad has developed and implemented policies, strategies and plans that address the impacts of climate change:

- (i) The 1st National Communication on Climate Change in 2001 and the 2nd in 2012<sup>9</sup>;
- (ii) National Action Programme to Combat Desertification (NAP-LCD) adopted in 2000, the four priority objectives of which are: the sustainable development of value chains, the safeguarding of threatened ecosystems, the fight against desertification and risk management;
- (iii) National Adaptation Programme of Action (NAPAs) presented in 2009;
- (iv) Intended Nationally Determined Contribution (INDC) became an NDC after the entry into force of the ratification of the Paris Agreement on 12 January 2017;
- (v) Chad's National Rural Sector Investment Plan (2016 - 2022);
- (vi) Action Plan for the Implementation of Chad's National Framework for Climate Services (2016-2020);
- (vii) National Development Plan (NDP 2017-2021);
- (viii) National Strategy for the Fight against Climate Change (SNLCC) in Chad in 2017;
- (ix) National Environmental Policy (NEP), 2017 in the process of being validated;
- (x) Vision 2030, the Chad We Want (2017);
- (xi) The National Adaptation Plan is currently being developed;
- (xii) Update of the NDC.

## 4 The Updated Mitigation Contribution

Chad's updated NDC is based on updated elements, including an inventory of GHG emissions covering the period 2010 to 2018, the year chosen as the base year. The objective set in the conditional scenario is to reduce GHG emissions by 19.3% in 2030, compared to a reference scenario. Chad intends to achieve this conditional objective while pursuing development efforts and making sustainable use of its available resources.

### 4.1 Baseline

#### 4.1.1 NDC coverage

The NDC covers the GHG emissions of the national territory for the energy, agriculture, forestry and land use as well as waste sectors. Emissions from industrial processes were not counted due to a lack of data. Nevertheless, they are considered low given that

---

<sup>9</sup> The Third National Communication was submitted to the UNFCCC Secretariat in September 2021 but is in the process of being formalized as of the NDC submission date.



that no emitting processes have been identified omitted for non-energy uses of fuels and refrigeration appliances.

The revision of Chad's NDC has made it possible to review the GHG emissions inventory over the 2010-2018 time series by applying the latest IPCC guidelines on the basis of available statistics. Emissions from new sectors, such as fugitive emissions, CH<sub>4</sub> and N<sub>2</sub>O emissions from wood combustion, emissions from wastewater treatment, etc. were included.

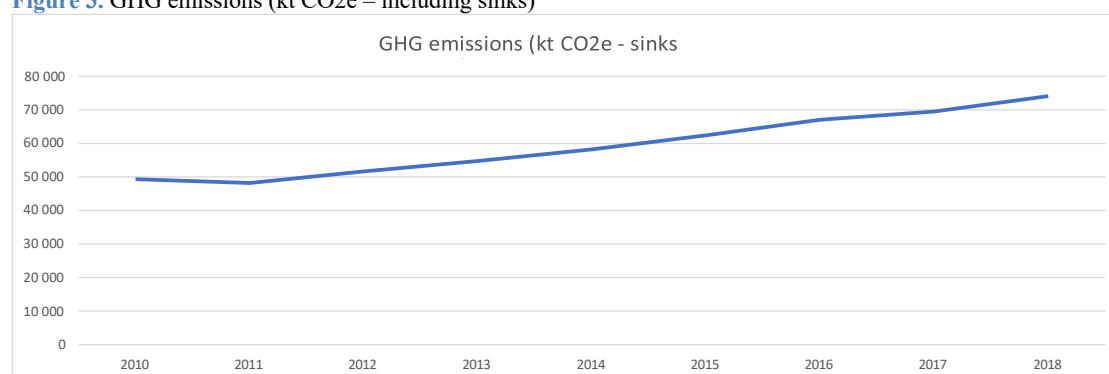
The GHGs covered are CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. The GWPs applied are those of the IPCC AR4. The 2006 IPCC guidelines are applied to all sectors covered.

## 4.1.2 GHG emissions inventory

The updated GHG emissions inventory covers the period 2010 to 2018 and covers the following sectors:

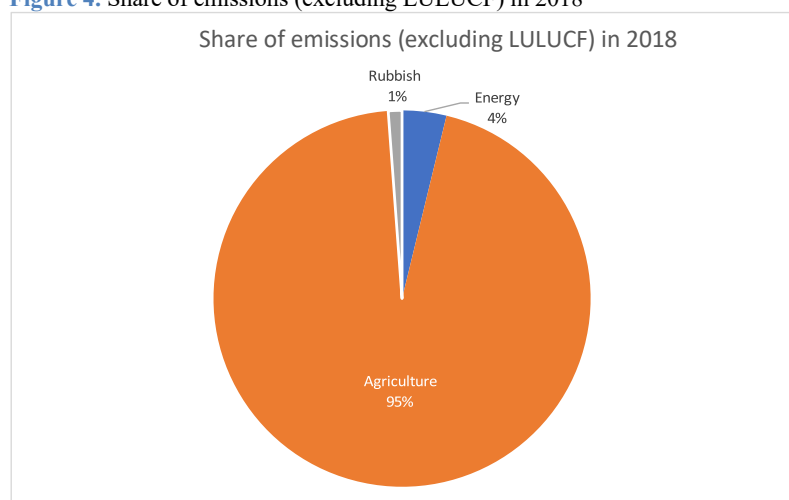
- Energy: electricity production, industry, transport, housing, fugitive emissions from oil and gas extraction and charcoal production,
- Agriculture,
- Land use, land-use change and forestry,
- Treatment of solid and liquid waste.

**Figure 3.** GHG emissions (kt CO<sub>2</sub>e – including sinks)



According to the inventory results, GHG emissions including sinks increased from 49,320 kt CO<sub>2</sub>eq to 74,090 kt CO<sub>2</sub>eq between 2010 and 2018, an increase of 50%.

**Figure 4.** Share of emissions (excluding LULUCF) in 2018



Agriculture is the main GHG emitting sector in Chad and accounts for about 95% of GHG emissions.

### 4.1.1 The Reference Case

Under this reference scenario, GHG emissions would increase from 74 090 to 84 960 kt CO<sub>2</sub>e between 2018 and 2030. This projection was developed using the GACMO tool by taking into account the following sectors:

**Table 1 GHG emissions (kt CO<sub>2</sub>e) in the 2018-2030 Reference Case**

kt CO <sub>2</sub> e	2018	2020	2025	2030
Energy	2 834	2 988	3 605	4 299
Industrial processes	NOT	NOT	NOT	NOT
Agriculture	71 019	72 444	76 140	80 024
LULUCF	- 641	- 654	- 687	- 722
Rubbish	878	954	1 157	1 360
<b>TOTAL</b>	<b>74 090</b>	<b>75 733</b>	<b>80 214</b>	<b>84 960</b>

#### The energy sector

The energy sector covers the energy production and transformation sectors as well as the uses in the various sectors. The United Nations Statistics Division (UNSD) energy balances, which are consistent over the period 2010 to 2018, were used to estimate GHG emissions from this sector. For biomass consumption, only CH<sub>4</sub> and N<sub>2</sub>O emissions are considered in this sector, in accordance with IPCC guidelines. Indeed, CO<sub>2</sub> emissions linked to biomass consumption are accounted for in the LULUCF sector.

Chad's economy is largely dependent on oil production (20% of GDP and more than 80% of goods exports in 2019), which began in 2003 and allowed the country to experience a period of rapid growth until 2014 (average annual growth rate of 13.7%). Fugitive emissions from oil extraction are estimated to account for about 30% of energy emissions in 2018. As this industry is new and modern, the emission factors of developed countries have been applied. On the other hand, fugitive emissions related to charcoal production are also estimated based on the 2019 refinement of the IPCC guidelines and represent 18% of energy emissions.

For electricity production, the rate of access to electricity was around 11% in 2020, concentrated mainly in N'Djamena and in certain urban areas. According to the Emergency Plan for Access to Electricity 2021-2023, the objective by 2030 is to achieve an electricity access rate of 53% throughout the country. As a result, activity and associated emissions from electricity generation increase rapidly in the Reference Case.

In final consumption, the transport sector is the main consumer of petroleum products.

The residential/tertiary sector mainly consumes wood and charcoal.

The manufacturing industry is underdeveloped and consumes mainly biomass and electricity.

In the absence of official projections, annual growth rates of between 4 and 6% are applied depending on the sector, based on estimated GDP and population trends over the period. For electricity production, growth rates follow the population's electricity connection targets.

### **Industrial processes**

Manufacturing is marginal and is mainly based on the production of beer and soft drinks, sugar production, and cotton ginning.

Only emissions related to energy consumption are accounted for for this sector. Emissions from non-energy fuel uses and leaks of fluorinated gases are not estimated and are considered negligible.

### **Agriculture**

Chad's GHG emissions in the agriculture sector are mainly linked to livestock activities (79% of the sector's emissions, 50% of which are due to enteric fermentation and 29% to excrement) and savannah burning (13%). They also come from rice cultivation activities (2%), the use of fertilizers and the burning of agricultural residues (3%).

Emissions from livestock farming were estimated from statistics provided by the Central Bureau of General Livestock Census available for the period 2010 to 2020 with a Tier 1 method and the IPCC default emission factors.

Emissions related to agricultural production (rice cultivation, burning of crop residues and direct and indirect N<sub>2</sub>O emissions from cultivated soils) were also estimated using data on surface areas, production and fertilizer consumption provided by Chad's statistical services. The hypotheses on the burning of residues on cotton and cereals were inspired by references to practices in Mali, rice cultivation was assumed to be rainfed with a growing time of 183 days from May to October. Emissions are then calculated using the Tier 1 methods of the 2006 IPCC Guidelines. As for GHG emissions related to savannah burning, the data on areas and biomass burned are directly retrieved from the FAO website, to which the methodologies of the 2006 guidelines have been applied.

### **Forests and Land Use**

Chad is subdivided into two distinct areas: the desert zone in the north, with almost no vegetation cover, and the Sudano-Sahelian zone, which has a vegetation cover of about 128,400,000 ha.

Emissions/removals related to the Land Use, Land-Use Change and Forestry (LULUCF) sector were estimated based on the 2006 IPCC guidelines. Land cover changes were estimated from maps produced by the U.S. Geological Survey Earth Resources Observation and Science (USGS EROS), which shows land change over the period 1975-2015. The characterization of the different types of land use (forests, savannahs, etc.) in terms of productivity is based on data collected from the Land Use Database (BDOCS) of P-SIDRAT. Estimates of wood consumption are also derived from the work carried out under the SIDRAT programme.

The LULUCF sink, estimated at -5,144 kt CO<sub>2</sub>eq in 2010, has been reduced to -641 kt CO<sub>2</sub>eq in 2018 due to a high rate of deforestation and deforestation.

### **Waste**

The quantities of waste produced in 2030 are estimated on the basis of a historical average per capita of about 88 kg/inhabitant/year (World Bank data). This rate of waste generation is considered stable until 2030.

The baseline scenario is a continuation of the same waste management practices currently observed: about 86% of the waste goes to open landfills considered shallow unmanaged landfills and the rest is treated by open fires.

Under these conditions, emissions associated with solid waste treatment, calculated by applying the 2006 IPCC guidelines, would increase from 326 kt CO<sub>2</sub>eq in 2018 to about 546 kt CO<sub>2</sub>eq in 2030, i.e. an average increase of 5% per year over the period.

For wastewater, the quantities of BOD (biochemical oxygen demand) produced are estimated at almost 293 kt per year in 2030 compared to nearly 222 kt in 2020. The extension of current management practices leads to GHG emissions of 814 kt CO<sub>2</sub>eq in 2030 compared to 552 kt CO<sub>2</sub>eq in 2018.

The cumulative emissions of the three sub-sectors (open fires, water storage and treatment) are estimated at around 1,360 kt CO<sub>2</sub>eq in 2030 compared to 878 kt CO<sub>2</sub>eq in 2018, i.e. an average annual increase of 4.3% per year.

