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The Role of Climate Finance in Fostering Regenerative Agricultural Practices: A Case Study of Cocoa and Cereal Farming in the Ntui Sub Division of Cameroon

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Analysis of governance models and educational policies linked to Sustainable
Development

by

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This piece of work is dedicated to my lovely Mother
Mrs. AKWOTE Stella Peki

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB: Asian Development Bank

AEs: Accredited Entities

AF: Adaptation Fund

AFB: Adaptation Fund Board

AfDB: African Development Bank

ASAP: Adaptation for Smallholder Agriculture Program

BEAC: Bank of Central African States

BOAD: West African Development Bank

CAF: Development Bank of Latin America and the Caribbean

CBD: Convention on Biological Diversity

CBDR: Common but Differentiated Responsibilities

CDM: Clean Development Mechanism

CEMAC: Central African Economic and Monetary Community

CERs: Certified Emission Reduction

CF: Climate Finance

CFA Franc: Financial Community of Africa/African Financial Community

CI: Conservation International

CIF: Climate Investment Funds

COP: Conference of Parties

CPF: Collaborative Partnership on Forests

CPI: Climate Policy Initiative

DAEs: Direct Access Entities

DBSA: Development Bank of Southern Africa

DOI: Diffusion of Innovation

EA: Enabling Activity

EBRD: European Bank for Reconstruction and Development

FAO: Food and Agriculture Organization

FECO: Foreign Economic Cooperation Office, Ministry of Environmental Protection of China

FIP: Forest Investment Program

FOs: Farmers 'Organizations

FP: Focal Points

FSP: Full-sized Project

FUNBIO: Brazilian Biodiversity Fund

GCF: Green Climate Fund

GDP: Gross Domestic Product

GEF: Global Environment Facility

GEFIOE: Global Environment Facility Independent Evaluation Office

GHG: Greenhouse Gas

GIZ: German Agency for International Cooperation

HYSACAM: Hygiene and Sanitation Company of Cameroon

IADB: Inter-American Development Bank

IFAD: International Fund for Agricultural Development's

IFC: International Financial Corporation

IIED: International Institute for Environment and Development

IMF: International Monetary Fund

INDC: Intended Nationally Determined Contribution

IPCC: Intergovernmental Panel on Climate Change

IPs: Integrated Programs

ISFL: Initiative for Sustainable Forest Landscapes

IUCN: International Union for Conservation of Nature

LDCF: Least Developed Countries Fund

LDCs: Least Developed Countries

MCFs: Multilateral Climate Funds

MDBs: Multilateral Development Banks

MIEs: Multilateral Implementing Entities

MINADER: Ministry of Agriculture and Rural Development

MINEPDED: Ministry of Environment Protection of Nature and Sustainable Development

MINFI: Ministry of Finance

MINFOF: Ministry of Forest and Wildlife

MINREX: Ministry of External Relations

MSP: Medium-sized Project

NAPAs: National Adaptation Programs of Action (NAPAs)

NAPs: National Adaptation Plans

NCOQ: New Collective Quantified Goal on Climate Finance

NDA: National Designated Authorities

NDAs: National Designated Authorities

NDCs: Nationally Determined Contributions

NGOs: Non-Governmental Organizations

NIEs: National Implementing Entities

NOCC: National Observatory of Climate Change

NPD: National Program Document

ODA: Official Development Assistance

OECD: Organisation for Economic Co-operation and Development

OFP: Operational Focal Point

OFP: Operational Focal Point

OSC: Operational Strategy and Policy Guidance Committee

PA: Paris Agreement

PIF: Project Identification Form

PNACC: National Plan for Adaptation to Climate Change

PPF: Project Preparation Facility

RA: Regenerative agriculture

REDD: Reduce Deforestation and Forest Degradation

REP: Request for Proposal

RIEs: Regional Implementing Entities

R-PP: Readiness Preparation Proposal

SAP: Simplified approval process

SCCF: Special Climate Change Fund

SDGs: Sustainable Development Goals

SGP: Small Grants Program

SIDS: Small Island Developing States

SIDS: Small Islands Developing States

SMEs: Small and medium-sized enterprises

SND-30: National Development Strategy 2020-2030

STAP: Scientific and Technical Advisory Panel

UN: United Nations

UNCCD: United Nations Convention to Combat Desertification

UNDP: United Nations Development Program

UNEP: United Nations Environment Program

UNFCCC: United Nations Framework Convention on Climate Change

UNFF: United Nations Forum on Forests

UNIDO: United Nations Industrial Development Organization

UN-REDD: United Nations Program for Reducing Emissions from Deforestation and Forest Degradation

USD: United States Dollars

WMO: World Meteorological Organization

WWF-US: World Wildlife Fund – US

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ABSTRACT

This study aims to assess the role of climate finance in promoting regenerative agriculture, with a specific focus on cocoa and cereal production. Amid the growing climate crisis, developing countries particularly Cameroon bears a disproportionate burden despite their minimal contribution to greenhouse gas emissions. This situation negatively impacts agricultural productivity and exacerbates hunger and food insecurity, highlighting the urgent need to intensify efforts to combat emissions and address these challenges. Cameroon has actively participated in international discussions on sustainable development and climate change, aligning itself with Sustainable Development Goals (SDGs) 2 and 13, which aim to end hunger, achieve food security, promote sustainable agriculture, and combat climate change. Despite these commitments, the country continues to face significant challenges related to climate change and hunger. The movement for sustainable development emphasizes the widespread adoption of regenerative agriculture and strategies to encourage its implementation among local populations. The problem this study seeks to address is examining stakeholders' perceptions of climate finance mechanisms and their potential to facilitate the transition to regenerative agricultural practices crucial for strengthening resilience and ensuring food security. Using a mixed-method approach (both quantitative and qualitative), the study assesses the current state of climate variability in Ntui, analyzes stakeholders' understanding of innovative mechanisms for regenerative agriculture, and examines the impact of climate finance initiatives on farmers' decisions. It also identifies the barriers stakeholders face in accessing financial resources and their implications for food security. The results indicate that stakeholders' knowledge of climate finance significantly influences the adoption of regenerative practices, with higher awareness correlating to better access to funding. However, challenges such as a lack of information and capacity hinder the effective use of climate finance, further exacerbating food insecurity. This research underscores the need to improve stakeholder education on climate finance and enhance access to financial mechanisms. The findings aim to inform policymakers and stakeholders, facilitating the promotion of sustainable agricultural development and contributing to the achievement of the Sustainable Development Goals (SDGs) in the region.

Keywords: Climate Finance, Regenerative Agriculture, Climate Crisis, Sustainable Development Goals, Hunger and Food Insecurity.

RÉSUMÉ

Cette étude a pour objectif d'évaluer le rôle du financement climatique dans la promotion de l'agriculture régénérative, en se concentrant spécifiquement sur la production de cacao et de la céréale. Au milieu de la crise climatique croissante, les pays en développement, en particulier le Cameroun, supportent un fardeau disproportionné malgré leur contribution minimale aux émissions de gaz à effet de serre, ce qui a un impact négatif sur la productivité agricole et exacerbe la faim et l'insécurité alimentaire. Cela souligne l'urgence d'intensifier les efforts pour lutter contre les émissions et relever ces défis. Le Cameroun a participé activement aux discussions internationales sur le développement durable et le changement climatique, s'alignant sur les Objectifs de Développement Durable (ODD) 2 et 13, qui visent à mettre fin à la faim, à atteindre la sécurité alimentaire et à promouvoir l'agriculture durable tout en luttant contre le changement climatique. Malgré ces engagements, la nation continue de faire face à des problèmes significatifs liés au changement climatique et à la faim. Le mouvement pour le développement durable met l'accent sur la popularisation de l'agriculture régénérative et des stratégies pour encourager son adoption parmi les populations locales. Le problème que cherche à résoudre cette étude est d'examiner les perceptions des parties prenantes concernant les mécanismes de financement climatique et leur potentiel à faciliter la transition vers des pratiques agricoles régénératives, cruciales pour renforcer la résilience et assurer la sécurité alimentaire. En utilisant une approche mixed (quantitative et qualitative), l'étude évalue l'état actuel de la variabilité climatique à Ntui, analyse la compréhension des parties prenantes sur les mécanismes innovants pour l'agriculture régénérative et examine l'impact des initiatives de financement climatique sur les décisions des agriculteurs. Elle identifie également les barrières auxquelles les parties prenantes sont confrontées pour accéder aux ressources financières et leurs implications pour la sécurité alimentaire. Les résultats indiquent que la connaissance des parties prenantes en matière de financement climatique influence significativement l'adoption de pratiques régénératives, une sensibilisation plus élevée étant corrélée à un meilleur accès au financement. Cependant, des défis tels que le manque d'informations et de capacités entravent l'utilisation efficace du financement climatique, exacerbant encore l'insécurité alimentaire. Cette recherche souligne la nécessité d'améliorer l'éducation des parties prenantes sur le financement climatique et d'améliorer l'accès aux mécanismes de financement. Les informations obtenues visent à éclairer les décideurs et les parties prenantes, facilitant la promotion d'un développement agricole durable et contribuant à la réalisation des Objectifs de Développement Durable (ODD) dans la région.

Mots-clés : Financement climatique, Agriculture régénérative, crise climatique, , Objectifs de Développement Durable, Faim et insécurité alimentaire.

GENERAL INTRODUCTION

In this part of our study, we will present the general context and justification of the study (I), the delimitation of the subject (II), the interest of the subject (III), the problem (IV) the objectives of the study (V), the hypothesis (VI) and the plan of work (VII).

0.1.GENERAL BACKGROUND AND JUSTIFICATION

0.1.1. General Background

It is increasingly evident that humanity is facing a climate crisis, a consequence of the Industrial Revolution driven by unsustainable economic growth patterns (IPCC, 2007). Affluent nations in the Global North are responsible for nearly half of all greenhouse gas emissions since the Industrial Revolution (Abdul, 2024). These countries have reaped the greatest benefits from this period, accumulating wealth and maintaining control over the global economic system at the expense of poorer nations in the Global South. While developing countries in the Global South contribute minimally to global emissions, they disproportionately suffer from its effects (Abdul, 2024). Vulnerable and marginalized communities are the most affected by climate-related impacts, despite their negligible contribution to the problem. Climate-induced disasters exacerbate poverty in the Global South, trapping these communities in a cycle of deprivation.

The adoption of the Sustainable Development Goals (SDGs) in 2015, during the Paris Agreement, addresses development issues globally (UNDP, 2023). Goals two and thirteen specifically focus on ending hunger, achieving food security, improving nutrition, promoting sustainable agriculture, and combating climate change by reducing global emissions. Climate change presents an unprecedented global challenge, causing increasingly severe environmental, social, and economic damage each year (IPCC, 2007). According to the United Nations Framework Convention on Climate Change (UNFCCC, 1992), climate change is characterized by an increase in environmental hazards, extreme temperatures, and heavy rainfall, all of which significantly impact society and human activities. Addressing and adapting to climate change by implementing measures to reduce global greenhouse gas emissions has become a priority for the global economy (Jurgilevich et al., 2017).

While the world's climate has always varied naturally, most scientists now believe that the rising concentrations of greenhouse gases in the atmosphere—resulting from economic and demographic growth over the past two centuries—are overriding this natural variability and leading to potentially irreversible climate change (Leichenko & O'Brien, 2024). After over three decades of efforts to combat the climate crisis, greenhouse gas emissions today are 60% higher than in the 1990s (Stoddard et al., 2021), highlighting the pervasive nature of climate change, particularly in Africa and Small Island countries.

Since the Industrial Revolution, atmospheric carbon dioxide concentrations have risen significantly (Hughes et al., 2003; IPCC, 2001b, 2007d; Parmesan & Yohe, 2003), presenting a critical question for the survival of our planet. Scientific evidence of climate change has accumulated rapidly in recent decades, with rising global temperatures serving as the most visible indicator (Leichenko & O'Brien, 2024). Global mean temperatures have increased by approximately 1.1 degrees Celsius, primarily due to human activities that elevate carbon dioxide concentrations (Damor, Parthvee R., 2024; Leichenko & O'Brien, 2024). Climate change poses significant challenges to sustainable growth, poverty reduction, and food security. Global warming, linked to rising atmospheric greenhouse gas concentrations, is a fundamental cause of climate change (IPCC, 2007d). Greenhouse gases, such as carbon dioxide, trap heat, leading to a warming effect on Earth. Other significant greenhouse gases include nitrogen, methane, and water vapor, the latter increasing with rising temperatures due to evaporation from lakes, rivers, oceans, and seas (Bristow & Ford, 2016).

As climate change intensifies, food insecurity is anticipated to face additional challenges. By 2050, it is projected that developing countries may experience a decline of 9% to 12% in overall agricultural productivity due to climate change (FAO, 2009, cited by Huang Ji-Kun et al., 2014). In addition to long-term climate changes, global and regional weather conditions are expected to become more variable, with increased frequency and severity of extreme events (IPCC, 2012). These long-term climate changes and extreme weather events lead to greater fluctuations in crop yields and local food supplies, heightening the risk of food insecurity (FAO, 2009; IPCC, 2012, cited by Huang Ji-Kun et al., 2014). Hundreds of millions of people currently suffer from food insecurity and hunger globally, with most of the world's hungry residing in Africa. In 2021, the number of undernourished people reached 815 million (FAO, 2021, cited by Huang Ji-Kun et al.,

2014). Consequently, global food production must increase by 70% to meet the demands of a population expected to exceed 9 billion by 2050 (FAO, 2009).

Furthermore, food inflation has reached its highest level in three decades, averaging 30%. The COVID-19 pandemic, the war in Ukraine, and the overarching climate crisis have exposed the vulnerability of the global food supply chain to health, geopolitical, and environmental shocks (D. Chiriac et H. Vishnumolakala, 2023). In Africa, nearly 282 million people (about 20% of the population) are malnourished and suffer from food insecurity (FAO, 2023). Droughts and floods are worsening agricultural productivity and have killed approximately 7 million livestock in Africa since 2018 (UN, 2022), increasing the continent's dependence on food imports and worsening its current account balance (World Bank, 2023a). Alongside growing concerns about climate change, there is a recognition of the urgent need to act to mitigate severe, widespread, and irreversible global impacts (IPCC, 2014a, 2023a). The Sixth Congress of the Intergovernmental Panel on Climate Change (IPCC, 2002) highlights that the adverse effects of climate change on agriculture are increasingly felt worldwide, with Africa particularly vulnerable due to various impacts and risks. Extreme droughts, reduced rainfall, and unpredictable distribution during the rainy season negatively affect agricultural activities (Lecaillon et al., 1984), leading to low agricultural yields (FAO, 2016). This situation continues to challenge African states in finding sustainable solutions to climate-related issues.

Cameroon is not immune to these challenges, especially in its northern central region, which is particularly vulnerable. The nation is threatened by climate change, with precipitation declining since 1960 at a rate of about 2.2% per decade and rising temperatures observed throughout the country (UNDP, 2008). Droughts and floods related to increased temperatures and heavy rainfall, respectively, compound these issues (PNACC, 2015). Approximately 1 million people, or 9.6% of rural households, experience food insecurity (Pierre Marie Chimi, 2022). This national average masks significant regional variations, particularly high rates in the north, where about 86% of the working population is employed in agriculture, making food security more vulnerable to climate change impacts (MINEPDED, 2015).

While the agricultural sector is the most sensitive and vulnerable to climate change, it is also a significant contributor to greenhouse gas emissions, accounting for 13.5% of global emissions in

2004 (IPCC, 2007b). Projections indicate that these emissions will increase if agricultural development continues under a "business-as-usual" model. Therefore, collective action across all sectors is necessary to address this issue.

Regenerative agriculture (RA) has emerged as a vital tool for addressing these challenges and achieving the United Nations Sustainable Development Goals (SDGs) by promoting soil health, reducing greenhouse gas emissions from agriculture, alleviating poverty, and ensuring food and livelihood security (Agrawal et Jain, 2016). Currently, agricultural intensification is crucial due to the need for higher food production to meet the growing population. Consequently, there is a pressing need to transition to more productive and zero-emission agricultural models like RA. Even without considering climate change, the investments required in agriculture in developing countries will be substantial and must be significantly increased to tackle food insecurity (FAO, 2019, cited by Huang Ji-Kun et al., 2020). Low access to finance is a barrier for smallholder farmers, hindering the transition to RA. Given the context of climate change, even greater efforts are necessary (Huang Ji-Kun et al., 2020). Current investments and commitments fall short of what is needed to meet the growing demands, particularly in the developing world (Islam, 2011). Moreover, the share of foreign aid allocated to agriculture has declined; for instance, while the share of agricultural aid increased from 13.0% in 1973-1975 to 23% in 1979-1981, it has been declining since the mid-1980s. Climate finance has emerged as a potential tool for enhancing agricultural development, with RA being one of the strategies that contribute to this goal.

This thesis explores the intricate relationship between climate finance and the transition to regenerative agriculture. By examining the existing literature, conducting empirical analyses, and engaging with relevant case studies, this research aims to provide a comprehensive understanding of how climate finance can influence climate change through the lens of regenerative agriculture.

0.1.2. Justification of the choice of subject

Cameroon is already experiencing the impacts of climate change, which threaten community ecosystems and the services they provide (Levesque, 2018). The consequences of climate change may undermine Cameroon's efforts to reduce poverty and hunger and to develop a strong, diversified, and competitive economy (Levesque, 2018). The nation is particularly vulnerable due to its territories in the Sahelian zone, which are affected by desertification, and its coastal areas,

which are threatened by rising sea levels. The diverse geography of Cameroon means that the impacts of climate change vary widely across regions, even though all agro-ecological zones and sectors are affected (Levesque, 2018).

The Centre region of Cameroon, specifically Ntui in the Mbam and Kim Department, is a significant agricultural area affected by climate change. Implementing regenerative agriculture practices could be particularly beneficial in this context, helping smallholder farmers adapt to changing environmental conditions and improve the long-term sustainability of their livelihoods. Assessing the impact of climate finance on these initiatives can guide local and national policymakers in supporting climate-smart practices such as regenerative agriculture in the region. Additionally, there is limited research on the intersection of climate finance, regenerative agriculture, and local development in the specific context of Cameroon or Central Africa. The findings of this study may inform the design and implementation of more effective climate finance programs to support regenerative agriculture and community resilience in Ntui and beyond. This research can also highlight best practices and lessons learned that could be shared with other regions or countries facing similar challenges. In summary, the choice of this subject is justified by the topic's importance, its relevance to the local context, the existing knowledge gap, and the potential for meaningful impacts on climate change mitigation, adaptation, and sustainable development in Ntui.

Ultimately, this research aims to contribute to the ongoing international dialogue on how to scale up climate finance that supports environmental initiatives and reduces the effects of climate change.

0.2.DELIMITATION OF THE SUBJECT

In order to better address the issue of the role climate finance can play in promoting the adoption of regenerative agriculture in Cameroon in the particular context of Ntui, it will be appropriate to delimit this study into two dimensions: spatial and temporal.

0.2.1. Spatial Delimitation

Located in the department of Mbam and Kim, Centre region and 100 km from Yaoundé with an area of 1,650 km², the Commune of Ntui extends between 4°20'0" and 5°10' north latitude and

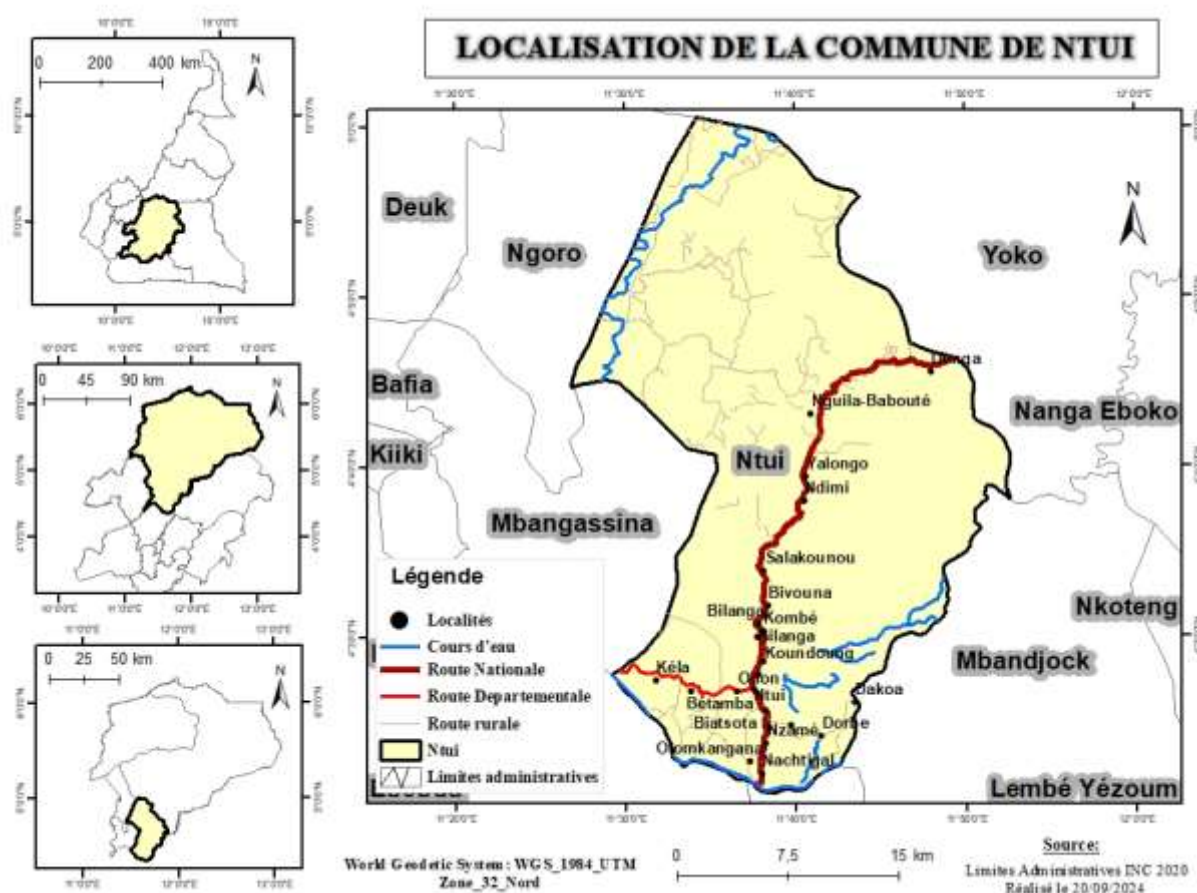
11°10 and 11°80 east longitude with a population estimated according to the results of the last population census at 20,000 inhabitants and has 27 villages with three 2nd degree chiefdoms).

It is limited to:

- To the north by the commune of Yoko du Mbam and Kim; (176 km)
- To the south by the municipality of Batschenga in the department of LEKIE (20 km)
- To the west by the commune of Sa' a in the department of LEKIE (37 km)
- To the east and north-east by the Sanaga

It is located in the time zone West Africa Standard Time and its official currency is the XAF (CFA Franc BEAC).

Figure 1 : Location of the Area of Study



Source: Limites Administrative INC, 2020

0.2.2. Temporal Delimitation

To better implement Cameroon's climate commitments within the framework of the Paris agreement, through the mainstream of its national determined contribution, the temporal choice of this study covers the period from 2015 when the COP 15 was held to the present day. The time limit is not chosen randomly. It is explained by the fact that 2015 marks the year of the signing of an important legally binding agreement on climate change which until today constitute the main turning point in the fight against climate change. However, the upper time limit remains open because climate issue still remains till date relevant both national and international.

0.2.3. Thematic Delimitation

Thematic Delimitation

This study is thematically delimited to the exploration of climate finance as a pivotal instrument in promoting regenerative agricultural practices. While regenerative agriculture forms the central focus of the research, the investigation is deliberately confined to the financial dimension specifically, the mechanisms through which climate finance, whether public, private, multilateral, or innovative, supports the adoption and scaling of regenerative methods among smallholder farmers.

The research critically examines stakeholders' perceptions, access to, and the tangible impacts of climate finance on cocoa and cereal farming in Ntui, Cameroon. Broader themes such as agronomic innovations, ecological practices, and technological interventions in regenerative agriculture are not considered in-depth, except where they intersect directly with financing issues. This delimitation ensures a targeted and policy-relevant analysis of how climate finance contributes to building agricultural resilience and sustainability in climate-vulnerable rural contexts.

0.2.4. Biophysical environment

i. Climate

The Commune of Ntui is subject to a sub-equatorial climate of the classic Guinean type with two rainy seasons (corresponding to the growing seasons) and two dry seasons. The average temperature of the region oscillates around 26°C with a temperature range varying between 8 and

13°C. Annual rainfalls is usually 1400 mm of rain on average per year; The long dry season runs from mid-November to mid-March, the short rainy season runs from mid-March to mid-June, the short dry season from mid-June to mid-August, and the long rainy season runs from mid-August to mid-November. The fact remains that the city escapes the effects of climate change that affect the agricultural and livestock production sector (PCD, 2022).

ii. Soils

The area has remarkably good arable soils with satisfactory drainage. Two main types of soils are found in this locality, namely ferralitic soils and hydromorphic soils.

Ferralitic soils

Generally speaking, these soils are characterized by a sandy-clayey texture. They are nutrient-poor, acidic, fragile and characterized by strong yellow or light-yellow colorations. Under the forest canopy, these soils are sometimes clayey, porous, highly permeable and rich in humus. They are known to be very fertile under the forest canopy. However, this fertility is quite precarious (PCD, 2013). These soils are mainly suitable for perennial crops (cocoa, fruit trees, palm trees) and food crops.

Hydromorphic soils

Hydromorphic soils are mainly found in marshy areas and along watercourses. The exploitation of these soils is difficult in rainy weather because of their waterlogging. In the dry season, on the other hand, the use of these soils is less restrictive with the drop in the water table. The practice of off-season crops is then possible on the banks of the village's waterways. The exploitation of these soils is difficult in rainy weather because of their waterlogging. In the dry season, on the other hand, the use of these soils is less restrictive with the drop in the water table. The practice of off-season crops is then possible (PCD, 2013).

iii. Forest: Flora and Fauna

The Commune of Ntui is located in a forest area of the equatorial forest. The flora as a whole is also very rich in forest formations with various species.

Fauna

The Commune of Ntui is home to a very diverse but scarce wildlife. The information collected from the populations and the sectors in charge reveals that this fauna is located both in gallery forests and in peri-forest savannahs (DAMINADER-NTUI, 2017). Some of the characteristic species are shown in Table 1 below.

Table 1: Main potential of the municipality of Ntui

Sectors	Potentiality
Agriculture	- Climate favourable to the practice of agricultural activities; - Significant rainfall; - Existence of vast arable land; - Presence of agricultural production areas both on the urban periphery and in rural areas; - Existence of human potential that can be used as a workforce for agricultural activities; - Existence of farmers' support services; - Existence of development projects and programs that support producers; - High production of Cocoa (2,500 t), Cassava (15 t), Macabo (08 t), Peanut (02 t), Plantains (25 t), Maize (10 t), Oil palm (1000 l), Existence of ICGs and Farmers' Associations
Animal Husbandry, Fisheries and Industry	- Climate favorable to the practice of pastoral activities; - Existence of lowlands favourable to the practice of fish farming; - Existence of associations and GICs
Forest and wildlife	- Climate favorable to the development of agroforestry, - Existence of a forest potential in the commune, - Existence of a public service in charge of regulating forestry and wildlife exploitation - Existence of rare forest species such as: Sape li; Iroko; - Existence of wildlife species such as: Buffalo; antelope; Chimpanzee;
Environment and Nature Protection	- Climate and soil favourable to the practice of forestry - Existence of public environmental services

Source: PCD, 2022

iv. Hydrography

The Commune of NTUI is watered by the Sanaga, a river full of fish with a permanent flow characterized by its falls and rapids. The Commune also has a dense network of watercourses, the most important of which are Ossombo, Obagne, Meloko, Mpiem, with an inexhaustible course. The presence of marshy banks in Ntui Ossombo and the To'o district offers potential for the development of fishing activities. The presence of these watercourses presents a capitalizable potential in the context of the pursuit and development of tourist, fishing and even hydroelectric activities (PCD, 2013).

0.2.5. Human Environment

i. History

The name NTUI originates from the time of German colonization. During their passage through Ntui in the Biatsota I district, the German colonist noticed the extreme poverty of the inhabitants. On this subject, he asked them what was wrong with the community. "Goame ntu", replied the village chief, meaning we are dying of poverty. The word Ntu was retained by him. When the French arrived, they added the letter "i" to the original word "Ntu". This is how the name "Ntui" came about. The indigenous people, the Mbondjo of the Mvele tribe were those who would have stayed far from the road at the time of the Germans and they were called "dung dwellers" because they did not want to leave the bush for the road because of their poverty. They therefore came to settle in the current site and their first chief was called AMBEDJA; upon his death, his son MAKIA AMBEDJA succeeded him and it was during his reign that his community was named Ntu. During the Second World War, he served as a rifleman. Back in his native lands, he took over the reins of the chieftaincy. He died in 1950. OMBALA Marcel succeeded him and passed away in December 2000. His son, MANDOH Georges, the current chief, ensures the destiny of the city.

ii. Population

The population of Ntui is 20,000 inhabitants (municipal sources), including 10,702 men and 9,298 women, (53.51% of men against 46.49% of women) according to the figures of the last census. It is quite cosmopolitan due to its cultural diversity; we find the natives who are made up of the Sanaga, Vute, Baveuk, Mvele, Batschenga, we also find non-natives from different regions of the

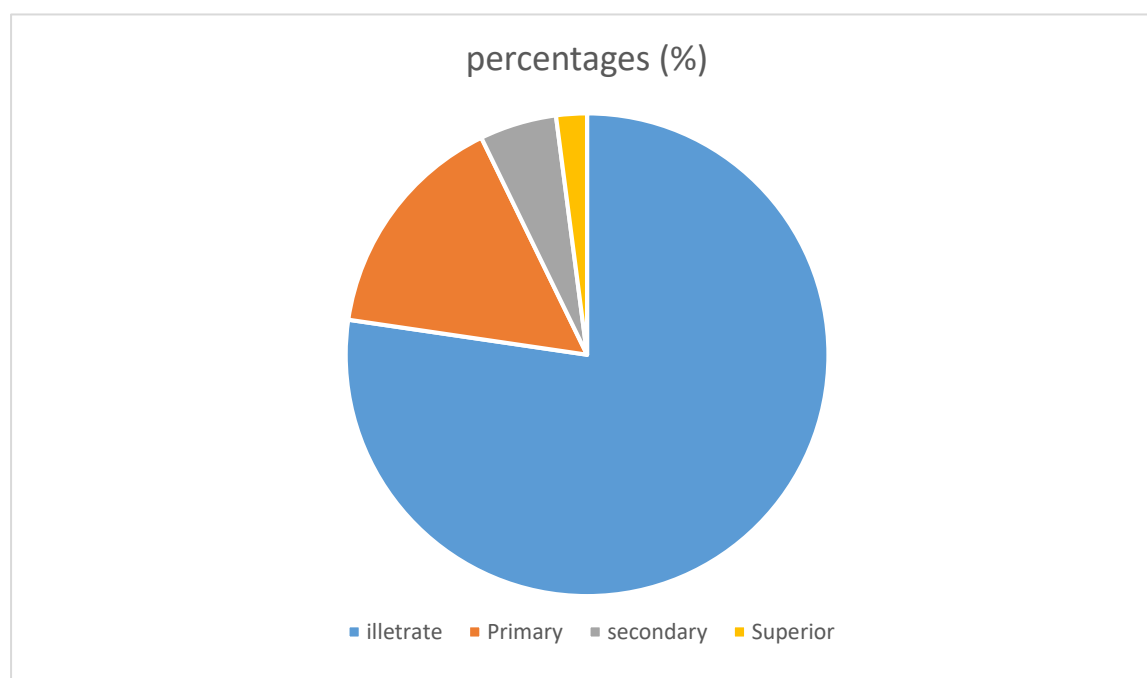
country like the Bamiléké, Bamoun, Haoussa, Yambassa, Bororos etc. most often we find them in communities which is why we will hear for example talk of the Haoussa district instead of Bindalima 1 which is the original name of this village.

More than 60% of this population lives in rural areas and practice agriculture, breeding, and fishing (PCD, 2013). The population of Ntui is mostly made of young and is a source of important labour for agriculture.

iii. Farmers' level of education.

The level of education is an important parameter that makes it possible to analyse and understand the quality of different agricultural techniques and adaptation strategies adopted by farmers. The population of Ntui is poorly educated, as shown in the figure below.

Figure 2: Level of Education in Ntui



Source: Author 2024

According to this figure above, 75% of farmers are illiterate, 15% have attended primary education, 8% have attended secondary education and 2% have attended university. The low level of

education of farmers can justify the fact that farmers are vulnerable to the effects of climate change as they will find it different to understand mechanisms of climate change and appropriating new techniques that will be popularized. Also, they will find it difficult to understand financial mechanisms for climate change as well as innovative financial mechanisms that could be used to finance regenerative agriculture.