## 4.2 Mitigation objectives

### 4.2.1 Approach

Chad presents mitigation targets in terms of reduction compared to the baseline scenario, by 2030. The impact of the actions considered, in terms of reducing GHG emissions, is estimated from the GACMO tool. The actions mainly cover the electricity generation, industrial, residential, fishing and forestry sectors.

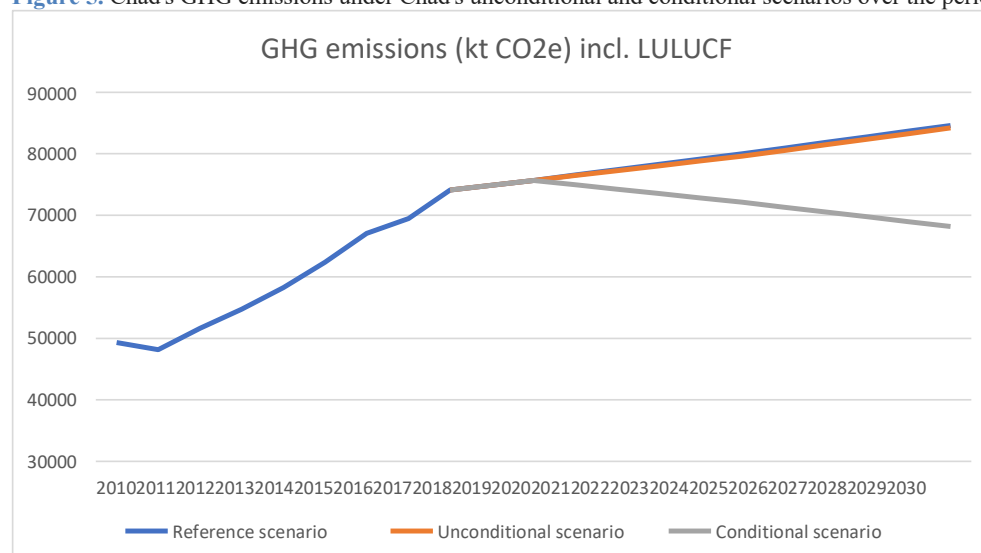
Two scenarios are considered for the emissions projections: an unconditional scenario (where only nationally financed actions are implemented) and a conditional scenario (with additional mitigation actions covered by international support).

### 4.2.2 Results

The unconditional scenario leads to a minimal reduction of 0.5% in 2030 compared to the baseline scenario.

Most of the actions were accounted for in the conditional scenario, which makes it possible to achieve a 19.3% reduction in GHG emissions compared to the reference scenario in 2030, i.e. 16,372 kt CO<sub>2</sub>eq of emissions avoided in 2030 and 88,350 kt CO<sub>2</sub>eq of emissions avoided cumulatively between 2018 and 2030. This scenario is very ambitious given that the reduction in emissions is based solely on the energy sectors (electricity generation and energy efficiency), on the increase in the carbon sink and very slightly on the waste sector.

**Figure 5.** Chad's GHG emissions under Chad's unconditional and conditional scenarios over the period 2010-2030



**Table 2 GHG emissions (kt CO<sub>2</sub>eq) and impacts of the different scenarios over the period 2018-2030**

kt CO <sub>2</sub> eq	Reference scenario		Unconditional	Conditional
	2018	2030	2030	2030
Energy	2 834	4 299	3 909	2 320
Industrial processes	NOT	NOT	NOT	NOT
Agriculture	71 019	80 024	80 024	80 011
LULUCF	- 641	- 722	- 722	- 15 049
Rubbish	878	1 360	1 360	1 305
<b>TOTAL</b>	<b>74 090</b>	<b>84 960</b>	<b>84 571</b>	<b>68 588</b>
<b>% Off</b>			<b>0,5</b>	<b>19,3</b>

The actions considered are described below:

### **The energy sector**

The projects considered by 2030 in the scenarios are for the power generation sector: Unconditional scenario:

- The construction of a 210 MW gas-fired turbine power plant located in N'Gouri in the Lake Province;
- The inclusion of 2.2 MW of wind turbines;
- The installation of improved drying ovens for the fishing sector (150 chokor type ovens and 200 improved drying racks) allowing savings of 30 to 40% in wood consumption compared to a traditional oven for fish smoking.

Conditional scenario (additional actions):

- The construction of two biomass-fired power plants (2x15 MW each) in Moundou and Sarh;
- The implementation of the electricity grid interconnection project between Chad and Cameroon that would make it possible to use hydroelectric energy (40 MW);
- The construction of several large-scale photovoltaic power plants for a total of 240 MW in the very short term (2025) and 400 MW by 2030;
- The construction of solar-diesel hybrid power plants for a total of 60 MW (several projects are under study in Sarh, Moundou and Pala);
- The construction of a solar power plant with storage capacity of 65 MW in the city of N'Djamena;
- The construction of wind power plants, for a total of 100 MW, in Bol, Mao, Amdjarass, Faya, Biltine, Fada, Guéréfa, Iriba, Kalaite and Arada;
- The extension of the use of improved drying ovens and racks for the fishing sector (1500 chokor type ovens and 2000 improved drying racks) allowing the reduction of wood consumption for this activity.
- In terms of energy efficiency, the actions are:
  - o The distribution of 3,000,000 energy-efficient LED lamps to homes as well as 100,000 LED office bulbs;
  - o An ambitious plan to distribute 3,000,000 improved wood-burning stoves and 1,500,000 charcoal-powered stoves;
  - o The efficient production of 300,000 tons of charcoal to improve production yield and thus reduce wood consumption and CH<sub>4</sub> emissions.
- Finally, the avoidance of CH<sub>4</sub> through the installation of 10,000 digesters on farms to reduce fossil fuel consumption is considered in the conditional scenario.

The implementation of these actions by 2030 will make it possible to avoid the emission of 6,900 kt CO<sub>2</sub>eq compared to the reference scenario, of which 1,979 kt CO<sub>2</sub>eq are accounted for in the energy sector, 4,909 kt CO<sub>2</sub>eq are accounted for in forestry (due to the decrease in wood consumption in residential and industry) and finally 12 kt CO<sub>2</sub>eq with the avoidance of CH<sub>4</sub> emissions.

This commitment could be reinforced in the future by implementing mitigation actions in the transport sector, in particular through the construction of railway lines, the development of public transport in cities and the improvement of the energy efficiency of the vehicle fleet, in particular through the ban on the import of vehicles that are too old. This sector was not considered in the actions, due to the lack of precise data on the vehicle fleet and consumption at the national level. A more precise inventory of this sector should be carried out in order to be able to assess the actions to be implemented as well as their impact in terms of mitigation.

### **Agriculture**

Agriculture is the most emitting sector in Chad. However, no planned action (apart from the installation of on-farm digesters, which is accounted for in energy) is directly aimed at reducing agricultural emissions, the main objectives being linked to the country's food security and the development of agricultural productivity.

The priority for this sector should therefore be to refine the activity data and practices that will make it possible to refine the inventory of GHG emissions and thus be able to establish a detailed action plan according to the priorities defined at the national level.

### **Forests and Land Use**

Reforestation and reforestation actions are underway or/planned to improve the carbon sink by 2030. As part of the Bonn Challenge, Chad has committed to reforesting a total of 5 million hectares by 2030, including shrub savannahs in the Sahelian zone (3.5 Mha) and wooded savannahs in the Sudanese zone (1.5 Mha). Protection actions to avoid deforestation (877,000 ha) and restoration (50,000 ha) are also planned in the action plan for 2030.

The impact of these actions is estimated at additional removals of 9,400 kt CO<sub>2</sub>eq in 2030 to which are added 4,909 kt CO<sub>2</sub>eq of avoided emissions related to energy efficiency actions.

### **Waste**

The implementation of a national waste management policy is crucial in terms of public health and the country's development. The conditional scenario takes into account the establishment of waste treatment plants in large urban centres with an estimated reduction impact of about 10% of emissions related to solid waste management. The priority is still to improve knowledge of the sector and to implement effective waste collection and treatment actions such as the recovery of methane generated in managed landfills. The treatment of wastewater (especially in urban areas) and the implementation of waste composting are also to be studied.

## **5 The Updated Contribution to Adaptation**

Adaptation is a key element in Chad's NDC, given its extreme vulnerability to climate change, resulting from a combination of high poverty among the majority of the population, high risks of drought and flooding, in addition to frequent conflicts. Chad is considered by the international scientific community as one of the world's climate change hotspots. Indeed, Chad was classified as the country most at risk, among the 186 countries assessed, as part of a study on climate vulnerability.<sup>Art. 10</sup>

<sup>10</sup> Climate Change Vulnerability Index 2017. Verisk Maplecroft 2016

Aware of these challenges, the Government of Chad clearly emphasized the need for adaptation in its first NDC, which identified several priority sectors and actions. Since then, the Government of Chad has developed a number of strategies and action plans that strengthen actions aimed at building a more climate-resilient economy and society. These include, "Vision 2030, the Chad we want" and the National Development Plan 2017 – 2021, the National Strategy for the Fight against Climate Change and the National Environment Policy (2017).

## 5.1 Status of adaptation in Chad

The priority sectors of intervention and the groups vulnerable to climate change described in the first NDC produced by the NAPA, were taken up and slightly updated during the second national communication and the Green Climate Fund Country Programme. It should be noted that Chad does not have complete and detailed studies of the vulnerabilities of the population and socio-economic sectors. This task has been identified as a priority in the UNDP project funded by the Global Environment Facility (GEF) "Chad's National Adaptation Plan (NAP)"

The update of this NDC, in terms of actions for adaptation, took place in parallel and in close collaboration with the development of the first NAP. This allowed for national and regional consultations and updating the list of key climate hazards, vulnerable sectors and strategic priorities for adaptation, taking into account as a starting point the priorities identified in the NAPAA, the first NDC, the national climate change strategy and the GCF country programme. which are summarized in the table below.

**Table 3 Priorities identified in the NAPAA, the first NDC, the NTCS and the GCF Country Programme**

PANA-2009	CDN - 2015	National Strategy for the Control of CC - 2017	Green Climate Fund Country Program - 2019
Water	Water	Agro-sylvo-pastoral and fisheries production systems	Improving the resilience of <b>agricultural production systems and urban systems</b>
Agricultural production	Agriculture		
Pasture	Breeding		
-	Fishing	Risk management of extreme events	-
Risk Management	Risk Management		Preventing risks and managing extreme weather events

The importance of climate change adaptation in national and sectoral policies is reflected in the integration of aspects related to the sustainable management of natural resources into national plans and strategies, the effective coordination and convergence of climate change initiatives, the integration of adaptation into national planning and into policies and strategies at the central level, regional and local. As well as the effective application of relevant and easily understandable weather and climate services and information.