Table 2: Distribution of the population

Village		Population				
		Homme	Femme	Jeunes (0 à 8 ans)	Enfants (de 0 à 5 ans).	Total
1.	BETAMBA	420	596	106	102	1016
2.	BIAGNIMI	65	36	40	35	176
3.	BIANGOENA	750	600	115	105	1350
4.	BIATSOTA 1	850	900	500	450	1750
5.	BIATSOTA 2	150	100	50	40	250
6.	BILANGA KOMBE	168	106	36	29	339
7.	BINDALIMA 1	275	425	450	900	2050
8.	BINDALIMA 2	60	130	10	30	230
9.	BINDANDJENGUE	150	270	100	80	600
10.	BIVOUNA	294	564	959	614	2431
11.	EHONDO	175	175	250	100	700
12.	KELA	247	285	116	57	705
13.	KOMBE BENGUE	1193	983	145	69	2390

14.	KORO	40	43	20	52	155
15.	KOUNDOUNG	53	77	17	11	158
16.	KOUSSE	109	236	54	93	492
17.	MBANGA	191	521	60	105	876
18.	NACHTIGAL	375	325	100	150	950
19.	NDJAME	375	275	100	50	800
20.	NDIMI	765	965	42	28	1800
21.	NGUETTE	941	1041	123	95	2200
22.	NGUILA	9455	842	235	185	2207
23.	NTUI	6000	7000	2100	1200	13000
24.	ODON	130	210	79	68	340
25.	OSSOMBE	1583	2383	129	105	4200
26.	SALAKOUNOU	24	126	120	80	450
27.	YALONGO	217	367	36	32	652
28.	TOTAL	19741	22485	7084	4813	19741

Sources : Chiffres issus des différents diagnostics (DPNV, DEUC, 2013)

iv. Housing

Generally speaking, housing is grouped in rural and urban areas. This reflects a clear desire for populations to live together. It consists of rectangular houses made of temporary and permanent materials: these are hard, semi-hard and beaten earth houses with raffia mat roofs. On both sides of the communal space, there are houses strewn with sheet metal roofs.

v. Religion

Several religions, mostly of Christian persuasion, are practiced within the Commune. These include Catholicism, Protestantism and Pentecostalism. Islam is also practiced there (PCD, 2022).

vi. Economic activities

Ntui is a city with strong economic potential. Its economic activities are mainly based on trade, exploitation of natural resources such as gathering and crafts, fishing and processing of regional agricultural products (palm oil, wood). Many quarry products (gravel, sand, gravel) found along the banks of the Sanaga and the main rivers that flow through the communal area, as well as sand from the sedimentation of rocks

Agriculture

Agriculture is the main activity of the populations of the Commune. It is marked by food crops (Cocoa (2,500t), Cassava (15t), Macabo (08t), Peanut (02t), BananaPlantain (25t), Corn (10t), Oil palm (1000 l), etc.) and cash crops (cocoa and coffee). In the villages, agriculture appears to be the only important productive sector (PCD, 2013). Also, this agriculture is largely based on the production of food for household consumption and marketing to resellers commonly called "bayamselam". Men cultivate cash crops which constitute a real source of income.

Cash crop farming.

This is agriculture intended for marketing. It is based on cocoa cultivation. The plantations are medium-sized, ranging from one to 25 hectares, with an average cocoa production of 7.5t per hectare (PCD, 2013).

Fishing

Fish products occupy a prominent place in the supply of animal protein to households. Fishing is the primary lucrative activity for Malian non-natives living in Ndji and Nachtigal. This is an artisanal fishery practiced mainly in the Sanaga River and the waterways in the Commune (Meloko, Mpien, Athè). The fishing techniques used include nets, traditional pirogue, and lines. The most commonly caught fish species include Nile Tilapia, snakehead fish (Chana chana), redbtail fish,

carp, and freshwater captain (PCD, 2013). However, the use of illicit and toxic substances to catch fish has been reported.

Hunting

The plant formations (forest and savannah) found in the Commune are home to a very diverse but not very abundant hunting fauna. This fauna continues to play a very important role in supplying local populations with animal protein and contributes effectively to the income of certain households. Here, hunting is both a means of capturing or killing animals and a means of protecting crops. This activity is exclusively practiced by men and young boys. The main characteristics of this hunting remain its permanence, its non-selectivity and the waste of resources caused mainly by trapping. This activity concerns a section of the population despite the controls of the MINFOF game wardens.

Crafts.

This activity is practiced by young people, women and some old people. Most of the objects are made of local materials: bamboo, rattan, wood, palm leaves, etc. The objects made here are baskets, hoods and mortars.

Trade.

Trade is the work of small traders (grocery stores, takeaways). It is oriented towards the sale of basic necessities, agricultural and hunting products. There is a municipal market in the city center (PCD, 2013). In the Municipality, there are several organizations that promote the flow of sales products.

0.3. THE SIGNIFICANCE OF THE STUDY

The aim of this study which is to examine the role climate finance can play in promoting regenerative agriculture in Cameroon precisely in the Ntui District. It is hoped that the findings of this study will provide some information which if taken up could be used to improve knowledge of the various financial mechanisms that could be deployed to put in place regenerative agriculture and also provide information on the various areas to work on to improve its capacity in accessing

climate funds. An effective response to climate finance challenges could help in the putting in place of environmentally friendly initiatives.

Also, another significant of this study is to anchor the importance of using regenerative agriculture as a way of limiting our emission*ns to well to 32% as started in the NDC. In various forums organized by the IPCC to foster climate change response, all national undertook to limit their emissions to a maximum of two degrees Celsius (Benjaminsen & Svarstad, 2021). This study has come at a time when human have altered more than 70% of earth's land from its natural state, with agriculture having the greatest impact of all human activity and currently occupying 40% of all land area (UNCCD, 2022). As such, our subject presents several significances from a societal, educational and political point of view.

0.3.1. Societal Significance

This thesis in social discipline is expected to focus on a phenomenon that the policymakers might care about the non-academic impact of the research (Bryman, 2016). The thesis focuses on the concept of climate finance and how it can be used by recipient countries in achieving their climate objectives. This topic is socially relevant as there is no appropriate time to study climate finance than now as climate change is the most urgent issue of this century. The creation of the green climate fund (GCF), the world's largest multilateral climate fund is a crucial element of the holistic Paris Agreement that aims to support developing countries achieve their climate ambitions and limits its devastating effects(GCF, 2021).By studying the challenging faced by climate finance accessibility, the research will help the policymakers ,multilateral and bilateral climate funds to understand the expectations of the recipient countries to achieve effective climate action and also help recipient nations scale up their capacities in receiving climate finance. This thesis targets recipient international climate finance and the findings can help them surpass their challenges and guide them in making informed decisions.

0.3.2. Educational Significance

This thesis is of educational relevance as studying this topic can help students and researchers learn about the various climate finance instruments and mechanisms and international climate finance initiatives that can be deployed for the implementation of Regenerative Agriculture. This knowledge is crucial for understanding how global efforts to address climate change can be

translated into local actions. Regenerative Agriculture who emerged as a system of farming that focuses on farming techniques that improve soil health, increase biodiversity and sequester carbon must be thought to the various parties involved so as to encourage its widespread adoption. Exploring this topic can help students, farmers, financial institutions and also policy makers understand the environment and economic benefits of adopting Regenerative agricultural practices particularly in the context of developing countries like Cameroon. Cameroon like many other developing countries is highly vulnerable to the impact of climate change. Examining the role climate finance plays in supporting the transition to regenerative agriculture can help analyze how climate change mitigation and adaptation strategies can be integrated into agricultural development plans.

0.3.3. Political Significance

This thesis is also of significant political relevance because it significantly holds on to global climate action, sustainable development and food security. Regenerative agriculture practices which has the potentials to sequester carbon and improve country's resilience to climate change impacts, aligns with the global political commitments under the Paris Agreement and particularly with that of Cameroon's objective to limit its emissions to 34% (NDC, 2021) and also potentially improve food security and rural livelihoods which are crucial political issues in Cameroon (Tchounwou.P.B,& Nangmenyi.G, 2017). Furthermore, the theme directly relates to several SDGs including Goal 2(Zero Hunger), Goal 13(Climate Action) and Goal 15 (Life on Land), which are political priorities for many countries including Cameroon (United Nations, 2015) and also addresses the politically sensitive issue of climate finance allocation for developing countries just like Cameroon. (Nakhooda.S, Watson., & Schalatek, 2015). Therefore, exploring this theme will contribute to significant knowledge on how policies can be designed to promote the transition to Regenerative Agriculture that will not only contribute to the sequestration of carbon but also fight food insecurity and also show how governments especial the Cameroon government can design policies that promotes the mobilization of funds and financial mechanisms for Regenerative Agriculture.

0.4. PROBLEM STATEMENT

Climate change has become a reality and a major challenge to the world today especially to Cameroon (IPCC, 2006) being one of the major causes of food insecurity and poverty. Anticipated impacts of global climate change are alarming and are expected to further impact all aspects of human life (Post&Altman, 1994). Ntui found in the Centre region of Cameroon faces significant challenges related to climate change, which adversely affect its agricultural productivity, food security, and local livelihoods. Despite the increasing recognition of regenerative agriculture in the world today as a sustainable solution to enhance resilience and restore ecosystems, the role of climate finance in facilitating its adoption remains underexplored. This research aims to assess stakeholder's perception and also the potentials of climate finance mechanisms in facilitating the transition to regenerative agricultural practices in Ntui. By understanding this dynamic, the study seeks to provide actionable insights for policymakers and stakeholders to enhance the effectiveness of climate finance in promoting sustainable agricultural development.

0.5. RESEARCH QUESTION

A research question indicates what the research is all about and if its critical in forming the direction of the research and fieldwork (Cohen, Manion & Morrison, 2018, pg.165). This section is made up of the main research question and specific research questions. Therefore, the following forms the research question of this study;

0.5.1. Main Research Question

Our main research question is "How do stakeholders in Ntui, Cameroon perceive the role of climate finance in facilitating the transition to regenerative agricultural practices, and what potential do they see for enhancing climate resilience, reducing global emissions, improving food security, and promoting sustainable development?"

0.5.2. Specific Research Questions

This main research question is further divided into sub questions to better apprehend this study. which are;

- What is the current state of climate vulnerability in Ntui ?

- How do stakeholders in Ntui understand innovative mechanisms for regenerative agriculture, and related climate finance opportunities ?
- What impact have climate finance initiatives had on farmers' decisions to adopt regenerative agricultural practices in Ntui ?
- What challenges do stakeholders face in accessing climate finance mechanisms for regenerative agriculture ?

0.6. RESEARCH OBJECTIVE

0.6.1. Main Objective

The primary objective of our study is to assess the perception and potential of stakeholders regarding climate finance in facilitating the transition to regenerative agricultural practices in Ntui, found in the Centre Region of Cameroon.

0.6.2. Specific Objectives

1. To evaluate the state of climate vulnerability and its effects on agricultural production in Ntui;
2. To evaluate stakeholders' understanding of innovative mechanisms for regenerative agriculture and the opportunities presented by climate finance ;
3. To analyse the impact of climate finance initiatives on farmers' decisions to adopt regenerative agricultural practices in Ntui ;
4. To investigate the challenges faced in accessing innovative mechanisms for regenerative agriculture, supported by climate finance, to ensure food security in Ntui.

0.7. HYPOTHESIS

In a bid respond to the above-mentioned research questions, a general hypothesis and specific research hypotheses have been formulated.

0.7.1. Main hypothesis

Stakeholders' knowledge and understanding of climate finance significantly influence the adoption of regenerative agricultural practices in Ntui, Cameroon.

0.7.2. Specific Hypotheses

H1: Climate vulnerability significantly impacts agricultural production in Ntui ;

H2: Higher levels of knowledge among stakeholders about innovative mechanisms and climate finance are associated with increased opportunities for adopting regenerative agriculture;

H3: Climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, leading to improved climate resilience and reduced emissions ;

H4: The challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in Ntui.

Table 3: Synoptic Diagram of the Logical Framework of the Research

Research Question	Research Objectives	Research Hypotheses	Chapters
<u>Main Research Question</u> How do stakeholders in Ntui, Cameroon perceive the role of climate finance in facilitating the transition to regenerative agricultural practices, and what potential do they see for enhancing climate resilience, reducing global emissions, improving food security, and promoting sustainable development?	<u>Main Research Objective</u> Assessing the perception and potential of stakeholders regarding climate finance in facilitating the transition to regenerative agricultural practices in Ntui, found in the Center Region of Cameroon. With the aim to enhance climate resilience, reduce global emissions, improve food security, and promote sustainable development.	<u>Main Research Hypotheses</u> Stakeholders' knowledge and understanding of climate finance significantly influence the adoption of regenerative agricultural practices in Ntui, Cameroon.	CHAPTER I: LITERATURE REVIEW
<u>Specific Research Questions</u> What is the current state of climate vulnerability in Ntui ?	<u>Specific Research Objectives</u> To evaluate the state of climate vulnerability and its effects on agricultural production in Ntui;	<u>Secondary Hypothesis</u> H1: Climate vulnerability significantly impacts agricultural production in Ntui ;	CHAPTER II: CONCEPTUAL AND THEORITICAL FRAMEWORK.
How do stakeholders in Ntui understand innovative mechanisms for regenerative agriculture, and related climate finance opportunities ?	To evaluate stakeholders' understanding of innovative mechanisms for regenerative agriculture and the opportunities presented by climate finance ;	H2: Higher levels of knowledge among stakeholders about innovative mechanisms and climate finance are associated with increased opportunities for adopting regenerative agriculture;	CHAPTER 3: METHODOLOGICAL FRAMEWORK
What impact have climate finance initiatives had on farmers' decisions to adopt regenerative agricultural practices in Ntui?	To analyze the impact of climate finance initiatives on farmers' decisions to adopt regenerative agricultural practices in Ntui ;	H3: Climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, leading to improved climate resilience and reduced emissions ;	CHAPTER IV: RESULTS
What challenges do stakeholders face in accessing climate finance mechanisms for regenerative agriculture ?	To investigate the challenges faced in accessing innovative mechanisms for regenerative agriculture, supported by climate finance, to ensure food security in Ntui.	H4: The challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in Ntui.	

Source: Author, 2024

0.8. WORK ORGANIZATION

This work is divided into four chapters. Therefore, the first (1) chapter of this work presents a review of literature, Chapter (2) two presents the conceptual and theoretical framework of the study, Chapter (3) three is on the methodological framework and chapter (4) four the presentation and analyses of results.

CHAPTER I: LITERATURE REVIEW

INTRODUCTION

This chapter is focused on the literature review of the study. A literature review is a survey of scholarly sources on a specific topic that provides an overview of current knowledge, allowing one to identify relevant theories, methods and gaps in the existing research. This section constitutes the related literature on scientific studies carried out around the world, Africa and in Cameroon in particular climate finance and Regenerative (RA) while equally trying to bring out the complementarity between both concepts. This will permit this study to bring out the existing literature gap.

1.1.THE GENESIS OF CLIMATE FINANCE

Climate financing is crucial for effectively mitigating and adapting to climate changes and achieving sustainable development globally (Abdul, 2024). it plays a vital role in addressing the global challenge of climate change and its genesis can be traced through several key developments. According to the intergovernmental panel on climate change (IPCC), the core objectives of climate funds are low carbon transition-related transformations, establishing a platform upon which developing countries can be assured of an unflinching support from developed nations and an environment for nurturing technological innovation. Implying that climate finance is necessary in achieving sustainable development goals especially in developing countries who turns out to be the most vulnerable populations though contributes the least to greenhouse gas emissions (GHG) (Chukwudum QC, 2024). Also, there is a lack of attention to the delivery mechanisms required at the country level for climate finance to achieve its stated aims (Bird & Glennie, 2011). There is also a pressing need to ensure effective allocation of climate finance due to the urgency to act on climate change and the importance of financing sustainable development (Zou & Ockenden, 2016). In 2009, under UNFCCC, developed countries committed to mobilizing USD100 billion of climate finance annually by 2020 to address the priorities of the developing countries and later reinforced by the Paris Agreement to increase the threshold in 2025 (GCF, 2020).

In this section, we delve into the history of climate finance, exploring various funds that support climate action, and discuss the issues associated with funds.

Climate finance has evolved significantly since the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. From the Rio Earth Summit in 1992, to the Kyoto Protocol, to the Paris Agreement and beyond. These developments have underscored the importance of mobilizing adequate financial resources to support developing countries in their efforts to mitigate and adapt to climate change. The establishment of the Green Climate Fund and other climate funds coupled with other commitments made under various agreements demonstrates progress made but continued efforts are needed to ensure the fulfilment of funding commitments and the equitable distribution of climate finance resources.

UN Framework Convention on Climate Change (UNFCCC) - 1992

Climate finance dates back to 1992 with the creation of the United Nations Framework Convention on Climate Change (UNFCCC). The Rio 1992 establishment of UNFCCC, and funding through GEF mechanism and partnership established the groundwork for international climate negotiations. While equally recognizing the need for financial resources to assist developing countries, the UNFCCC laid the foundation for climate finance mechanisms (UNFCCC, 2024).

Kyoto Protocol- 1997

Subsequently, the Kyoto Protocol introduced mechanisms such as the Clean Development Mechanism (CDM) as a financial mechanism to promote clean energy projects in developing countries and the Adaptation Fund. The CDM allowed developed countries to invest in emission reduction projects in developing nations and receive carbon credits in return, which could be used to meet their own emission reduction targets (UNFCCC, 2024). It equally facilitated the channelling of climate finance to support mitigation and adaptation efforts.

Bali Action Plan (2007):

The Bali Action Plan marked a significant shift in climate finance discussions. It emphasized the need for long-term financing to support mitigation and adaptation actions in developing countries. The plan called for the establishment of a fund to mobilize \$100 billion annually by 2020 to address the needs of developing countries.

The COP 15 - Copenhagen Accord (2009):

The Copenhagen Accord, although not legally binding, recognized the importance of climate finance. It called for developed countries to provide "new and additional" resources, reaching a collective goal of \$30 billion in the period 2010-2012. It equally acknowledged the need to mobilize \$100 billion per year by 2020 from a variety of sources to support climate action in developing countries. It launched the Green Climate Fund (GCF) to channel funds.

Green Climate Fund (GCF) Establishment (2010):

The Green Climate Fund was established as the primary funding mechanism under the UNFCCC. It aimed to provide financial support to developing countries to mitigate greenhouse gas emissions and adapt to the impacts of climate change. It became operational in 2015 in Paris and has since been a key channel for climate finance.

COP 21- THE Paris Agreement (2015):

The Paris Agreement solidified the global commitment to combat climate change. It proved to be a landmark international treaty whereby 196 parties jointly agreed to limit global temperatures to well below 2 degrees compared to pre-industrial levels (Paris Agreement, 2015). It called for enhanced financial flows to support developing countries in their climate actions with the developed world being responsible for generating majority of carbon emissions and the developing world being faced with the constraint of bearing the most severe consequences (Bird & Glennie, 2011). Moreover, developing countries do not have sufficient resources to deal with the challenges posed by climate change and they have made the implementation of their NDCs conditional upon international support (Pauw et al., 2020). Through this agreement, developed countries reaffirmed their pledge to mobilize \$100 billion per year by 2020 and committed to scaling up their financial contributions in the future. There have also been commentaries on what climate finance should look like which is meant to be adopted this year at COP29 in Azerbaijan (Climate Finance, 2022; Sierra, 2011; Stewart et al., 2009). It equally emphasized on the role of financial resources in meeting the commitments made by countries in their national determined contribution.

GCF's Initial Resource Mobilization (2019):

In 2019, the GCF successfully concluded its first formal replenishment process, mobilizing \$9.8 billion in pledges from developed countries. This replenishment signaled a significant step towards meeting the \$100 billion annual target and demonstrated increased commitment to climate finance.

Glasgow Climate Pact (2021):

At the 26th UN Climate Change Conference of the Parties (COP26) held in Glasgow, the Glasgow Climate Pact aimed to accelerate action to limit global warming to 1.5 degrees Celsius. The pact emphasized the need for enhanced climate finance, including the provision of new and additional financial resources to developing countries. The Glasgow Climate Pact emphasized the need for enhanced climate finance, including the provision of new and additional financial resources to developing countries. The pact called for the establishment of a new Loss and Damage fund with its details still being worked out to provide financial support to countries that are already experiencing the impacts of climate change that are "irreversible and unavoidable."

The pact reaffirmed the commitment of developed countries to provide \$100 billion annually in climate finance by 2020 and called for this target to be updated to reflect current economic conditions and the needs of developing countries. It also called for the mobilization of additional climate finance from all sources, including the private sector.

The pact further committed us all to ensuring that climate finance is accessible, predictable, and sustainable and finally, the pact also recognizes the need to strengthen the capacity of developing countries to access and manage climate finance.

1.2.PARAGRAPH 1: THE GLOBAL LANDSCAPE OF CLIMATE FINANCING IN AFRICA

Africa is one of the most vulnerable regions to climate change as established in the Glasgow Climate Pact signed at COP26 (GFANZ, 2021 cited by Abdul, 2024). Despite numerous commitment to a net-zero target under the Paris Agreement, greenhouse gas emissions continue to rise (IPCC, 2022). It is estimated that total global climate finance flows amount to several hundreds of billions of US dollars, which are necessary to achieve the goals of the Paris Agreement and are

expected to increase drastically to support this transition (CPI, 2023). Understanding the needs of developing economies is crucial for directing climate finance where it is most needed. Stakeholders must identify financial gaps and opportunities to access, allocate, and mobilize climate finance effectively. In 2023, the domestic and international climate finance mobilized in Africa was around USD 30 billion, which was insufficient to meet the continent's needs (CPI, forthcoming). Article 3 of the Paris Agreement invites all countries to include in their NDCs the actions required to achieve its goals. Countries are therefore requested to update their NDCs every five years in response to changing conditions and to maintain high ambitions (CPI, 2021). Between 2015 and 2021, all African countries, except Libya, submitted NDCs (53 in total), and 41 of these have submitted updated NDCs in which Cameroon was among, demonstrating Cameroon's determination and engagements. Also, article 13 of the Paris Agreement states that "developing country Parties should provide information on financial, technology transfer, and capacity-building support needed and received." Of the 53 countries that submitted their national determined contributions, 51 provided data on the costs of implementing their NDCs, collectively representing more than 93% of Africa's GDP (CPI, 2021). Implementing Africa's NDCs is estimated to cost around USD 2.8 trillion between 2020 and 2030 (CPI, 2021). Additionally, African governments committed USD 264 billion in domestic public resources, which accounts for about 10% of the total cost, indicating that USD 2.5 trillion must come from international public sources and the domestic and international private sectors. This external financial support, required beyond domestic public sources, is defined as the "climate finance need." Given high debt levels and unanticipated budgetary pressures, such as those arising from the COVID-19 crisis and the economic impacts of the Russian invasion of Ukraine, countries may struggle to provide as much domestic public finance as initially estimated (CPI, 2021). This therefore means, the transition to a low-carbon economy will therefore require significant financial resources that developing countries are currently unable to provide. As mentioned earlier, developed countries committed to raising USD 100 billion per year until 2020 to support climate change mitigation and adaptation needs in developing countries (UNFCCC, 2010), a commitment reaffirmed in the 2015 Paris Agreement and met for the first time in 2022, two years after the initial deadline (OECD, 2024). Nevertheless, negotiators are already working on establishing a new goal that will exceed the previous target to be decided at the upcoming COP 29 in Baku, Azerbaijan from 11 to 22 November 2024 (Council of the European Union, 2024).

When countries signed the Paris Agreement, they also decided to set a “new collective quantified goal on climate finance” (NCOQ) to replace the existing goal of \$100 billion per year. This new finance goal aims to channel greater funds toward urgently needed climate action in developing countries, supporting the implementation of low-carbon, climate-resilient solutions across energy, transport, agriculture, and other vital sectors. By increasing financial support, developing countries should be able to enhance their climate ambitions in the next round of national climate plans (NDCs), due in 2025. However, deliberations on the new goal have progressed slowly, and negotiations have yet to reach consensus on foundational questions, including the dollar amount of the goal and which countries will contribute (Council of the European Union, 2024).

1.3.PARAGRAPH 2: WHAT CLIMATE FINANCE SHOULD LOOK LIKE

To ensure accuracy in reporting and hold providers accountable to their Paris Agreement goals, it is vital to develop a shared definition of climate finance. Definitions can prove particularly challenging for adaptation compared to mitigation, given the high variation in adaptation interventions that require context-specific responses. Within this backdrop of climate finance, the following recommendations were set out by the IIED (2021) on what climate finance should achieve, what its definition should encompass, and its additionality:

- Climate finance needs to deliver on the Paris Agreement: Developing the third pillar of the Paris Agreement (Article 2.1c), which aims to make finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development, is critical. Climate finance should enable the other two goals of the Paris Agreement: limiting temperature increases to between 1.5°C and 2°C (Article 2.1a) and enhancing the ability to adapt to climate change (Article 2.1b). To achieve these goals, all financing beyond just climate finance should align with the Paris Agreement's objectives. It was significant when the members of the OECD Development Assistance Committee announced their 2021 Declaration, committing that all Official Development Assistance (ODA) should align with the Paris Agreement (OECD, 2021). At COP26, the Glasgow Financial Alliance for Net Zero, a coalition of financial firms, committed over USD 130 trillion to also align with Paris Agreement goals and disclose climate risks (GFANZ, 2021).
- Climate finance needs to do no harm and support social and ecological integrity: A necessary, though not sufficient, condition for climate finance is that it must meet a minimum standard of

social and ecological integrity for eligibility. The interventions funded through climate finance, like other forms of public financing, should not negatively impact societies or ecosystems.

- Climate finance needs to support low-carbon, climate-resilient development: Fundamentally, climate finance should support pathways to low-carbon, climate-resilient development in developing countries. The USD 100 billion from public finance alone is insufficient to facilitate this transition; additional financial support from Paris-aligned ODA and the private sector will also be necessary. The quality of climate finance provided is critical. Developing countries need providers to offer climate finance that is accessible and risk-tolerant, or even risk-seeking, with minimal strings attached. Risk-tolerant capital can promote early innovation and incubation, enabling developing countries to leverage additional funds from larger investors. Grants, for instance, are risk-tolerant instruments that should be used more commonly, particularly for adaptation interventions. Highly concessional loans also play a role in climate finance, especially in mitigation interventions aimed at kick-starting new and innovative investments that can yield returns in the long run. Commercial loans from the private sector could also be considered for traditional mitigation interventions as part of “Paris-aligned private investment.” Grant instruments should be prioritized for Least Developed Countries (LDCs) and Small Island Developing States (SIDS), while a combination of grants and highly concessional loans should be considered for countries with high sovereign debt.
- Climate finance needs to be accessible to those who need it most: Currently, too little climate finance reaches LDCs and SIDS, which receive around 25% and 2% of climate finance, respectively, while only 10% reaches the local level (Patel et al., 2020). Accessing climate finance from global funds has been challenging, partly due to the requirement to demonstrate climate additionality and a previous track record—conditions that undermine the purpose of climate finance due to very low risk tolerance and limited understanding of what it takes to shift entire development pathways and align all finance flows with Paris goals.

The processes to access bilateral climate finance, which often represent greater funding levels, tend to be less transparent and are often influenced by political, trade, and historical connections rather than by the climate vulnerability of recipient countries. The following five ‘I’s should be considered for finance to be counted as climate finance (IIED, 2022):

- Innovate: Financing should be more risk-taking and support innovative, first-of-a-kind projects that demonstrate new approaches to climate change and encourage experimentation tailored to different contexts.
- Incubate: Financing should support nascent ideas before they are scaled up.
- Influence: Financing should help leverage greater financial flows to scale up and replicate climate interventions by demonstrating the business case, building investor confidence, and de-risking investments across other financing streams.
- Incentivize: Financing should create incentives that foster new understandings and different ways of working, ultimately changing default behaviors and institutional practices.
- Institutionalize Capabilities: Financing should strengthen the agility, flexibility, and responsiveness of institutions, empowering them to respond effectively to the uncertainties of climate change. It should also enhance capabilities for robust planning under various future scenarios.

All adaptation and mitigation finance should strive to meet these five ‘I’s of climate finance. Their validity could also be tested in discussions around financing for Loss and Damage, emphasizing the necessity of transforming traditional approaches by addressing structural and institutional barriers. Additional considerations for what should qualify as adaptation and mitigation financing should also be explored.

1.4.ENGAGEMENT OF CAMEROON IN CLIMATE FINANCE POLITICS

Climate change as already mentioned poses significant development challenge for countries like Cameroon. As one of the most vulnerable nations in sub-Saharan Africa, Cameroon ranks 145 out of 182 on the Notre Dame Global Adaptation Initiative's 2021 vulnerability index, which assesses a country's exposure, sensitivity, and capacity to adapt to the adverse effects of climate change (ND-Gain, 2021). The country's geographical diversity exacerbates its vulnerability, particularly due to its reliance on climate-sensitive sectors such as agriculture. Increasingly, Cameroon faces climate-related extreme events such as droughts, landslides, and floods, which severely impact agriculture a key economic sector upon which over 70% of the population depends for their

livelihoods (CCAC, 2022). To address these challenges, both mitigation and adaptation measures are essential, making financing mechanisms a central focus of international cooperation. The impacts of climate change in Cameroon are multifaceted, affecting not only agriculture but also water resources, public health, and the overall socio-economic stability of the nation.

1. Cameroon's Involvement in Climate Finance

Climate change is recognized as a key issue in Cameroon's national development strategy (SND-30). This strategy emphasizes that adaptation and mitigation are critical for achieving sustainability and addressing climate change (IMF, 2024). Consequently, the mobilization of climate finance has become crucial for supporting Cameroon and other developing countries in their efforts to build resilience and transition to low-carbon, sustainable development pathways. Cameroon has actively participated in international conventions and signed treaties aimed at mobilizing funds for its transition to a low-carbon economy. Its engagement in climate finance can be traced back to its ratification of significant international climate agreements, including the UN Framework Convention on Climate Change (UNFCCC) in 1992, the Kyoto Protocol in 2002, and the Paris Agreement in 2015. These actions demonstrate Cameroon's commitment to building a low-carbon, climate-resilient economy.

In 1992, Cameroon signed the UNFCCC, and on October 19, 1994, it ratified the convention, which came into effect on January 17, 1995. By ratifying this agreement, Cameroon joined the international community in committing to stabilize greenhouse gas concentrations at levels that would prevent harmful interference with the climate system. The UNFCCC serves as the foundational treaty for international climate negotiations, leading to the adoption of the Kyoto Protocol in 1997, which established binding emission reduction targets, and the Paris Agreement in 2015. The convention's main objective, articulated in Article 2, aims for the stabilization of greenhouse gas concentrations in the atmosphere to prevent dangerous anthropogenic interference with the climate system (UNFCCC, 1992). Additionally, it recognizes the principle of common but differentiated responsibilities (CBDR), which acknowledges that different states have varying capabilities and responsibilities in addressing climate change. This principle helps balance the need for all states to act on climate change, while considering their historical contributions to greenhouse gas emissions and their respective capacities. The supreme governing body of the UNFCCC is the Conference of the Parties (COP), where all signatory states are represented. The COP meets

annually to review the implementation of the convention and make necessary decisions to promote its effective execution. Although the convention itself did not establish concrete targets, it laid the groundwork for future agreements and policies. By adhering to the UNFCCC, Cameroon has demonstrated its political will and commitment to reform efforts aimed at mitigating the harmful effects of climate change.

In the same light, on July 2002, Cameroon became a party to the Kyoto Protocol, which aims to implement the UNFCCC.

Furthermore, Cameroon ratified the Paris Agreement on July 29, 2016, which set the stage for accessing climate finance. The Paris Agreement, adopted at COP 21 in Paris on December 12, 2015, is a legally binding international treaty that seeks to limit global warming to well below 2 degrees Celsius, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. This groundbreaking agreement unites nations in a common effort to combat climate change and adapt to its effects, necessitating economic and social transformations based on the best available scientific data.

At the national level, Cameroon has undertaken various legal and institutional actions. One significant step was the adoption of Law No. 96/12 on August 5, 1996, which serves as the framework for environmental management in Cameroon (Emile, 2014). Measures to reduce greenhouse gas emissions include the development of the National Plan for Environmental Management in 1996, which was updated in 2011 to redefine the state of environmental management in the country and propose adequate measures for critical sectors.

Additionally, the Ministry of Environment and Protection of Nature was established in 2005 and later transformed into the Ministry of Environment, Protection of Nature, and Sustainable Development (MINEPDED) in 2011. This ministry is responsible for formulating, implementing, and assessing government environmental policies from a sustainable development perspective. MINEPDED also plays a crucial role in negotiating international conventions related to environmental protection. Since the ratification of the UNFCCC, MINEPDED has undertaken numerous initiatives, including:

- The First National Communication Strategy on Climate Change (2001): This framework aimed to provoke necessary changes in skills, opinions, attitudes, and behaviors within targeted populations to address climate change effectively.
- The Long-Term Vision on Climate Change (2009): This ambitious policy aimed to preserve the environment and combat the adverse effects of climate change.
- The Second National Communication Strategy on Climate Change (2011): Similar to the first, it aimed to enhance awareness and action regarding climate change issues.
- Development of Integrated Approaches for Climate Change Adaptation: Since 2008, this program, funded by Japan, aims to strengthen national capabilities for adaptation at systemic, institutional, and individual levels.
- National Plan for Adaptation to Climate Change: This plan guides initiatives to combat climate change and provides practical tools for stakeholders, addressing the specific climatic challenges of each agro-ecological zone in Cameroon. In 2015, Cameroon became one of the first developing countries to submit a national adaptation plan to the UNFCCC (NAP Global Network, 2022).

Additionally, the REDD+ Initiative (Reducing Emissions from Deforestation and Forest Degradation) aims to mitigate climate change by reducing deforestation and promoting forest conservation. Moreover, a partnership agreement between MINEPDED and HYSACAM for waste management underscores the ministry's commitment to combating climate change.

Also in 2009, the National Observatory on Climate Change (ONCC) was established to monitor and assess the environmental and socio-economic impacts of measures taken to mitigate the effects of climate change.

In 2016, Cameroon submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC secretariat. Following the first revision of its INDC, which was aligned with the Tunis Regional Dialogue in September 2016, Cameroon improved its commitment, resulting in the Nationally Determined Contribution (NDC). This document distinguishes between unconditional efforts (internal initiatives) and conditional efforts (support expected from developed countries). The NDC outlines the measures Cameroon will undertake to reduce greenhouse gas emissions and enhance its resilience to the effects of rising temperatures. The NDC emerged from the 19th United

Nations Conference on Climate Change in Warsaw in 2013, with the aim of creating a global framework for post-2020 action. Countries are encouraged to submit contributions that reflect their national priorities, capacities, and responsibilities. The NDC aims to facilitate progress in combating climate change from 2020 to 2030, with the goal of keeping global temperature rise below 2 degrees Celsius, in line with the IPCC's recommendations. As part of its commitment, Cameroon aims to reduce greenhouse gas emissions by 32% by 2035, with 11% of this reduction being unconditional and 21% conditional on international support, including financing, capacity building, and technology transfer. The implementation of the NDC involves activities related to capacity building, transparency, advocacy, governance, and more. All these policies, strategies, and programs are implemented at the field level by regional and divisional services of MINEPDED, which carry out numerous activities related to climate change mitigation and the implementation of the UNFCCC.

1.5.MULTILATERAL CLIMATE CHANGE FUNDS /CURRENT CLIMATE FINANCE MECHANISMS.

In facing the challenges of climate change, international communities have initiated several global-wide funds raised through both bilateral and multilateral channels for climate finance for developing countries (OECD, 2009). Under the UNFCCC, three multilateral Funds address climate-related needs and are managed by the Global Environment Facility (GEF). They are the Adaptation Fund, the Least Development Countries Fund (LDCF), and the Special Climate Change Fund (SCCF) (Oxfam, 2009). The Special Climate Change Fund was created to fund projects in capacity building, adaptation, technology transfer and climate change mitigation. The Least Developed Countries Fund is designed to help the poorest countries cover the cost of preparing and implementing their national adaptation programmes of actions (NAPAs). The Adaptation Fund was established to finance adaptation projects and programmes in developing countries that are parties of the Kyoto Protocol in order to protect vulnerable communities from the impacts of climate change.

The need for collective, urgent and ambitious action on climate is greater than ever before (GEF, 2023). The first global stocktake made it clear, that the world is not on track to meet the goals of the Paris Agreement. While progress is seen in some areas, much more is needed to reach net zero

and adapt to climate impacts (GEF, 2023). Climate finance for developing countries plays the key role in this transition. Simplified and improved access to climate funds can allow for the more rapid deployment of urgently needed finance while also better serving local needs. The current international climate finance architecture needs to develop to keep ‘fit-for-purpose’ to deal with the growing multiple challenges (GEF, 2023). A shift to a system-wide climate finance architecture where all actors work together and better in a more synergized and harmonious way needed.

Multilateral climate funds (MCFs) can facilitate broad changes and contribute to the reform of the international climate finance architecture. The architecture has differing structures of governance, modalities and objectives but shares complementary mandates (GEF, 2023). While the transparency of climate finance programs through multilateral initiatives is increasing, detailed information on bilateral initiatives, regional and national funds is often less readily available (Charlene Watson, 2024). Climate finance funds are largely provided by multilateral institutions including development banks and the financial institutions established under the UNFCCC itself. To date, the multilateral climate fund has together channelled over \$32 billion (about \$ 197 billion with co- financing) of resources for climate and sustainability action in developing countries but much more is however still required to deliver the transformation to a low-emission, climate-resilient future with social and environmental sustainable development, and the protection of biodiversity (GEF, 2023). The \$100 billion per year target agreed at the COP15 in Copenhagen met for the first time in 2022, must be increased and replaced by a new collective goal to be decided at the COP 29 as planned (OECD, 2022). Also, the commitment made at COP26 to double the amount of adaptation finance by 2025 must be equally achieved (OECD, 2022). More broadly, it is essential to align global financial flows with the 1.5 degrees’ target under the Paris Agreement which will require moving billions to trillion. In line with these targets, the total amount of resources channelled through the multilateral climate funds should be significantly increased (GEF, 2023). In turn, the multilateral funds should be more committed to ensuring that those resources are used strategically to achieve the greatest possible impacts. This thesis seeks to track this intricate architecture. It tracks operating entities of the UNFCCC, major multilateral climate funds that feature prominently in reporting to the UNFCCC and funds that have had a significant demonstration role. It does not track all climate funds or all channels of climate finance, due to available information as well as resource limitations.

1.5.1. The Global Environment Facility

The Global Environment Facility (GEF) is a multilateral climate fund, established in 1991, that comprises 186 member countries dedicated to addressing biodiversity loss, climate change, pollution, and the pressures on land and ocean health. As an operating entity of the financial mechanism of the UNFCCC, it also serves the same function for the Paris Agreement while boasting a long track record in environmental funding. Furthermore, it acts as a financial mechanism for several other conventions, including those on biodiversity and desertification. Resources are allocated to target multiple focal areas, including climate change, based on the impact of funds spent on environmental outcomes, while ensuring that all developing countries receive a share of the funding. Over the past three decades, the GEF has provided more than \$23 billion and mobilized \$129 billion in co-financing for over 5,000 national and regional projects.

- **Creation**

The Global Environment Facility was established on October 15, 1991, as a \$1 billion pilot program within the World Bank. This initiative aimed to enable developing countries to tackle environmental challenges and promote sustainable development. The GEF provides new and additional grants, along with concessional funding, to cover the "incremental" costs associated with transforming projects that offer national benefits into those that provide global environmental benefits (IISD, 2024). Initially, the United Nations Development Program, the United Nations Environment Program, and the World Bank were the three partners implementing GEF projects. However, in 1992, at the Rio Earth Summit, the GEF was restructured and established as a permanent, independent institution. This decision enhanced the involvement of developing countries in the decision-making process and the implementation of projects. As part of this restructuring, the GEF was tasked with becoming the financial mechanism for both the UN Convention on Biological Diversity and the UN Framework Convention on Climate Change. In partnership with the Montreal Protocol on Substances that Deplete the Ozone Layer, the GEF began funding projects that assist the Russian Federation and nations in Eastern Europe and Central Asia in phasing out ozone-depleting substances. In 1998, the GEF Council decided to expand beyond the initial three implementing agencies by including the International Finance Corporation, thus broadening its capacity to facilitate innovative financing mechanisms and better leverage private

sector investments. Subsequently, the GEF was also selected to serve as the financial mechanism for three more international conventions: The Stockholm Convention on Persistent Organic Pollutants (2001), the United Nations Convention to Combat Desertification (2003), and the Minamata Convention on Mercury (2013) (IISD, 2024).

- **Objectives**

The GEF is a multilateral environmental fund that provides grants, concessional, and blended finance to support developing countries in addressing their most pressing environmental problems. It finances activities related to biodiversity loss, chemicals and waste, climate change (both mitigation and adaptation), international waste, and land degradation. Moreover, it employs an integrated approach to support sustainable forest management, food security, and sustainable cities in developing countries (GEF, 2024). As the largest source of multilateral funding for biodiversity globally, the GEF distributes more than \$1 billion annually on average to tackle interrelated environmental challenges. It also implements a blended financing policy to help developing countries address their most significant environmental priorities while adhering to international environmental conventions.

- **Typical projects**

The GEF supports a diverse range of projects that address biodiversity conservation, climate change mitigation, and adaptation. Typical projects include initiatives to protect and restore ecosystems, promote sustainable land management practices, develop climate-resilient agricultural systems, and strengthen climate change adaptation capacities at both national and community levels.

- **Organization**

The GEF has a governing structure organized around an Assembly, a Council, a Secretariat, 18 Agencies, a Scientific and Technical Advisory Panel (STAP), and an Independent Evaluation Office.

The GEF Council

The GEF Council is the main governing body of the GEF, comprising 32 members appointed by constituencies of GEF member countries (14 from developed countries, 16 from developing countries, and 2 from economies in transition). Council members rotate every three years or until their constituency appoints a new member. The Council meets twice annually to develop, adopt, and evaluate the operational policies and programs for GEF-financed activities. It also reviews and approves the work program (projects submitted for approval), making decisions by consensus (GEF, 2024).

The GEF Secretariat

The GEF Secretariat, based in Washington, D.C., reports directly to the GEF Council and Assembly, ensuring that their decisions are translated into effective actions. The Secretariat coordinates the formulation of projects included in the work programs, oversees their implementation, and ensures compliance with operational strategies and policies. The CEO and Chairperson, Carlos Manuel Rodriguez, heads the Secretariat.

The GEF Scientific and Technical Advisory Panel (STAP)

The STAP provides scientific and technical advice to the GEF on policies, operational strategies, programs, and projects. This panel consists of six members who are internationally recognized experts in the GEF's key areas of work, supported by a global network of experts and institutions. Additionally, the STAP interacts with other relevant scientific and technical bodies, particularly the subsidiary bodies of environmental conventions.

The GEF Independent Evaluation Office (GEF IEO)

The GEF IEO reports directly to the Council and is headed by a Director appointed by the Council, who coordinates a team of specialized evaluators. This office collaborates with the Secretariat and the GEF Agencies to share lessons learned and best practices. The IEO conducts independent evaluations of GEF impact and effectiveness, typically focusing on specific focal areas, institutional issues, or cross-cutting themes.

GEF Agencies

The GEF Agencies are the operational arm of the GEF. They work closely with project proponents, government agencies, civil society organizations, and other stakeholders to design, develop, and implement GEF-funded projects and programs. The GEF collaborates with 18 agencies, including:

- United Nations Development Program (UNDP)
- United Nations Environment Program (UNEP)
- World Bank
- Food and Agriculture Organization (FAO)
- Inter-American Development Bank (IADB)
- United Nations Industrial Development Organization (UNIDO)
- Asian Development Bank (ADB)
- African Development Bank (AfDB)
- European Bank for Reconstruction and Development (EBRD)
- International Fund for Agricultural Development (IFAD)
- World Wildlife Fund – US (WWF-US)
- Conservation International (CI)
- West African Development Bank (BOAD)
- Brazilian Biodiversity Fund (FUNBIO)
- Foreign Economic Cooperation Office, Ministry of Environmental Protection of China (FECO)
- Development Bank of Southern Africa (DBSA)
- Development Bank of Latin America and the Caribbean (CAF)
- International Union for Conservation of Nature (IUCN)

▪ Funding

The GEF funds are available to developing countries seeking to meet the objectives of international environmental agreements. Support is provided to government agencies, civil society organizations, private sector companies, research institutions, and other partners to implement projects and programs related to environmental conservation, protection, and renewal. GEF

funding is sourced from participating donor countries (GEF, 2024) and is made available to developing countries and countries with economies in transition to meet the objectives of international environmental conventions and agreements. The Council-approved funds are transferred through 18 GEF Agencies (GEF, 2024) to government agencies, civil society organizations, private sector companies, and research institutions, among a broad diversity of potential partners, to execute projects and programs in recipient countries.

Financing Instruments: Grants and Non-Grant (Equity, Loans, Guarantees)

▪ **Project Scale:**

The GEF provides funding through four modalities: full-sized projects, medium-sized projects, enabling activities, and programmatic approaches. The selected modality should best support the project objectives, with each modality requiring the completion of a different template.

- **Full-sized Project (FSP):** GEF project financing of more than two million US dollars.
- **Medium-sized Project (MSP):** GEF project financing of less than or equal to two million US dollars.
- **Enabling Activity (EA):** A project for the preparation of a plan, strategy, or report to fulfill commitments under a convention.
- **Program:** A longer-term and strategic arrangement of individual yet interlinked projects aiming to achieve large-scale impacts on the global environment.

The Small Grants Program funds grants of up to \$50,000, with the average grant being around \$25,000. Additionally, the SGP provides a maximum of \$150,000 for strategic projects.

▪ **Recipient Countries:**

Developing countries and countries with economies in transition receive GEF support. Through the projects they undertake, these countries achieve global environmental benefits and fulfill their commitments under key environmental conventions and international waters. Each country is represented at the GEF Council through its Council members and alternates and manages its GEF portfolio and relationship with the GEF Secretariat through designated focal points.

▪ **Eligibility Criteria:**

GEF funds are available to developing countries and countries with economies in transition to meet the objectives of international environmental conventions and agreements. All projects or programs must fulfil the following criteria to be eligible for GEF funding:

- **Eligible Country:** Countries may qualify for GEF funding in one of two ways: a) if the country has ratified the conventions that the GEF serves and conforms to the eligibility criteria set by the Conference of the Parties of each convention; or b) if the country is eligible to receive World Bank (IBRD and/or IDA) financing or is an eligible recipient of UNDP technical assistance through its targeted resource assignments from the core (specifically TRAC-1 and/or TRAC-2).
- **National Priority:** The project must be driven by the country rather than an external partner and must align with national priorities that support sustainable development.
- **GEF Priorities:** To achieve the objectives of multilateral environmental agreements, GEF support must align with country priorities aimed at tackling the drivers of environmental degradation in an integrated manner. Therefore, the focal areas (Biodiversity, Climate Change, Land Degradation, International Waters, and Chemicals and Waste) remain central to the GEF-8 Programming Directions, providing countries with opportunities to participate in selected “Integrated Programs” that aim to address major drivers of environmental degradation and deliver multiple benefits under the GEF’s mandate.
- **Financing:** The project must seek GEF financing only for the agreed incremental costs of measures required to achieve global environmental benefits.
- **Participation:** The project must involve public engagement in its design and implementation, following the Policy on Stakeholder Engagement and the respective guidelines.

▪ **Application Guidelines**

The Operational Focal Point coordinates all GEF-related activities within a country. The OFP reviews project ideas, checks them against eligibility criteria, and ensures that new project ideas will not duplicate existing projects. Any project submitted for approval requires a Letter of Endorsement signed by the GEF OFP. The following project cycle applies to full-sized projects:

- i. **GEF Council Approval of Work Program:** The project proposer in a recipient country agrees on the Project Identification Form (PIF) with the country's Operational Focal Point (OFP) and the GEF Agency, seeking endorsement from the country's OFP. Once both the PIF and the endorsement letter are completed, they can be formally submitted to the Secretariat through the GEF Agency. There are no deadlines for submissions, as PIFs are received on a rolling basis. The Secretariat reviews the PIF, and if approved, it is included in the Work Program for Council approval, which occurs twice a year.
- ii. **Endorsement of a Project by the CEO:** Since the PIF provides the overall outline of the proposal, a more detailed project document is required. After a PIF is approved by the Council, the project proponent and the Agency have a maximum of 18 months to prepare the project document for CEO Endorsement.
- iii. **Approval of a Project by the GEF Agency:** Following CEO endorsement, and using the same project document, the GEF Agency follows its internal procedures to approve the project and begin implementation.
- iv. **Project Completion and Terminal Evaluation:** The GEF Agency is responsible for the completion, terminal evaluation, and financial closure of the project.

Medium-sized projects can be approved through an expedited one-step approval process if they do not require project preparation grants. Otherwise, the two-step approval process involves:

- i. **GEF Council Agreement of Work Program**
- ii. **Approval of Projects under the Agreed Program**

1.5.2. Green Climate Fund (GCF)

The GCF was set up by the UNFCCC in 2010, and it is the world's largest fund devoted to helping developing countries reduce their GHG emissions and adapt to the impacts of climate change, paying particular attention to the needs of the most vulnerable countries. The GCF plays an essential role in compliance with the Paris agreement, challenging climate finance to developing countries.

▪ **Origin**

The green climate fund abbreviated as GCF is a fund established within the framework of the United Nations Convention on Climate Change as an operating entity of the financial mechanism to assist developing countries in adaptation and mitigation practices to counter climate change. It was formed in 2010, 14 years ago with its headquarters in Incheon South Korea. It is governed by a board of 24 members and supported by a secretariat. Wealthier industrialized countries have been the countries responsible for most greenhouse gas emissions. As a consequence, it has been argued that these countries are morally responsible for the lion's share of the cost of climate mitigation worldwide, including costs of transition of less developed and least developed countries. The GCF has a portfolio of USD 13.5 billion (USD 51.8 billion including co-financing) delivering transformative climate action in more than 120 countries (GCF, 2023). It also has a readiness support programme that builds capacity and help countries develop long term plans to fight climate change.

▪ **Typical projects**

The GCF supports a wide range of projects, including renewable energy initiatives, climate-smart agriculture, ecosystem restoration, climate-resilient infrastructure, and capacity-building programs. For example, the GCF has funded projects such as the construction of solar power plants, the implementation of climate-resilient water management systems, and the promotion of energy-efficient technologies in industries.

▪ **Objectives**

The green climate fund aim is to expand collective human action to respond to climate change. The fund aims to mobilize funding at scale to invest in low emission and climate resilient development on our home planet. The objectives of the GCF is to support projects, programs, policies, and other activities in developing country parties using thematic funding windows.

It is intended that the GCF be the centrepiece of efforts to raise climate finance under the UNFCCC.

▪ **Organisation**

The green climate fund was established by 194 countries party of the UN Framework convention on climate change in 2010. It is designed as an operating entity of the convention's financial mechanism. It is governed by 24 board member representing countries and receives guidance from the conference on climate change. It has a fully independent secretariat which is responsible for executing the day-to-day operations of the fund. It services and accountable to the board. Today the GCE has around 220 staff members at its headquarters in addition there are a number of consultants who support the staff. Some limited support is being provided offsite in other countries. The fund pays particular attention to the needs of societies that are highly vulnerable to the effects of climate change in particular least developed countries (LDCs), small island developing states and African states.

▪ **Mission**

The green climate fund is a critical element of the historic Paris agreement which mission is to support developing countries raise and realize their Nationally Determined Contributions (NDC) with an ambition towards low emission and climate - resilient pathways.

▪ **Sources of finance**

The GFC accepts funds from developed countries party to the UN framework convention on climate change as well as public donations, non-public and alternative sources. Such sources include among others countries not party to the UNFCCC and foundation.

▪ **Modalities to access finance**

Accessing the GCF requires project proponents to submit proposals through accredited entities, such as nationally designated authorities or international implementing entities. For example, the GCF has approved a \$300 million project in Bangladesh to enhance climate resilience in coastal areas through community-based adaptation measures. Bangladesh_Green Climate Fund. The GCF has several funding modalities available to developing countries to help them access GCF resources. They include;

i. Through A Simplified Approval Process

Simplified approval process (SAP) is an application process for projects or programmes that have the potentials for scaling up and being transformative in promoting a paradigm shift to low emission and climate resilient development. Accredited entities, national designated authorities (NDA) or focal points can submit concepts notes under the SAP. Direct Access Entities (DAEs) are encouraged to apply.

ii. Through Project Preparation Support

Recognising developing countries may face capacity constraints in developing funding proposals, GCF provides financial and technical assistance through the project preparation facility (PPF). PPF is especially designed to support direct access entities for projects in the micro and small-sized category. However, all accredited entities are eligible to apply.

iii. Request for Proposal

As some areas with large potentials do not receive adequate climate financing, GCF seeks to help fill the gaps through request for proposal (RFP) and pilot programme on specific themes. National designated authorities (NDA), accredited entities (AE) and their partners are encouraged to submit concept notes and funding proposals in any of the active RFPs within the indicated time period. As each REP is different.

1.6.THE ADAPTATION FUND

The Adaptation Fund is an international fund that finances projects and programs aimed at helping developing countries adapt to the harmful effects of climate change. Established under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), it has committed over US\$1.2 billion since 2010 for climate change adaptation and resilience projects. This includes 176 concrete, localized projects in the most vulnerable communities of developing countries worldwide, benefiting a total of 45 million people (Adaptation Fund, 2024). Governed by the Adaptation Fund Board, it offers direct access to countries that meet specific criteria, including Least Developed Countries (LDCs). Notable projects include improving water management in drought-prone areas such as Ethiopia and developing early warning systems for

cyclones, as seen in Madagascar. This approach empowers countries to access funding and develop local projects directly through accredited national implementing entities.

- **Origin**

The Adaptation Fund was established in 2001 to finance concrete adaptation projects and programs in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change. Through decisions made at the 14th Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP.14), parties decided that the Adaptation Fund would also serve the Paris Agreement under the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA), effective January 1, 2019 (UNFCCC, 2024).

- **Typical Projects**

The Adaptation Fund supports projects that enhance the resilience of vulnerable communities and ecosystems to the impacts of climate change. Examples of funded projects include the implementation of climate-resilient agricultural practices, the construction of climate-proof infrastructure such as flood protection systems, and the establishment of early warning systems for extreme weather events (Adaptation Fund, 2024).

- **Organization**

The Adaptation Fund is supervised and managed by the Adaptation Fund Board (AFB), which is composed of 16 members and 16 alternates, holding periodic meetings throughout the year (Adaptation Fund, 2024). The Board's Secretariat provides research, advisory, and administrative services, while the World Bank serves as the trustee of the Adaptation Fund on an interim basis (Adaptation Fund, 2024).

- **Mission**

The Adaptation Fund was established to finance concrete adaptation projects and programs in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change (Adaptation Fund, 2024).

▪ **Sources of finance**

The Fund is primarily financed through contributions from governments, private donors, and individuals. Most of the funds come from the sale of certified emission reductions, which amount to a two percent share of proceeds from certified emission reductions (CERs) issued under the protocol's Clean Development Mechanism projects (Adaptation Fund, 2024).

▪ **Modalities to access funding**

Funds can be accessed either directly or indirectly:

i. Indirect Access

To apply for project and program funding, countries must submit proposals through an accredited institution, which falls into one of three categories:

- National Implementing Entities (NIEs)
- Regional Implementing Entities (RIEs)
- Multilateral Implementing Entities (MIEs)

Only institutions accredited by the Adaptation Fund may receive funding for adaptation projects. After obtaining accreditation, these entities can submit project proposals aligned with national priorities for consideration by the Adaptation Fund Board (Adaptation Fund, 2024).

ii. Direct Access

National Implementing Entities fall under the Adaptation Fund's Direct Access modality, which enables them to directly access financing and manage all aspects of climate adaptation and resilience projects, from design to implementation and monitoring. This direct access allows developing countries to strengthen their capacity to adapt to climate change and build on local expertise (Adaptation Fund, 2024).

To enhance the capacity of National Implementing Entities (NIEs), the Adaptation Fund Board launched the Readiness Programme for Climate Finance in 2014. This program is designed to capture and share the growing experience of the Adaptation Fund's direct access and other climate finance initiatives, thereby strengthening the capacity of national and regional entities to manage climate financing. Additionally, the Adaptation Fund Board has made available three new funding windows for accredited National Implementing Entities to access small grants for innovation, learning, and project scale-up (Adaptation Fund, 2024).

It is important to note that all projects submitted under both categories must align with national priorities as outlined in national strategies and plans or in Nationally Determined Contributions (NDCs) and must be endorsed by the Designated Authorities of the country in which the project or program would take place.

1.6.1. The Special Climate Change Fund (SCCF)

The Special Climate Change Fund (SCCF), administered by the Global Environment Facility (GEF), offers four different financial services: adaptation to climate change, technology transfer, energy, transport, industry, agriculture, forestry, waste management, and economic diversification for countries dependent on fossil fuels.

▪ Origin

The SCCF was created at the 2001 Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) as one of the world's first multilateral climate adaptation finance instruments. Its primary goal is to assist vulnerable nations in addressing the negative impacts of climate change (GEF, 2024). The fund covers the incremental costs of interventions aimed at climate change adaptation relative to a development baseline. While adaptation to climate change is the top priority of the SCCF, it can also support technology transfer and associated capacity-building activities (Climate Funds Update, 2022).

▪ Typical Projects

The SCCF has two active windows: 1) Adaptation and 2) Transfer of Technologies.

- i. **Adaptation:** The SCCF funds adaptation initiatives in various sectors, such as water resource management, land management, agriculture, health, infrastructure development, fragile ecosystems, and integrated coastal zone management. Additionally, it supports the monitoring of diseases and vectors affected by climate change and builds capacity for disaster prevention.
- ii. **Transfer of Technologies:** The SCCF facilitates the transfer of climate-resilient technology for both mitigation and adaptation. This support includes assistance to countries in applying climate change technologies, conducting research, and implementing demonstration and deployment projects.

- **Objectives**

The SCCF's primary funding priority is to support adaptation actions in developing countries. In addition, it offers funding for technology transfer and mitigation in selected sectors, but to a much lesser extent. As part of the GEF Programming Strategy, the SCCF has three strategic objectives:

- 1. To reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation.
- 2. To mainstream climate change adaptation and resilience for systematic impact.
- 3. To foster enabling conditions for effective and integrated climate change adaptation.

- **Organization**

The SCCF is managed by the GEF, operating in parallel with the Least Developed Countries Fund (LDCF), and both funds serve the Paris Agreement (GEF, 2024). The GEF Secretariat, based in Washington D.C., is led by a Chief Executive Officer (CEO)-Chairperson, who is appointed for a four-year term by the GEF Council. The Secretariat consists of approximately 75 professionals organized into three administrative units: the Programs Unit, the Policy, Partnerships, and Operations Unit, and the Front Office. The Secretariat is responsible for:

- 1. Coordinating and overseeing programs.
- 2. Ensuring that policies are implemented in consultation with the GEF Agencies.
- 3. Chairing interagency meetings to facilitate effective collaboration among the GEF agencies.

4. Coordinating with the Secretariats of the five conventions for which the GEF serves as a financial mechanism, namely the Convention on Biological Diversity (CBD), the UNFCCC, the Stockholm Convention on Persistent Organic Pollutants (POPs), the UN Convention to Combat Desertification (UNCCD), and the Minamata Convention on Mercury.

The Secretariat reports directly to the GEF Assembly and Council.

- **Sources of finance**

The SCCF is financed through both bilateral and multilateral sources and is administered as a specialized trust fund by the Global Environment Facility (GEF).

- **Modalities to access finance**

The SCCF is open to all vulnerable developing countries, not restricted solely to those eligible for Official Development Assistance (ODA). All non-annex I countries can apply, with particular emphasis on the needs of the most vulnerable countries in Africa, Asia, and Small Island Developing States (SIDS). The World Bank serves as the permanent trustee.

To be eligible, projects or programs must be country-driven, cost-effective, and integrated into national sustainable development and poverty-reduction strategies. They should also consider national communications or National Adaptation Programs of Action (NAPAs) and other relevant studies. Due to high demand exceeding available funding, pre-selection criteria have been established:

- Project or program quality.
- Balanced distribution of funds among eligible countries, with an emphasis on vulnerable non-annex I countries that have not previously had access.
- Equitable regional distribution.
- Balanced support across all priority sectors.
- Balanced distribution among GEF agencies based on comparative advantage.

The 18 GEF Agencies are the only institutions that can access GEF funding directly on behalf of a government recipient. To submit project proposals, eligible countries must collaborate with a GEF

Partner Agency. Additionally, the SCCF Project Proponent needs to secure the endorsement of a national GEF operational focal point, which confirms that the project proposals align with national plans and priorities. Full-sized Projects (FSP, with GEF funding exceeding USD 2 million) and some Medium-sized Projects (MSP, with GEF funding less than or equal to USD 2 million) must be cleared by the GEF CEO before formal approval by the SCCF/LDCF Council, at which point funding is earmarked for their support. Projects are considered approved only after a Project Identification Form (PIF), demonstrating compliance with specific criteria, has been produced and approved by the council. It must also be endorsed by the CEO before funding can be officially confirmed (although nearly 100% of council-approved projects are also endorsed by the CEO). Implementing agencies must further approve projects through their internal decision-making processes. Financing is available for project preparation.

Initially, only UN agencies and multilateral development banks were accredited as GEF Partner Agencies. However, in 2011, a pilot program was launched to accredit up to ten new agencies. Applicant entities undergo a three-stage review process, with an independent GEF Accreditation Panel assessing compliance with GEF fiduciary standards and environmental and social safeguards, including gender mainstreaming. Of the initial applicants, eight successfully completed the accreditation process and were added as fully accredited GEF Partner Agencies. A recent review confirmed that no further expansion of GEF Partner Agencies is planned for the foreseeable future. An Enabling Activity (EA), which refers to a project for the preparation of a plan, strategy, or report to fulfill commitments under a convention, can also receive support. Projects are intended to be nationally owned and country-driven, requiring endorsement from the country or countries where they will be implemented to qualify for GEF funding.

Moreover, all SCCF projects involve a GEF Operational Focal Point (OFP) and a GEF Focal Point, which serve as liaison agencies:

- The **GEF Operational Focal Point** is designated by each country receiving GEF funding and is responsible for operational aspects of GEF activities, such as endorsing project proposals to ensure consistency with national plans and facilitating GEF coordination, integration, and consultation at the country level.

- The **GEF Focal Points** (Country Representatives) are government officials appointed by member countries to oversee GEF activities and ensure that GEF projects are country-driven and aligned with national priorities.

1.6.2. The Least Developed Countries Fund (LDCF)

The Least Developed Countries Fund (LDCF) was established at the 7th Conference of the Parties in 2001 (COP7) to meet the adaptation needs of least developed countries (LDCs). Specifically, the LDCF finances the preparation and implementation of National Adaptation Programs of Action (NAPAs), which help identify priority adaptation actions based on existing information. The Fund is active in various sectors, including water, agriculture and food security, health, disaster risk management and prevention, infrastructure, and fragile ecosystems, making it the largest portfolio of adaptation projects of its kind. The Global Environment Facility (GEF) administers the LDCF as a specialized trust fund, serving as a foundation for programming resources.

▪ Scale

As of November 2020, the cumulative pledges to the Fund amount to USD 1.6 billion (Climate Fund Updates, 2024). The contributing countries include Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Romania, Spain, Sweden, Switzerland, the United Kingdom, and the United States. These contributions from donor countries are included as official development assistance (ODA).

▪ Typical projects/activities supported

The LDCF supports the preparation of NAPAs, which require LDCs to identify priority activities that address their urgent and immediate needs to adapt to climate change. It can also fund NAPA implementation, encompassing the design, development, and execution of projects on the ground. The Fund targets sectors central to livelihoods and national development, such as water, agriculture and food security, health, disaster risk management and prevention, and infrastructure. As of November 2020, approximately 50 percent of LDCF projects have contributed to land degradation reduction and biodiversity management.

▪ Objectives

The LDCF aims to address the needs of the 51 LDCs, which are particularly vulnerable to the adverse impacts of climate change. As a priority, the LDCF supports the preparation and implementation of the National Adaptation Programs of Action (NAPAs), which are country-driven strategies identifying the immediate needs of LDCs in order to adapt to climate change. Its three main objectives are:

- i. To reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation.
- ii. To mainstream climate change adaptation and resilience for systematic impact.
- iii. To foster enabling conditions for effective and integrated climate change adaptation.

▪ Organization/administrative unit

The LDCF is administered by the Global Environment Facility (GEF), and the GEF Secretariat, based in Washington D.C., is led by a Chief Executive Officer (CEO)-Chairperson, who is appointed for a four-year term by the GEF Council. The Secretariat consists of approximately 75 professionals and is divided into three administrative units: the Programs Unit, the Policy, Partnerships, and Operations Unit, and the Front Office. The Secretariat's responsibilities include:

- i. Coordinating and overseeing programs.
- ii. Ensuring that policies are implemented in consultation with the GEF Agencies.
- iii. Chairing interagency group meetings to ensure effective collaboration among the GEF agencies.
- iv. Coordinating with the Secretariats of the five conventions that the GEF serves as part of their financial mechanism: The Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), the Stockholm Convention on Persistent Organic Pollutants (POPs), the UN Convention to Combat Desertification (UNCCD), and the Minamata Convention on Mercury.

The Secretariat reports directly to the GEF Assembly and Council.

- **Fund finance and access modalities**

Conditions and Eligibility Requirements

Eligibility is not restricted to ODA-eligible countries; all Least Developed Countries that are part of the UNFCCC are eligible.

Accessing the Fund

Before an LDCF Project Proponent can access financing for an adaptation project, a National Adaptation Program of Action (NAPA) must be completed and submitted to the UNFCCC Secretariat. Once a NAPA has been submitted, the LDCF Project Proponent can begin preparing for project implementation under the LDCF. Project criteria are informed by guidance from the UNFCCC COP and include country ownership, program and policy conformity, financing, institutional coordination and support, as well as monitoring and evaluation. These criteria are understood as follows:

- i. **Country ownership:** Proposed projects must be identified as priority activities in the NAPA and demonstrate evidence of stakeholder consultation and support.
- ii. **Program and policy conformity:** This pertains to project design, sustainability, and stakeholder involvement.
- iii. **Financing plan:** A financing plan must be developed, along with an assessment of cost-effectiveness.
- iv. **Institutional coordination and support:** This ensures that all relevant institutions are involved.
- v. **Monitoring and evaluation:** Continuous assessment of project progress is essential.

To submit project proposals, LDCs need to work with a GEF Partner Agency, as the 18 GEF Agencies are the only institutions that can access GEF funding directly on behalf of a government recipient. Additionally, the LDCF Project Proponent must secure the endorsement of a national GEF operational focal point, confirming that the project proposals align with national plans and priorities. It is important to note that finance is available for project preparation. Full-sized Projects (FSPs), which involve GEF funding of more than USD 2 million, as well as some Medium-sized Projects (MSPs) with funding less than or equivalent to USD 2 million, must be submitted to the

UNFCCC Secretariat. The project implementation process can commence once the necessary approvals have been obtained.