## 5.2 Climate risks, and vulnerable sectors

According to the national and provincial consultations undertaken during the development of the 2021 NDC and the NAP-GEF studies, the main hazards and climate impacts in Chad are as follows:

**Table 4 Main hazards and climate impacts in Chad**

<b>Main climatic hazards</b>	<b>Priority sectors</b>	<b>Factors that aggravate vulnerability</b>	<b>Key impacts</b>
<ul style="list-style-type: none"> <li>• Droughts</li> </ul>	<ul style="list-style-type: none"> <li>• Breeding</li> <li>• Agriculture</li> <li>• Water and sanitation</li> <li>• Health/Nutrition, Environment</li> <li>• Fishing</li> <li>• Social</li> <li>• Education, Business</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction of biodiversity and degradation of productive and forest ecosystems</li> <li>• Degradation of water resource quality and weakening of aquatic ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>• Decreasing drinking water supplies</li> <li>• Loss of potential for agriculture and livestock, and associated income (loss of crops, livestock)</li> <li>• Loss of fishing potential and associated income</li> <li>• Malnutrition</li> <li>• Loss of life</li> <li>• Loss of natural habitat for wildlife and avifauna</li> <li>• Erosion</li> </ul>
<ul style="list-style-type: none"> <li>• Rising temperatures</li> </ul>	<ul style="list-style-type: none"> <li>• Breeding</li> <li>• Agriculture, Health/Nutrition, Environment, Education</li> <li>• Social</li> <li>• Water and sanitation</li> <li>• Commerce</li> </ul>	<ul style="list-style-type: none"> <li>• Urbanization</li> <li>• Degradation of agroforestry systems</li> <li>• Deterioration of the quality of water resources, and weakening of Aquatic ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease in water reserves drinkable</li> <li>• Loss of potential for agriculture and livestock, and associated income (loss of crops, livestock)</li> <li>• Loss of fishing potential and associated income</li> <li>• Malnutrition</li> <li>• Loss of life</li> <li>• Accentuation of attacks by pests and harmful insects</li> </ul>



			<ul style="list-style-type: none"> <li>Impacts on biodiversity and degradation of ecosystems</li> </ul>
<ul style="list-style-type: none"> <li>Flooding</li> </ul>	<ul style="list-style-type: none"> <li>Water and Sanitation</li> <li>Breeding</li> <li>Agriculture Health/Nutrition Environment</li> <li>Fishing</li> <li>Social</li> <li>Trade, Infrastructure and Housing</li> <li>Transport</li> <li>Tourism</li> </ul>	<ul style="list-style-type: none"> <li>Erosion</li> <li>Solid and liquid waste</li> <li>Non-territorial planning</li> <li>Inadequate sewerage systems</li> </ul>	<ul style="list-style-type: none"> <li>Extension and multiplication of flood zones</li> <li>Destruction and loss of territories, habitats, community resources and associated revenues</li> <li>Disturbance of certain natural and productive ecosystems, and associated revenues</li> <li>Loss of pasture</li> <li>Crop losses</li> <li>Loss of public and private infrastructure</li> <li>Diseases</li> <li>Loss of life</li> </ul>
<ul style="list-style-type: none"> <li>Winds</li> </ul>	<ul style="list-style-type: none"> <li>Breeding</li> <li>Agriculture</li> <li>Health/Nutrition</li> <li>Environment</li> <li>Fishing</li> <li>Social</li> <li>Water and sanitation, Trade</li> <li>Infrastructure and housing</li> <li>Transport</li> <li>Tourism</li> </ul>	<ul style="list-style-type: none"> <li>Forest and vegetation cover degradation</li> <li>Inadequate infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Destruction and degradation of infrastructure</li> <li>Loss of livestock</li> <li>Silting up of wells and ponds,</li> <li>Eye diseases,</li> <li>Wind erosion</li> </ul>

It should be noted that these hazards and impacts have different importance and priorities depending on Chad's bioclimatic zones.

**Table 5 Chad's bioclimatic zones, hazards and priority sectors**

Bioclimatic zone	Significant hazards	Priority sectors
------------------	---------------------	------------------

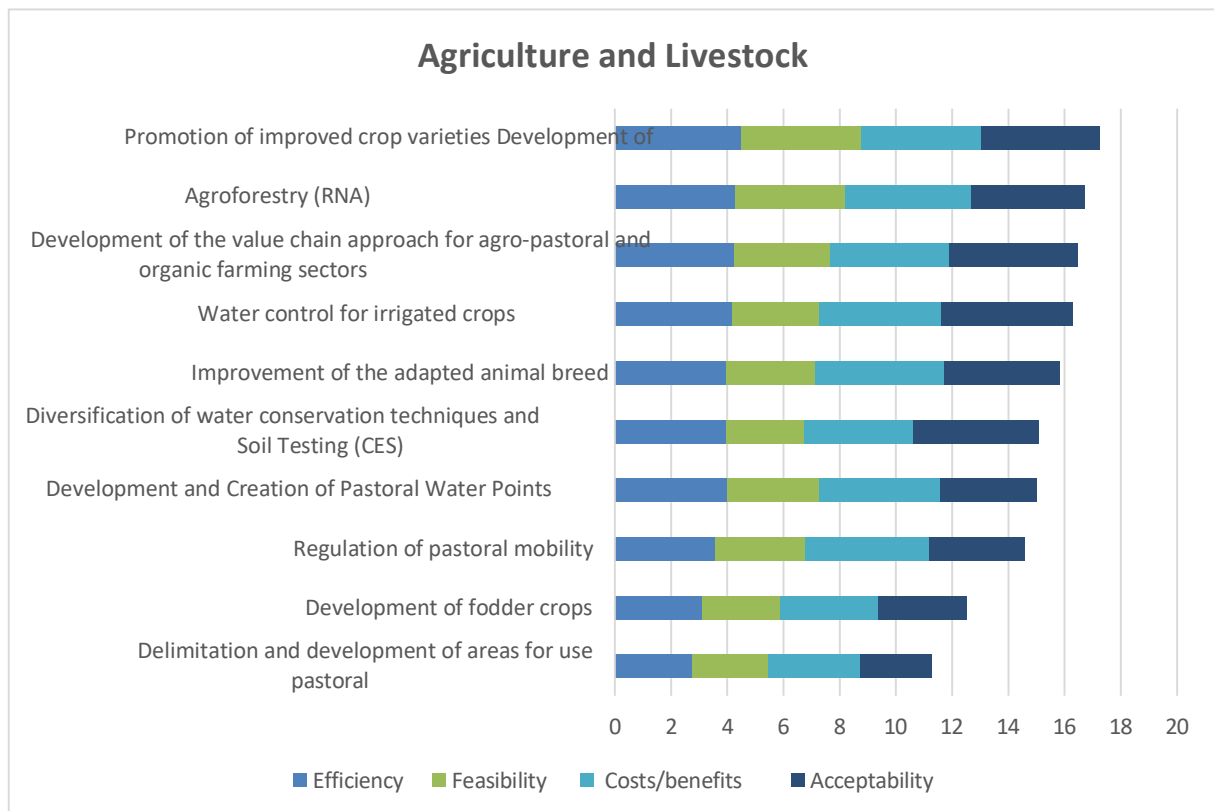
<b>Saharan</b>	<ul style="list-style-type: none"> <li>• Heatwave crisis</li> </ul>	<ul style="list-style-type: none"> <li>• Breeding</li> <li>• Agriculture</li> </ul>
----------------	---	---

	<ul style="list-style-type: none"> <li>• Intense cold</li> <li>• Sandstorm</li> <li>• Acute drought</li> </ul>	<ul style="list-style-type: none"> <li>• Commerce</li> <li>• Steppes</li> <li>• Handicraft</li> <li>• Water Resources</li> </ul>
<b>Sahelian</b>	<ul style="list-style-type: none"> <li>• Seasonal drought</li> <li>• Sandstorm</li> <li>• Intense rains</li> </ul>	<ul style="list-style-type: none"> <li>• Water Resources</li> <li>• Agriculture</li> <li>• Breeding</li> <li>• Handicraft</li> <li>• Fishing</li> <li>• Forests</li> <li>• Energy</li> </ul>
<b>Sudanian</b>	<ul style="list-style-type: none"> <li>• Intense rains</li> <li>• Seasonal drought</li> <li>• River flooding</li> </ul>	<ul style="list-style-type: none"> <li>• Water Resources</li> <li>• Agriculture</li> <li>• Breeding</li> <li>• Fishing</li> <li>• Forests</li> <li>• Energy</li> <li>• Commerce</li> </ul>

### 5.3 Priority areas for adaptation

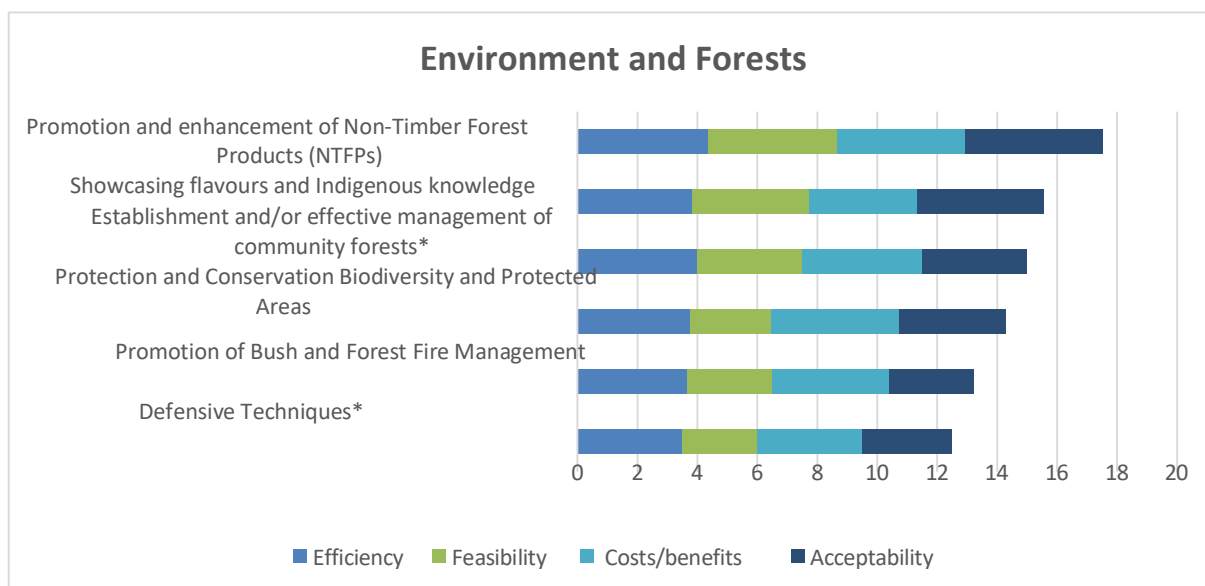
Priority adaptation options were identified for each focus area based on national priorities, consultations with stakeholders at the national and regional levels, as well as regional consultation with communities and regional officials and vulnerability analysis of Chad's climate-sensitive sectors. The studies used a combination of literature review, focus group discussions and individual interviews. The following graphs summarize the priority measures for each area of intervention, ranked according to a score compiling the evaluations of the effectiveness, feasibility, cost/benefit ratio and acceptability of each measure.

The following areas of intervention have been ranked according to the results of consultations with stakeholders: Agriculture and Livestock, Environment and Forestry; Water and Sanitation; Renewable; Gender and social protection; Education and communication; Risk Management, Infrastructure and Spatial Planning; and Fisheries and aquaculture. It should be noted that the number and order of priority areas for action has changed compared to the first NDC. Stakeholders also identified an additional number of priority areas for intervention, namely, the areas of intervention of the environment, gender and social protection and education.