Projects are only considered approved after a Project Identification Form (PIF) is produced, showing that the project meets specific criteria, and is subsequently approved by the council. It must then be endorsed by the CEO before funding is officially approved (although nearly 100% of council-approved projects also receive CEO endorsement). Implementing agencies must also approve projects through their internal decision-making processes. An Enabling Activity (EA), which refers to a project for preparing a plan, strategy, or report to fulfill commitments under a Convention, can also receive support.

- **Financial instruments**

Grants are provided as incremental cost finance to address climate change adaptation relative to a development baseline.

- **Accreditation process**

Initially, only UN agencies and multilateral development banks were accredited as GEF Partner Agencies. To broaden the number of GEF implementation partners, a pilot program was launched in 2011 to accredit "up to ten" new agencies. Applicant entities were reviewed through a three-stage process, with an independent GEF Accreditation Panel assessing whether they meet the GEF's fiduciary standards and environmental and social safeguards, including gender mainstreaming. Of the initial applicants, eight successfully completed the accreditation process and were added as fully accredited GEF Partner Agencies. A recent review of the accreditation approach confirmed that no further GEF Partner Agency expansion is planned for the foreseeable future.

- **Overview of implementing entities**

The LDCF works through formally accredited GEF Agencies, which include UN agencies, multilateral and regional development banks, national government institutions, and international and non-governmental organizations.

- **Nature of recipient country involvement**

National ownership is central to the LDCF's conceptualization, emphasizing stakeholder engagement in the development of the NAPA and country-driven approaches to identifying priorities. A project must be endorsed by the country or countries where it will be implemented to be considered for GEF funding.

Additionally, all LDCF projects have a GEF Operational Focal Point (OFP) and a GEF Focal Point that work as liaison agencies.

- The **GEF Operational Focal Point** is designated by each country receiving GEF funding and is responsible for operational aspects of GEF activities, such as endorsing project proposals to affirm consistency with national plans and priorities, as well as facilitating GEF coordination, integration, and consultation at the country level.
- The **GEF Focal Points** (Country Representatives) are government officials designated by member countries, responsible for GEF activities and ensuring that GEF projects are country-driven and based on national priorities.

- **Allocation criteria**

The total LDCF contribution for a Medium-sized Project (MSP) cannot exceed USD 2 million. If the total contribution from the LDCF exceeds USD 2 million, the project is classified as a Full-sized Project (FSP) and must undergo a longer and more comprehensive review process under the SCCF/LDCF Council.

1.6.3. The Un-Redd Program (U-RP)

The UN-REDD Program was established through collaboration among three UN agencies: the United Nations Environment Program (UNEP), the United Nations Development Program (UNDP), and the Food and Agriculture Organization of the United Nations (FAO). This multi-donor trust fund allows donors to pool resources and provide funding with the aim of significantly reducing global emissions from deforestation and forest degradation in developing countries. Since its launch in 2008, the UN-REDD Program has supported 65 partner countries across Africa, Asia-Pacific, Latin America, and the Caribbean, becoming the largest international provider of REDD+ readiness assistance in terms of funding, expertise, and geographical scope.

▪ Objectives

The UN-REDD Program aims to generate the necessary flow of resources to significantly reduce global emissions from deforestation and forest degradation in developing countries while enhancing carbon stocks in forests and contributing to national sustainable development. To achieve its goals, the Program has set three key outcomes:

- i. Contributions of REDD+ to climate change mitigation and the provision of additional benefits are designed.
- ii. Country contributions to climate change mitigation through REDD+ are measured, reported, and verified, with necessary institutional arrangements in place.
- iii. REDD+ contributions to climate change mitigation are implemented and safeguarded by policies and measures that constitute results-based actions, including the development of appropriate and effective institutional arrangements.

As of November 2020, the total source of funds was approximately USD 325 million, with major contributors including Norway, the European Union, Denmark, Spain, Japan, Luxembourg, and Switzerland. Contributions from donor countries are included as official development assistance (ODA).

▪ Activities supported

The UN-REDD Program consists of two components:

- National/Country Programs: Assisting developing countries with the preparation and implementation of national REDD strategies and mechanisms.
- Global Program: Supporting the development of normative solutions and standardized approaches based on sound science for a REDD instrument linked with the UNFCCC.

The National/Country Programs focus on six work areas:

- i. Measurement, reporting, and verification (MRV) and monitoring
- ii. National REDD+ governance
- iii. Engagement of Indigenous Peoples, local communities, and other relevant stakeholders
- iv. Ensuring multiple benefits of forests and REDD+
- v. Transparent, equitable, and accountable management of REDD+ payments

- vi. REDD+ as a catalyst for transformation to a green economy

The Global Programs are aligned with these work areas and also emphasize knowledge management, coordination, and communication.

- **Administering organization**

Secretariat or Administrative Unit

The UN-REDD Program has its own Secretariat based in Geneva, Switzerland. The Head of the Secretariat is appointed by the Executive Director of UNEP, and the Secretariat's responsibilities include:

- Developing and implementing results-based planning
- Monitoring and reporting tools across the breadth of the Program
- Supporting adaptive management tools
- Reporting achievements to both internal and external audiences

Trustee

The UNDP Multi-Partner Trust Fund (MPTF) Office provides funding administration for the UN-REDD Program.

- **Fund finance and access modalities**

Conditions and Eligibility Requirements

During the sixth Policy Board meeting in 2011, criteria were established for prioritizing funding allocations for new National Programs, including:

- Being a partner country of the UN-REDD Program
- Achieving regional balance
- Enhanced coordination with other initiatives
- The ability of UN agencies to assist the country
- Demonstrating progress/results in the short term based on REDD+ early action
- REDD+ potential
- Commitment to applying the principles of the UN-REDD Program

It is important to note that access to the UN-REDD Program is not restricted to ODA-eligible countries.

- **Accessing the fund**

Access Modalities: While programs under the UN-REDD Program are implemented by FAO, UNDP, and/or UNEP, the program is not an exclusive UN mechanism. National governments, regional development banks, and non-governmental organizations (NGOs) can receive funding through one of the participating UN organizations by acting as executing agencies.

Financial Instruments

The primary financial instrument used is grants.

Accreditation Process

For the UN-REDD Program, it is the National Program of a country that needs to be accredited, not the participating implementing entities. The first stage involves the government, in association with focal points from the three participating UN organizations, preparing the draft Readiness Preparation Proposal (R-PP) and the National Program Document (NPD). These documents describe the UN-REDD Program's contribution to the implementation of the R-PP and to the national REDD+ readiness process. The NPD serves as a grant agreement between the three participating UN organizations and the government.

In the second stage, the UN-REDD Program Secretariat supports the actors from the first stage in finalizing the R-PP and the NPD. Both documents must incorporate comments from the Policy Board and insights from consultations with relevant stakeholders. Once prepared in accordance with UN-REDD Program guidelines, the NPD is ready for signature by authorized representatives from the national government and the participating UN organizations. The signed NPD is subsequently submitted to the Administrative Agent, who then releases funds to the participating UN organizations.

Overview of Implementing Entities

The implementing entities include the FAO, UNDP, and UNEP.

- **Nature of recipient country involvement**

National actions are identified and led by the host government, supported by the UN Country team. Governments play a prominent role throughout the National Program cycle by:

1. Managing the preparation of the National Program
2. Signing the final National Program document before it is transmitted to the Secretariat for consideration
3. Appointing a national focal point for coordination and implementation of activities under the Program

Additionally, a National Steering Committee oversees the country program, ensuring strong national ownership and shared decision-making. The UN-REDD Program aims to empower countries to exercise operational and fiduciary responsibility while utilizing national systems and institutions wherever possible.

1.6.4. Forest Investment Program (FIP)

The Forest Investment Program (FIP) is a targeted program of the Strategic Climate Fund (SCF) within the Climate Investment Funds (CIF). The FIP supports developing countries' efforts to reduce deforestation and forest degradation (REDD) while promoting sustainable forest management that leads to emission reductions and the protection of carbon reservoirs. It works toward this goal by providing scaled-up financing for readiness reforms and public and private investments identified through national REDD readiness or equivalent strategies. The FIP is active in 23 countries.

- **Objectives**

The FIP is designed to support developing countries' REDD efforts and promote sustainable forest management through four main objectives:

1. Initiate and facilitate transformational change in developing countries' forest-related policies and practices.
2. Facilitate the leveraging of additional and sustained financial resources for REDD, including through a possible UNFCCC forest mechanism, leading to effective and sustained

reductions in deforestation and forest degradation while enhancing sustainable forest management.

3. Pilot replicable models to generate understanding and learning of the links between the implementation of forest-related investments, policies, measures, and long-term emission reductions, as well as conservation and sustainable management of forests.
4. Provide valuable experience and feedback in the context of the UNFCCC deliberations on REDD.

▪ **Financial inputs and fund size**

Contributions to the FIP total approximately USD 785 million, with contributors including Australia, Denmark, Japan, Norway, Spain, Sweden, the United Kingdom, and the United States. The application of all CIF finance can be classified as ODA by the partner multilateral development banks (MDBs) acting as implementing entities for the CIFs, including the FIP, if:

- It meets the criterion of promoting economic development and welfare.
- The grant element is at least 25%.

The funds are to be used in countries included in the OECD-DAC list of ODA-eligible countries.

▪ **Activities supported**

The FIP is currently active in 23 countries, including Bangladesh, Brazil, Burkina Faso, Cambodia, Cameroon, the Republic of Congo, Côte d'Ivoire, the Democratic Republic of the Congo, Ecuador, Ghana, Guatemala, Guyana, Honduras, Indonesia, the Lao People's Democratic Republic, Mexico, Mozambique, Nepal, Peru, Rwanda, Tunisia, Uganda, and Zambia.

Supported activities include:

- Investments that build institutional capacity, forest governance, and information
- Investments in forest mitigation efforts, including forest ecosystem services
- Investments outside the forest sector necessary to reduce pressure on forests, such as alternative livelihood and poverty reduction opportunities

FIP investments also mainstream climate resilience considerations and contribute to multiple co-benefits, such as biodiversity conservation, protection of the rights of Indigenous Peoples and local communities, and poverty reduction through enhancements in rural livelihoods.

- **Administrating organization**

Secretariat or Administrative Unit

The CIF Administrative Unit supports the work of the SCF Trust Fund Committee and other committees, including the FIP Sub-Committee. It provides recommendations and reporting on operational and financial matters to the CIF governing bodies. The Unit is housed in the World Bank Group's Washington, D.C. offices and comprises a small professional and administrative staff.

Trustee

The World Bank (International Bank for Reconstruction and Development) acts as Trustee for all Climate Investment Funds, including the FIP.

- **Fund finance and access modalities**

Conditions and eligibility requirements

For a country to be eligible to receive funding from the FIP, the following are required:

- ODA eligibility (according to OECD/DAC guidelines)
- Existence of active multilateral development bank (MDB) country programs.

- **Accessing the fund**

Access Modalities: FIP funding is only accessible through MDBs (the World Bank Group, the Inter-American Development Bank, the African Development Bank, the European Bank for Reconstruction and Development, and the Asian Development Bank) acting as implementing partners. Eligibility to receive FIP funding is established through assessments of FIP investment strategies, programs, and projects, which must deliver transformational change and go beyond business-as-usual. They are assessed according to:

- Program potential to contribute to and adhere to FIP objectives and principles
- Country preparedness and ability to undertake REDD initiatives
- Climate change mitigation potential
- Demonstration potential at scale
- Cost-effectiveness
- Implementation potential
- Integration of sustainable development safeguards (co-benefits).

Pre-Programming Phase

1. The FIP Sub-Committee (SC) agrees upon the number of country or regional pilots and criteria for country selection.
2. The CIF Administrative Unit, through MDBs, informs countries and invites expressions of interest, which must be submitted by governments.
3. The FIP-SC selects country or regional pilots based on the Expert Group Report.
4. Selected countries are invited to confirm their interest in participating, identify a focal point, and establish their national-level multi-stakeholder steering committee.

Programming Phase

1. A country-led joint MDBs mission assists in developing the Investment Strategy.
2. The Investment Strategy is endorsed by the FIP-SC, followed by further development of program/project concepts.
3. Preparation of FIP investment programs and projects takes place.
4. Decisions on financing for programs and projects are made by the FIP-SC.

Further processing of projects follows MDB procedures, including final approval.

▪ *Financial instruments*

The FIP can offer grants, concessional loans, guarantees, or equity as detailed in its Investment Criteria and Financing Modalities. The FIP Sub-Committee decides which type of financing is suitable for a specific project or program, either approving the proposed financing modality (grant or concessional loan) or a range of proposed financing modalities (grant, concessional loan, guarantee, and/or equity).

Accreditation Process

There is no accreditation process for the CIF, as only the MDBs can access and implement CIF funding, including for the FIP.

Overview of Implementing Entities

Implementing agencies for FIP investments include the World Bank Group, the African Development Bank, the Asian Development Bank, the European Development Bank, and the Inter-American Development Bank.

- **Nature of recipient country involvement**

FIP programs are country-led and country-owned, building on, enhancing, and strengthening existing nationally prioritized REDD efforts while respecting national sovereignty.

- **Allocation criteria**

The maximum total FIP preparation grant allocation for an investment strategy is USD 250,000. However, there is no maximum allocation for a project preparation grant, and while there does not seem to be a financing cap for a single FIP project, most projects fall within a range of up to USD 10 million.

1.6.5. Bio-Carbon Fund (B-CF)

The Bio-Carbon Fund was established as a public-private initiative managed by the World Bank. This fund supports projects that generate multiple revenue streams by combining financial returns from the sale of emission reductions (such as carbon credits) with increased local incomes and other indirect benefits from sustainable land management practices. The fund comprises over 20 projects divided into two categories: the UNFCCC Clean Development Mechanism projects and the Verified Carbon Standard projects. The first two tranches of the Bio-Carbon Fund were founded in 2004 and 2007, and they are now closed to new fund participation. In 2013, the Bio-Carbon Fund launched a new initiative to support forest landscapes, namely the Initiative for Sustainable Forest Landscapes (ISFL). The ISFL is capitalized through a new tranche of funding from the Bio-Carbon Fund. This initiative supports developing countries' efforts to reduce emissions by testing

jurisdictional approaches that integrate the reduction of deforestation and degradation, sustainable forest management, and climate-smart agricultural practices to green supply chains. Ultimately, the ISFL funds large-scale programs that aim to enable both countries and the private sector to adopt changes in the way farmers operate on the ground while also informing policies at the international level.

▪ **Objectives**

The Bio-Carbon Fund is focused on land use, with the primary objective of restoring and protecting ecosystems and supporting land transformation. Moreover, the fund aims to create new revenue streams and improve the livelihoods of rural communities. For the ISFL, the objective is to collaborate with private firms that can provide capital, innovation, operational resources, and technical expertise to accelerate the greening and securing of their supply chains. Specifically, the ISFL seeks to:

- Scale up interventions to jurisdictional landscapes.
- Break down sectoral silos and work across the forest, agriculture, and energy sectors.
- Build partnerships with the private sector to scale up beyond available public financing.
- Combine results-based payments with dedicated grant funding for technical assistance.

The overarching aim of the ISFL is to catalyze the development of a low-carbon rural economy, resulting in livelihood opportunities for communities and an overall reduction in land-based emissions.

▪ **Financial inputs and fund size**

The ISFL is a multilateral fund supported by donor governments. The first two tranches of the Bio-Carbon Fund have a total commitment of USD 90 million, contributed by six governments and public entities, as well as eleven private companies. The fund's total capital amounts to approximately USD 355 million, with contributors including Germany, Norway, Switzerland, the United Kingdom, and the USA. However, no information is available regarding the extent to which these financial inputs are classified as official development assistance (ODA).

- **Activities supported**

The activities supported by the Bio-Carbon Fund include environmental restoration, reforestation for fuelwood, afforestation activities, REDD+ activities, sustainable agricultural land management, and fast-growing tree plantations for timber.

- **Administrating organization**

Secretariat or Administrative Unit

The fund is managed by the World Bank, specifically through the Carbon Finance Unit, which handles the day-to-day operations of the Bio-Carbon Fund within the organization's Climate Change Fund Management Unit.

- **Trustee**

The World Bank serves as the permanent trustee of the Bio-Carbon Fund.

- **Fund finance and access modalities**

Conditions and Eligibility Requirements

Eligibility for the fund covers forest countries that are members of the World Bank and extends beyond ODA-eligible countries.

Accessing the Fund

To access the Bio-Carbon Fund, forest countries propose projects that can certify their emission reductions under various standards, such as the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC). For the selection of ISFL jurisdictions, a series of high-level quantitative and qualitative indicators across three areas are considered, including REDD readiness, general factors unrelated specifically to REDD+ or agriculture (such as private sector engagement in the country and potential co-benefits), and agricultural drivers. Projects are only considered if they sequester or conserve greenhouse gases in forests, agro-ecosystems, and other ecosystems.

- **Financial instruments**

The Bio-Carbon Fund provides grant funding, grant-based technical assistance, capacity-building efforts, and results-based payments for achieved emission reductions.

Accreditation Process

There is no formal accreditation process. Forest countries and jurisdictions approved by the Bio-Carbon Fund will be included in the funding portfolio. A project will be proposed by an entity associated with the host country through a Project Idea Note. If both parties agree to proceed, a Project Design Document and an Emissions Reductions Purchase Agreement will be drafted.

- **Overview of implementing entities**

The implementing entities may include private companies, NGOs, government agencies, or international partners; however, a comprehensive list of actual implementing entities is not available.

- **Nature of recipient country involvement**

Local-level governance relies on a partnership between Bio-Carbon Fund contributors and local entities, although no information is available regarding the extent of recipient countries' involvement.

1.6.6. Adaptation for Smallholder Agriculture Program (ASAP)

The Adaptation for Smallholder Agriculture Program is the primary initiative of the International Fund for Agricultural Development (IFAD) for channelling climate and environmental finance to smallholder farmers. The program is incorporated into IFAD's regular investment processes and is subject to rigorous quality control and supervision systems. Since commencing operations in 2012, ASAP has received USD 300 million in contributions during two distinct phases (ASAP1 and ASAP2) and has helped eight million vulnerable smallholders in 43 countries cope with the impacts of climate change while building more resilient livelihoods. A next phase, known as the Enhanced Adaptation for Smallholder Agriculture Program (ASAP+), is currently under development.

▪ Objectives

ASAP's objectives are to channel climate and environmental finance to smallholder farmers, scale up climate change adaptation in rural development programs, and mainstream climate adaptation into IFAD's work. Globally, ASAP has established targets for greenhouse gas emission reductions, aiming to avoid and/or sequester 80 million tons of GHG emissions by 2020. Since the program has been designed primarily as an adaptation initiative, only a limited number of projects commit to specific greenhouse gas emission targets. Instead, the focus of most investment designs is on resilient agricultural production. Consequently, the mitigation benefits of ASAP should be assessed as side benefits of adaptation investments and determined through an ex-post assessment.

▪ Financial inputs and fund size

ASAP has received USD 300 million in grant support from 2012 to 2017. The ten contributor countries include:

- Government of Canada
- Korean International Cooperation Agency
- Ministry of Foreign Affairs of Finland
- Belgian Development Cooperation
- Flemish Department for Foreign Affairs
- Norwegian Ministry of Foreign Affairs
- Ministry of Foreign Affairs of the Netherlands
- Government of Sweden
- Swiss Agency for Development
- UK Aid

The second phase of ASAP has been financed by the Norwegian Agency for Development Cooperation (USD 9.5 million) and the Swedish International Development Agency (USD 5.9 million). The overall target for the ASAP2 Trust Fund is USD 100 million, although the degree to which these financial inputs are classified as official development assistance (ODA) is unknown. An Enhanced Adaptation for Smallholder Agriculture Program (ASAP+) was proposed in 2020 to apply lessons learned from the first two phases, with a finance mobilization target of USD 500

million. Initial contributors to ASAP+ include the governments of Qatar, Austria, Ireland, and Germany.

▪ **Activities supported**

The activities supported in ASAP1 and ASAP2 include:

- **Policy Engagement:** Supporting agricultural institutions in IFAD Member States to achieve international climate change commitments and national adaptation priorities.
- **Climate Risk Assessment:** Facilitating the systematic use of climate risk information when planning investments to increase resilience.
- **Women's Empowerment:** Increasing the participation of women in, and their benefits from, climate change adaptation activities.
- **Private-Sector Engagement:** Strengthening the involvement of the private sector and farmer groups in climate change adaptation and mitigation activities.
- **Climate Services:** Enhancing the use of climate information when planning investments to increase resilience.
- **Natural Resource Management and Governance:** Strengthening the participation and ownership of smallholder farmers in decision-making processes and improving technologies for the governance and management of climate-sensitive natural resources.
- **Knowledge Management:** Enhancing the documentation and dissemination of knowledge on approaches to climate-resilient agriculture.

▪ **Administering organization**

Secretariat or Administrative Unit

ASAP is integrated into IFAD's regular investment processes. The Program Management Department is responsible for coordinating and overseeing ASAP programs.

Trustee

IFAD serves as the permanent trustee of the program.

- **Fund finance and access modalities**

Conditions and Eligibility Requirements

Country eligibility is determined by the IFAD Program Management Department, following regular IFAD procedures and policies for grant financing. While eligibility for ASAP financing extends beyond ODA-eligible countries, recipient countries are restricted to IFAD developing Member States.

Accessing the Fund

ASAP operates somewhat differently from other funds because ASAP grants are combined with IFAD baseline investments implemented by government entities. The programming of ASAP funds aligns with the IFAD project design cycle and follows regular IFAD procedures and safeguards. Therefore, ASAP does not employ specific application procedures like other funds that issue calls for proposals accessible by NGOs or civil society organizations (CSOs) directly. Results-Based Country Strategic Opportunities Programs (RB-COSOPs), which are developed jointly with governments, typically serve as the starting point for an ASAP investment, highlighting climate change adaptation as a strategic decision for IFAD operations in specific countries.

ASAP follows the typical IFAD design cycle, which includes:

- **Project Concept:** Project concepts are created as part of the COSOP or through consultations between IFAD, governments, and national stakeholders. These concepts are reviewed by an Operational Strategy and Policy Guidance Committee (OSC).
- **Detailed Project Design and Quality Enhancement:** A Project Design Report (PDR) is created and improved through a Quality Enhancement (QE) process involving field missions and interactions with local partners and stakeholders, culminating in a final review by a QE panel.
- **Executive Board Review:** Every ASAP investment design undergoes review and clearance by the IFAD Executive Board, which meets three times a year.
- **Negotiation and Approval:** After the IFAD Executive Board approves the financing, negotiations conclude between IFAD and other parties involved in the project financing, resulting in a signed financing agreement.

- **Implementation:** Once the conditions set by IFAD are met, the grant is declared effective, and implementation begins.

The projects and investment designs are selected based on the following dimensions:

- **Financial instruments**

ASAP provides only grant financing via two types of grants:

- **Global and Regional Grants:** Driven by thematic and regional corporate-level strategic priorities.
- **Country-Specific Grants:** Focused on strengthening institutional, implementation, and policy capacities and on innovating in thematic areas.

Accreditation Process

There is no formal accreditation process for ASAP implementing partners.

Overview of Implementing Entities

The primary implementing entities are government ministries and agencies, while implementing partners may include research organizations, centers of excellence involved in rural poverty reduction, NGOs, and private sector and civil society organizations. However, due to the lack of a formal accreditation process, a comprehensive list of ASAP implementing partners is not available.

- **Nature of recipient country involvement**

IFAD works in partnership with recipient country governments, national extension services, a range of national and international research institutes, civil society organizations, and communities, including farmers' organizations (FOs) and women's groups. National governments play a crucial role in both the design and implementation of ASAP programs. They influence and approve project proposals via the Country Strategic Opportunities Program (COSOP), ensuring that IFAD operations align with government priorities while being the main responsible entity for implementing the programs.

Allocation Criteria

Up until 2002, IFAD resources were allocated to developing member states based on country needs, measured by the depth of rural poverty, the number of rural poor, the availability of national resources, and the commitments of other development partners. Since 2003, the Governing Council has implemented a coherent performance-based allocation system (PBAS). A core feature of the PBAS is that country allocations are based on a specific multiplicative formula that includes: (a) a country needs component (rural population, per capita gross national income), and (b) a country performance component (International Development Association resource allocation index, rural sector performance score, and projects-at-risk).

Despite the emergence of recent funds, they still fall short of the amounts needed to effectively mitigate and adapt to climate change. As of 2010, combined climate finance from the UNFCCC, multilateral and bilateral sources, including the CDM, GEF Trust Fund, Adaptation Fund, and World Bank Climate Investment Funders, amounted to USD 8 billion per annum (UN-HAGCCF 2010). Additionally, by November 2011, approximately USD 450 million had been pledged to the LDCF and USD 250 million to the SCCF (Schalatek et al. 2011). Nevertheless, these amounts are significantly less than the estimated additional investments needed to finance climate change.

The above finances offer an opportunity to strengthen food security and promote climate change mitigation and adaptation in the developing countries. However, current climate-related financial flows specifically targeted to agriculture in the developing nations cover only a tiny fraction of the total climate-change funds (Climate Focus 2011). By 2008, the average total aid on agriculture was less than US\$6 billion, yet when considering the annual investment needs for agricultural adaptation are about US\$7 billion (Nelson et al. 2010), climate finance is unlikely to meet most of the developing countries requirements for mitigation and adaptation. On the other hand, it is estimated that the potential increase in global investment flows to agriculture, forestry and fishery sectors will reach US\$14 billion per year by 2030, of which US\$7 billion/year is assumed to go developing countries (SEI 2008). According to projections, mitigation costs in agriculture will reach about US\$20 billion by 2030. The amount of investment flows on agriculture will be significantly less than the expected costs for agricultural mitigation and adaptation (Louis 2007).

1.6.7. Importance of innovative financial mechanisms and their role in influencing farmers' decision to adopt to regenerative agriculture

In recent years, the escalating human and financial costs of climate change have become increasingly evident. As global temperatures rise, the frequency and severity of climate-related disasters have surged. According to a recent assessment by the United Nations Environment Program (IDRC, 2023), the costs for developing countries to adapt and to mitigate climate change currently exceed available public finance by ten to eighteen times. The funding gap is estimated to be between USD 194 billion and USD 366 billion annually (IDRC, 2023). To bridge this gap, innovative financial instruments have been identified as a means to stimulate increased private sector investment in climate action (World Economic Forum, 2019, cited by IISD, 2023). These instruments include sustainable bonds, payments for ecosystem services, pooled investments, debt-for-nature swaps, and public-private partnerships. By diversifying funding sources, these instruments allow governments and project developers to engage private investors, pension funds, socially conscious impact investors, and philanthropists (IDRC, 2023). Although these instruments are not entirely new, they represent innovative approaches to utilizing and combining existing mechanisms to encourage higher investment flows into climate-beneficial projects. The innovation arises from the new combinations of financial instruments and the establishment of partnerships among various financial providers in the climate sector. While innovative financing mechanisms play a crucial role in facilitating funding for climate change initiatives, its mechanisms can modify traditional finance in three significant ways:

1. Acquisition of New Financial Resources

This includes sourcing funds from financial institutions, private investors, institutional investors (such as pension funds), impact investors, foundations, and other philanthropists, while blending these with traditional resources like public grants and loans. Public and philanthropic capital often serves a catalytic role, improving the risk-return profile to attract private investors.

2. Improving Efficiency

Mechanisms that enhance the efficiency of raising and distributing financial resources can reduce transaction costs, increase transparency, and widen access to investment opportunities.

3. Enhancing Effectiveness

Focusing on results and performance metrics of funded projects can significantly improve investment effectiveness.

Innovative financial instruments offer pathways to secure, structure, govern, and allocate resources toward climate adaptation and mitigation. They can facilitate access to funds from diverse entities, creating opportunities for blending with traditional financing (IISD, 2022). While many of these instruments have seen success in developed countries, their application in developing nations especially the least developed countries remain limited. This underutilization is often due to perceived risks, low profitability in climate investments (Abalkina & Zaytsev, 2021, cited by IISD, 2023), and a lack of familiarity with innovative financial instruments (Sherchan & Singh, 2021, cited by IISD, 2023). Nevertheless, as awareness and understanding grow, these instruments may gain traction in developing regions.

In recent years, several novel approaches to climate finance have emerged, particularly aimed at supporting the transition to a low-carbon economy and fostering regenerative agriculture. Researchers have identified various strategies to enhance access to climate finance within this sector. For example, aggregating smallholder farmers into cooperatives or leveraging digital monitoring technologies have shown promise in overcoming financial barriers. Teague et al. (2016) propose a pay-for-performance model, wherein farmers receive payments based on the verified amount of carbon sequestered. Similarly, Fargione et al. (2018) advocate for green bonds and impact investing as viable mechanisms for supporting regenerative agriculture initiatives. A noteworthy existing program is the Soil Carbon Initiative (SCI), which aims to direct climate finance towards regenerative agriculture. The SCI provides a structured framework for quantifying, verifying, and monetizing the carbon sequestration benefits of regenerative practices, thereby enabling farmers and landowners to access carbon credits and other climate finance opportunities (SCI, 2021). This section aims to demonstrate how innovative financial instruments can facilitate, and have indeed facilitated, increased funding for climate change actions in both developing and developed countries. Furthermore, it will explore their potential to enhance financing efforts in the future.

1.7.INSTRUMENTS ALREADY UTILIZED

The first part of this discussion focuses on five key financing instruments that can be used directly to finance climate- smart agriculture such as regenerative agriculture and have been employed for climate action and are likely to channel additional funds toward this cause. The first three instruments blended finance, public-private partnerships (PPPs), and payment for ecosystem services (PES) have been successfully implemented in developing countries, as illustrated by various case studies. Conversely, the latter two instruments stormwater markets and tax increment financing (TIF) have primarily been utilized in developed nations, with limited application in developing contexts.

1.7.1. Blended Finance

Blended finance involves the strategic use of financial instruments such as grants, loans, equity, and guarantees to attract private investments. This approach can align risk-adjusted returns with investor expectations by reallocating risk to public entities better positioned to absorb it (Lankes, 2021, cited by IISD, 2023). While blended finance is not a distinct financial instrument, it represents a method for structuring various financial tools. For instance, pooled investments exemplify blended finance, where capital from different sources is combined to fund projects (IISD, 2023). Although such pooled investments for climate projects are still uncommon, interest is on the rise. An example is Lightsmith Climate Resilience Partners, the first private equity fund dedicated to climate resilience, which supports companies developing innovative solutions in areas like water efficiency and resilient food systems (Lightsmith Group, 2022).

1.7.2. Public-Private Partnerships (PPPs)

A PPP is defined as a long-term contract between a private entity and a government body designed to provide a public asset or service. In this arrangement, the private party assumes significant risk and management responsibilities, with compensation tied to performance (PPP Knowledge Lab, 2017, p. 1, cited by IISD, 2023). PPPs aim to align the interests of public and private investors to deliver services more efficiently and cost-effectively than traditional public sector projects. While PPPs have been implemented across various sectors in developing countries, their application specifically for climate change projects has been limited (IISD, 2023). One notable example is African Parks, a private, non-profit organization responsible for managing protected areas in

southern Africa. This organization partners with governments, which retain ownership and set policies for these areas. The African Parks model has attracted philanthropic investments, demonstrating financial viability through revenue generated from tourism (African Parks, 2022). However, expanding the use of PPPs for climate projects may present challenges compared to increasing blended finance arrangements, as private investors in PPPs are more susceptible to domestic political risks. While some private investors have successfully navigated these risks in sectors like transport and energy infrastructure, the same level of motivation may not be present for climate change projects (IISD, 2023). Nonetheless, there is an opportunity to incorporate adaptation and resilience measures into infrastructure projects financed through PPPs (Musmanni, 2021; World Bank, 2022a).

1.7.3. Payment for Ecosystem Services (PES)

PES arrangements involve the transfer of financial resources from beneficiaries of ecosystem services such as water consumers and hydropower producers to the providers of those services, including farmers and land trusts (IISD, 2023). This approach operationalizes a "beneficiary pays" principle, allowing providers to generate revenue and funding. Successful implementation of PES requires strong public institutions and clearly defined property rights, enabling beneficiaries to internalize benefits and compensate providers (IISD, 2022). The Remuneration Mechanism for Ecosystem Services (MERESE) in Peru serves as an effective example of how PES can channel funding toward climate change initiatives. The success of PES hinges on early participant engagement and trust in the institutions managing the payment schemes (Sorice et al., 2018). Given the distributed nature of beneficiaries and providers in PES arrangements, careful design is essential to foster participant buy-in.

1.7.4. Stormwater Markets and Tax Increment Financing (TIF)

Stormwater markets and TIFs have been financial instruments applied in developed countries to support climate change actions, yet they have seen limited use in developing nations. These instruments can incentivize private investments in green infrastructure, aiding property owners and municipalities in adapting to climate change impacts. Stormwater markets consist of mechanisms that motivate property owners to manage stormwater runoff effectively (IISD, 2023). Typically, property owners who implement runoff prevention measures, such as installing green roofs or rain

barrels, receive credits from municipal governments applicable to their water or tax bills (Bassi et al., 2017, cited by IISD, 2023). For example, Washington, D.C., has successfully utilized a credit trading program to enhance climate resilience through green infrastructure (Department of Energy & Environment, 2014). Similarly, rainwater harvesting rebates are increasingly adopted in regions such as Australia, Europe, and North America, with emerging applications in developing countries like India, Nepal, and the Philippines (IISD, 2023). TIFs operate on the principle that redevelopment projects will increase land value, thus generating higher tax revenues. Initial investments are often financed with government resources, later reimbursed as incremental taxes are collected (City of Chicago, 2019). However, both stormwater markets and TIFs require robust public institutional capacity for development and oversight, which can pose significant challenges in many developing countries.

1.8.INSTRUMENTS THAT MAY ENCOURAGE FINANCING FOR CLIMATE CHANGE

The previous section examined instruments that can directly finance climate change projects or modify the risk parameters of adaptation initiatives. This section explores instruments that may catalyze financing through intervening events.

1.8.1. Sustainable Bonds

Sustainable bonds are debt instruments through which issuers, such as governments, borrow money from bondholders, promising repayment with interest. In return, investors benefit from predictable returns (Fernando, 2022). Issuers of sustainable bonds, including green, blue, social, and sustainability-linked bonds, commit to using the proceeds for projects that further sustainability goals. According to the Climate Bonds Initiative (2022), cumulative issuances of these bonds aligned with the Paris Agreement reached USD 2 trillion by September 2022. Despite growth in the sustainable bond market over the past five years, it remains a niche sector within the broader bond market (OECD, 2022, cited by IISD, 2023). Many sovereign issuers of sustainable bonds aim to fund initiatives that meet greenhouse gas emission reduction targets outlined in their nationally determined contributions. Notably, green bonds are widely recognized, with proceeds designated for financing green projects. The International Capital Market Association established the voluntary Green Bond Principles in 2014, identifying climate adaptation and mitigation projects as eligible for bond funding (International Capital Market Association, 2021). In 2019, the European

Bank for Reconstruction and Development issued the first climate resilience bond, supporting a portfolio of adaptation projects (EBRD, 2019, cited by IISD, 2023). While the public sector leads sustainable bond issuance, many developing countries face challenges in accessing this market, often due to the size of the issuances required and the need for robust governance frameworks.

1.8.2. Debt-for-Nature and Debt-for-Climate Swaps

Debt-for-nature and debt-for-climate swaps involve renegotiating repayment terms so that savings can be allocated to investments in environmental or climate initiatives (IISD, 2023). In some cases, lenders may sell portions of a borrower's debt to third-party organizations specializing in conservation and climate action. An example includes Belize's 2021 transaction, where commitments to conservation facilitated private creditors to offer debt relief by converting expensive loans into more manageable financing (Amorim, 2023). While these swaps provide an attractive option for indebted nations to reduce debt while investing in climate resilience, they can be complex, requiring rigorous due diligence and performance monitoring. The success of these transactions hinges on both the lender's and borrower's commitment to the agreed objectives, as well as the lender's confidence that debt relief will not lead to the accumulation of new debt.

1.8.3. Policy and Institutional Support

The role of policy and institutional frameworks in facilitating access to climate finance is critical. Cacho et al. (2020) emphasize the importance of government incentives, such as carbon pricing and subsidies, in promoting the adoption of regenerative agriculture practices. Furthermore, Wollenberg et al. (2016) highlight the necessity for coordinated efforts among policymakers, financial institutions, and agricultural stakeholders to create enabling frameworks for climate finance within the agricultural sector.

However, integrating regenerative agriculture into climate finance mechanisms presents challenges. Concerns about measuring and verifying soil carbon sequestration, ensuring the additionality of funded activities, and achieving equitable distribution of climate finance benefits have been raised (Paustin et al., 2016; Rumpel et al., 2020). Researchers stress the need for robust monitoring and evaluation frameworks, as well as the inclusion of broader ecosystem services and social co-benefits in the design of climate finance programs (Chabbi et al., Elevitch et al., 2018). Duru et al. (2021) point out that the complexity of climate finance mechanisms, lack of awareness,

and difficulties in measuring environmental outcomes are significant barriers. Similarly, Scherer et al. (2022) identify access to capital, transaction costs, and uncertainty surrounding carbon sequestration quantification as key obstacles.

As mentioned, innovative financing mechanisms play a crucial role in facilitating funding for climate change initiatives. The scale and scope of climate challenges cannot be addressed by government action alone; private industries must also play a central role as de-riskers and investors in climate mitigation and adaptation. This collaboration is critical in reducing risks for investors and insurance companies operating in climate-prone regions (World Economic Forum, 2024). Several case studies presented below illustrate the effectiveness of these mechanisms in addressing the issues mentioned. This includes case studies from Cameroon, Africa, and the global context.

In Bafut, Cameroon, for instance, the "Bafut PES Scheme" is a Payment for Ecosystem Services (PES) initiative that compensates farmers for maintaining forest cover and protecting water sources. This initiative encourages sustainable land management practices that benefit both the environment and local communities, ultimately leading to improved watershed management and income generation for farmers in Bafut, which contributes to better environmental health.

Another case study is the REDD+ "On the Ground" project, which focuses on community payments for ecosystem services in the southern and eastern regions of Cameroon. The purpose of this pilot initiative is to assist local communities in Cameroon, and to some extent throughout the Congo Basin, in protecting their forest resources through PES. This initiative aims to change forest management practices, enabling local communities to engage in sustainable resource management while receiving direct payments for environmental performance. As noted by Blom et al. (2010), performance is what distinguishes REDD+ initiatives from other conservation efforts. Beyond local impacts, the initiative aims to influence the development of national REDD+ policy in Cameroon, even though government support has been somewhat lukewarm. The PES initiative results from a partnership between the Centre Pour le L'Environnement et le Développement (CED), BioClimate Research and Development, and the Rainforest Foundation UK.

Moreover, in Yaoundé, a Public-Private Partnership (PPP) was established to enhance water supply infrastructure. This project integrates climate resilience measures, such as rainwater harvesting and

efficient distribution systems, improving access to clean water for urban residents and increasing resilience to water scarcity in Yaoundé.

These innovative climate instruments and their associated projects demonstrate the important role of innovative financial mechanisms in addressing climate change challenges. By integrating community involvement, sustainable practices, and financial support mechanisms, Cameroon is making significant strides in building resilience and promoting sustainable development.

In a broader context, the Seychelles became the first country to finance conservation through a debt-for-nature swap in 2018, exchanging USD 21.6 million in debt for the creation of two major marine nature reserves. Part of its national debt was sold at a discounted rate to the Nature Conservancy and other philanthropic foundations (IDRC, 2023). This allowed Seychelles to enhance its climate resilience while saving approximately USD 2 million annually in debt service charges.

Another important case study involves blending grants, community equity, and microfinance for water access in Kenya (Atieno et al., 2021; African Centre for Technology cited by IISD, 2023). Between 2020 and 2021, the African Centre for Technology Studies in Kenya, the Prakriti Resources Centre in Nepal, and Libélula in Peru prepared case studies analyzing innovative financial instruments for adaptation and mitigation in Kenya, Nepal, and Peru. These case studies provide insights into how innovative financial instruments helped channel resources toward adaptation and mitigation measures and how they could be used to scale up investment in these areas.

From 2013 to 2018, Kenya financed water projects by combining local community equity, grants, and microfinance loans (IISD, 2023). It is important to note that Kenya is increasingly susceptible to climate change impacts, particularly regarding access to water (Government of Kenya, 2018). Severe water scarcity affects several areas of Kenya, with about 40% of the population lacking access to basic drinking water services in 2020 (World Bank, 2022b). This case study highlights the need for significant investment in safe water access, which cannot be solely met by government or NGO contributions. The initiative utilized capital from the World Bank to enable K-Rep Bank (the Kenyan Rural Enterprise Programme Bank) to extend loans to qualified community groups

capable of covering the operational and maintenance costs of water projects. Additionally, technical assistance funded by grants facilitated the development of viable loan applications.

The Water and Sanitation Project employed a blend of community equity, grants, and microfinance, supported by output-based aid (OBA) subsidies and a partial credit guarantee. Local communities contributed 20% of the total project costs, supplemented by World Bank grants and OBA subsidies. This financial structure, along with a 50% risk guarantee provided by USAID, allowed K-Rep Bank to finance both new and existing infrastructure projects in vulnerable communities. Loans from K-Rep Bank ranged from KES 5 million to 10 million (approximately USD 50,000 to 100,000), with interest rates fixed at market rates (between 16% and 18% per annum), financing up to 80% of project costs. Moreover, support organizations offered technical assistance to community groups, guiding them in developing bankable loan applications and overseeing project implementation. The project followed a meticulous process for loan disbursement to ensure accountability. The OBA financing scheme focused on results, with established performance indicators and required project audits to assess outputs and determine subsidy disbursements. Upon achieving specific targets, such as the number of water connections and revenue generated, the subsidy was released. After the OBA subsidy was received, the project transitioned from partial risk coverage to full credit risk borne by K-Rep Bank. K-Rep Bank also aligned its financing requirements with performance indicators, including the number of people gaining water access and new household connections. Each sub-project's outputs were explicitly outlined in the loan agreements, and the disbursement of World Bank-supported subsidies was contingent upon the successful achievement of these outputs. This innovative financing approach yielded notable commercial profitability, generating a positive return of USD 2–10 for every USD 1 invested. Ultimately, the project connected approximately 1,500 households in arid and semi-arid regions of Kenya to new water infrastructure. The success stemmed from blending various financing mechanisms, including community equity contributions, OBA subsidies, and private microfinancing from K-Rep Bank, combined with capacity building within both the bank and local communities.

In a similar vein, the Quiroz-Chira Water Fund in Peru serves as a Payment for Ecosystem Services supporting conservation (Fonseca & Lahud, 2022; cited by IISD, 2023). Peru, characterized by its diverse landscape and growing urban population, faces increasing water scarcity issues exacerbated by climate change (IISD, 2023). Approximately 70% of the world's tropical glaciers are in Peru,

and over the last 50 years, these glaciers have lost about half of their surface area due to climate change, leading to reduced long-term water supply and increased risk of glacial lake outburst floods (Taylor et al., 2022). An estimated 3 million Peruvians (9.2% of the population) lacked access to water services in 2019 (OECD, 2021; cited by IISD, 2023). In response, the Peruvian government has established systems to promote the sustainable use of ecosystem services. Notably, the Ministry of Environment developed the MERESE mechanism to mitigate risks to Peru's hydrological systems through voluntary agreements that unite the interests of those benefiting from ecosystem services with those contributing to their conservation.

In 2014, the Peruvian government enacted Law No. 30215 (MERESE), establishing a PES framework that encourages financial investments and non-financial tools for the sustainable use, protection, and recovery of ecosystem services. The MERESE and water funds were identified in Peru's National Adaptation Plan (NAP) and nationally determined contributions as critical mechanisms to enhance private sector involvement in financing adaptation efforts. This case study examines the implementation of MERESE through the Quiroz-Chira Water Fund, aiming to channel resources toward adaptation priorities. Although the MERESE did not explicitly include climate change adaptation within its scope, the study explored how its initiatives could bolster the adaptive capacity and resilience of headwater ecosystems while ensuring water availability for communities amidst climate changes.

The Quiroz-Chira Water Fund, a not-for-profit public-private partnership, was created to oversee the conservation of the Quiroz-Chira basin, informed by an initial pilot phase. The fund aimed to raise and manage resources for the conservation and recovery of forests and headwater ecosystems critical for agriculture, aquaculture, and domestic and industrial water use. Financed by a voluntary consortium of five payers (two municipalities, two water boards, and one NGO) and various peasant communities, the fund operated through contributions. The water boards voluntarily allocated 1% of their collected water tariffs, while the municipalities committed USD 17,000 and USD 15,000 annually, providing technical support for the fund's operations. Nature and Culture International, a U.S.-based NGO, played a pivotal role by securing international development finance to cover operational costs, including salaries, logistics, and project implementation. Between 2014 and 2020, the water fund allocated its resources to community development (53%), ecosystem conservation (37%), and fund management (10%). This initiative positively impacted

around 500 families and over 18,000 hectares of land, raising nearly USD 1 million during that period.

The MERESE successfully blended public and private financing, enhancing managerial efficiency in raising and distributing funds while increasing investment effectiveness. Although the Quiroz-Chira Water Fund did not explicitly target climate change adaptation, many projects contributed to the goals of Peru's NAP by improving the resilience of mountain ecosystems and the communities relying on their services. However, the financial mechanism faced vulnerabilities to extreme climate events, particularly between 2017 and 2019 when droughts and floods disrupted revenue streams, leading water boards to halt voluntary payments. This instability affected monitoring and evaluation efforts. To address funding gaps, the water fund sought support from national public innovation programs, partly financed by the World Bank. Establishing a stable funding stream remains a significant challenge, although efforts in 2021 focused on educating potential beneficiaries about the fund's projects to generate new financing sources.

This case study illustrates how water funds and MERESE agreements can synergize to implement actions aligned with climate priorities. Key success factors included:

- Trusting relationships between beneficiaries and contributors, fostering participation and equity in decision-making.
- Education and awareness-raising initiatives that highlighted the importance of ecosystem protection.
- Pilot projects that increased stakeholder awareness and mitigated risks associated with innovative financing.
- The involvement of a champion institution, Nature and Culture International, which provided stability and legitimacy to the water fund.
- Municipal engagement that added legitimacy and helped identify local development priorities.
- Clear project activity guidelines that managed expectations among various stakeholders.

In summary, this case study demonstrates that blending public and philanthropic finance with private finance through PES mechanisms can promote conservation efforts with adaptation and mitigation benefits, particularly when adaptation and mitigation considerations are integrated into

planning and climate risks are assessed. Government support, including municipal involvement and financing from national innovation funds, lent legitimacy to the initiative, attracting private water boards. Nature and Culture International's role in securing both international and domestic financing was crucial for operational management and project oversight.

Finally, Nepal's blended finance arrangements for enhancing food security (Sherchan & Singh, 2021; cited by IISD, 2023) illustrate another critical example. Nepal is highly vulnerable to climate-related disasters due to its geographic location and diverse topography. Recently, the country has experienced rapid changes in temperature and precipitation, outpacing the global average (Government of Nepal, 2021). With 60% of agricultural land reliant on rainfall, this climate variability poses significant threats to the agricultural sector, which is a priority area for action in Nepal's National Adaptation Plan (NAP), supporting 60% of the country's jobs and contributing 25% to the national GDP, making it critical to national food security (Karki et al., 2020; cited by IISD, 2023). Recognizing the need for adaptation, Nepal has identified a USD 4.8 billion investment opportunity to transition to climate-smart agriculture (IISD, 2023). However, the sector is often perceived as risky and unattractive for private investment due to low returns and an uncertain policy environment. Small and medium-sized enterprises (SMEs) face challenges accessing finance from local banks due to high transaction costs, inadequate collateral, and a lack of agricultural insurance, necessitating de-risking mechanisms to encourage investment in climate-smart agriculture (IISD, 2023).

The blended finance arrangements highlighted in a case study by Sherchan and Singh aimed to stimulate private sector investment in climate-resilient agriculture among small farmers. The Promoting Climate Resilient Agriculture project (2013–2019), initiated by the International Financial Corporation (IFC) as part of the broader Pilot Program on Climate Resilience, utilized a concessional loan from the IFC to de-risk investments in Nepal's agriculture sector. Business Oxygen (BO2), Nepal's first climate-focused private equity fund, participated by providing equity financing, particularly beneficial for SMEs as it eliminated the need for collateral. Investment efforts focused on SMEs involved in the production of three strategically important crops: rice, maize, and sugar cane. Alongside BO2, three local agribusiness firms provided technical assistance and capacity building for farmers and supply chain members. The project promoted climate-resilient technologies and practices, such as high-yield seed varieties, organic fertilizers, improved

irrigation, and moisture management, which successfully enhanced agricultural productivity. The primary beneficiaries of BO2's equity investments and capacity-building efforts were five SMEs seeking to strengthen their climate-resilient business operations. The financing facilitated these SMEs in repaying original loans and covering operational expenses, while BO2 agreed to pay a 25% premium on the predetermined equity share price to assist in scaling their businesses. Additionally, the SMEs benefited from government subsidies on imported goods and a 5% interest rebate on agricultural loans. Investors realized a return on investment of 35% over a 3.5-year period.

Despite low awareness of climate change and adaptation among private sector investors in Nepal, capacity-building activities organized by government officials, consulting firms, NGOs, and agribusinesses addressed this knowledge gap. These initiatives educated private firms on the impacts of climate change on agriculture and the importance of adaptation. Technical assistance was also provided to enhance the competitiveness of SMEs, making them more attractive to private investment. The main climate outcomes included the successful adoption of climate-resilient, high-yield seed varieties, improved access to weather information and early warning systems, and partnerships to enhance storage infrastructure. Additionally, farmers received training in improved irrigation systems and sustainable cultivation practices, further increasing productivity.

This study explored innovative financial mechanisms such as:

- **Pay-for-Success Programs:** Incentivizing farmers based on measurable outcomes of their regenerative practices.
- **Crowdfunding Platforms:** Engaging local and global communities to invest in sustainable agriculture projects.
- **Climate Bonds:** Issuing bonds specifically for financing climate-friendly agricultural initiatives.
- **Public-Private Partnerships:** Engaging both the public and private sectors in climate financial solutions.

These innovative approaches show promise in enhancing funding accessibility and mobilizing community support for regenerative agriculture. The exploration of innovative financial mechanisms reveals significant potential in overcoming existing barriers to funding. By

incorporating local community input and leveraging technology, these models can increase investment in regenerative agriculture and create sustainable funding sources that align with local needs.

In summary, current research on accessing climate finance for regenerative agriculture underscores the necessity for a multi-faceted approach that addresses barriers related to financing mechanisms, policy and institutional support, as well as measurement and monitoring. If these innovative mechanisms are utilized effectively, they could significantly contribute to financing the transition to a low-carbon economy, ultimately helping to achieve the 2030 global goals of eradicating poverty, eliminating hunger, and combating climate change.

1.9.THE GENESIS OF REGENERATIVE AGRICULTURE

The global food system is currently in crisis, primarily due to the ongoing practice of conventional farming and an over-dependence on chemical fertilizers and pesticides. These practices have led to significant environmental degradation, biodiversity loss, and various ecological damages (Giller et al., 2021). In response, the term "regenerative agriculture" is gaining traction among activists, civil society groups, and corporations, all of whom advocate for the renewal, transformation, and revitalization of the global food system (Duncan et al., 2021, cited by Giller et al., 2021).

The concept of regenerative agriculture was first introduced by Robert Rodale, the son of J.I. Rodale, a pioneer of organic farming in the United States since the 1930s. He established the Rodale Institute, which is dedicated to researching and promoting regenerative agriculture. Although the term has been associated with agriculture and farming since the late 1970s, its usage became more widespread in the early 1980s through the Rodale Institute's initiatives. Over the decades, the Institute has been at the forefront of this agricultural model through extensive research and publications. Robert Rodale (1983) defined regenerative agriculture as a system that, while increasing productivity, enhances the biological production base of land and soil. He emphasized that it should have minimal to no negative environmental impact beyond farm boundaries, produce food free from biocides, and involve the productive contribution of increasingly large numbers of people during a transition to reduced reliance on non-renewable resources.

Furthermore, Richard Harwood, an agronomist known for his work in international farming systems research, served as the director of the Rodale Research Centre when he published an international overview of regenerative agriculture (Harwood, 1983). He highlighted Rodale's assertion that regenerative agriculture extends beyond organic practices because it aims to enhance both macro structure and social relevance, thereby seeking to increase productive resources rather than diminish them. Harwood summarized the philosophy of regenerative agriculture into ten key points, emphasizing the interconnectedness of all components of the farming system, including the farmer and their family, the importance of maintaining biological balance, and the need to maximize beneficial biological relationships while minimizing materials and practices that disrupt these connections.

Key Principles of Regenerative Agriculture (Harwood, 1983)

1. Agriculture should produce highly nutritious food, free from biocides, at high yields.
2. It should enhance soil productivity by improving the depth, fertility, and physical characteristics of the upper soil layers.
3. Nutrient-flow systems should fully integrate soil flora and fauna to ensure better crop nutrition while minimizing environmental impact.
4. Crop production should rely on biological interactions for stability, eliminating the need for synthetic biocides.
5. Substances that disrupt the biological structure of the farming system, such as synthetic fertilizers, should be avoided.
6. An intimate relationship between the managers and the farming system itself is essential.
7. Integrated systems that are largely self-reliant in nitrogen through biological nitrogen fixation should be utilized.
8. Animals should be raised without the use of hormones or prophylactic antibiotics.
9. Agricultural production should create increased employment opportunities.
10. Regenerative agriculture requires national-level planning alongside a high degree of local and regional self-reliance to close nutrient-flow loops.

In what is likely the first journal article on regenerative agriculture, Francis et al. (1986, cited by Giller et al., 2021) closely linked it to organic and low-external-input agriculture, emphasizing biological structuring, progressive biological sequencing, and integrative farm structuring. While

interest in regenerative agriculture waned for nearly two decades, it regained momentum after 2015. Between 1972 and 2018, references to regenerative agriculture in literature were substantially fewer than terms like sustainable agriculture, organic agriculture, and agro ecology. Regenerative agriculture first appeared in the Nexus Uni database of news stories in 1983, referencing the Rodale Institute (Giller et al., 2021). Its mention in news articles remained low until 2009, but following 2016, its usage surged, with occurrences doubling each year and reaching 6,163 news items by 2020.

Turning to academic literature, only seven papers containing "regenerative agriculture" in their titles or abstracts were identified in the three decades following Francis et al. (1986). However, 2016 marked a pivotal year, as by 2020, a total of 52 papers had been published, which collectively received approximately 250 citations (Giller et al., 2021). Although the term has been in use since the early 1980s, it has not been as widely recognized as related terms such as sustainable agriculture or organic agriculture until recently. Since 2016, its presence in books, news, and online platforms has increased, reflecting its adoption by various NGOs, multinational corporations, and charitable foundations.

Despite this resurgence, there remains a lack of consensus on a precise definition of regenerative agriculture (Merfield, 2019; Soloviev and Landua, 2016, cited by Giller et al., 2021). Various broader and narrower definitions have emerged, most highlighting elements originally identified by Rodale. Some authors emphasize that regenerative agriculture systems are semi-closed, aiming to minimize external inputs and impacts (Pearson, 2007), while others focus on recycling energy inputs like fertilizers and fuels (Rhodes, 2012). Burgess et al. (2019) suggest that regenerative agriculture not only generates agricultural products but also sequesters carbon and enhances biodiversity, raising the question of whether it is an end in itself or a means to an end.

The most commonly associated themes with regenerative agriculture include improvements in soil health, environmental quality, human health, and economic prosperity (Schreefel et al., 2020). Practices vary widely across the globe, influenced by local ecosystems, cultures, and agricultural systems.

In Cameroon, for instance, the city of Nkongsamba was recognized at COP 26 in Glasgow (Scotland) in 2021 as the first city globally to implement biochar in its climate and agricultural

strategy (MINREX, 2024). Biochar, a solid carbon product, that enhances soil fertility while sequestering greenhouse gas emissions, helping Cameroon work toward the global goal of limiting temperature rise to below 2°C by 2100. Nkongsamba could thus serve as a model for other cities seeking to adopt best practices.

Similarly, the organization "Powerful Action for the Development of the Kadey Division" (PADK) in Cameroon has been practicing regenerative agriculture since its establishment in 2017. PADK promotes 100% organic agriculture based on regenerative principles, utilizing bio-pesticides and bio-fertilizers instead of synthetic alternatives. In 2023, through its "Organic Crop Development Program," PADK applied 250 kg of natural limestone to a 12,000 m² area to assess soil alkalinity for crop planting. They continue to produce and utilize bio-pesticides and bio-fertilizers, such as rabbit urine and vermicompost tea, to enhance soil nutrients (PADK, 2024).

In the United States, the Rodale Institute and the Savory Institute are leading proponents of this agricultural model. They have focused on practices like cover cropping, reduced tillage, rational grazing, and agroforestry, all of which aim to improve soil health. In Brazil, integrated crop-livestock systems, biochar application, and agroforestry practices have successfully restored degraded lands while boosting productivity (FAO, 2024). In Europe, countries such as the Netherlands emphasize innovative approaches like precision farming and agroforestry (European Commission, 2024). In Asia, nations like India and Australia are adopting regenerative practices to combat desertification and enhance water retention, utilizing traditional methods like intercropping and holistic management.

In summary, regenerative agriculture is defined as an approach to farming that prioritizes soil conservation while contributing to multiple ecosystem services. Its overarching goal is to create sustainable agricultural systems that restore and enhance the environment, ensuring the social and economic dimensions of sustainable food production are also addressed.

1.10. CAMEROON'S EMISSION TARGETS AND AGRICULTURAL PRIORITIES: INSIGHTS FROM THE NDC AND NAP

Cameroon continues to serve as a global greenhouse gas (GHG) sink, with an absorption capacity of 29,772 Gg CO₂ equivalent in 2010, compared to 46,983 Gg CO₂ equivalent in 2000

(MINEPDED, 2021). GHG emissions were estimated at approximately 34,933 Gg CO₂ equivalent in 2010, up from 29,599 Gg CO₂ equivalent in 2000, while absorption levels were about -64,705 Gg CO₂ equivalent in 2010, compared to -74,548 Gg CO₂ equivalent in 2000 (MINEPDED, 2021). Despite this low level of emissions, Cameroon has actively participated in international climate efforts, adhering to the UNFCCC principle of "common but differentiated responsibilities" while aiming for low-carbon development.

However, as a low GHG emitter, Cameroon faces significant climatic challenges (MINEPDED, 2021). The nation's ambitious development strategy aims for it to become an emerging economy by 2035, which is likely to lead to a sharp increase in emissions. Consequently, Cameroon must take decisive action to reduce its carbon footprint without hindering economic growth. This involves prioritizing mitigation options that offer high co-benefits, such as enhancing resilience to climate change, aligning sector policies, and strengthening implementation mechanisms. Mobilizing resources including funding, technology transfer, and capacity building—is essential (Africa NDC HUB, n.d.).

The foundation of Cameroon's Intended Nationally Determined Contribution (INDC) is its vision for 2035, which aspires to elevate the country to emerging nation status. This overarching goal includes several intermediate objectives, such as poverty reduction, achieving middle-income status, progressing to a Newly Industrialized Country, and fostering national unity while respecting the country's diversity. Economically, this vision entails sustained growth, an agricultural revolution focused on productivity, and doubling the secondary sector's share of GDP from 19% to 38% (MINEPDED, 2021).

In preparation for the Paris Agreement, Cameroon undertook its first INDC revision, informed by the Tunis Regional Dialogue in September 2016. This dialogue assessed technical aspects such as institutional arrangements, monitoring systems, and funding strategies, resulting in an improved INDC that transitioned into the Nationally Determined Contribution (NDC).

This updated NDC clearly distinguishes between unconditional internal efforts and conditional support from developed countries.

By correspondence No. A344/SG/PR dated March 29, 2017, the President of the Republic reaffirmed Cameroon's commitment to reducing GHG emissions by 32% by 2035 (MINEPDED, 2021). This target comprises an unconditional reduction of 11% and a conditional reduction of 21%, reliant on international support, including financing, capacity building, and technology transfer. Under this NDC framework, Cameroon aims to curtail its GHG emissions to 71 MtCO₂ equivalent by 2035, marking a 32% decrease from a projected baseline of 104 MtCO₂ equivalent. This inclusive climate strategy is encapsulated in the slogan "Transforming Climate Constraints into Development Opportunities," reflecting commitments made since COP 21 at the international level and within Cameroon's national development strategy.

The primary sectors targeted for emissions reduction include agriculture, energy production, waste management, buildings, transportation, and industry. Notably, agriculture alone accounts for 69.4% of the reduction efforts, followed by energy production at 14.2%. In 2010, agriculture was responsible for 69% of the country's total GHG emissions (35 MtCO₂ equivalent), underscoring the sector's critical role in achieving sustainable development goals. Consequently, the INDC significantly contributes to SDG 2, "No Hunger," particularly focusing on sustainable agricultural practices and enhancing productivity for small-scale producers.

Moreover, Cameroon's National Adaptation Plan (NAP, 2015) identifies agriculture as the sector most vulnerable to climate change, employing approximately 60% of the population and relying predominantly on rain-fed agriculture. Hence, there is an urgent need to develop climate-resilient agricultural practices that enhance farmers' adaptive capacities. Recommendations from the NAP include:

- Promoting Field Practices: Techniques for water conservation, soil management, and the dissemination of new crop varieties adaptable to high temperatures.
- Encouraging Agricultural Diversification: This aims to reduce vulnerabilities by promoting diverse varieties and integrating trees into farming systems.

However, major challenges in the agriculture and forestry sectors remain:

- Seeking self-sufficiency and food security
- Developing agro-industry
- Improving productivity and competitiveness

- Sustainable forest management
- Contributing to economic growth and combating poverty
- Conserving biodiversity
- Aligning land systems through zoning plans (KAGONBE, 2024)

In October 2021, Cameroon submitted a revised NDC, raising its mitigation target to 35% by 2030 compared to 2010 levels. This includes an unconditional contribution of 12% and a conditional reduction target of 23%, contingent on international support. Under the business-as-usual (BAU) scenario, projected GHG emissions are estimated at around 119 MtCO₂ equivalent by 2030, representing a 71% increase from 2010 levels. Achieving the 35% reduction would limit emissions to about 77 MtCO₂ equivalent, with significant savings anticipated from the forestry and land use sector, energy sector, agriculture, and waste management. This updated NDC not only emphasizes mitigation but also outlines Cameroon's vision for adaptation, aiming to transform climate-related challenges into developmental opportunities across the nation's five agro-ecological zones. By implementing its NDC, Cameroon seeks to reduce local vulnerabilities while promoting sustainable development for all. Ultimately, Cameroon is committed to achieving its development goals while learning from the missteps of developed nations that pursued growth at the expense of climate considerations.

The country envisions a transition toward low-carbon development, which entails:

- Reflecting on the development strategy to identify opportunities for reducing carbon intensity while enhancing resilience to climate impacts.
- Strengthening the coherence of public policies in relation to climate objectives.

In addition, the nation's NDC for its implementation includes seven orientations:

1. Aligning planning and development of rural areas to develop agriculture while limiting deforestation and degradation.
2. Intensifying environmentally friendly agriculture, livestock, and fisheries production that limits deforestation and degradation.
3. Promoting practices that improve agricultural production capacities and enhance environmental resources.
4. Enhancing energy use of resources in rural areas, including waste.

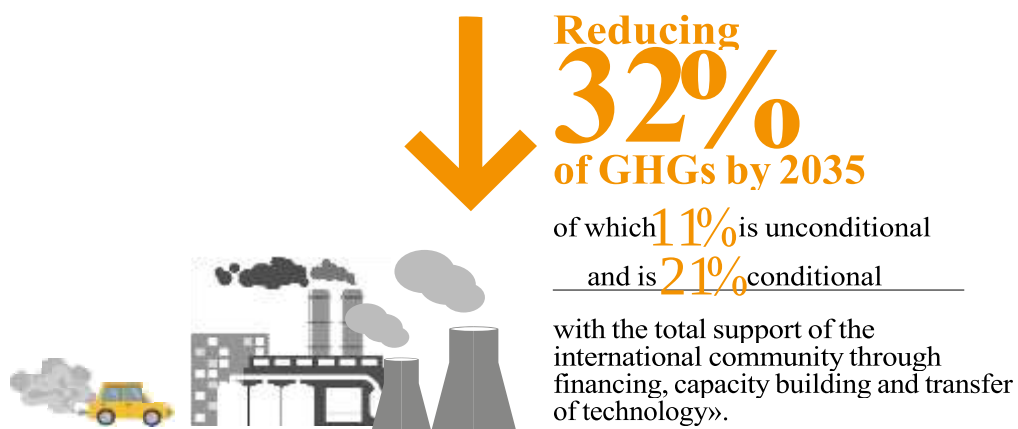
5. Controlling energy consumption through a proactive energy efficiency policy.
6. Efficiently using resources to move towards a circular economy.
7. Developing energy production from renewable sources (MINEPDED, 2024)

Table 4: Share of Emission Reduction by Sector in 2030

Share of Reduction by Sector in 2023					
Sector	Agriculture	FAT	Energy	Waste	Totals
Quantity reduction (Gg Eq CO ₂)	6808.48	19378.63	13369.85	2701.78	42258.73
Share of each sector in the total reduction (%)	16.1%	45.9%	31.6%	6.4%	100.0%
Share of each sector in relation to the percentage reduction (%)	5.7%	16.3%	11.2%	2.3%	35.5%

Source: (Kagonbe, T. 2024)

Figure 3: Expected Emission Reduction by 2030



Source: (MINEPDED, 2021)

In collaboration with the United Nations Environment Programme (UNEP), Cameroon developed an Economic Development Model in 2018 that prioritizes employment, economic growth, poverty reduction, and GHG emissions reduction, diverging from traditional business-as-usual approaches.

Additionally, the country has prepared a document outlining priority actions for climate financing from 2020 to 2025.

Beyond carbon considerations, this initiative represents an opportunity for richer development policies that yield multiple co-benefits, such as job creation and improved living conditions through a healthier environment. Ultimately, Cameroon aims to reconcile its development aspirations with the imperative of reducing GHG emissions, guided by a global commitment to low-carbon development.

In a broader context, this challenge encompasses the modernization of agriculture, livestock, and energy sectors while simultaneously curbing emissions. The agricultural sector remains pivotal, as it is essential for the country's development and a significant contributor to global emissions, accounting for over 65% of total emissions (NDC, 2021), followed by the energy sector.