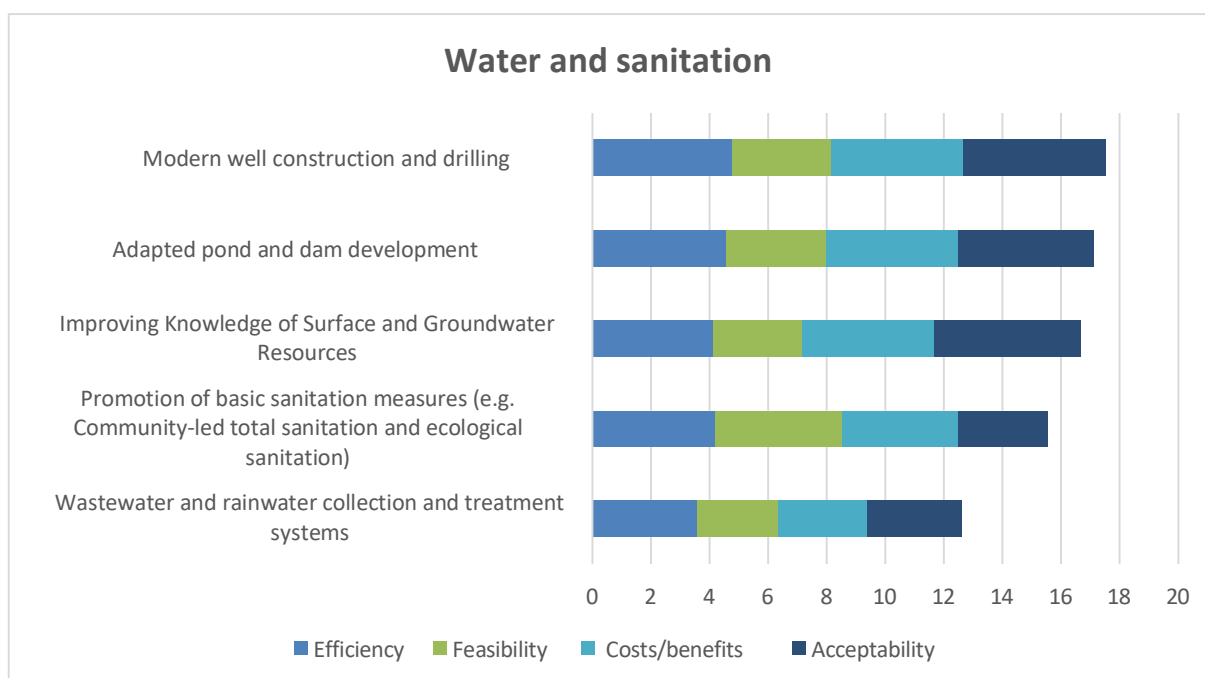
**Areas of intervention Agriculture and livestock:** Being a landlocked country, its economy is essentially based on agriculture and livestock, which are sectors that are very sensitive to climate change. The agricultural sector, which is dependent on climatic conditions, is strongly affected by climate change (lower harvests, shrinking cropping areas, drought, etc.). The limited capacity of local populations to adapt to climate risks is also a major obstacle to building their resilience.

The priority adaptation options considered represent a number of measures aimed at becoming more resilient. They are based on reducing threats by intervening on hazards, in particular, by promoting improved crop varieties, which offer higher and more stable yields and better resilience to the climate. Other priority options for agriculture and livestock also include the development of agroforestry and the development of the value chain approach to agro-pastoral value chains, the improvement of the overall efficiency of livestock farming, investment in improved pasture management, the regulation of pastoral mobility and the diversification of water and soil conservation techniques.



**Environment and forests focus areas :** Rising temperatures and the resurgence of drought episodes could influence the renewal of forest systems and could lead to irreversible deforestation. Protected areas cover 12% of the territory but are subject to strong pressures: pastoral pressure, poaching, fishing, demographic pressure, overexploitation of natural resources, bush fires and agriculture. In Chad, there is a significant lack of environmental data, which limits the possibility of assessing impacts.

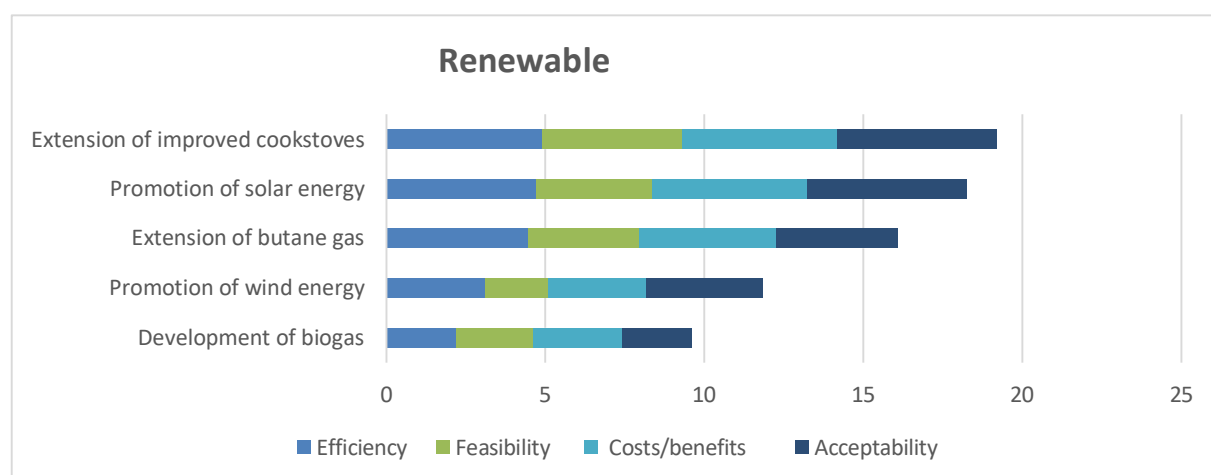
The adaptation measures identified will support forest restoration and sustainable forest management, for example, through the promotion of non-timber forest products, which will benefit biodiversity conservation and reduce deforestation, as well as the impact of floods, and contribute to the development of income-generating activities for communities



**Areas of intervention water and sanitation.** Current projections of water availability in Chad present a high degree of uncertainty in both GHG emission scenarios. The combined effects of reduced precipitation and high temperatures lead in some cases to the drying up of some watercourses and drinking water facilities. When floods occur

produce, they increase the pollution of surface and groundwater. On the other hand, floods cause groundwater pollution through poorly protected catchment structures. In urban areas, most populations defecate in latrines that are not or only poorly sealed and dug to depths above the water table. Access to (or lack thereof) to water, sanitation and hygiene is a major contributor to Chad's structural vulnerability and affects the country's health and nutrition situation. In terms of education, deficiencies in water, sanitation and hygiene also penalize the development of human capital.

The proposed water, sanitation and hygiene options will improve health and contribute to the economic benefits of communities. These measures will improve communities' access to basic water and sanitation and support climate-resilient water and sanitation infrastructure. As well as the sustainable use, protection and management of surface and groundwater resources, and the resilient management of solid and liquid waste.



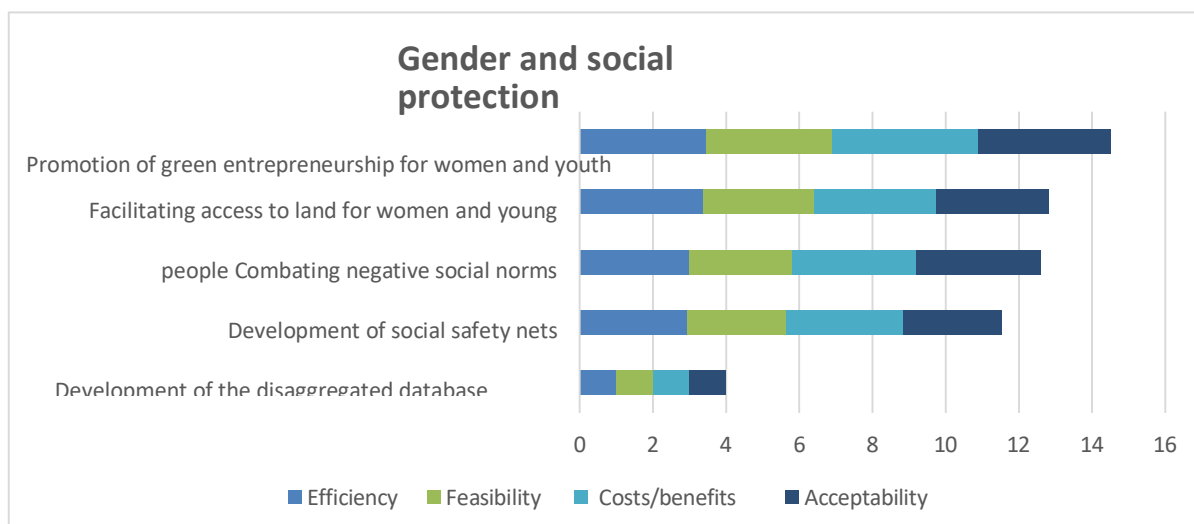
**Areas of intervention renewable energies.** 96.5% of national energy consumption is dominated by the consumption of wood fuels, whose productivity remains highly dependent on the climate and its variations.<sup>11</sup> This overexploitation of wood resources for household uses combined with climate change has led to deforestation of more than 90% of the national heritage and the extinction of certain plant species from 1970 to the present day.<sup>12</sup> Since the main source of energy for cooking is wood or charcoal, the vulnerability of wood energy can have a significant impact on households that depend on it, especially the poorest population.<sup>Art. 13</sup>

Priority options identified include measures that will promote and support the use of renewable energy, such as biogas and solar energy, which will help reduce communities' reliance on firewood. This will help reduce deforestation and land cover degradation, and will have positive economic, public, health and environmental impacts.

<sup>11</sup> Country Program for the Green Climate Fund of Chad, 2019

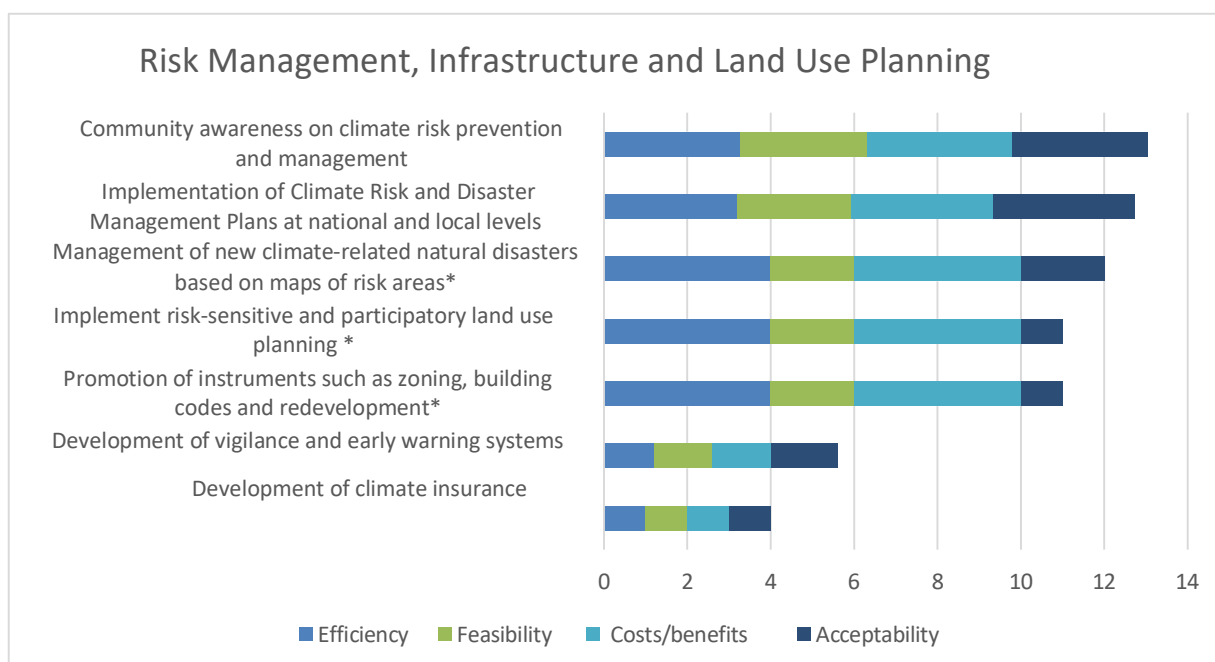
<sup>12</sup> Country Program for the Green Climate Fund of Chad, 2019

<sup>13</sup> Country Program for the Green Climate Fund of Chad, 2019



**Gender and social protection areas of intervention.** Limited education, cultural barriers, inequalities in social responsibilities and women's low participation in decision-making are at the root of their vulnerability and hinder their ability to adapt to climate change<sup>14</sup>. Women are not in the same conditions as men to cope with the negative impacts associated with climate change and do not have the same capacities and opportunities to cope with them, which exposes them or makes them more vulnerable.

Priority options identified to address these issues include, among others, facilitating women's access to land, developing social safety nets or developing a disaggregated national database.