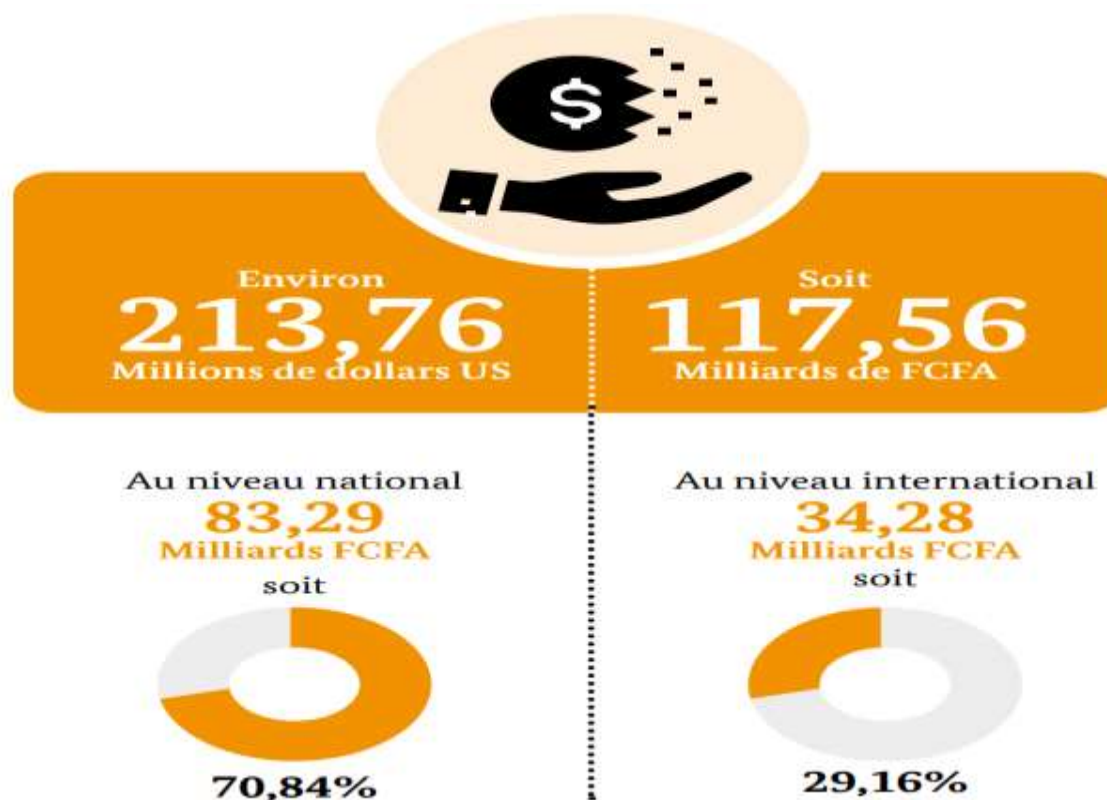
1.11. CAMEROON'S TOTAL COST OF IMPLEMENTATION OF ITS NATIONAL DETERMINED CONTRIBUTION

The total cost of investments needed to achieve the objectives outlined in Cameroon's NDC by 2030 is estimated at USD 57,640 million, consisting of:

1. USD 25,784.66 million (or FCFA 12,785 billion) for necessary investments in mitigation actions (NDC, 2021).
2. USD 31,856 million (or FCFA 15,928 billion) for necessary investments in adaptation actions (NDC, 2021).

Cameroon intends to mobilize these private and public finances both domestically and internationally for the implementation of its NDC actions. However, between 2015 and 2020, Cameroon mobilized approximately USD 213.76 million (about FCFA 117.56 billion) for planned or ongoing activities linked to its commitments under the Paris Agreement. This amount consists of resources mobilized at the national level (FCFA 83.29 billion or 70.84%) and at the international level (FCFA 34.28 billion or 29.16%) (KAGONBE, 2024).

Figure 4: Fundraising Report for the Period 2015-2020



Source: (MINEPDED, 2021)

- The resources mobilized at the international level include donations and loans contracted under mechanisms specific to climate-related issues (primarily forest conservation and restoration) as well as financial mechanisms under the UNFCCC (GCF, GEF, AF).
- Resources at the national level represent public investment budgets committed by administrations and public administrative establishments, including loans contracted under bilateral agreements with friendly countries, which Cameroon must repay. These resources encompass activities prescribed within the Nationally Determined Contribution and carried out by various actors.

CONCLUSION

In a nutshell, it is proper to say Cameroon's engagement and commitments to further reduce its GHG emissions despite being a carbon sink and a low emitter shows how willing she is in achieving the 2 degrees celsius of the Paris Agreement and attaining sustainable development.

CHAPTER II: CONCEPTUAL FRAMEWORK AND THEORY

INTRODUCTION

This section reviews conceptual literature related to the main variables of the study. These includes the independent variables which is climate finance, under which we have sub variables such as, Mitigation and Adaptation. The dependent variable regenerative agriculture will also be reviewed and a brief review of the theoretical and empirical works in the thematic areas.

2.1. CONCEPTUAL FRAMEWORK

Our research topic entitled ‘The role of climate finance in fostering regenerative agriculture in Cameroon; Case of Cocoa and Maize of the Ntui District’. To carry out this research, it is necessary to clarify the different concepts in order to contextualise the understanding of ideas.

2.1.1. Climate Finance

Finance plays an important role in supporting developing countries’ efforts to reduce emissions, decarbonize their economies, and adapt to the impacts of climate change (Climate Initiative, 2022). Finance in this work means all investments in adaptation, mitigation and capacity building, recognizing the difference between public finance (international and domestic; public financial institutions) and private finance (companies, households, private financial institutions), and between the various instruments to finance adaptation and mitigation (Adaptation Committee, 2022). Finance may be grant money provided by the public sector as well as capital raised from lenders from the public and private sectors that needs to be repaid. In developing countries alone, an estimated 75 to 100 billion dollars is needed per year over the next 40 years to build resilience to these changes. In addition, mitigation costs in these countries are expected to range from 140 to 175 billion dollars per year by 2030. (World Bank, 2010) Despite this huge financial requirement, a significant gap remains (CPI, 2021). Through the year 2030, the estimated net incremental infrastructure investment required for a global transition to low-carbon economy is 5.7 trillion U.S. dollars. This would require shifting the world’s current 5 trillion U.S. dollars investments in agriculture business-as-usual to low-carbon investments and raising an additional 700 billion U.S. dollars (Green Growth Action Alliance, 2013). In December 2015, countries met in Paris to finalize

a new global agreement to tackle climate change meaning Mobilizing sufficient financial resources to support low-carbon development activities was and is still a key part of these continuing efforts.

Broadly defined, climate finance consists of the financial resources paid to cover the costs of transitioning to a low-carbon global economy and to adapt to or build resilience against current and future climate change impacts. Although there is no global agreed definition of Climate finance, the United Nation Framework Convention on Climate Change (UNFCCC, 2024) defines Climate Finance as any local, national or transnational financing that seeks to support both mitigation and adaptation actions, with the underlying aim of addressing climate change. An almost near definition that was given by Watson and Schalatek (2023) which referred to climate finance as the financial resources mobilised to fund actions that mitigate and adapt to the impacts of climate change, including public climate finance commitments by developed countries under the UNFCCC. To intergovernmental panel on climate change(IPCC), (2022, p. 2902) equally notes *that there is no agreed-upon definition of climate finance and that the term climate finance “is applied to the financial resources devoted to addressing climate change by all public and private actors from global and to local scales, including international financial flows to developing countries to assist them in addressing climate change.*

A precise split between green and climate finance is impossible. In most conceptualization climate finance is seen as a subset of green finance, itself being a subset of sustainable finance. The European Parliament define these as *“Climate finance provides funds for addressing climate change adaptation and mitigation, green finance has a broader scope as it also covers other environmental goals (e.g. biodiversity protection/restoration), while sustainable finance extends its domain to environmental, social and governance factors (ESG).”* This corresponds closely to the definitions used by the UN in its inquiry into a sustainable **financial system** 2016. Climate finance aims to reduce net greenhouse gas emissions and/or to enhance adaptation and increase resilience to the impacts of current and projected climate change. Finance can come from private and public sources, channelled by various intermediaries, and is delivered by a range of instruments, including grants, concessional and non-concessional debt, and internal budget reallocations with its core objectives being a low carbon transition-related transformations establishing a platform upon which developing countries can be assured of an unflinching support from developed nations and an environment for nurturing technological innovation. Implying that,

climate finance is necessary in achieving sustainable development goals especially in developing countries which turns out to be the most vulnerable populations though contributes the least to greenhouse gas emissions (GHG) (Chukwudum QC ,2024). However, despite the numerous definitions as to what climate finance is all about, there still exist controversies in what should be called climate finance and Development aids. The principle of additionality is debated, with many stakeholders insisting that climate finance must be separate and not divert existing development aid. Alden Meyer (2015) Argues that climate finance should be additional to development aid, focusing specifically on climate change impacts rather than broader development objectives. In the same light, Liane Schalatek (2016) Critiques the conflation of climate finance with development aid, emphasizing the need for clear definitions and accountability in climate funding. This body of literature and ongoing controversies highlight the complexity of distinguishing climate finance from development aid. However, the funds involved comes from different sources public, private and alternative sources (Chukwudum QC ,2024). Not forgetting that this climate finance flows mainly from developed countries that are responsible for the majority of emissions to developing countries that are less responsible but the most affected. This Climate funding's has been sourced and disbursed through a wide variety of public, private, bilateral, multilateral and alternative sources directed towards projects and initiatives that address climate change, promote sustainable practices and help communities adapt to environmental challenges.

More specifically, Climate finance includes the following :

- Reduce greenhouse gas emissions ;
- Adapt to the impacts of climate change;
- Support developing countries and is needed for the implementation of mitigation and adaptation measures. (UNFCCC, 2024).

2.1.2. Climate Change Mitigation

Climate change mitigation one of the important components of this study according to the United Nations Environment Program (UNEP, 2024) refers to efforts to reduce or prevent greenhouse gas emissions. The goal of climate change mitigation is to avoid significant human interference with the climate system and stabilize greenhouse gas levels in a timeframe long enough to allow ecosystems to naturally adapt to climate change, ensure food production is not jeopardized and allow economic development to proceed in a sustainable manner (IPCC, 2014). The Sixth

Assessment Report of the Intergovernmental Panel on climate change (IPCC) highlights the urgency of needed climate actions. Global emissions will have to decline by 43% from 2019 by 2030 and rapidly decrease to net zero by 2050 if we are to stay within the safety limits established by the Paris Agreement. The study would use mitigation concept to see how the government of Cameroon can use regenerative agriculture as a mitigation measure in response to impacts of climate change on the environment.

2.2. TYPES OF PROJECTS LINKED TO MITIGATION INITIATIVES.

Climate finance is needed for mitigation as large scale investments are required to significantly reduce emissions. Reduce GHG emissions (or remove GHG emissions from the atmosphere) to limit change(mitigation). In mitigation, interventions should finance a shift away from business-as-usual models of carbon intensive investments in the energy and transportation sector towards financing low or zero carbon investments that benefit society. This means that interventions should uphold social and ecological integrity, support low emission systems, contribute to resilience, and have transformation potential. One means of accounting mitigation impacts could be to measure gigatons of carbon emissions averted or stored.

Table 5: MITIGATION COMPONENT

INVESTMENT CRITERIA AND STRATEGIC IMPACT AREAS

1. ACCESS TO ENERGY AND LOW EMISSION ELECTRICITY PRODUCTION.	3. ENERGY EFFICIENCY IN BUILDINGS, CITY, INDUSTRIES.
2. LOW- EMISSION MEANS OF TRANSPORT.	4. LAND AND FOREST APPLIANCES.

Source: (WAGNOUN V. , 2024)

2.2.1. Climate Change Adaptation

Climate change adaptation an essential element of this study refers to actions that help reduce the vulnerability to the current or expected impacts of climate change such as weather extremes and hazards, sea- level rise, biodiversity loss or food and water insecurity (UNDP 2024). Many

adaptation measures need to happen at the local level so rural communities and cities have a big role to play. Such measures include planting crop varieties that are more resistant to drought and practicing regenerative agriculture, improving water storage and use, managing land to reduce wildfire risks and building stronger defences against extreme weather like floods and heat waves.

However, adaptation also needs to be driven at the national and international levels. In addition to developing the policies needed to guide adaptation, governments need to look at large scale measures such as strengthening or relocating infrastructure from coastal areas affected by sea-level rise, building infrastructures able to withstand more extreme weather conditions, enhancing early warning systems and access to disaster information, developing insurance mechanisms specific to climate-related threats and creating new protections for wildlife and natural ecosystems. According to FAO (2007), adaptation is ‘adjustment in natural systems in response to current or anticipated climate change, or its effects that mitigates the damages or enhance its benefits’. There are several types of adaptation namely;

- **Anticipative adaptation** that takes place before the effects of changes are observable.
- **Reactive adaptation:** adaptation that takes place after the effects of climate change has been observed.
- **Planned adaptation:** adaptation that results from strategic decisions based on a clear perception of the conditions that have changed or that are about to change and what steps should be taken to address, prevent, stick to or achieve the desired solution.

The concept of adaptation is also defined as a process by which organisms or populations of organisms that live together in a well-defined environment are part of the biological and behavioural adjustments, which changes increases their chances of survival (Bates, 1998). There is an evolution of adaptation when conditions change.

2.3. TYPES OF PROJECTS LINKED TO ADAPTATION INITIATIVES

Climate Finance is equally important for adaptation as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate. Adapting simply means Limiting the vulnerability and negative impacts of climate change. According to FAO (2007), adaptation is ‘the adjustment in natural or human systems in response to current or expected

climate change. Adaptation interventions have mainly been limited to responses on current climate variability. However, through IIED's (2021) analysis of transformational adaptation interventions across individuals representing the entire landscape of actors, adaptation requires at least two of the following:

- Responding to current climate variability.
- Tackling the underlying drivers of vulnerability such as structural inequality and lack of institutional climate capabilities.
- Planning flexible and robust responses for the possible range of uncertain climatic conditions in the future.
- Restoring and protecting ecosystems to increase resilience of landscapes and livelihoods.

Table 6: ADAPTAION COMPONENT

INVESTMENT CRITERIA AND STRATEGIC IMPACT AREAS

1. PROTECT THE LIVELIHOODS OF PEOPLE, COMMUNITIES AND REGIONS	3. MAKE INFRASTRUCTURE AND ENVIRONMENT RESILIENT TO CLIMATE CHANGE
2. ENSURE THE HEALTH AND WELL-BEING OF PEOPLE, FOOD AND WATER SECUIRITY	4. PRESERVE ECOSYSTEMS AND RELATED SERVICES

Source: (KAGONBE T. , 2024)

In accordance with the principle of 'common but differentiated responsibility and respective capabilities' set out in the Paris convention, developed country parties are to provide financial resources to assist developing country parties in implementing the objectives of the UNFCCC. It reaffirms the obligations of developed countries, while for the first time also encouraging voluntary contributions by other parties (climate policy initiatives, 2021). Developed country parties should also continue to take the lead in mobilizing climate finance from a wide variety of sources,

instruments and channels noting the significant role of public funds through a variety of actions, including supporting country driven strategies and taking into account the needs and priorities of developing country parties. It also lays emphasis on the fact that it is important for all government and stakeholders to understand and assess the financial needs of developing countries, as well as to understand how these financial resources can be mobilized while aiming to achieve a balance between adaptation and mitigation.

Overall, the efforts under the Paris Agreement are guided by its aim of making finance flow consistent with a pathway towards low greenhouse gas emissions and climate resilient development. Assessing progress in provision and mobilization of support is also part of the transparency and enhance predictability of financial support.

Climate finance could be channelled through both public and private actors. The former includes national or subnational governments, bilateral aid agencies or multilateral development banks; the latter include single households, multinational corporations and commercial financial institutions. Not forgetting that this climate finance flows mainly from developed countries that are responsible for the majority of emissions to developing countries that are less responsible but the most affected (Chukwudum QC, 2024).

In 2023, the annual climate finance needed through 2023, increased steadily from USD 8.1 trillion to USD 9 trillion, then estimated needs jump over USD 10 trillion each year from 2031 to 2050 meaning that climate finance must increase by at least five- fold annually as quickly as possible, to avoid the worst impacts of climate change (Climate policy initiatives, 2023).

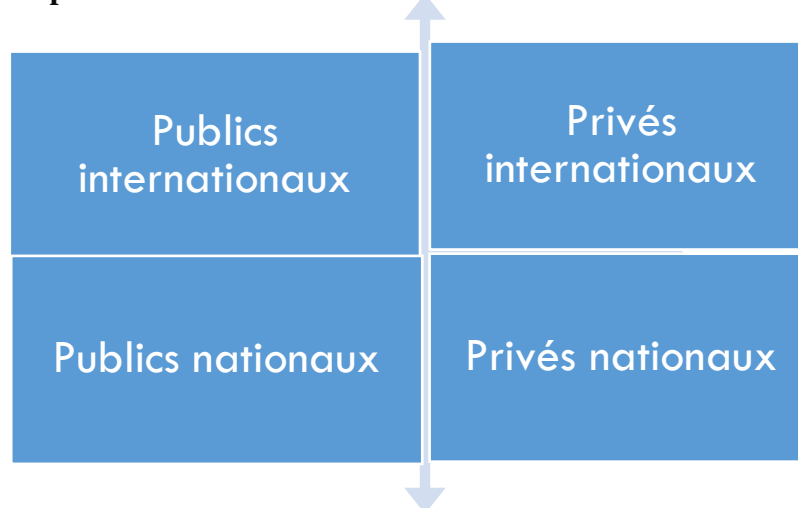
2.3.1. Principal Sources of Climate Finance

The global climate finance architecture is complex and always evolving (Climate Finance Update, 2022). Principally, climate finance comes from two distinct sources of financing which are the public and private sources of finance which are funds that flows through multilateral channels that can be both within and outside the UNFCCC Financial Mechanisms as well as through bilateral and regional initiatives and channels. Also, a good number of countries are also setting up national climate change funds that receive funding from multiple contributor countries in an effort to coordinate and align contributor interests with national priorities (Climate Finance Update, 2024)

Some multilateral funds that developing countries can access includes the Green Climate Fund (GCF), the Global Environment Facility (GEF), the Adaptation Fund (AF). These funds were established throughout the years as financial instruments of the United Nations Framework Convention on Climate Change (UNFCCC) to provide resources to developing countries.

Developing countries can access some of their climate finance in the form of grants from the GEF, the GCF and the AF. Governments and the private sector can also access market-based and concessional loans from financial institutions such as the World Bank, the African Development Bank and the Inter-American Development Bank among others. These grants and loans can be used to invest in projects that reduce, absorb or prevent greenhouse gas (GHG) emissions such as renewable energy power plants, electric buses, and forest conservation, or projects that build resilience on climate change such as establishing early warning systems, increasing coastal protection, enhancing the resilience of agriculture and food systems and building infrastructure that can withstand storms and flooding. The diagram below presents the principal sources of climate finance as mentioned above :

Figure 5 : Principal Climate Finance Sources



Source : (KAGONBE T. , 2024)

2.3.2. Major Climate Finance Instruments That Can Be Deployed

Climate finance for regenerative agriculture can come from different sources: public or private, national or international, bilateral or multilateral. It can employ different instruments such as grants

and donations, green bonds, equities, debt swaps, guarantees, and concessional loans. And it can be used for different activities, including mitigation, adaptation, and resilience-building.

1. **DEBT SWAPS:** These entails the sale of foreign currency debt by the creditor country to an investor example an NGO which can then swap the debt with the debtor country for the development of mitigation and adaptation projects.
2. **GREEN BONDS:** Generally speaking, bonds are debt instruments where the issuer borrows funds from buyers of the bond on the promise that they will repay the funds along with interest (Fernando, 2022). These are a kind of debt issued by a public or private institution. Unlike other types of credit instruments, they undertake to use the funds for environmental purposes such as fighting climate change for example.
3. **GUARANTEES:** A guarantee is a contractual promise made by a bank, insurance company, or other entity to guarantee payment of a debt obligation of another party, such as a private company (Corporate Finance Institute Team, 2022). These are commitments whereby a guarantor promises to fulfil the obligations undertaken by a borrower to a lender in the context of climate change activities.
4. **CONCESSIONAL LOANS:** These are loans for climate change mitigation and adaptation activities that differs from traditional loans in that they have longer repayment periods and lower interest rates, among other preferential conditions. Concessional loans “are extended on terms substantially more generous than market loans. The concessionality is achieved either through interest rates below those available on the market or by grace periods, or a combination of these. Concessional loans typically have long grace periods” (International Monetary Fund, 2003)
5. **GRANTS AND DONATIONS:** These are amounts granted to projects related to the fight against the climate emergency, which do not need to be repaid.

2.3.3. General Accessibility Procedures of Climate Funds

Several agencies play a role in helping countries access and monitor climate finance funds. While specific percentages may vary, here are some key agencies involved in supporting countries in accessing and monitoring these funds:

- **National Designated Authorities (NDAs) or Focal Points**

NDAs or Focal Points are national institutions designated by each country to act as the primary contact point for climate finance funds. They facilitate coordination and communication between the country and the fund, provide guidance to potential project proponents, and support the development and submission of project proposals. The percentage of funding allocated to NDAs or Focal Points varies depending on the fund, but it typically covers administrative and capacity-building support.

- **Accredited Entities (AEs)**

Accredited Entities are institutions that have been accredited by climate finance funds to access and manage funds on behalf of countries. These entities can include government agencies, development banks, international organizations, non-governmental organizations (NGOs), and private sector entities. AEs assist countries in developing project proposals, accessing funds, and implementing approved projects. The percentage of funding allocated to AEs can vary, covering costs related to project development, implementation, and reporting.

- **Implementing Entities**

Implementing Entities are organizations responsible for executing and monitoring project activities on the ground. They can be government agencies, NGOs, or private sector entities with expertise in project implementation. Implementing Entities ensure the effective and efficient utilization of climate finance funds, monitor project progress, and report on results. The percentage of funding allocated to Implementing Entities varies based on the specific project requirements and arrangements.

- **Independent Evaluation Units**

Climate finance funds often have independent evaluation units or bodies that assess the performance and impact of funded projects. These units provide objective evaluations, verify project outcomes, and ensure transparency and accountability. The percentage of funding allocated to independent evaluation units may vary, covering the costs associated with project evaluation and impact assessment. Also important to note that the percentages allocated to each agency can vary

depending on the specific arrangements and policies of each climate finance fund. The distribution of funds aims to balance administrative costs, capacity-building support, project implementation, and monitoring and evaluation activities to ensure efficient and effective use of climate finance resources.

- **Direct access** refers to the ability of countries, particularly developing countries, to directly access climate finance funds without going through intermediaries or multilateral institutions. It empowers countries to have greater control over the design and implementation of climate projects and promotes ownership and capacity building at the national level. **Example of Direct Access Fund Process: Green Climate Fund (GCF)**

The Green Climate Fund (GCF) offers a direct access modality that allows countries to directly access and manage climate finance. Here is an example of the process:

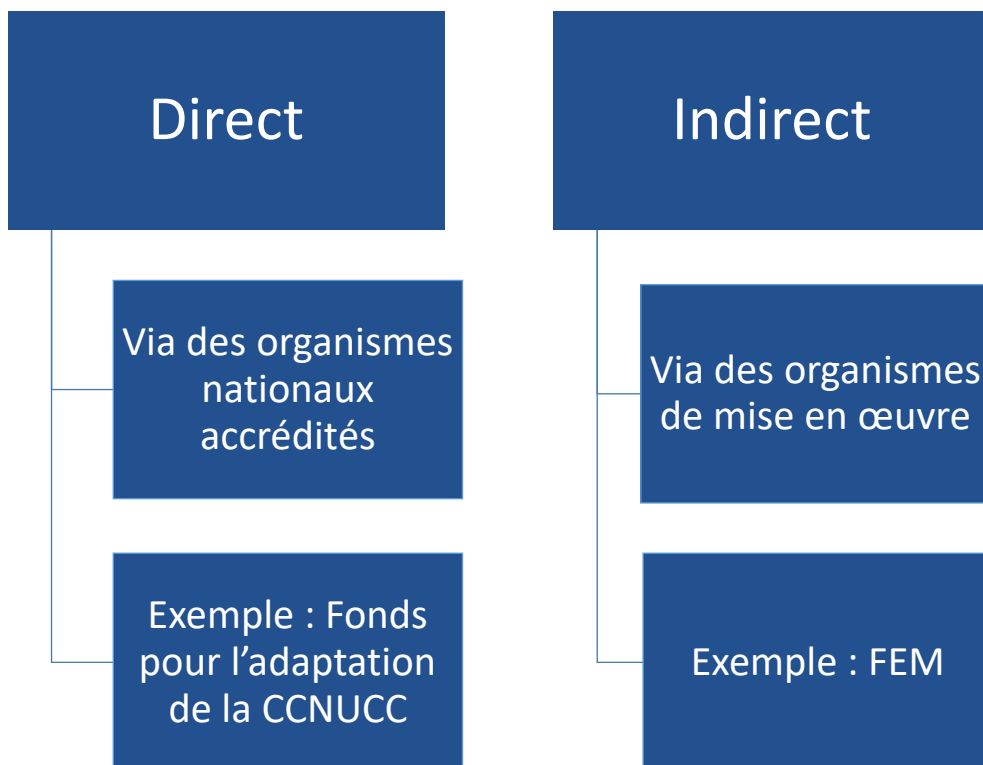
- i) **Accreditation:** Countries interested in direct access to the GCF must first go through an accreditation process. The national designated authority or an eligible entity within the country applies to become an Accredited Entity (AE) to the GCF.
- ii) **Project Proposal:** Once accredited, the AE can develop and submit project proposals to the GCF. The proposal should align with the GCF's funding priorities, objectives, and eligibility criteria. It should also address the country's climate change challenges and priorities.
- iii) **Project Review and Approval:** The submitted project proposal undergoes a rigorous review process by the GCF's independent technical experts and the GCF Board. The review assesses the project's technical feasibility, potential impacts, sustainability, and alignment with climate goals.
- iv) **Funding Decision:** Based on the review, the GCF Board makes a funding decision. If approved, the GCF provides financial resources to the accredited entity for project implementation. The funding can cover activities such as capacity building, project preparation, and project execution.
- v) **Project Implementation:** The accredited entity is responsible for implementing the approved project, ensuring effective utilization of the allocated funds, and achieving the project's objectives and outcomes. The entity reports on project progress and submits financial and performance reports to the GCF periodically.

- vi) **Monitoring and Evaluation:** The **GCF monitors the implementation of projects funded through direct access and evaluates their impact.** This process helps assess the effectiveness of the projects and provides insights for continuous improvement.

Direct access provides countries with greater autonomy in determining their climate priorities and implementing projects that address their specific needs. It also promotes local ownership, strengthens institutional capacities, and encourages the development of sustainable frameworks for climate finance management at the national level.

All in all, it is important to say that climate finance is essential for developing and vulnerable nations like Cameroon to effectively address climate change, build resilience, promote sustainable development, and meets its international commitments.

Figure 6: Access to Climate Finance



Source: (KAGONBE T. , 2024)

Table 7: Operationalization of the term climate finance

Concept	Dimensions	Components	Indicators
Climate Finance	Source	Public finance	Amount of public funds allocated to climate projects. Total government expenditure on climate initiatives
		Private finance	Total private investment in climate-related initiatives
		International finance	Volume of climate finance from international sources Amount of climate finance received from international sources
	Type	Mitigation finance	Investment in renewable energy projects, sustainable land practices and emissions reduction projects.
		Adaptation finance	Funding for climate resilience and adaptation strategies
	Geography	Domestic climate finance	Proportion of funds allocated to domestic projects
		International climate finance	Percentage of funds directed to developing countries
		Bilateral funding	Number of bilateral agreements for climate finance
	Delivery Mechanisms	Multilateral funding	Funds received from multilateral development banks
		Private sector engagement	Number of partnerships with private sector actors
	Impact	Environmental impact	Reduction in greenhouse gas emissions
		Social impact	Number of beneficiaries from climate finance initiatives Number of communities benefiting from climate finance initiatives
		Economic impact	Job creation in green sectors

Source: Author, 2024

This table provides a structured way to understand and measure climate finance by breaking it down into various dimensions, components, and specific indicators that can be tracked and evaluated.

2.3.4. Regenerative Agriculture

Most often, the term sustainable Agriculture is often taken for Regenerative Agriculture. Sustainable Agriculture simply refers to increasing sustainability practices in some agricultural systems over prevailing ones both preindustrial and industrialized. Sustain includes the idea of keeping up, supporting and prolonging. These includes biodynamic, community based, Eco agriculture, ecological, Environment sensitive, extensive, fresh farm, free ranges, low inputs, organic, permaculture, sustainable and wise use (pretty,1995; Conway, 1997; NRC, 2000; McNeely et Scherr, 2003; Clements et Shrestha, 2004; Cox et al, 2004; Gliessman, 2005). By definition, sustainable means that something is able to be maintained at a certain rate or level. About 38% of global agricultural land is already affected by degradation (renature, 2021) so, sustainable isn't going to cut it anymore, we need to regenerate. Regenerative agricultural practices or techniques are similar to that of sustainable agriculture, but the tools and techniques are customized to the specific agroecosystem in which it takes place. Also, it is soil based rather than seed based. Attention is given to increasing the amount of nutrients cycling through soil by improving soil organic matter while also increasing the soil's potentials for storing carbon. Sustainability is the bridge while regeneration is the destination.

The principal focus of this work is on the implementation of Regenerative agriculture (RA). I focus on RA because I seek not only to sustain the current state of the world's soil but aims at renewing and further improving the soil functions and capabilities for ecosystem services. Regenerative agriculture has been established as an alternative system of agriculture that seeks to promote positive farm-scale environmental management practices that are focused on developing a better understanding of how work with natural resources. The term ‘regenerative agriculture’ was first coined by Robert Rodale in the 1980s, but has seen a resurgence in recent years, with many of the related practices being traceable to earlier times (Giller et al, 2021). This movement is particularly noteworthy for being led by farmers (Buns, 2020). It claims to improve ecological, economic and social issues surrounding the farm and local community, while also having potential to positively

impact the earth system by acknowledging and transforming ecological complexity in farming systems (Colley et al.,2019; Elevitch et al.,2018; Gordon et al.,2022; Massy, 2017; Rhodes, 2012).

There are seven tendencies that defines a regenerative system. Robert Rodale describes these seven (7) tendencies towards regeneration in agriculture. These seven P's describe how a system moves to being regenerative. The first is the 'Pluralism', which essentially means diversity in plant species. Second, 'Protection', refers to the need for cover crops to end erosion and increase microbial populations near the surface of the soil. 'Purity', describes the intentional lack of pesticides and fertilizers in production. The fourth tendency, 'Permanence' calls for more perennials and plants with vigorous roots. 'Peace' refers to the harmony with nature, growing with it rather than fighting against it. 'Potential' describes the readily available nutrients that makes their way up to the surface of the soil to be used by plants. The final tendency, 'Progress', encompasses the ever-improving soil quality in terms of structure and water retention capacity. Understanding these tendencies helps to conceptualize the necessary elements needed to move towards a regenerative agricultural system

According to the 2022 Global Land Outlook report, humans have altered more than 70% of the Earth's land from its natural state, with agriculture having the greatest impact of all human activity and currently occupying 40% of all land area (UNCCD, 2022) causing the global food system a major source of greenhouse gas (GHG) emissions. Between 2007 and 2016, our food systems were responsible for between 10.8 to 19.1 Gt CO₂eq/year on average (IPCC, 2019). The Food systems are also the greatest cause of terrestrial biodiversity loss (UNCCD, 2022). Despite these negative environmental outcomes, food systems can be reimaged and redesigned to better contribute to land restoration, biodiversity protection, and GHG mitigation. A suite of practices classified as 'regenerative agriculture'(RA) have been proposed to help achieve this, typically by sequestering carbon, increasing biodiversity, and improving soil health (Newton et al, 2020). Regenerative agriculture includes; minimal external inputs, the use of on-farm inputs, integration of livestock, disuse of synthetic fertilizers or pesticides, no or reduced till, and use of cover crops (Newton et al, 2020). Some of the most commonly mentioned objectives of regenerative agriculture from both practitioner websites and published articles were improving soil health, sequestering carbon, and increasing biodiversity (Newton et al, 2020). In addition to these practices, other studies have focused more specifically on regenerative ranching and grazing practices, such as rotational

grazing, adaptive multi-paddock grazing, or holistic planned grazing, which generally seek to increase stocking density, shorten rotation time, and extend post-grazing rest periods for paddocks (Rhodes 2017, Pecenka and Lundgren 2019, Gosnell et al 2020, Fenster LaCanne et al, 2021). Indeed, the term ‘conventional agriculture’ also needs definition as it is frequently juxtaposed against ‘other’ agricultural practices, without any major consideration of its definition (Sumberg et Giller, 2022). Regenerative agriculture is set to be defined by the practices it entails or the results it seeks to achieve (Newton et al 2020, Schreefel et al ,2020). A provisional definition of RA is an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple ecosystem services (Schreefel et al ,2020). The main practices included in regenerative agriculture definitions are minimal external inputs, mixed farming, minimal tillage, crop rotation, use of manure and compost, use of perennials, and other soil health improvement activities, while the overall objectives of regenerative agriculture center around improving soil, planet, human health, and/or profit (Schreefel et al ,2020). It is claimed that these practices have the potential to bring about beneficial outcomes such as water retention, soil creation, carbon sequestration and pest management while also reducing input costs.

Regenerative agriculture addresses two main crisis of soil health including carbon sequestration and biodiversity which are the most articulations of regenerative agriculture.