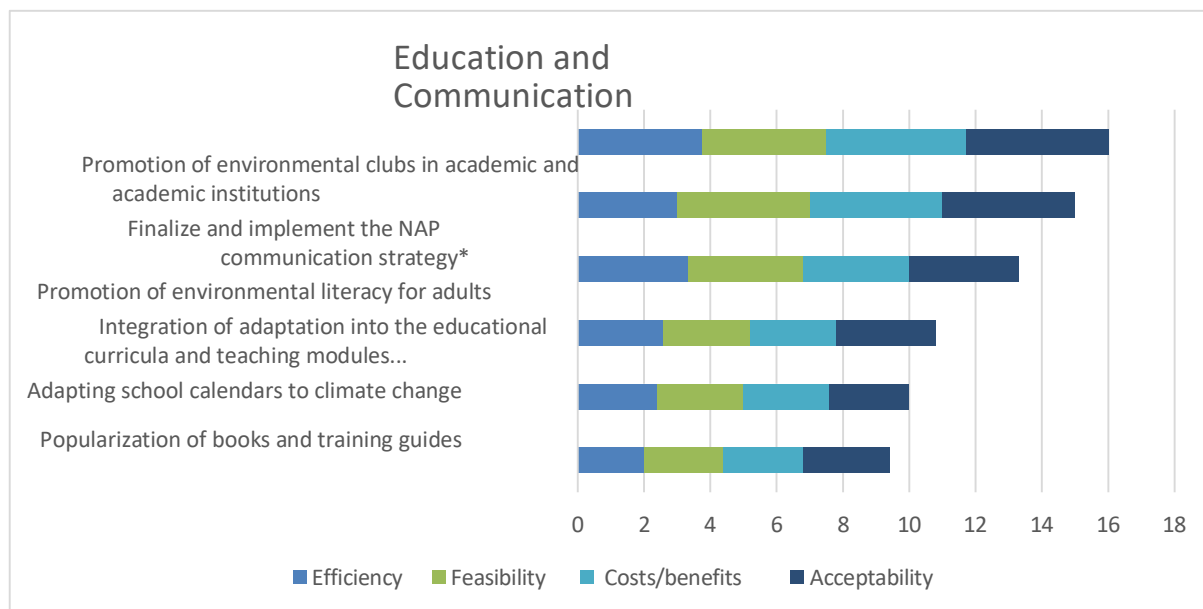


**Areas of intervention risk management, infrastructure and spatial planning.** Climate change will have significant impacts on human settlements and on sites of economic production, particularly in densely populated urban areas such as N'Djamena, Moundou or Sarh. Urban centres are already facing flooding episodes during heavy rains or river flooding. Chad is heavily dependent on road transport, but the country's road density ranges from 6 to 40.5 km per 1,000 km<sup>2</sup> and many roads are not

<sup>14</sup> IISD. MEP. 2021. Integration of gender in the NAP process in Chad.

Asphalt becomes impassable during the rainy season, leaving many villages and rural communities isolated.

Priority options will improve community preparedness and include the integration of risk reduction measures such as early warning mechanisms for floods and droughts. Adaptation measures will benefit urban settlements by reducing their vulnerability to the effects of extreme weather events through risk mapping, climate-resilient building codes, and infrastructure rehabilitation.



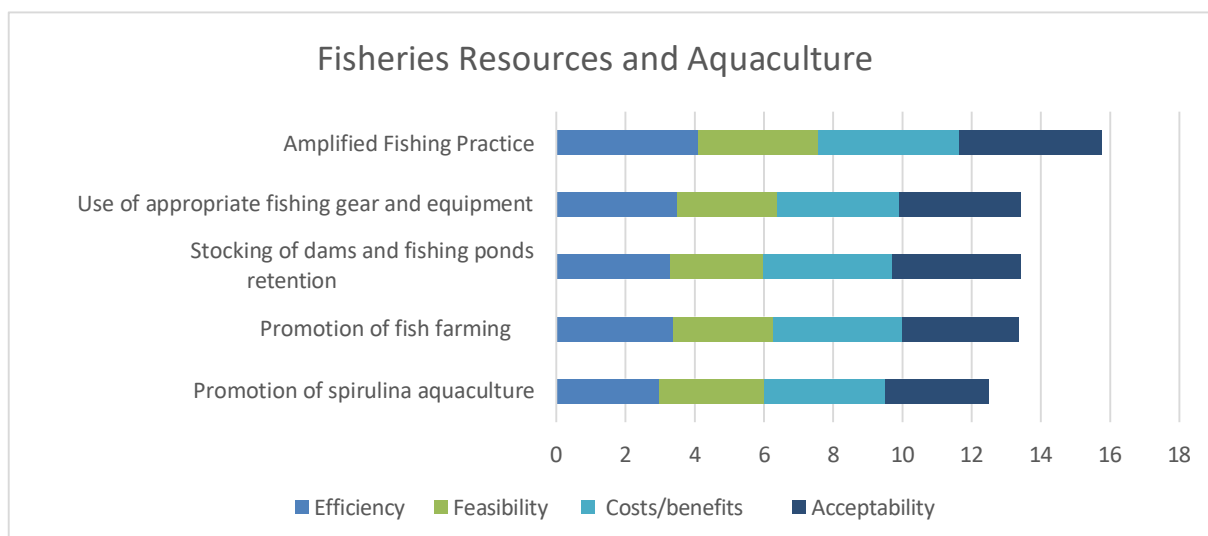
#### Areas of intervention: education and communication.

The education sector is a key sector for advancing all of Chad's development goals. It is directly and indirectly impacted by climate change, particularly following extreme events (floods, heat waves, etc.) which can cause mortality of school children and teachers or have an impact on school infrastructure. According to UNICEF's Children's Climate Risk Index (CRI), Chad is the second country in the world where children are most at risk from climate change.<sup>Art. 15</sup>

Therefore, and through the priorities identified for this focus area, the expected result is that adults, youth and children improve their knowledge and information while encouraging them to participate in school activities focused on climate adaptation and resilience in order to contribute to climate change solutions.

<sup>15</sup> UNICEF. 2021. Unicef. 2021. The climate crisis is a children's rights crisis.





**Areas of intervention fisheries resources and aquaculture :** Variations in rainfall patterns and water use have an impact on freshwater fishing activities. Climate variability has more of an impact on fishing activities and artisanal spirulina production. As a result, irregular rainfall leads to low productivity in fisheries and wadis that produce spirulina. The fisheries and aquaculture sector is essentially artisanal and is confronted with recurrent droughts, the clogging of rivers and lakes due to erosion in watersheds as a result of accelerated deforestation. The integration of climate change in this sector is very low due to the inadequacy of economic analyses and in-depth assessments of the risks and vulnerability of the fisheries sector.

The priority options identified include measures that will contribute to better adaptation of communities to climate impacts and, at the same time, to the improvement of their livelihoods, such as the practice of amplified fishing or the stocking of dams and retention basins.

## 6 Cross-cutting issues and priorities for adaptation and mitigation

### 6.1 The Gender Dynamics

Two studies have recently been carried out, the first on gender and climate change in Chad<sup>16</sup>, the second on gender mainstreaming in the NAP process<sup>17</sup>, and have highlighted the importance of integrating the gender component into climate change programmes in Chad.

The two studies also highlighted the low understanding of the concept of gender by the various actors (national decision-makers, and some women themselves) and the links with climate change. This deficit is partly due to a lack of training on inclusive development approaches, but also to the lack of development initiatives that rely on the systematic collection of sex- and age-disaggregated data. For example, the role of women in ecological management and the inequalities in access to and control of resources that aggravate their vulnerability remain poorly recognized. Both studies focused on three cross-cutting priorities that will be important to advance in the two components of the NDC, adaptation and mitigation:

<sup>16</sup> Sarr and Djoula. 2020. Chad - Gender and Climate Change Analysis. Project to strengthen the resilience of local communities to the impact of climate change in Chad. National Water Fund.

<sup>17</sup> World Network of National Adaptation Plans and Ministry of the Environment, Water and Fisheries. 2021.

- Strengthen the capacities of the Ministry in charge of gender and other ministries involved in the fight against climate change to exercise their catalytic role in the integration of gender in the formulation, budgeting and planning systems of gender-responsive adaptation,
- Systematize the implementation of the gender approach in the development of climate policies, strategies, plans, programs and sustainable development projects,
- Guarantee women's access to decision-making spheres through support that ensures education, information and economic empowerment.

## 6.2 Spatial planning

Land use planning emerged as an important cross-cutting element for the planning and effectiveness of the NDC's mitigation and adaptation priorities.

Effective land use planning is an important part of a successful response to climate change, as it can both influence greenhouse gas emissions and represent a cost-effective adaptation strategy at the national, regional or local level. Land use planning choices significantly influence the final impacts of climate change and can increase resilience to the impact of climate change through the location, mix and design of development. Currently, more and more countries are integrating climate risks into risk-sensitive planning decisions, especially in urban areas.

Indeed, land-use and infrastructure decisions can either decrease or increase risks significantly, especially in cities. If investments in infrastructure, housing and other facilities have been made in dangerous places, the risk is locked in for decades and it would be much more expensive to correct it than to prevent its creation. It will be important to further integrate risk reduction measures that take into account the effects of climate variability and change, with the help of flood and drought early warning mechanisms to improve community preparedness. Adaptation actions will benefit urban settlements by reducing their vulnerability to the impacts of extreme weather events through risk mapping, climate-resilient building codes, and infrastructure upgrades. The measures will also include improvements in terms of energy efficiency of buildings, green spaces and parks that will have beneficial effects on mitigation.

## 6.3 Measures generating co-benefits

One of the important elements that emerged from the consultations in Chad was the importance of emphasizing and prioritizing actions that create synergies and co-benefits of adaptation and mitigation. Indeed, by 2030, Chad will implement several climate change adaptation measures that will result in mitigation benefits, especially nature-based solutions (NBS) that will have the advantage of strengthening resilience to climate change, contributing to GHG capture and also achieving other SDGs. These actions will also have beneficial effects on the biodiversity, health and socio-economic well-being of communities.

As such, and given the vulnerability of agriculture to changes in rainfall patterns in the country, the promotion and support of SBNs related to sustainable and climate-smart agriculture as well as agroforestry, which, along with cropland nutrient management, cropland tree planting and conservation agriculture, offer a significant return on mitigation coupled with a considerable number of adaptation benefits with environmental and socio-economic benefits in terms of improved biodiversity and ecosystem services as well as increased agricultural production, improved livelihoods, food security and nutrition.

Livestock management and sustainable grazing and feeding practices can have benefits in terms of improved soil fertility, vegetation cover and grassland ecosystems, which will have co-benefits of climate adaptation and carbon sequestration. These actions will also be associated with manure management practices and composting, which will have mitigating effects by reducing methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions.

Other adaptation measures with mitigation benefits will support forest restoration and sustainable forest management, which will benefit biodiversity conservation and reduce deforestation, and the impact of flooding, which will contribute to carbon sequestration and help communities set up alternative income-generating activities.

Integrating adaptation and mitigation into access to water, sanitation and hygiene will improve health and contribute to the economic benefits of communities. Adaptation measures will improve communities' access to basic water and hygiene and support climate-resilient water and sanitation infrastructure. Mitigation measures will also be integrated in terms of wastewater treatment and the use of solar energy to extract water, which can reduce emissions.

It is also important to note that stakeholders have identified the renewable energy focus areas as important for adaptation as promoting and supporting the use of renewable energy, such as biogas and solar energy, will generate co-benefits by reducing methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions from manure and reducing the use of renewable energy. communities' dependence on firewood, which will help decrease deforestation and vegetation cover degradation, which, in addition to increasing carbon sequestration, is an important element in reducing vulnerability to climate change and will have economic, public health, health and environmental benefits.

## 6.4 Contributions to the Rio Conventions and SDGs

The majority of the adaptation and mitigation measures in this NDC are in perfect synergy with Chad's commitments in the three Rio conventions on biodiversity, climate change and desertification, as well as with the Sustainable Development Goals and its commitments under the Bonn Challenge to restore 5 million hectares of degraded and deforested land by 2030.

In this context, the priority adaptation measures identified as well as the mitigation actions promoted by this NDC will support forest and land restoration, address the causes of biodiversity loss, land degradation and the reduction of greenhouse gas emissions.

Thus, and through nature-based solutions, these actions will contribute to the objectives of land degradation neutrality by 2030. At the same time, they will promote the conservation, management and restoration of several ecosystems, as well as interventions that call for the protection and conservation of biodiversity and the restoration of ecosystems and their services, which are part of the objectives of the strategic plan of the Convention on Biological Diversity.

Some of the response measures will also generate synergies and co-benefits, particularly in terms of mitigation, activities generating greenhouse gas emission reductions, which will be carried out in the agriculture, forestry and other land use (AFOLU) sectors.

The NDC also generates synergies that can also generate co-benefits for several SDGs, particularly with regard to activities that are related to themes such as drinking water and sanitation, agriculture, resilience, infrastructure, land use and management, forests, ecosystems, environment, disaster risk reduction, awareness-raising,

employment, well-being, resource efficiency and adaptive capacity, which are linked to SDGs 1, 2, 3, 4, 5, 6, 7, 9, 10, 13 and 15.

## 7 Means of implementation

### 7.1 Monitoring of actions and needs in terms of support

#### 7.1.1 Tracking mitigation actions

The mitigation actions considered in the scenarios are clearly identified, which will make it possible to effectively monitor their implementation and their real impact in terms of reducing GHG emissions, as well as the supports received. Monitoring indicators and the entities responsible for monitoring will be defined in the NDC implementation plan for each of the actions.

#### 7.1.2 Investment needs

The investment required to implement the NDC mitigation actions is estimated below:

**Table 6 Investment required for the implementation of NDC mitigation actions**

Sector	Unconditional scenario (MUSD 2020)	Conditional scenario (MUSD 2020)	TOTAL (2020 USD MILLION)
<b>Energy</b>			
<i>Power Plants</i>	296,9	1 613,6	<b>1 910,5</b>
<i>Power grid</i>	111,2	956,9	<b>1 068,1</b>
<i>Energy efficiency</i>	0,1	111,8	<b>111,9</b>
<b>Agriculture - Digester</b>	-	2,5	<b>2,5</b>
<b>Forestry</b>	-	3 556,2	<b>3 556,2</b>
<b>Rubbish</b>	6,6	44,4	<b>51,0</b>
<b>TOTAL</b>	<b>414,8</b>	<b>6 285,4</b>	<b>6 700,2</b>

The implementation of the actions covered by the conditional scenario requires international financial support to the tune of USD 6,285,385,669, i.e. 94% of the investments necessary to achieve the national objective.

### 7.2 Adaptation funding needs

The assessment of the achievements of the 1st NDC reveals that the adaptation funding committed during the period 2016-2020 is insufficient in relation to the needs. The revised NDC also considered a greater number of priority sectors and actions.

Given the lack of studies and quantified data to determine the socio-economic impacts of climate change on different sectors in Chad, it was difficult to estimate the cost of adaptation interventions. Thus, the financing needs of this NDC have been estimated in range.

The corresponding minimum amount is estimated using a top-down approach that estimates adaptation needs as a percentage of GDP. This is based on global simulations of adaptation needs developed by UNEP (*top-down* approach from the *Adaptation Gap Report*), as well as several reports and studies that have assessed that adaptation costs could be equivalent to one

annual loss of between 1.5 and 3% of GDP in Africa by 2030.<sup>18</sup> As Chad is one of the most vulnerable countries in the world, the estimate of 3% of GDP was chosen.

According to this approach, the financing needs to address the high level of climate risks expected in Chad could amount to more than USD 375 million by 2021 (i.e. based on an estimated 3% of Gross Domestic Product) to reach an annual cost of USD 645 million by 2030 (Table 7). **Based on these annual simulations, the financing needs for the period 2021-2030 could amount to more than USD 5.002 billion.**

**Table 7 Summary of adaptation financing needs (top-down approach)**

(USD million during the period 2021-2030)

	GDP		Needs 3% GDP (USD Million)
	Annual growth	(USD billion)	
2021	IMF Estimate	12,531	375,9
2022	IMF Estimate	13,269	398,1
2023	IMF Estimate	13,98	419,4
2024	IMF Estimate	14,96	448,8
2025	IMF Estimate	16,01	480,3
2026	IMF Estimate	17,03	510,9
2027	6%	18,05	541,5
2028	6%	19,13	573,9
2029	6%	20,28	608,4
2030	6%	21,50	645
<b>Total</b>			<b>5002,2</b>

The proposed financing needs of US\$5.002 billion for the revised NDC are more conservative compared to the adaptation financing needs included in the 2015 NDC, which totalled US\$14.169 billion. This value is kept as the maximum value of the adaptation costs for the period up to 2030. It stems from the extrapolation of the costs of two of Chad's national programmes focused on resilience: the Chadian Country Resilience Programme under the Global Alliance for Resilience (AGIR) (PRP\_AGIR) and the National Rural Sector Investment Plan (PNISR) covering the period. The extrapolation of the costs of these two programmes was made by applying an annual population growth rate of 3.5% and an annual inflation rate of 2.9%<sup>10</sup> to arrive at the amount of USD 14.169 billion.

The PNISR, for a total amount of 2,301.7 billion CFA francs, is based on five programs, namely:

- Sustainable management of natural resources and adaptation to climate change (243.6 billion CFA francs);
- development of infrastructure and equipment in the rural sector (1,277.1 billion CFA francs);
- development of the agro-sylvo-pastoral and fisheries sectors (360.1 billion CFA francs);
- food and nutrition security, gender and strengthening the resilience of rural households (94.6 billion CFA francs);
- research, adoption and dissemination of technologies, human and institutional capacity building (CFAF 326.3 billion).

<sup>18</sup> Watkiss, P. 2010. [The economics of climate change](#).

The overall cost of the PRP amounts to 1,241 billion CFA francs for a period of 5 years until 2020 and its priorities are based on the following 4 pillars:

- Pillar 1: improve social protection for the most vulnerable communities and households to secure their livelihoods (415.7 billion CFA francs);
- Pillar 2: strengthening the nutrition of vulnerable households (249 billion CFA francs);
- Pillar 3: sustainably improve agricultural and food productivity, the incomes of the most vulnerable and their access to food (564 billion CFA francs);
- Pillar 4: Strengthening the governance of food and nutrition security (12 billion CFA francs).

The real figures for adaptation costs by 2030 would be in the range of 5 to 14 billion US dollars. More detailed studies of cost estimates of adaptation needs will be developed by the GEF-NAP.

### **Priority international support required**

Without neglecting the importance of domestic and private sources of financing, the international financial contributions of Technical and Financial Partners will have to play a very significant role. Given that Chad is among the least developed countries, international priority flows are estimated at around 75% of financing needs, and are expected to amount to more than USD 281 million/year by 2021 and reach more than USD 483 million/year by 2030.

It should be noted that the Green Climate Fund Country Programme has an estimated budget of USD 2.280 billion for eleven (11) adaptation projects by 2030, and that the programme addresses only part of the priority sectors identified by this updated NDC.

### **Climate Investment Plan**

Given that the anticipated financing needs require large-scale investment, and that the Government of Chad cannot make available alone, a specific approach is needed in terms of access to financial resources to achieve the objectives of this country's NDC.

An investment plan will define the priorities and the funding programme necessary for the implementation of the various measures. Thus, a list of project concepts will be developed with funding proposals that will be submitted to the funding sources. In this context, Chad will need a combination of domestic budget allocations, external sources of financing, and private sector financing.

Among other things, the Climate Investment Plan will estimate resource needs and propose complementary financial mechanisms and instruments needed to finance the NDC. As well as mechanisms to encourage or mobilize the private sector to promote resource mobilization. It will also contribute to proposing a mechanism to monitor investments made for the implementation of the NDC and to propose a framework for the annual reporting of funds mobilized and investments made for the implementation of the revised NDC.

In addition, and in order to strengthen climate governance within the Government of Chad, the feasibility of implementing a Chadian Climate Fund will be explored based on national and international experiences that could be responsible for mobilizing funding opportunities for the implementation of NDC activities and other activities related to long-term climate change mitigation and adaptation.

## 7.3 Capacity building and technology transfer

### Attenuation

In order to reduce the inherent institutional, technical, political and financial risks, this activity needs to be strengthened in the technical, research and coordination capacities of stakeholders. Chad encourages Parties listed in Annex 1 of the Convention to provide technical and financial support for the establishment of NDC monitoring and evaluation initiatives in Chad. In particular, support for the establishment of the National Agency on MRV involving the various sectors will allow the establishment of a national transparency system on the regular updating of GHG inventories, the definition and reporting of indicators for monitoring mitigation actions and the necessary and received support.

Capacity building in the area of national statistics and the definition of mitigation actions at the sectoral level. This is particularly the case in the context of the energy transition (energy accounting, forecasting, programming of energy management actions, monitoring and evaluation of the actions implemented, the definition of new sectoral action plans,...) but also in other sectors such as agriculture, LULUCF (with the establishment of a forest inventory and the monitoring of the impact of actions over time) and waste treatment. Capacity building of stakeholders in the implementation of carbon market mechanisms provided for in Article 6 of the Paris Agreement as well as technology transfers.

Chad's need for capacity building and technology transfer is high, in addition to land, security, climate and financial risks. Also, the attractiveness of the country for the private sector is very low due to multiple and complex socio-economic and geopolitical elements. Local capacity in the value chain of sustainable energy projects is insufficient and statistical data on energy resources are limited.

Given the government's priorities in terms of renewable energy, rural electrification and energy efficiency ("The Energy Policy Letter (EPL) (2018 - 2030)"), the level of development of the sustainable energy sector in Chad but also the urgency to intervene in the electricity sector, the following actions present an urgent need for capacity building and technology transfer:

► Strengthening the electricity sector:

- Improvement of the legal and regulatory framework necessary for the proper functioning of the sector;
- Restructuring of the NES and review of its fundamentals (pricing policy, collection policy);
- Reduction of the cost of production per kWh;
- Development and improvement of electricity distribution and transmission networks across the country;
- Institutional capacity building to enable an efficient energy market;

► Increased access to energy for all populations;

- Development of electrification in main and secondary cities;
- Development of electrification in rural areas through decentralized solutions such as mini-grids or solar kits;
- Develop alternative solutions to fuelwood for cooking;

► Promotion of the share of renewable energies in Chad's energy balance;

- Increase in the contribution of renewable energies to the electricity grid;
- Promotion of renewable energy solutions for rural electrification;
- Promotion of electrification projects by renewable energies of a social nature;
- Strengthening of local technical skills on renewable energies and improvement of market control procedures;

- Support for actions relating to technologies and innovation in the field of Energy Efficiency:
  - Strengthening of procedures to support and develop the EE market, both domestic and industrial;
  - Promotion of Improved Cookstoves and Clean Cooking;
  - Promotion of local technical skills on EE and improvement of market control procedures;

The cost of capacity-building actions is estimated at between USD 20 million and USD 30 million, with international support.

## **Adaptation**

In order to reduce vulnerability and increase resilience, adaptation needs include human, institutional and technical capacity building, financial support and technology transfer.

### Human and institutional capacity-building needs:

- Inform, educate and communicate on climate risks and adaptation technologies (development of people's capacities to react);
- Strengthen the skills of actors (especially women and farmers) on new technical itineraries within the framework of intensified and sustainable production methods;
- Support research and encourage technology transfers between research organizations and agro-sylvo-pastoral actors;
- Support institutions in defining adaptation priorities according to socio-economic sectors according to the needs of the population and promote intersectoral coherence, particularly during the development of the National Adaptation Plan.

### Organizational capacity building needs:

- Civil society organizations and local authorities in the country need to be strengthened in terms of:
- Definition of a vision and strategy that allow for better management of the concerns of disadvantaged and/or vulnerable groups;
- Definition of appropriate organizational structures;
- Establishment of mechanisms for seeking funding and resource management systems (financial and human).

### Technical organizational capacity building needs:

- Local and regional authorities need capacities in the participatory formulation and implementation of strategies, programmes and projects in the field of adaptation to climate change that are integrated into communal sustainable development plans;
- Stakeholders need knowledge and know-how in terms of:
- Construction of protective structures against the impacts of climate change;
- Design and operationalization of greener production and consumption patterns;
- Identification of vulnerable species;
- Design and development of systems for warning and prevention of disasters resulting from climate change;
- Knowledge and know-how on active participatory research methods (devolved administrations), associations, NGOs, researchers and other development actors - these trainings



should focus on the adaptation of vulnerable groups to the impacts of climate change.