- A crisis of soil health. Soil health receives particularly strong attention in narratives around regenerative agriculture (Schreefel et al, 2020; Sherwood and Uphoff, 2000). Indeed, the idea that soil and soil life in particular is under threat underpins most if not all, calls for regenerative agriculture. However, the term soil health is as problematic just as soil quality which requires disaggregation to be meaningful. Though it is something positive to strive for, underlying soil functions need meaningful indicators which can be measured and monitored over long periods of time. Moreover, some practices which benefits one aspect of soil health such as soil life often have negative effects on other functions such as nitrate leaching, primary production or GHG emissions (Ten Berge et al, 2019 cited by Giller. K.E.et al, 2021). Which means there is usually not one direction in soil health but multiple trade-offs. Reports of declining soil biodiversity under intensive agriculture and simplification of soil food webs have led to widespread alarm on soil health (de vries et al, 2013 cited by Giller. K.E.et al, 2021). The notion of feeding the soil and not the crop

has been a central focus to organic agriculture with the main aim of building soil organic matter or biodynamic agriculture for the USA (example USDA, 1938, 1957, 1987).

- And a crisis of biodiversity. The promotion of RA frames the crisis of biodiversity around the widespread use of monoculture alongside with the strong dependence on external inputs and a lack of biological cycling (Francis et al, 1986 cited by Giller. K.E.et al, 2021). Large areas of genetically uniform crops are rapid to spread pests and diseases and add little value to the quality the soil. However, there is no clear way on how to arrest this loss in biodiversity which needs to be addressed as fast possible.

While the soil takes centuries to form, it is commonly claimed that a quarter or more of the earth's soils are degraded although the exact numbers are contested, with the rates of soil loss exceeding those of soil formation (Giller. K.E.et al, 2021). Projections suggest that the world's population will peak at around 9.8 billion in 2060 (Vollset et al, 2020) while the United Nations Population Program projects a population of 11.4 billion by the end of the century which in all cases will require the production of additional nutritious food.

Overall, the environmental and humanitarian benefits of regenerative agriculture demonstrate its potential to address a wide range of challenges, from soil degradation and biodiversity loss to climate change and food insecurity. As a holistic approach to farming and land management, regenerative agriculture offers a promising pathway towards a sustainable and equitable future.

The operationalization of the concept of regenerative agriculture into its key elements:

Table 8: Operationalisation of Regenerative Agriculture

Concept	Dimensions	Components	Indicators
Regenerative Agriculture	Principles	Soil Health	Increase in soil organic matter
		Biodiversity	Number of plant and animal species on the farm
		Water Management	Improved water retention in soil
	Practices	Cover Cropping	Area planted with cover crops each season

Concept	Dimensions	Components	Indicators
		Crop Rotation	Diversity of crops planted over multiple seasons
		No-Till Farming	Reduction in tillage frequency
		Agroforestry	Area dedicated to agroforestry practices The integration of trees into farmlands.
		Biochar	The use of Biochar to make the soils fertile while at the same time sequestering greenhouse gas emissions.
	Outcomes	Economic Viability	Increase in farm profitability over time
		Environmental Impact	Reduction in chemical inputs (fertilizers, pesticides)
		Social Impact	Improvement in local community well-being
	Monitoring	Data Collection	Frequency of soil health assessments
		Stakeholder Engagement	Number of community workshops or training sessions held

Source: Author, 2024

This table provides a structured framework for understanding and measuring regenerative agriculture through its principles, practices, outcomes, and monitoring efforts.

2.4. THEORETICAL FRAMEWORK

This section reviews the related theories. The theoretical framework of a study provides a foundation for understanding and interpreting the research. It consists of the theories and concepts that inform the study, guiding the research question, methodology and analysis. Essentially, it links the research to existing knowledge and helps to explain how and why certain phenomena occur. The theoretical framework is a structured approach that outlines the theories, models, and concepts

that underpin the research. It helps clarify the hypotheses and provides a basis for discussing the findings in relation to existing literature.

2.4.1. The Sustainability Theory of Lisa. M. Butler Harrington (2016).

According to Lisa. M. Butler Harrington (2016), the theory of sustainability is a theory that examines the environmental, economic and social impacts of agricultural practices and equally evaluates the capacity of climate finance in promoting sustainable and regenerative agricultural practices. The theory lays emphases on the health of the social – ecological system. It also lays emphases on the capacity to maintain or improve the state and availability of desirable material or conditions over the long term. It retains the commonly cited characteristics of sustainability as oriented toward the long term and the basic identification of sustaining any particular conditions or materials as keeping or maintaining them. Which may be applied to our particular interest, as well as to any spatial scale. Other descriptions are also highlighted such as ‘meeting fundamental human needs while preserving the life-support systems of planet Earth’. The pursuit of sustainability implies that the goal is to maintain or improve beneficial conditions (to sustain them), particularly with improved capacity to extend conditions over the long term.

It is clear that ‘Sustainability’ emphasizes maintaining the desirable aspects of natural and / or social conditions, and when possible, improving such conditions, including the status of natural resources.

It is also important to note that sustainability is a broader concept than Sustainable Development. Sustainable Development focuses on human well-being (WCED 1987 cited by Harrington, L. M. B, 2016) while sustainability may be focused on an ecosystem or biodiversity status (with or without explicit attention to human well-being or may be focused on a specific aspect of a human system such as educational equity or even the financial health of an individual farm). The theory of sustainability will permit us to demonstrate how conventional system of agriculture are not sustainable and as a result are damaging the natural soil and health of the environment. In other words, this theory will enable us to present regenerative agriculture as a healthy system of agriculture that is sustainable and resilient to climate shocks.

In sum, the pursuit of sustainability is oriented towards long term treatment of natural resources, social systems and people in ways that are consistent with human well-being and dynamic system stability.

2.4.2. The Financial Inclusion Theory of Peterson K. Ozili (2020).

According to Peterson K. Ozili (2020), Financial inclusion is defined as the availability of and the ease of access to, basic formal financial services to all members of the population. Financial inclusion means that individuals and businesses have access to useful and affordable formal financial services that meet their needs in a responsible and sustainable way. Financial inclusion practices vary from country to country and there is need to identify the underlying principles that explains the observed variation in financial inclusion practices. Financial inclusion theories are explanations for observed financial inclusion practices. These definitions have one thing in common which is that they emphasize that each member of the population should have access to available financial services.

Financial inclusion has been a major policy objective for the government of many developing and emerging countries, and there is great promise that financial inclusion will bring the excluded population into the formal financial sector so that they can have access to formal financial products and services (Allen et al, 2016). Many governments are making tremendous efforts to achieve high levels of financial inclusion, such as: opening of bank accounts with minimal documentation requirements, using ultimatums to compel citizens to obtain a bank identification number, granting free debit cards, granting free insurance policies, using mobile technology to access finance, adopting a direct government to person (G2P) payment system, enrolling for mortgage without having to make compulsory equity down payment, the large-scale use of bank correspondents, etc.

There have been many success stories of financial inclusion around the world particularly in India (Nimbrayan et al, 2018), Rwanda (Lichtenstein, 2018; Otioma et al, 2019), Kenya (Ndung'u, 2018; Hove & Dubus, 2019) and Peru (Cámara & Tuesta 2015). In India, the PMJDY program improved the level of financial inclusion for many citizens and became a big success in the early years of the program.

This theory plays a crucial role in addressing the barriers to accessing climate finance that could be used to promote regenerative agriculture in our study area. The accessibility of finance by all individuals and communities can empower the farmers, particularly smallholders, to invest in sustainable practices, improve productivity, and to adapt to climate change. Financial inclusion can facilitate investments in regenerative agriculture by providing necessary capital for sustainable farming techniques. Also, the access to insurance and credit can reduce the financial risks associated with transitioning to regenerative practices, encouraging more farmers to adopt these methods.

To conclude, integrating financial inclusion theory with efforts to enhance access to climate finance is essential for promoting regenerative agriculture. By addressing the barriers to financing, we can empower farmers to adopt sustainable practices that contribute to environmental resilience and food security.

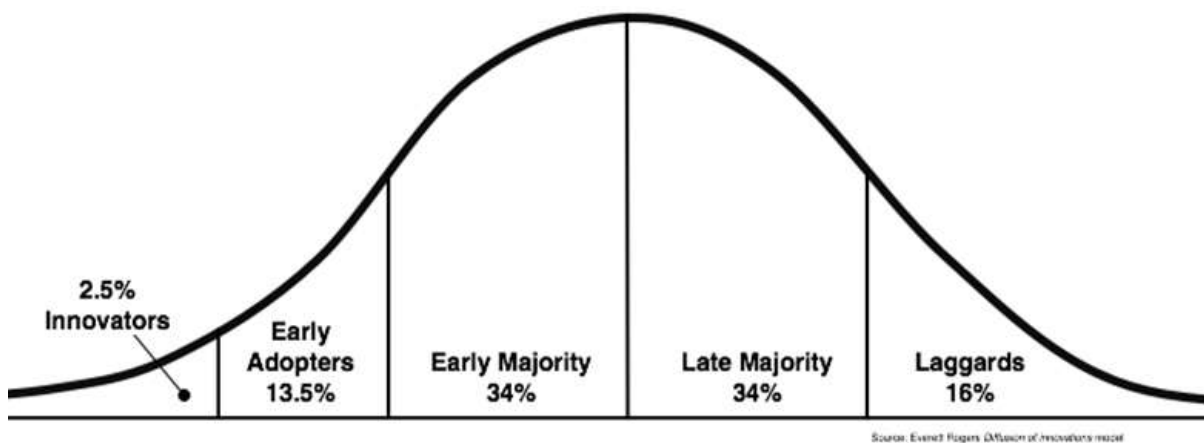
2.4.3. The Diffusion of Innovation theory of E.M. Rogers (1962).

Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behaviour, or product. Adoption means that a person does something differently than what they had previously (that is, purchase or use a new product, acquire and perform a new behaviour, etc.). The key to adoption is that the person must perceive the idea, behaviour, or product as new or innovative. It is through this that diffusion is possible. Adoption of a new idea, behaviour, or product (i.e., "innovation") does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation. There are five established adopter categories. When promoting an innovation, there are different strategies used to appeal to the different adopter categories.

1. Innovators - These are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and

- are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population.
2. **Early Adopters** - These are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change.
 3. **Early Majority** - These people are rarely leaders, but they do adopt new ideas before the average person. That said, they typically need to see evidence that the innovation works before they are willing to adopt it. Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness.
 4. **Late Majority** - These people are skeptical of change and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully.
 5. **Laggards** - These people are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups.

Figure 7: Synoptic Representation of the Different Strategies used to Appeal when Promoting an Innovation.



Source : <http://blog.leanmonitor.com/early-adopters-allies-launching-product/>

The stages by which a person adopts an innovation, and whereby diffusion is accomplished, include awareness of the need for an innovation, decision to adopt (or reject) the innovation, initial use of the innovation to test it, and continued use of the innovation. There are five main factors that influence adoption of an innovation, and each of these factors is at play to a different extent in the five adopter categories.

1. Relative Advantage - The degree to which an innovation is seen as better than the idea, program, or product it replaces.
2. Compatibility - How consistent the innovation is with the values, experiences, and needs of the potential adopters.
3. Complexity - How difficult the innovation is to understand and/or use.
4. Triability - The extent to which the innovation can be tested or experimented with before a commitment to adopt is made.
5. Observability - The extent to which the innovation provides tangible results.

Within the framework of our study, ‘The diffusion of innovation theory’, developed by Everett Rogers, is applied here to understand how innovative financial mechanisms can be used in promoting the transition to regenerative agriculture in Ntui. This theory provides a framework for understanding how new ideas such as innovative financial mechanisms can spread within a society while exploring the hypothesis that there is a significant link between innovative financial mechanisms and the transition to RA. Given the large financial needs of climate finance in developing countries and in Cameroon in particular, there is the need for out of the box initiatives such as innovative financial mechanisms that can be used to promote the adoption of RA. We need to come out of the traditional financial mechanisms and adopt new strategies and get used to them. According to Rogers as mentioned above, adopters can be classified into five categories: innovators, early majority, late majority and laggards. Understanding where stakeholders fall within these categories can help tailor strategies to promote financial mechanisms that support RA. To better explore our hypothesis, we can analyse this relationship through several key components of Rogers’ theory.

Innovation characteristics

- **Relative advantage:** Innovative financial mechanisms such as green bonds and PES, may offer clear advantages over traditional financing methods. These advantages may could

include lower costs, access to new markets, or enhanced sustainability credentials for investors.

- **Compatibility:** Innovative financial mechanisms must align with the values and practices of farmers and stakeholders in the agricultural sector for innovative financial mechanisms to facilitate the transition to RA. This includes compatibility with existing financial systems and agricultural practices that prioritize sustainability.
- **Complexity:** The perceived complexity of this financial innovation can affect their adaptation. If stakeholders find innovation financial mechanisms straightforward and beneficial, they are more likely to engage with them.
- **Trial ability:** opportunities for small-scale trails or pilot projects can encourage broader adaptation. If farmers can experiment with innovative financial products without significant risk, they may be more willing to transition to RA.
- **Observability:** The visibility of successful case studies where innovative financial mechanisms have supported RA can drive adaptation. When stakeholders observe tangible benefits, it enhances the perceived value of these innovations.

2. Communication Channels: Effective communication is crucial for the diffusion of innovative financial mechanisms. Knowledge-sharing platforms, workshops and networks that connect farmers, financial institutions and environmental organizations can enhance awareness and understanding. Furthermore, social media and community engagement initiatives can also play a role in disseminating information and success stories, fostering a community of practice around RA and innovative financing.

3. Social System: the social context influences the adaptation of innovations. In agricultural communities, peer influence and social norms significantly affect decision-making. If influential farmers or organizations adopt innovative financial mechanisms, others may follow suit. Also, collaboration between farmers, investors and policymakers can create a supportive environment for adapting innovative financial solutions. This ecosystem can promote RA practices through shared goals and resources.

4. Adopter Categories: Roger identifies different categories of adopters; innovators, early adopters, early majority, late majority and laggards. Understanding these categories can help tailor

strategies for engaging different stakeholders in the agricultural sector. Early adopters, often forward-thinking farmers or organizations can serve as champions for innovative financial mechanisms, demonstrating their benefits and encouraging wider acceptance.

In conclusion, the hypothesis positions a significant link between innovative financial mechanisms and the transition to RA is supported by the principles of Rogers' diffusion of innovation theory. By understanding the characteristics of innovations, the role of communication, the influence of social systems, and the categorization of adopters, stakeholders can create strategies that promote the adaptation of financial innovations that facilitate the transition to more sustainable agricultural practices. As innovative financial mechanisms become more integrated into the agricultural landscape, they can play a crucial role in promoting regenerative practices that benefit the environment, farmers and society as a whole.

Limitations of Diffusion of Innovation Theory

There are several limitations of Diffusion of Innovation Theory, which include the following:

- It works better with adoption of behaviors rather than cessation or prevention of behaviours;
- It doesn't take into account an individual's resources or social support to adopt the new behaviour (or innovation).

This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing. In Agriculture, Diffusion of Innovation Theory is used to accelerate the adoption of important Agricultural programs that typically aim to improve soil health, improve productivity and store carbon dioxide.

CONCLUSION

To conclude this chapter, it is important to note that financing regenerative agriculture is important to encourage its wild spread adoption and is fundamental for Cameroon to achieving its carbon reduction goals and equally achieving food security. The theories of the study have been inserted to enhance a deep understanding of the study in all its aspects.

CHAPTER 3: METHODOLOGICAL FRAMEWORK

INTRODUCTION

The method is understood as ‘the set of intellectual operations by which a discipline seeks to reach the truths it pursues, to demonstrate and to verify them’. It is also ‘the foundation of the scientific nature of all research and constitutes the set of material operations allowing the researcher to transcend the obstacles that litter the path leading to the truth’ (Madeleine GRAWITZ, 1993). Any scientific work requires the use of a methodological approach that can allow the researcher to collect, interpret and analyse the data that he will have to collect. In this section, a detailed description of the methodology undertaken to arrive at the results of this study will be presented. Precisely, this chapter will be examining type of data collection, and the data processing and analysis. Similarly, the reasons underlying the chosen methodology are explained and the various instruments and justifications for their usage are presented. It suffices to mention that the methodology used in this study falls within the limits social science research methods as presented below ;

3.1. RESEARCH DESIGN

According to Creswell (2008), a research design is a plan and the procedure for research that spans the decision from broad assumptions to detailed methods of data collection and analysis. This study used both the qualitative and quantitative research approaches. Also known as the mixed method of inquiry, this can be used when the research variables constitute both qualitative and quantitative elements. To Creswell (2003), it implies the procedure for collecting, analysing and interpreting both qualitative and quantitative data in a single study. Amin (2005) explains that this mixed design allows for researchers to use at the same time for example, observations and interviews, which are qualitative instruments combine with surveys which are quantitative instruments. It is important to note that the research design used in any study has a link with the nature of variables. However, variables that can be quantified often take the quantitative approach while those to be qualified often take on qualitative approach.

3.1.1. The Survey Design

This is a design that allows for the collection of information from a large population. Check and Schutt (2021, p.160) defined survey research as the collection of information from a sample of individuals through their responses to questions. To this author, the primary purpose of this type of research design is obtaining information describing the characteristics of a large sample of interest with difficulties and relatively quickly. In this study, the survey design was used to collect information from administrations and NGOs that are directly involved with climate finance and regenerative agriculture and farmers that are constantly in the field and who directly perceive the effects of climate change on their agricultural activities.

3.1.2. The Exploratory Case Study Research Design

It can be defined as ‘an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between the phenomenon and context are not clearly evident and in which multiple sources of evidence are used’ (Yin, 1994). Case studies enables a researcher to make an intensive investigation of complex factors that contributes to a happening or an event. Amin (2005) explains that case study emphasizes detailed contextual analysis of a limited number of events or conditions and their relationships. However, case study probe deeply and in an intense way, analyses interactions between the factors that produces change, growth and development. In the same light, Yin (1984) notes that there exist three types of case studies that is exploratory case study, descriptive case study and explanatory case study. This study has opted for exploratory case study design of which according to Yin (1984) is a study design that sets out to explore any phenomenon which serves as pint of interest to the researcher or to the study.

In this study, the exploratory case study design explores the nature and role of climate finance and its capacity in fostering regenerative agriculture in Ntui. It is in this direction that the study explores climate finance in terms of the various climate funds, their modalities of accessibility and various innovative financial mechanisms for the promotion of regenerative agriculture.

3.1.3. Reasons for Using the Qualitative and Quantitative Design in this Study

3.1.3.1. The Population of the Study

The mixed method of inquiry was used in this study for the main reason of the complex nature of the various categories of the population involved. As a result, the same instrument could not be used to collect data from these various categories of the population.

In effect, the population was made up of Farmers (Cocoa and Cereal), Administrations and Civil Societies. In this study, the number of people investigated were 125 people. This population was made up three big groups of stakeholders which were; Farmers of Ntui more precisely cocoa and cereal farmers, Civil Societies and finally, Governmental Organisations that are directly involved in climate finance and Regenerative agriculture.

Table 9: Population Distribution by Category

Category	Number of Participants	Percentages (%)
Farmers	125	90.58%
Administrations	7	5.07%
Civil Societies	6	4.35%
Total	138	100%

Source: Author, 2024

The Administrations investigated were;

- The Ministry of Environment Protection of Nature and Sustainable Development (MINEPDED) ;
- The Ministry of Agriculture and Rural Development ;
- The Ministry of Forest and Wildlife ;
- The National Observatory of Climate Change ;
- The Ministry of External Relations;
- Regional Delegation of Agriculture and Rural Development of the Mbam et Kim

- Regional Delegation of Environment Protection of Nature of Sustainable Development of Mbam et Kim.

On the other hand, the civil Societies involved were; IDH, JAICA, Young Volunteers for the Environment.

- IDH: it is an international organisation that brings together public and private stakeholders to make global agricultural markets more sustainable and more inclusive. Together, with their partners, they develop solutions to critical challenges in global value chains, such as climate change, unfair working conditions, unequal value distribution, and gender inequality ;
- JICA: JICA (Japan International Cooperation Agency) is a Japanese governmental agency responsible for implementing Japan's official development assistance (ODA) programs. Founded in 1974, JICA's mission is to promote sustainable development in developing countries through various forms of assistance, including technical cooperation, financial aid, and project management. JICA's activities focus on a wide range of sectors, such as infrastructure, education, health, disaster relief, environmental conservation, and governance. The agency works closely with partner countries to address development challenges, improve living standards, and foster economic growth. JICA also supports capacity building and strengthens the partnerships between Japan and developing nations. JICA operates globally, engaging in projects that help countries achieve the United Nations' Sustainable Development Goals (SDGs).
- Young Volunteers for the Environment: Young Volunteers for the Environment is non-profit organisation that strive to achieve environmental sustainability and improve the community's living conditions.
- FAO: The FAO (Food and Agriculture Organization) is a specialized agency of the United Nations that works to combat hunger, improve food security, and promote sustainable agricultural practices around the world. It was established in 1945 and is headquartered in Rome, Italy. The FAO provides technical expertise, policy guidance, and supports countries in achieving food security and agricultural development goals. It also collects and disseminates data on agriculture, fisheries, forestry, and rural development.
- UNDP: The UNDP (United Nations Development Programme) is a global development network of the United Nations, established in 1965. It works in nearly 170 countries and

territories, aiming to eradicate poverty, reduce inequality, and promote sustainable development. The UNDP helps countries achieve the Sustainable Development Goals (SDGs) by providing expert advice, technical assistance, and funding support for projects that focus on economic growth, governance, climate change, and peacebuilding, among other issues. The organization also plays a key role in disaster recovery, democratic governance, and environmental sustainability.

- SOCONTUI: SOCONTUI is a non-governmental organisation in Ntui that works with farmers to promote sustainable use of farmlands. It equally train farmers on how to produce natural fertilizers and provide them with seeds at low cost.

And finally, at the level of farmers, two big groups of farmers were investigated. These two big groups farmers were made up of Cocoa and Cereal farmers.

3.2. THE TARGETED POPULATION

This is the population on which the researcher ultimately wants to generalize the results of his study. This population sometimes may not be accessible to the researcher. In this study, the targeted population constitutes Farmers precisely cocoa and cereal farmers in Ntui, Administrations and Civil Societies.

3.2.1. The Accessible Population

This is the population from which the sample of the study shall be drawn (Amin, 2005). This is the population which is reachable or that the population can easily have access to in order to draw the sample of the study. In the case of this study, the accessible population constitutes the farmers of Ntui in the centre region of Cameroon. Also, officials of the following governmental organisation; the Ministry of Environment Protection of Nature and Sustainable Development, The Ministry of Forest and Wildlife, The Ministry of External Relations, The Ministry of Agriculture and Rural Development and the National Observatory of Climate Change, the Regional Delegation of Agriculture and Rural Development of the Mbam et Kim and the Regional Delegation of Environment Protection of Nature of Sustainable Development of Mbam et Kim. Moreover, officials from Non-governmental organisations such as IDH, JAICA, Young Volunteers for the Environment, FAO, UNDP and SOCONTUI.

3.3. SAMPLING TECHNIQUE

Two major sampling techniques were used in this study for different reasons. These are the Purposive or Judgemental Sampling technique and Stratified-Random Sampling. They are explained below;

3.3.1. The Purposive or Judgemental Sampling

The sampling was selected using the ‘Purposive choice’ sampling method called ‘method of standard units’ proposed by Dufour et al (2012). This is a qualitative sampling methodology that consists of selecting a sample without ‘randomly’ drawing the survey unit, but using an information priori relating to the population to be studied. It allows for the researcher to choose participants based on purpose or individual judgement that they can produce relevant information for the study. This sampling technique was used to select some officials of the various governmental organisations and non- governmental organisations involved in the usage of climate finance for the implementation of their various environmental and agricultural projects and programmes. This category of respondents was sampled for interviews.

3.3.2. The Stratified-Random Sampling

This sampling technique allowed participant to be grouped in stratum, based on homogenous characteristics. Therefore, the random approach was used to give equal chances to all members of the population to be selected. In this light, farmers who are cultivating cocoa and cereal products were grouped according to what they produce, of which the researcher with a random exercise to pick respondents for them to answer to questionnaires. Moreover, each head of agricultural household constitutes a ‘standard unit’. Our observation unit is a head of agricultural household who have being carrying out agriculture for at least 5 years. who resides in Ntui. The choice of the sampling is based on the fact that, farmers under 5 years of experience may have less relative knowledge on climate destruction of farmlands since its vulnerability is not perceived early. However, the study of climate requires accurate information that is why we choose this number of years of experience. For it clearly informs us on the vulnerability of agriculture due to climate change.

3.4. DATA COLLECTION

The collection of data is an important process in the elaboration of a research work no matter the type of evaluation to be carried out. It is therefore very important to choose wisely the method of data analysis. This study as mentioned above, uses both the qualitative and quantitative research approaches.

3.5. DATA PROCESSING AND ANALYSIS

The data processing and analysis process are also very important in a research work. Qualitative data collection allows collecting data that is non-numeric which helps us to explore how decisions are made and provide us with detailed insight (conjointly, 2024). While quantitative deals with numeric data which helps us to demonstrate a given phenomenon.

3.5.1. Data Processing

3.5.1.1. Quantitative data

This are principally, temperature, precipitation and agricultural production data that are coded to create a database for processing. This processing was done using SPSS software. After manually analysing this data, it was entered into the computer through an input mask. He results obtained were represented in the form of tables, graphs and grades using Excel 2016 software.

3.5.1.2. Qualitative data

The qualitative data collection of this work refers to the physical documents that we consulted when writing this work. The documents used were general works, specific works, reports, thesis, journals and scientific works. These documents came from divers sources that where both online and offline resources. Within the framework of this study, two major approach were adopted that is the Field Research and the use documentary research data analysis.

- **Field Research**

Field research is a broad approach of qualitative research or a method of gathering qualitative data. The essential idea is that the researcher goes ‘into the field’ to observe the phenomenon in its

natural state. The researcher typically takes extensive field notes which are subsequently coded and analysed in a variety of ways. The researcher used questionnaires and interview guides to collect data from each participant. The interview guides and questionnaires research were conducted with adequate research ethics.

- **Documentary Research**

The documentary research consisted essentially of research on the internet and libraries. Specifically, it relied on the history of climate finance, the history of regenerative agriculture, the consultations of books, articles and journals, theses and dissertations and official documents. These techniques made it possible to identify the realities related to this study.

3.5.2. Methods Used

The methods used for data collection principally includes; direct observations, focus groups and investigations using interview guides and questionnaires.

a) Direct Observations (define)

Direct observation has enabled us to directly assess the perverse effects of climate change on the agricultural productivity in Ntui as well as the strategies developed in response to these challenges. It has also enabled close monitoring of how climate finance can be utilized to support the adoption of regenerative agriculture practices in Ntui.

b) Interviews

Before the field work, we prepared an interview guide which allowed us to obtain major information relating to our theme of study. It is thus a question for us to collect additional information from the traditional authorities (chiefs), administrative (delegates, heads of agricultural posts, agricultural technicians and climate experts).

The present study has opted for the structured interview. Before the field work, we prepared an interview guide that permitted us to obtain major information relating to our theme of study. The structured interview was conducted to target officials. Which therefore means it required obtaining

additional information from the NGOs and administrative authorities (the delegates, heads of agricultural posts, agricultural technicians and climate experts).

In this light, various interviews were carried out with key administrations and Civil Societies in the country that are directly involved in climate finance and agriculture. These include;

- **Government Administrations;**

- An interview session with a group of personnels in the Sub- department of Ecological Monitoring at the Ministry of Environment Protection of Nature and Sustainable Development (MINEPDED);
- With an agricultural and climate expert at the Ministry of Agriculture and Rural Development (MINADER) ;
- With the climate expert of the National Observatory of Climate Change (ONACC) and former focal point of the United Nations Framework on Climate Change (UNFCCC) ;
- With personnels of the Ministry of Forest and Wildlife (MINFOF) ;
- An interview was equally carried out with the climate expert of the Ministry of External Relations in the Department of United Nations and Decentralised Cooperation's (MINREX) ;
- An interview was carried out with the Regional Delegate of Agriculture of the Mbam et Kim ;
- And lastly an interview was carried out with the Regional Delegate of Environment, Protection of Nature and Sustainable Development of the Mbam et Kim.

- **With Civil Societies;**

- An interview was carried out with the technical adviser of the Japan International Cooperation Agency ;
- Young Volunteers For the Environment
- IDH
- FAO
- SOCONTUI
- UNDP

The administered interview guides were translated into English and French due to the bilingual nature of our country.

c) Questionnaires

In my research, I used a closed-ended questionnaires to collect data from farmers (In this type of questionnaire, respondents select their answers from a predefined list of options, such as multiple-choice questions, yes/no questions, or rating scales). This method was chosen primarily because many of the farmers involved in the study have limited formal education, and closed-ended questions offer clear, easy-to-understand options for them to choose from. The structure of the questionnaire ensured that the responses could be easily analysed, providing accurate and reliable data. To facilitate the data collection process, the farmers were divided into groups. This grouping approach made it easier to manage the flow of the interviews and allowed for more efficient data collection. Additionally, the researcher was assisted by a focal point, who played a crucial role in the process. The focal point first informed the farmers of the researcher's arrival and helped organize and unite the groups, ensuring that everyone was aware of the purpose of the research and ready to participate in the data collection. This collaborative effort helped streamline the process and improved the overall quality of the information gathered.

3.5.2. Data Analyses

This refers to the appropriate statistical test which allows for the researcher to either confirm or reject the hypothesis of the study. However, the nature of a study or variable determines the types of statistical instrument to use in its analysis.

Qualitative studies take on descriptive statistics or analysis such as content analysis, narratives, deductive analysis, discourse analysis, framework analysis, but to name a few. Since this study is made of qualitative data, it therefore requires qualitative techniques of analysis as seen below ;

3.5.3. Qualitative Techniques for Data Analysis

This refers to the methods used by the researcher to analyse information that cannot be easily quantified. This is often on the form of content of data which demands for explicit or depth texts, books, newspaper, journals, articles, observations, interviews, open-ended questionnaires and focused groups discussions. However, various techniques can be used in analysing qualitative

data. According to Wilkinson & Birmingham (2003), qualitative data can be analysed with the use of content analysis which has been recommended by experts for qualitative data. Principally, two main model of content analysis exist, which are conceptual or thematic analysis, and rational content analysis.

3.5.4. Conceptual or Thematic Content Analysis

This approach is the most popularly used by researchers. It examines the incidence or frequency of concepts (themes, issues, words, statements, expressions, etc.) in a text or discourse. In most cases, it quantifies the occurrences of the themes or concepts into frequencies and Percentages, dispersions, and standard deviations. However, the researchers focus on the number of times a word appears so as to make meaning. Under normal circumstances, the central point of content analysis is to make meaning out of themes, issues, and statements that are tied to the phenomenon under study. Unfortunately, this model has been criticized for sometimes taking a quantitative turn, thus not showing in satisfactory terms the inherent meanings in the words. In this light, (Berelson as cited in Wilkinson & Birmingham, 2003) argued that based on the fact that slime quantification has taken place, the real meaning of the data is overlooked in favour of frequencies. This has made this approach to be considered by some researchers as the quantitative content analysis.

For the purpose of this work, conceptual or thematic content analysis will be used, while relationships between concepts and phenomenon's will be examined in the process. This signifies that there is a mixture or thematic and relational content analysis used in this study.

3.5.5. Quantitative Techniques for Data Analysis

3.5.5.1. Qualitative Data

The qualitative data collected in the field were gathered for potential exploitation. They are results of temperature and precipitation that were collected at the National Observatory of climate change with whom I carried out the analyses. Then, the converging information was grouped. The main trends identified were analyzed and then interpreted. The treatment of qualitative data focused on the different adaptation strategies developed, as well as the understanding and local perception of the climatic effects by the farmers.

3.5.5.2. Data Analysis

This specifically refers to the descriptive analysis (Descriptive Statistics) of the results obtained from the processing of the collected data. These climatic data were obtained at the National Observatory of Climate Change.

- Annual Average Temperature

This average is obtained using the following equation:

$$T_a = \sum(T_x) / N_b$$

Where **T_a**: annual average temperature in °C; **T_x**: monthly temperature in °C; **N_b**: total number of months.

- Annual Average Precipitation

This is calculated using the following statistical equation:

$$P_a = \sum(P_y) / N_b$$

Where **P_a**: annual average precipitation in mm; **P_y**: monthly rainfall collected in mm; **N_b**: total number of months.

3.6. DATA COLLECTION TOOLS

According to the American Psychology Association, (APA, 2020), instrumentation is the concept that describes the tools to be used for data collection and analysis. To Creswell and Clark (2007), instrumentation consist of the process of identifying, developing, validating and administering information collection tools in a given study.

To Amin (2005), research instruments are meant to translate attributes or traits into quantities. To realise this work, we made use of a certain number of tools which are;

- A questionnaire and an interview guide
- Notepads and pens to take down important points
- A Cameroon to take pictures
- A laptop
- Words 2016, Excel 2016 for the treatment and analysis of data.

All these instruments were used to ease our collection of data during the field work research.

3.7. PILOT STUDY

In every scientific study, it suffices for the researcher to avoid any doubts of the interpretation and understanding of items or questions by respondents. In this respect, before the final field administration of the instruments, the researcher proceeded with a pilot study to therefore confirm the effectiveness, articulation, and the appropriateness of the questionnaires and interview guides in extracting the right information from the respondents. However, this exercise was conducted with strict respect of the different profile of respondents involved in the sample population as follows: cocoa and cereal farmers of Ntui, some non- governmental organizations and selected governmental organizations directly involved in our main area of study.