Capacity-building needs for access to information and knowledge:

- Development and implementation in each country of a communication strategy between the coordinating administration of the climate change component and other development actors;
- Development of a national awareness-raising, information and training programme on climate change or support for existing programmes;
- Support to all relevant actors to participate in global, regional and sub-regional forums related to climate change;
- Need to inform and train leaders and facilitators of provincial, local and community forums on issues related to the adaptation of vulnerable groups to climate change.

Research and development capacity-building needs:

- Support to identify and develop policy and regulatory action research projects to increase the know-how needed in voluntary carbon trading, the mobilization of related finance, and transparent and equitable benefit-sharing mechanisms.

## 7.4 Policy and institutional arrangements

Adaptation and mitigation require the active participation of different actors and responses at multiple levels. The consequences of climate change are felt at the local level, and therefore make the active participation of stakeholders at local, national and regional levels essential to promote adaptation decisions that are taken during the UNFCCC negotiations.

Chad already has a number of structures and an institutional framework in place to implement the Paris Agreement. In particular, within the Ministry of the Environment, the Directorate of Environmental Education and the Fight against Climate Change (DEELCC) is designated as the national focal point of the Paris Agreement, and ensures a function of coordinating climate action with all public and private actors, especially with all sectoral ministries (Ministry of Agriculture, Ministry in charge of livestock, Ministry of Public Health, Ministry in charge of mines, energy and petroleum, Ministry in charge of infrastructure and transport, Ministry in charge of land use planning, Ministry in charge of trade and industry, Ministry of National Education, Ministry in charge of higher education, Ministry in charge of information and communication, Ministry of Women and Social Affairs, Ministry of National Defence).

The High National Committee for the Environment (HCNE), created by Decree No. 822/PR/MET/95 of 20 October 1995, is another important body in this institutional system, since it ensures the effective implementation of the articles of the Constitution relating to the protection of the environment; the effective integration of the environment and development; and the concrete implementation of Sustainable Development policies. The HCNE also has an arbitration function in the event of contradictory options between development priorities and environmental protection.

During the consultations for the update of the NDC, it is noted that there is an urgent need to improve and above all to operationalize and ensure stability of the institutional framework and focal points to avoid a dispersion of energy in climate governance. This action is paramount to ensure the sustainability of the implementation of climate actions and projects

These actions to strengthen the institutional framework must also strengthen the role of non-state actors and local communities in the formulation and implementation of policies and decision-making processes.

Further study of the institutional framework with a view to recommending practical structures is required.

## **7.5 Use of voluntary cooperation under Article 6 of the Paris Agreement**

For the preparation and implementation of mitigation projects, the country intends to seek international assistance from the various available sources, including development aid agencies, bilateral and multilateral financial institutions, the financial mechanisms of the UNFCCC as well as the use of market-based mechanisms for sustainable development under Article 6.4 as well as non-market-based approaches provided for in Article 6.8 of the Agreement of Paris.

## ANNEX 1

### Information necessary to facilitate the clarity, the transparency and understanding (ICTC)

1. Quantifiable information on the reference point (including, as appropriate, a base year)	
has. The reference year(s), reference period(s) or other starting point(s)	2018 is the base year for emissions projections to 2030
b. Quantifiable information on the benchmarks, their values in the reference year(s), reference period(s) or other starting points and, where applicable, the target year	For the base year 2018, total emissions, including LULUCF, are 74 090 kt CO <sub>2</sub> eq. The national target is expressed as a percentage reduction in GHG emissions relative to the baseline scenario in 2030.
c. With respect to strategies, plans and actions referred to in paragraph 6 of Article 4 of the Paris Agreement, or policies and measures that are part of the Nationally Determined Contributions, where subparagraph (b) of paragraph 1 above shall not apply, Parties must provide other relevant information	Not applicable
d. A target relative to the benchmark, expressed numerically, such as a percentage or amount of reduction	The target is to reduce GHG emissions by 19.3% in 2030 compared to the baseline scenario. The unconditional scenario based on the country's own resources will lead to a 0.5% reduction in emissions compared to the reference scenario in 2030. The implementation of the conditional scenario, based on international support, would allow a total reduction in emissions of 19.3%.
e. Information on the sources of Data used to quantify the reference point(s)	The GHG emissions of the base year are quantified according to the 2006 IPCC guidelines for all sectors. The GWPs applied are those of the AR4.
f. Information on the circumstances under which the Party may update the values of the benchmarks	The National GHG Emissions Inventory for the period 2010 to 2018 was updated in 2021. It could be improved and supplemented, in particular by estimating emissions from industrial processes and by relying on national statistics rather than international databases, particularly with regard to the balance sheet energy and waste treatment.
2. Time horizon and/or implementation period	
has. The timetable and/or implementation period, including start and end dates, in accordance with any other relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)	2021-2030
b. Whether it's an annual or multi-year, as applicable	The objective is defined for the year 2030
3. Scope and Scope	
has. A general description of the target	An unconditional reduction target of 0.5% in 2030 compared to a baseline scenario (-389 kt CO <sub>2</sub> eq reduction).

	This target is increased to 19.3% in total under the of the conditional scenario (-16,372 kt CO <sub>2</sub> eq reduction ) with international support.
b. The sectors, gases, categories and reservoirs covered by the Nationally Determined Contribution, including, where applicable, in accordance with the Intergovernmental Panel on Climate Change (IPCC) guidelines	<p>The NDC covers:</p> <ul style="list-style-type: none"> <li>- The entire national territory;</li> <li>- All sectors in accordance with IPCC guidelines (energy, agriculture, LULUCFT, waste), except for industrial processes whose emissions are considered negligible;</li> <li>- The following GHGs; CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O ; AR4 GWPs are applied.</li> </ul>
c. The manner in which the Party has taken into account paragraph 31 (c) and (d) of decision 1/CP.21	Chad's NDC includes all anthropogenic emission and removal items covered by the 2006 IPCC guidelines except for industrial processes whose emissions are considered as negligible.
d. Mitigation benefits resulting from adaptation measures and/or economic diversification plans of the Parties, including a description of projects, actions and initiatives relating in particular to adaptation measures and/or economic diversification plans of the Parties	<p>The Republic of Chad has identified several mitigation benefits from adaptation measures, particularly in the areas of agriculture, which is a highly vulnerable sector, and adaptation technologies are expected to reduce emissions in this sector, including smart agriculture.</p> <p>The implementation of climate-resilient agricultural projects will induce mitigation and adaptation co-benefits.</p> <p>Other programs below:</p> <ul style="list-style-type: none"> <li>-Local governance for access to land and land tenure security for the most vulnerable groups in the Lake Province</li> <li>- Promotion of the solar dewatering system for the mobilization of water, energy and agricultural diversification in the Lake Province</li> <li>- Promotion of the use of composting through pilot sites</li> <li>- Construction of ponds with solar boreholes and an anti-erosion device for access to water (drinking and livestock watering) in the vulnerable plain</li> <li>- Support for climate governance, climate-smart agricultural production and the empowerment of women and youth in the Lake Province</li> <li>- Boosting innovative climate-smart and climate-resilient agriculture practices in vulnerable regions</li> <li>-Promotion of smart and climate-resilient livestock practices through the processing, conservation and marketing of animal products</li> </ul>
<b>4. Planning Process</b>	
has. Information on the planning processes that the Party followed in preparing its contribution determined at the national level and, if available, on the Party's implementation plans, including, as appropriate:	
i. National institutional arrangements, public participation and collaboration with local communities and indigenous peoples, in particular gender-responsive;	This NDC was designed to integrate gender equality into its planning, supporting the inclusion of adaptation and mitigation measures that are sensitive to the that were recommended in consultations

	at the national and regional levels and that will contribute to the more effective climate action.
ii. Contextual issues, including, but not limited to:	
has. National circumstances, including geography, climate, economy, sustainable development and poverty eradication	<p>A landlocked country, Chad covers an area of 1,284,000 km<sup>2</sup> and is located between 7° and 24° north latitude and 13° and 24° east longitude. It is bordered to the north by Libya, to the south by the Central African Republic, to the east by Sudan and to the west by Niger, Nigeria and Cameroon.</p> <p>The evolution of demographic indicators shows that the population of Chad in 2009, which was 11.1 million inhabitants (density: 8.6 inhabitants/km<sup>2</sup>), will reach 15.1 million inhabitants in 2018.</p> <p>According to the final results of the RGPH2, women and young people under the age of 15 remain in the majority with a proportion of 50.6%, the average annual intercensal growth rate is estimated at 3.6% (including refugees). On the social front, the proportion of the Chadian population living below the monetary poverty line has fallen from 55% in 2003 to 46% in 2011 (ECOSIT3, INSEED, 2014). The Human Development Index (HDI) over the last five years (0.392 in 2015) is up 5.9% compared to 2012. In 2015, Chad committed to achieving the Sustainable Development Goals (SDGs, 2016-2030) under the aegis of the United Nations. The country is divided into 23 regions, 63 departments and 250 municipalities.</p> <p>The climate of Chad is Saharan in the north, Sahelian in the centre, Sudano-Sahelian in the south and Sudanian with sub-humid in the extreme south. There are six (6) climatic zones (DREM, Meteorological Service; 2009): the Saharan zone (&lt; 100 mm); the Saharan-Sahelian zone (100 to 200 mm); the Sahelian zone (200 to 600 mm); the Sahelo-Sudanian zone (600 to 800 mm); the Sudanian zone (800 to 1200 mm) and the Sub-Guinean zone (&gt;1200 mm). The length of the rainy season is two months in the north and more than six months in the extreme south of the country.</p> <p>Throughout the country, the average minimum and maximum temperatures are between 19 to 21°C and 34 to + respectively 37 °C.</p>
b. Best practices and experience in the development of the Nationally Determined Contribution	<p>Chad's revised NDC benefited from a very robust architecture under the supervision of the Ministry of Environment and Climate Change.</p> <p>This has facilitated:</p> <ul style="list-style-type: none"> <li>• carrying out data collection;</li> <li>• the organization of consultations with stakeholders (public sector, private sector, civil society), TFPs;</li> <li>• field missions;</li> <li>• The organization of focus groups in the country's departments at the regional level,</li> </ul>

	<ul style="list-style-type: none"> <li>• The organization of awareness and training workshops on the application of scenario software emissions (LEAP and GACMO)</li> </ul>
<p>c. Other contextual aspirations and priorities recognized upon accession to the Paris Agreement</p>	<p>The Republic of Chad aspires with its self-sufficient oil resources to be an emerging country by 2025 and advocates development according to the SDGs, but also the African Union's Agenda 63. The priorities are:</p> <ol style="list-style-type: none"> <li>1- Mitigation, low-carbon development strategy;</li> <li>2- In the field of adaptation;</li> <li>• The development of the national adaptation plan;</li> <li>3- Financing;</li> <li>• Establishment of financial mechanisms on climate change;</li> <li>4- Capacity building and education; Capacity-building strategy</li> <li>5- Technology transfer; Technology Needs Assessment</li> <li>6- Food security;</li> <li>7- Gender equality;</li> <li>8- Actions in favour of young people;</li> <li>9- The Sustainable Development Goals (SDGs).</li> </ol>
<p>d. Specific information applicable to Parties, including regional economic integration organizations and their member States, that have agreed to act jointly pursuant to Article 4, paragraph 2, of the Paris Agreement, including Parties that have decided to act jointly, and the terms of the relevant agreement, in accordance with paragraphs 16 to 18 of Article 4 of the Paris Agreement</p>	<p>At the UN climate summit held in Washington in 2019, the Republic of Chad reaffirmed its strong commitment to increase its ambition to contribute to climate change efforts, and to include new sectors that were not considered in Chad's NDC published in 2015.</p> <p>Stakeholders were made aware during the sectoral workshops of the content of the Paris Agreement, the IPCC special report on level 1.5, and the CAFI letter of commitment for Central African forests. These documents have enabled the various stakeholders to understand the issues related to the revision of the NDC to raise Chad's ambition.</p> <p>The country specifies that its ambition has been revised upwards, compared to the 2015 NDC and the conclusions of the last COP which calls for more ambition in terms of reduction on the part of countries.</p>
<p>e. How the Party's preparation of its nationally determined contribution has been informed by the results of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement</p>	<p>Each Party shall report a nationally determined contribution every five years in accordance with decision 1/CP.21 and all relevant decisions of the Conference of the Parties serving as the meeting of the Parties to this Paris Agreement and taking into account the results of the global stocktake under Article 14.</p> <p>The Republic of Chad should clearly articulate its actions in its NDC on adaptation and how this has co-benefits for mitigation.</p> <p>The main socio-economic sectors identified as most vulnerable to the impacts of climate change are: agriculture, forestry, natural resources and climate change.</p> <p>land, livestock. Most of these sectoral actions</p>

	<p>have strong synergies and co-benefits with mitigation. These co-benefits are:</p> <ul style="list-style-type: none"> <li>- Reduced emissions;</li> <li>- Promotion of clean and renewable energies</li> <li>- Introducing the population to new energy efficiency technologies, reducing deforestation and promoting non-timber forest products</li> <li>- Elimination of diseases;</li> <li>- Improvement of the added value of food crops and creation of employment for young people.</li> </ul>
<p>f. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement, consisting of mitigation benefits and/or economic diversification plans in accordance with Article 4, paragraph 7, of the Paris Agreement,</p>	<p>Article 4, paragraph 7, of the Paris Agreement emphasizes that the benefits of mitigation actions, adaptation measures and/or economic diversification plans of Parties may contribute to mitigation outcomes under this Article.</p> <p>Chad is a country that produces its hydrofuel needs and favors adaptation and economic diversification measures to achieve the Sustainable Development Goals. In particular, there is a low awareness and communication on the process of SDG implementation and monitoring, and low resource mobilization for SDG monitoring and implementation. These measures are often subject to the threat and risk of fluctuations in commodity prices, the evolution of regional conflicts, the adverse effects of climate change and uncontrolled migration flows, as well as the length and porosity of borders.</p> <p>The information is contained in the NDC (list of projects and social and economic co-benefits of mitigation and adaptation measures).</p> <p>Chad's updated 2021 NDC also presents how it contributes to the achievement of the SDGs.</p>
<p><b>5. Assumptions and methodological approaches, including those concerning estimation and accounting for anthropogenic greenhouse gas emissions and, where applicable, anthropogenic removals:</b></p>	
<p>has. The assumptions and methodological approaches used to account for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, in accordance with paragraph 31 of decision 1/CP.21 and the guidelines for the accounting adopted by the CMA</p>	<p>The assumptions and methodological approaches used to account for anthropogenic GHG emissions and removals are based on the 2006 IPCC guidelines.</p>
<p>b. The assumptions and methodological approaches used to account for the implementation of policies and measures or strategies in the Determined Contribution to the National level</p>	<p>The emissions to 2030 are based on the projections and the calculation of the impact of the mitigation measures considered in the different scenarios were developed using the GACMO (Greenhouse Gas Abatement Cost Model).</p>
<p>c. Where appropriate, information on how the Party will take into account the methodologies and guidelines in place under the Convention for accounting for anthropogenic emissions and removals, in accordance with the</p>	<p>The collection of GHG inventory data was carried out according to the 2006 IPCC guidelines taking into account the basic principles of the compilation of GHG emission inventories, which are transparency, accuracy, completeness, comparability and data consistency.</p>

Article 4, paragraph 14, of the Paris, as appropriate	
d. IPCC methods and metrics used to estimate emissions and Anthropogenic removals of greenhouse gases	Methodologies: 2006 IPCC Guidelines. GWPs applied: the GWPs are those of the IPCC AR4: CO <sub>2</sub> = 1; CH <sub>4</sub> = 25; N <sub>2</sub> O = 298
e. Assumptions, methods and approaches specific to a sector, class or activity, consistent with the IPCC, as appropriate, including, as appropriate:	
i. The approach to dealing with emissions and subsequent removals of natural disturbances on working land	Not applicable
ii. The approach to accounting for emissions and removals of harvested wood products	Emissions and absorptions from the distribution of harvested wood products are not yet estimated. The default approach of instantaneous oxidation is therefore applied.
iii. The approach to dealing with the effects of the structure of age classes in forests	Not applicable
f. Other assumptions and methodological approaches used to understand the Nationally Determined Contribution and, where appropriate, to estimate emissions and Corresponding removals, including:	
i. The way in which the benchmarks, the baseline(s), including, where applicable, sector, category or activity-specific baselines, are constructed, including, for example, key parameters, assumptions, definitions, methods, data sources and models Used	The methodologies applied for the calculation of GHG emissions from 2010 to 2018 follow the IPCC methods with the application of Tier 1 emission factors by sector. The reference scenario is based on the growth rates differentiated by sector reported in GACMO, applied over the period 2018 to 2030.
ii. For Parties whose nationally determined contributions contain elements other than greenhouse gases, information on assumptions and methodological approaches used in relation to these elements, as appropriate	Not applicable
iii. For climate forcing factors included in Nationally Determined Contributions that are not covered by the IPCC guidelines, information on how these factors are estimated	Not applicable
iv. Other technical information, as required	Not applicable
g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable	This article provides for a system of greenhouse gas emissions trading between countries that emit too much greenhouse gas emissions and countries that emit less. In concrete terms, the emission reductions achieved by one state could be bought back by another. Chad is considered one of the least developed countries and intends to use voluntary cooperation.
<b>6. How the Party considers its nationally determined contribution to be equitable and ambitious in light of its national circumstances</b>	
has. How the Party considers its nationally determined contribution to be equitable and ambitious in light of its national circumstances	Taking into consideration its socio-economic situation, the Republic of Chad considers that its updated NDC is equitable and ambitious enough to contribute to the fight against climate change by 2030. Chad contributes little to global emissions of greenhouse gases, but he wants to stay the course of the



	<p>development of its economy while using low-carbon clean tools and technologies.</p> <p>Chad's updated CND is facilitated by:</p> <ul style="list-style-type: none"> <li>- the will to fight poverty (SDG1), to achieve a low-carbon and climate-resilient economy, to achieve sustainable development by moving towards the energy transition and the use of energy green issues, including in relation to accountability for past and future emissions, and the ability to invest in mitigation policies.</li> </ul>
b. Considerations of fairness	<p>Since the beginning of the 21st century, Chad has made real progress in the context of forest governance and the effective implementation of action on the ground in the field of energy and conservation and sustainable forest management.</p> <p>The efforts that Chad is making in terms of the conservation and sustainable management of Lake Chad's ecosystems are enormous.</p> <p>Stakeholders at the national level consider these efforts to be important but insufficient and call on the international community to recognize not only efforts, but also to reward the country's efforts.</p>
c. How the Party has taken into account Article 4, paragraph 3, of the Paris Agreement <sup>19</sup>	<p>Chad's updated NDC represents an improvement on its Nationally Determined Contribution communicated in 2015. This is a broadening of the scope of areas targeted for mitigation.</p> <ul style="list-style-type: none"> <li>• The Nationally Determined Contribution benefited from a high level of stakeholder participation (NGOs, key ministries, experts from different sectors).</li> <li>• The updated NDC also integrates gender issues and women's participation in the fight against climate change.</li> <li>• The updated NDC benefited from the expertise of national consultants in its preparation and drafting.</li> </ul>
d. How the Party has taken into account Article 4, paragraph 4, of the Paris Agreement <sup>20</sup>	<p>In this context, Chad relies on the strategy REDD+, which offers low-carbon development activities for the long term.</p>
e. The manner in which the Party has implemented includes Article 4, paragraph 6, of the Paris Agreement <sup>21</sup>	<p>Not applicable</p>
<b>7. The manner in which the Nationally Determined Contribution contributes to the achievement of the objective of the Convention as set out in Article 2 of the Convention</b>	
has. The manner in which the Nationally Determined Contribution contributes to the achievement of the objective of the Convention as set out in article 222 of the Convention	<p>It should be recalled that the ultimate objective of the UNFCCC and any related legal instruments that the Conference of the Parties to this Convention may adopt (including the Paris Climate Change Agreements) is to stabilize, in accordance with the relevant provisions of this Convention, greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the system</p>

<sup>19</sup> How does the NDC represent a progression beyond the Party's previous NDC and reflect its greatest possible ambition?

<sup>20</sup> Developing countries: Information on how they continue to strengthen their mitigation efforts, and how they intend to move over time towards the Economy wide emission reduction or limitation target (EWERLT) in light of different national circumstances.

<sup>21</sup> Least developed countries and small island developing States may prepare and communicate low-greenhouse gas emission development strategies, plans and measures appropriate to their particular circumstances.

<sup>22</sup> Article 2 of the UNFCCC sets out the ultimate objective of "stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system" (UNFCCC 1992). The second sentence specifies that this stabilization must be achieved "within a sufficient period of time to allow ecosystems to adapt naturally to climate change, so that food production is not threatened and so that economic development can continue."

	<p>climatic.</p> <p>This level will need to be reached in sufficient time to ensure that ecosystems can adapt naturally to climate change, that food production is not threatened and that economic development can continue in a sustainable manner. In the case of Chad, the degradation of Lake Chad's terrestrial ecosystems and food production is largely significant. The threats may be irreversible.</p> <p>This revised NDC contributes to the achievement of Article 2 of the Convention in terms of the preservation of the country's ecosystems and the promotion of food production. This contribution is based on a growing political will to strengthen the unconditional contribution and the integration of climate change into the sectoral priorities of the Government's policy.</p> <p>The proposed measures are based on the policies, measures, strategies, and plans in force in the Republic of Chad. The measures proposed in the revised NDC should not endanger development socio-economic of the country. This should not endanger natural ecosystems or food production.</p>
<p>b. How the Nationally Determined Contribution (NDG) contributes to Article 2, paragraph 1 (a), and Article 4, paragraph 1, of the Paris Agreement<sup>23</sup></p>	<p>It should be recalled that the Paris Agreement on Climate Change underlines:</p> <ul style="list-style-type: none"> <li>- Article 2, paragraph 1, paragraph 1, states that the increase in the global average temperature is well below 2°C above pre-industrial levels and by pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, on the understanding that this would significantly reduce the risks and impacts of climate change.</li> <li>- With a view to achieving the long-term temperature objective set out in Article 2, Parties shall seek to achieve a global peak in greenhouse gas emissions as soon as possible, on the understanding that capping will take longer for developing country Parties, and to make rapid reductions thereafter in accordance with the best available science so as to achieve a balance between anthropogenic emissions and anthropogenic sources and removals by sinks of GHGs in the second half of the century, on the basis of equity, and in the context of sustainable development and poverty alleviation.</li> </ul> <p>In the case of Chad, the country has insignificant GHG emissions. Nevertheless, this revised NDC contributes to the achievement of Article 2 and Article 4 of the UNFCCC Paris Agreements, in particular by strengthening the activities and projects of the</p>

<sup>23</sup> Article 2.1(a) of the Paris Agreement includes two global temperature objectives – "well below 2 degrees" and "1.5 degrees". Article 4.1 qualifies them by stating that "Parties aim to achieve global capping of greenhouse gas emissions as soon as possible, recognizing that such capping will take longer for developing country Parties, and to undertake rapid reductions in such emissions. and subsequently undertake rapid reductions in accordance with the best available science ...", and that Parties will also strive to "achieve a balance between anthropogenic emissions by sources and emissions by sinks" in the second half of the century

	<p>renewable energy and energy efficiency across the country.</p> <p>Chad's efforts in its NDC aim to contribute to the achievement of the overall goal of not reaching 2 degrees Celsius.</p>
--	--