3.7.1. The pilot testing respecting the following procedures

- After developing the interview guide, they were presented to the supervisor for scrutiny. Key issues examined by the supervisor were the sufficient operationalization of the variables to provide the expected indicators (items). The language and length of the interview guide were also verified.
- After this phase the interview guides were administered to 125 cocoa and maize farmers of Ntui.

3.7.2. Results from the Pilot Study

After the pilot phase, the researcher had to correct and pay attention to the following aspects

for ameliorate such as:

- Reduce the length of the interview guide and questionnaire as time taken to answer to the questions did not have to go above 30 Minutes.
- Long questions were summarized;
- Ambiguous questions were clarified by reformulating them and taking care of technical terms or complex vocabulary:
- some items required to be more specific so as to target relevant responses and to avoid ambiguous responses;
- Abbreviations on the interview guide and questionnaires were written in full beside or in brackets.

3.7.3. Administration of Research Instruments

According to Yin (1994), the administration of a research instrument investigates the mode used by the researcher to get the respondents provide the required information either through questionnaires, interviews or observations. This can either be done via self-administration or direct administration, indirect administration or through another individual.

- To talk of **self or direct administration**, it refers to a scenario whereby the research meets the respondents on a physical basis for them to answer the two either questionnaire of interview. The main advantage of this method is that the researcher orientates and clarifies the respondents on items which may not be understood by them. The presence of the researcher also instils some confidence on respondents that they are giving the information to the right quarters. On the other hand, this technique is disadvantageous due to the likelihood for the researcher to influence the respondents by over directing them on how and what to answer. In this work, the researcher self-administered the interview guides to the various administrations and civil societies. She met the respondent physically for them to answer to the questions.
- To talk of the **indirect administration**, the researcher may relay the questionnaire via an intermediary individual or organization. Today, a new mode of administration has occupied the research field due to the advent of information technology. These instruments are administered through online format, via emails, or other messaging platforms for respondents to fill, and return. They include *survey monkey*, *Question pro*, *pyshData* or *Zumerang*.

As mentioned earlier, two principal instruments were used in this study to collect data; interview guides and questionnaires. The questionnaires were administered to farmers with the help of a focal point who helped regrouped the farmers into groups (Focus groups). While she was reading the questions, the focal point was filling in the answers in accordance to the responses of the farmers.

3.8. VARIABLES OF THE STUDY

Research variables are considered as a characteristic that varies. It may change from one thing to another, from a quantity to another or from one quality to another which gives changing result in a research study. To Amin (2005), a variable can generally be defined as anything which gives can take a differing or varying values, which can differ at various times for the same object or person. Two main variables exist in this study, which are the independent and dependent variables.

Climate finance is the independent variable of this study, while regenerative agriculture is the dependent variable.

3.8.1. Independent Variable: Climate Finance

- Definition: Climate finance refers to the financial resources dedicated to initiatives aimed at addressing climate change impacts and promoting sustainable practices. This can include funding for projects that enhance agricultural resilience and sustainability.
- Components:
 - Types: Includes grants, loans, investments, and technical assistance aimed at climate change mitigation and adaptation.
 - Sources: Can originate from international bodies (e.g., the Green Climate Fund), governmental allocations, NGOs, and private investors.
 - Mechanisms: Encompasses various channels through which funds are allocated, such as capacity-building programs, infrastructure development, and research funding.

3.8.2. Dependent Variable: Regenerative Agriculture

- Definition: Regenerative agriculture refers to agricultural practices designed to restore and enhance the health of ecosystems, focusing on soil health, biodiversity, and ecosystem services.
- Components:
 - practices: Includes methods such as cover cropping, agroforestry, crop rotation, and holistic grazing.
 - Outcomes: Aims for measurable improvements in soil quality, biodiversity, carbon sequestration, and resilience to climate variability.
 - Indicators: Success can be evaluated through metrics like yield stability, soil health assessments, and biodiversity indices.

Conceptualization of Variables

1. Climate Finance

The concept of climate finance is rooted in the need for financial resources to support sustainable development in the face of climate change. It is formed through the recognition that financial support can catalyse effective agricultural practices that contribute to climate resilience.

The role of climate finance can be conceptualized as a facilitator that provides the necessary resources and technical support to implement regenerative agriculture practices.

2. Regenerative Agriculture:

The concept of regenerative agriculture is based on ecological principles aimed at restoring the health of agricultural systems. It emerged from the need to counteract the negative impacts of conventional farming practices on soil and biodiversity. The conceptualization of regenerative agriculture encompasses a holistic approach that integrates sustainable practices with community involvement and ecological restoration.

Relationship Between Variables

The hypothesis is that effective climate finance leads to the successful implementation of regenerative agriculture practices. By providing financial resources, training, and support, climate finance can directly influence the adoption and success of regenerative agriculture

Figure 8: Diagrammatic Illustration of the Relationship Between the Independent and Dependent Variables

Below is a diagram to illustrate the relationship between the independent and dependent variables:



Source: Author, 2024

Explanation of the Diagram

- Boxes: Each box represents a variable in the study:
 - The Climate Finance box is the independent variable, indicating that it influences the outcomes.

- The Regenerative Agriculture box is the dependent variable, representing the practices and their effectiveness that are influenced by climate finance.
- Arrow: The arrow indicates a directional relationship, showing that changes or increases in climate finance are expected to lead to enhanced practices and outcomes in regenerative agriculture.

This research aims to illuminate how climate finance can be leveraged to foster regenerative agriculture in *Ntui* in Cameroon. Understanding the interplay between financial resources and agricultural practices is essential for developing effective policies that promote sustainability and resilience in agriculture amidst climate challenges.

CONCLUSION

In a nutshell, this chapter examined the methodological tools used in this study. It is therefore worth nothing that the qualitative research was used in this study. The chapter has equally succinctly presented the area of study, and the method used for data processing and analyses. It therefore suffices to mention that is a pertinent study that seeks to investigate the link between climate finance and regenerative agriculture.

CHAPTER FOUR: RESULTS

INTRODUCTION

This chapter includes a discussion of major findings as related to the literature on the role of climate finance in fostering regenerative agriculture. It also interprets them from a qualitative and quantitative perspective in a bid to make proposals that would ameliorate the effective use of climate finance in promoting the adoption of regenerative agriculture. The chapter concludes with a discussion of the limitations of the study, areas of future research and a brief summary.

4.1. SUMMARY OF FINDINGS

The purpose of this research was to determine the extent to which climate finance influences the adoption and promotion of regenerative agriculture among the farmers of cocoa and cereal in Ntui. In that token, three (04) specific research hypothesis were formulated to guide the researcher. In order to collect the necessary data, a participant observation, and interviews were used. At the end of the analysis, the following results were obtained:

- 1- **H1:** Climate vulnerability significantly impacts agricultural production in Ntui;
- 2- **H2:** Higher levels of knowledge about innovative mechanisms for regenerative agriculture among stakeholders are associated with increased opportunities for accessing climate finance;
- 3- **H3:** Climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, leading to improved climate resilience and reduced emissions;
- 4- **H4:** The challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in Ntui.

A) DATA PRESENTATION AND ANALYSIS

4.1.1. H1: Climate vulnerability significantly impacts agricultural production in Ntui.

4.1.1.1. *Agriculture in Ntui commune is vulnerable to climate change*

To measure this hypothesis, we will rely on the three pillars of vulnerability: exposure, sensitivity and adaptation strategies of populations to climate change. we also used mathematical equations to get the tendencies, to show the dynamics of precipitation and temperature.

The vulnerability tenets of exposure, sensitivity, and adaptive capacity are crucial for demonstrating the vulnerability of the agricultural sector to climate change in Ntui, highlighting the need for climate finance. Here's how each tenet contributes to this understanding:

i. Exposure

- **Impact on Agriculture:** The agricultural sector in Ntui is exposed to various climate-related hazards, such as erratic rainfall, temperature fluctuations, and extreme weather events. This exposure increases the risk of crop failures and livestock losses.
- **Need for Climate Finance:** Understanding exposure helps identify the area's most at risk, informing targeted investments in infrastructure (like irrigation systems and flood defenses) and technologies that can mitigate these risks. Climate finance is essential to support these initiatives.

ii. Sensitivity

- **Impact on Crop Resilience:** Different crops and farming practices have varying levels of sensitivity to climate variability. For instance, staple crops may be more susceptible to droughts or pests exacerbated by climate change.
- **Need for Climate Finance:** Assessing sensitivity highlights the need for research and development of climate-resilient crop varieties and farming techniques. Climate finance can support agricultural research, training for farmers on adaptive practices, and the introduction of sustainable agricultural methods.

iii. Adaptive Capacity

- **Impact on Community Resilience:** Adaptive capacity refers to the ability of farmers and communities to adjust to climate changes. Factors such as access to information, resources, and technology play a significant role in this capacity.
- **Need for Climate Finance:** Strengthening adaptive capacity requires investments in education, infrastructure, and technology. Climate finance can facilitate capacity-building programs, improve access to climate data, and enhance the overall resilience of agricultural systems in Ntui.

By examining exposure, sensitivity, and adaptive capacity, we can clearly see the vulnerabilities of the agricultural sector in Ntui to climate change. This understanding

underscores the necessity of climate finance to support adaptation efforts, build resilience, and ensure the sustainability of agricultural production in the face of increasing climate variability.

Exposure

Analysis of the perception of climate change by farmers in the Ntui council

Farmers in the Ntui council recognize the negative impact of climate change on their activities. In terms of climate characterization, they mainly address rainfall and heat as the main hazards. Thus, they speak of the scarcity of rainfall which will lead to a decrease in the amount of water available for their crops during the year. There will be the installation of pockets of drought that are damaging to their crops. They also mention the delay in the installation of rainfall. This could lead to a more pronounced shift in the agricultural calendar. For them, all indicators related to rainfall will be disrupted, further deteriorated and evolve to the detriment of their agricultural activities. The second parameter mentioned is the high heat. Indeed, for farmers, the heat observed will be maintained and even accentuated. A regression in heat intensification is not an option because this has not happened so far. In their eyes, this is a real problem that will lead to the drying out and then death of the plants. The most significant impacts that can be observed are: erosion, sedimentation, flooding, flooding.

Analysis of the vulnerability of agriculture in the commune

The vulnerability of agriculture in the Ntui council is defined according to three criteria, namely: the exposure, sensitivity and adaptive capacity of the agricultural system to withstand external shocks. In this section, we will explore each of these criteria to ensure that the type of agriculture and practices are from a sustainable perspective.

Of all the elements that contribute to vulnerability, exposure is the only one that is directly related to climate parameters (GIZ, 2015).

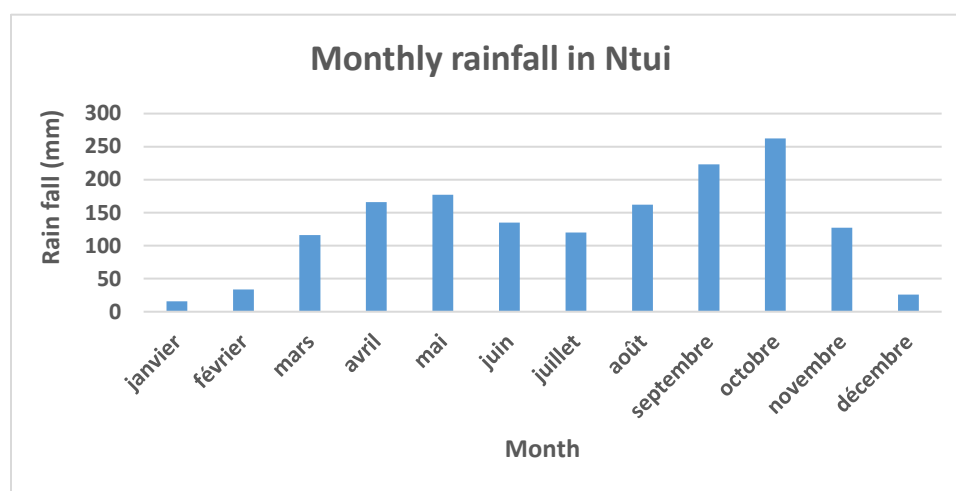
i. Dynamics of precipitation and temperature in the Ntui council

Evolution of rainfall in the Ntui council

Rainfall is unevenly distributed among the months in the Ntui council during the study period. We are seeing extremely rainy months, others with moderate rain and some with light rain. Indeed, the

months of October (262.4 mm), September (223.2 mm), May (177 mm), April (165.8 mm) and August (162 mm) are the wettest of the period 1982-2021. In addition, months such as June (134.7 mm), July (119.9 mm) and March (116.2 mm) received moderate rainfall during the study period. On the other hand, the months of February (33.6 mm), December (25.8 mm) and January (15.9 mm) were poorly rained. Thus, given the bimodal nature of the rainfall in the Ntui council, the rainiest month is October, with 262.4 mm of rain for the main rainy season and May, with 177 mm of rain for the short rainy season. On the other hand, January, with 15.9 mm, is the least rainy for the long dry season and December, with 25.8 mm for the short dry season.

Figure 9: Monthly rainfall trends in the Ntui council from 1982 to 2021



Source: ONACC, 2024

The general trend of rainfall in the Ntui council from 1982 to 2021 is decreasing on a monthly scale, with a decrease in the amount of rainfall of 9.105 mm/year, a decrease of 91.05 mm of rainfall per decade and 364.2 mm over the 40 years of studies. Thus, the amount of rainfall varies between 967,72 mm (1991) and 2231,9 mm (1982) of water, with an inter-annual average of 1563.5 mm during the period studied (1982-2021). Rainfall amounts were quite high from 1982 to 1996, with values well above average, except for the period 1990-1992. But from the 2000s to 2021, rainfall amounts decreased significantly, with the predominance of years with a rainfall amount remarkably lower than the inter-annual average (1563.5 mm). This state of affairs reflects par excellence the decrease in rainfall during the study period, and therefore the resurgence of rainfall deficit situations in the locality in the Ntui council.

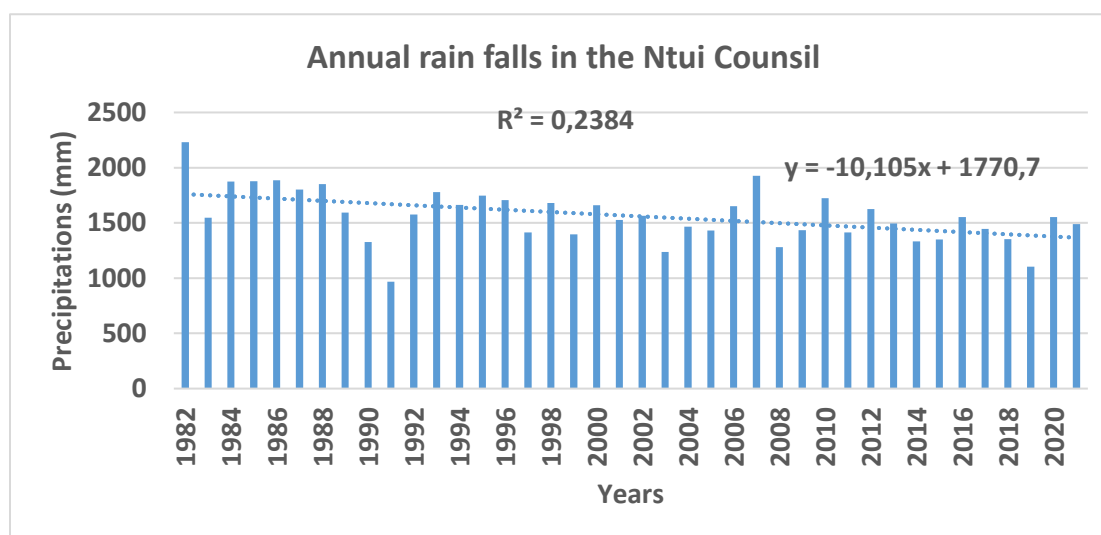
In addition, rainfall is an essential element in agricultural production in Africa in general and in Cameroon in particular, and a fortiori in the Ntui council, because of its exclusively rain fed nature. Rainfall conditions agricultural production insofar as the beginning and end of the rains help farmers to plan agricultural operations, particularly from the point of view of sowing, weeding, choice of seeds and varieties, etc. Thus, poor distribution and a decrease in the amount of rainfall during the agricultural season, combined with other factors such as soil infertility, inevitably lead to the failure of agricultural yields.

Table 10: Statistical characteristics of rainfall in the Ntui council

Statistics	No. of observations	Minimum (mm)	Maximum (mm)	Average (mm)
Precip (mm)	40 years	967,72 (1991)	1927,99 (2007)	1563,5

Source: ONACC, 2024

Figure 10: Statistical characteristics of rainfall in the Ntui council



Source: ONACC, 2024

Inter-annual variation in the amount of rainfall in the Ntui council from 1982 to 2021

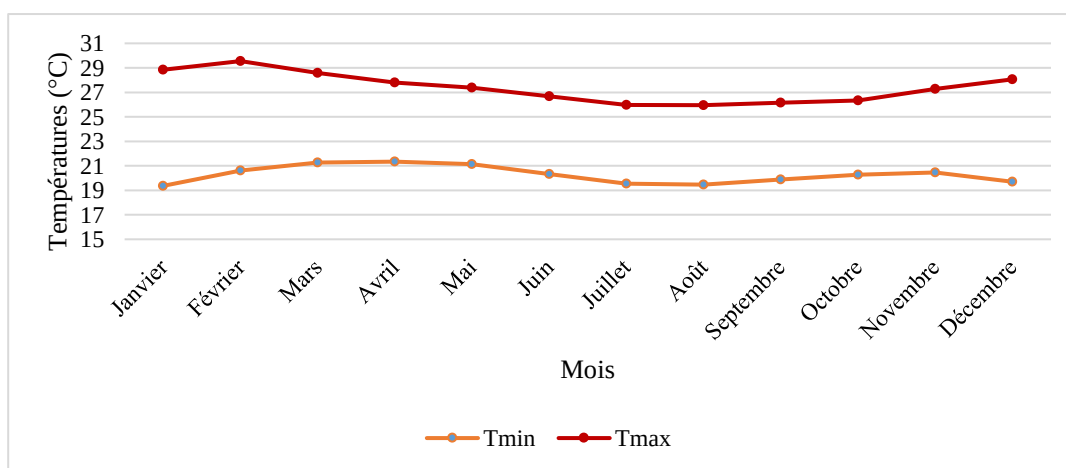
🌡️ Temperature variation between 1983 and 2021

The analysis of the monthly temperature dynamics in the Ntui council from 1982 to 2021 shows that thermal values vary from one month to another. The analysis of the monthly evolution of maximum temperatures shows that the hottest months are February (29.6°C), January (28.8°C), March (28.6°C) and December (28.1°C). On the other hand, the coldest months are June (26°C), July (26°C), August (26.1°C) and October (26.3°C).

Regarding minimum temperatures, the results indicate that the hottest months are March (21.3°C), April (21.3°C) and May (21.1°C) while the coldest months are January (19.4°C), July (19.5°C), August (19.5°C) and December (19.7°C). It should be noted that the warmer months are observed during the great dry season while the coldest months are recorded during the great rainy season in the Ntui council from 1982 to 2021.

High temperatures, both during the day and at night, lead to the amplification of heat, which has drastic consequences for humans and their activities. Indeed, the increase in temperature leads to water stress due to increased evapotranspiration. This has a negative impact on agricultural production insofar as when the temperature rises during the critical period of cultivation, especially flowering, it can lead to the degradation of flower quality with a considerable influence on ear formation. It should also be noted that the increase in temperature would lead to the reduction of the vegetative cycle of the crop. This state of affairs contributes to the decline in agricultural yields and soil degradation.

Figure 11: Monthly variation of temperatures in the municipality from 1982 to 2021



Source: ONACC, 2024

The annual evolution of temperatures in the Ntui council from 1982 to 2023 indicates that temperature values are increasing overall in the study area. Thus, maximum temperatures show an upward trend with $0.044^{\circ}\text{C}/\text{year}$, or an increase of 0.44°C per decade. The warmest year is 2019 with 28.9°C while the coldest year is 1982 with 25.9°C . Regarding minimum temperatures, their evolution shows an increasing pace from 1982 to 2021 with a coefficient of progression of $0.026^{\circ}\text{C}/\text{year}$, i.e. a temperature increase of 0.26°C per decade. The hottest year is 2019, with 21.1°C while 1986 is the coldest year with 19.6°C .

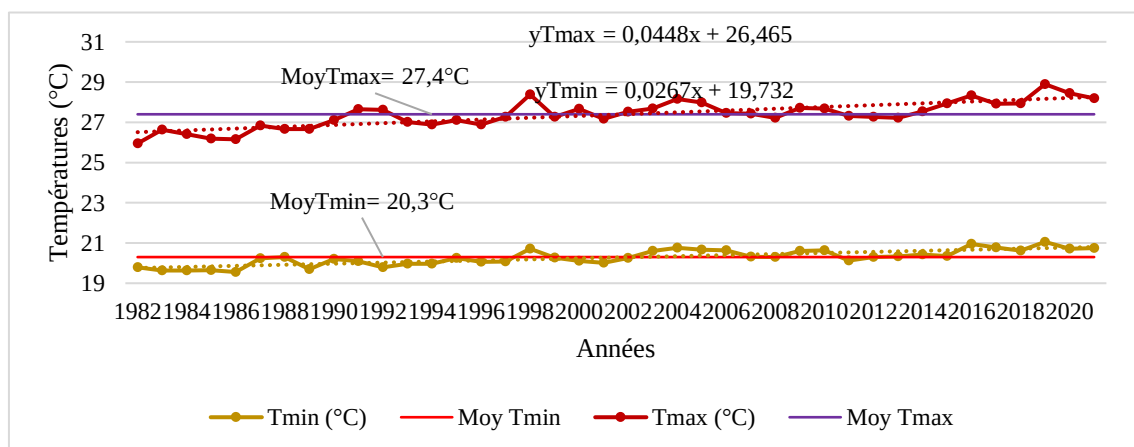
Overall, the increase in temperature is concomitant with the increase in evapotranspiration. This situation promotes water stress that is harmful to humans and their activities, the environment, natural resources, etc.

Table 11: Statistical characteristics of temperatures in the municipality from 1982 to 2021

Statistics	Nb. Observations	Minimum ($^{\circ}\text{C}$)	Maximum ($^{\circ}\text{C}$)	Average ($^{\circ}\text{C}$)	Variance (n-1)	Standard deviation (n-1)	Coeff of variation (n-1)
Tmax ($^{\circ}\text{C}$)	40 years	25,9 (1982)	28,9 (2019)	27,4	0,440	0,663	0,024
Tmin ($^{\circ}\text{C}$)		19,6 (1986)	21,1 (2019)	20,3	0,152	0,390	0,019

Source: ONACC, 2024

Figure 12: Statistical characteristics of temperatures in the municipality from 1982 to 2021



Source: ONACC, 2022

Inter-annual temperature changes in the council from 1982 to 2021

Analysis of drought and flood situations in the Ntui council

Droughts and floods are the major extreme climatic events identified in the Ntui council. To analyse and characterise these climatic hazards (droughts and floods), we used the standardised rainfall index (SPI) and the rainfall index.

- **Analysis of drought and flood situations in the Ntui council according to the standardized rainfall index (SPI)**

The SPI index makes it possible to characterise the level of severity of drought in a given area. As part of this study, we analysed the drought and flood hazards in the Ntui council from 1982 to 2021 using this index. The results indicate that 72.5% of the years in the study period are normal. On the other hand, 12.5% of years are characterized by moderate humidity compared to 5% of years with moderate drought. In addition, 2.5% of years are very wet and 2.5% very dry. The year 1991 was extremely dry and 1982 was extremely wet with a proportion of 2.5% each during the period 1980-2021.

According to the World Meteorological Organization (WMO), a level of -1 in the SPI is enough to trigger a drought that is detrimental to agricultural production. Conversely, a SPI value of 1 is considerable for triggering wet events that can still handicap agricultural production. In view of these assertions, the years 1986, 1985, 1984, 1988, 1987, 2007 and 1982, with an index of 1.02, 1.22, 1.31, 1.32, 1.37, 1.63 and 2.81 respectively, experienced situations of high humidity which could jeopardize agricultural production. Generally, excess humidity results in flooding situations, which lead to waterlogging of crops, yellowing of crops, degradation of agricultural land, asphyxiation of crops, etc. It is important to specify that excess humidity leads to crop rot, the development of crop diseases, etc. All these elements combined with other factors have formidable consequences on the lives of peasants in general and their activities in particular.

Sensitivity

It refers to the degree to which a system is affected by climatic stimuli (GIZ, 2014). The effect or impact can be direct (e.g., change in crop yield in response to a change in temperature mean, range, or variability) or indirect (e.g., damage caused by advancing seas) (McCarthy et al., 2001).

This part of the work deals with the sensitivity of the municipality of Ntui, in the face of climate change, with regard to the analyses of the climatic situation observed in the municipality.

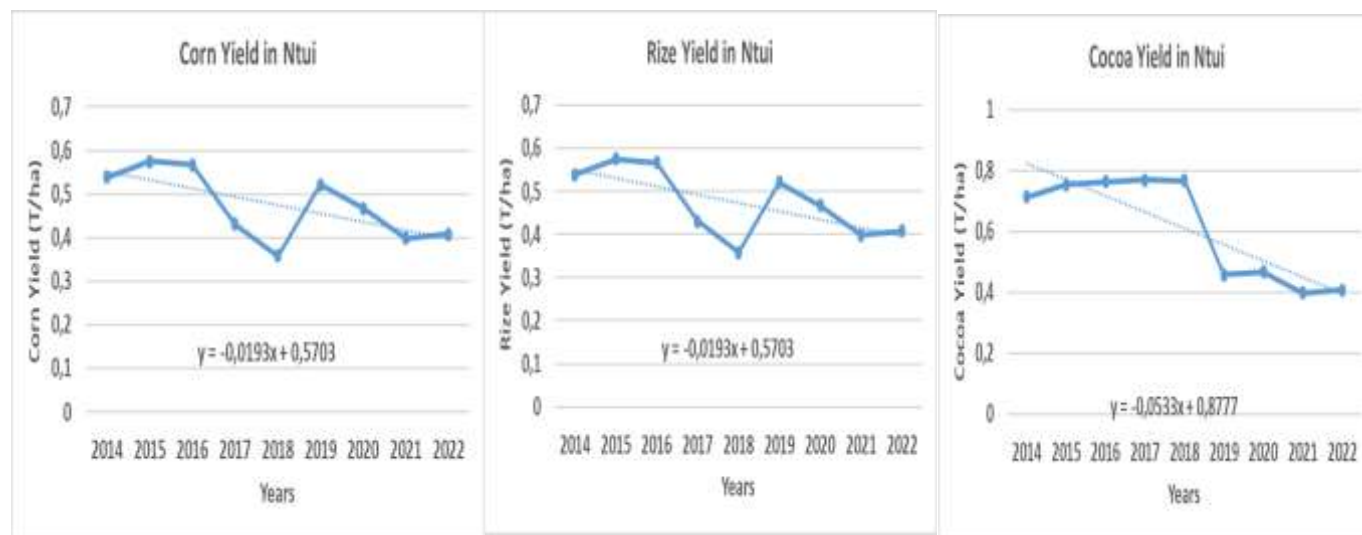
4.1.1.2. The problems of agriculture in the Ntui Council

Agriculture is the main activity of the people of the Commune. It is marked by **food crops** (Cassava (15t), Macabo (08t), Peanuts (02t), Plantain (25t), Maize (10t), Oil palm (1000 l), etc.) and **cash crops** (Cocoa (2,500t and coffee). In the villages, agriculture appears to be the only important productive sector. Also, this agriculture is largely based on the production of food for household consumption and marketing to resellers, commonly known as "bayamselam". Men grow cash crops that are a real source of income. **Cash crops are** intended for marketing. It is based on cocoa cultivation. The plantations are medium-sized, ranging from one to 25 hectares, with an average cocoa production of 7.5 t per hectare.

4.1.2. The impact of climatic conditions on agricultural production in Ntui and other major risks that impact agricultural production

a) Climate as a major determinant of the quality of agricultural production

In the Ntui council, the climate is a major explanatory factor for agricultural production. Thus, years of low rainfall hinder the development of plants, thus limiting productivity. Yields of cocoa trees for example (the main cash crop) are well below their potential of 2–3 t/ha with an average of only 400 kg/ha due to a lack of inputs, labour, agricultural services, government support and poor organisation of producer cooperatives (Alliance of Bioversity International and CIAT et al., 2020; Nfinn, 2005), to which is added the very advanced age of many cocoa trees (Wessel & Foluke Quist-Wessel, 2015). It is estimated that insect devastation, disease and post-harvest losses commonly affect 30% of production (Mukete et al., 2018; Nfinn, 2005). Production increases are therefore usually achieved through the expansion of agricultural areas, leading to widespread deforestation (Wessel & Foluke Quist-Wessel, 2015).

Figure 13: Corn Yield (a), Rize Yield (b) and cocoa Yield in Ntui

The data presented in the Figure above highlights a concerning decline in agricultural productivity in Ntui over the period 2014 to 2022, with corn, rice, and cocoa yields all exhibiting downward trends. Corn and rice yields both show a moderate but consistent decrease, as indicated by their identical regression equations ($y = -0.0193x + 0.5703$), reflecting an annual yield loss of approximately 0.0193 tons per hectare. This trend suggests a growing vulnerability of staple food crops to environmental stressors. Even more striking is the decline in cocoa yield, with a steeper regression slope ($y = -0.0533x + 0.8777$), pointing to a rapid annual decrease of 0.0533 tons per hectare. The sharp drop observed from 2018 onwards may be linked to extreme weather events, prolonged dry seasons, and the increasing frequency of pest and disease outbreaks all of which are aggravated by climate change.

These yield reductions have direct implications for food security in the region. As crop productivity falls, household food availability and dietary diversity are threatened, particularly for smallholder farming communities who rely on subsistence agriculture. Moreover, declining cocoa yields can undermine livelihoods and income generation, further reducing families' capacity to access food and essential services. In this context, the data underscores the need for urgent climate adaptation strategies, including the promotion of climate-resilient crop varieties, improved water management systems, and sustainable land use practices. Without such interventions, continued environmental

degradation and agricultural decline could deepen food insecurity and exacerbate poverty in vulnerable rural areas like Ntui.

b) Other major risks impacting agricultural production in the Ntui council

Biological and environmental hazards

Biological risks are linked to pests and pests on crops, destruction of plots by animals (pachyderm, grain-eating birds) and diseases on livestock. They can have a heavy impact on yields and are the cause of significant operating losses (in the field and post-harvest stock).

▪ **Pests**

Among the important causes of the low agricultural productivity in the Ntui council are pests (phytopathogens, vertebrates, insects, nematodes, weeds) and pests on crops and stored foodstuffs. Pests and diseases affect food production, either directly through crop losses or indirectly through profit losses due to insufficient cash crop yields. Today, changes and increased volatility in the climate, as well as changes in vegetation cover, such as deforestation or soil erosion, are increasing the frequency and intensity of pests and diseases and thus losses, threatening the food security and livelihoods of rural households.

▪ **Pests on crops**

In total, losses are estimated at 35 to 45% of the food value chain. The table below shows the main pests that have a significant impact on the production and/or conservation of foodstuffs for some food crops (MINADER/DADER, 2022).

Table 12: Main pests of some food crops, loss rate in 2020 and importance according to the different regions of Cameroon

Crops	Main pests	Loss rate (in 2020)	Most affected regions
But	▪ Borers ▪ Weevils ▪ Rod Driller ▪ Seed-eating birds ▪ Tracks ▪ Weeds	▪ 15-20% ▪ 5-15% ▪ 15-20% ▪ 5-11% ▪ 10-15% ▪ 5%	▪ Set of 05 ZAEs ▪ Set of 05 ZAEs ▪ East and South-West ▪ West and Northern Regions ▪ Central, South
Cassava	▪ Tuber rot ▪ Cochineal ▪ Mosaic	▪ 12-20% ▪ 5-15% ▪ 5-10%	Set of 05 ZAE except the North and the Far North
Plantain	▪ Weevil ▪ Nematodes ▪ Black cercosporiosis	▪ 10-20% ▪ 12-15% ▪ 5-8%	Set of 05 ZAE except the North and the Far North
Peanut	▪ Sigatoka ▪ Rosette	▪ 10-15% ▪ 8-15%	Central, North and Far North
Tomato	▪ Bacterial wilt ▪ Flies ▪ Mildew	▪ 12-15% ▪ 8-10% ▪ 5-25%	East, West, North-West
Onion	▪ Basal rot ▪ Damping-off ▪ Thrips	▪ 10-12% ▪ 10% ▪ 5-8%	North and Far North
Chili pepper	▪ Sigatoka ▪ Rosette	▪ 10% ▪ 15%	South

Source: ONACC/2022

Maize is particularly susceptible to insect damage during storage and storage periods (limited field loss). Pests (borers, weevils, termites, birds) are the main causes of losses either in the field (during periods of interruption of rainfall in July-August, particularly water stress) or in wet storage areas. The longer the crop remains standing, the greater the risk of loss.

Cassava cultivation is also vulnerable to recurrent pest attacks, including cassava rot (a bacterium capable of reducing yields by 90%) and cassava mosaic (a virus capable of reducing yields by 20%) (Kouakou et al., 2015). Regarding plantain cultivation, the three major pests are weevils, nematodes and black leaf spot. They impact between 12.5 and 25% of the production in the Ntui council and can result in a loss of 50 to 75% of the infected production in extreme cases (MINADER/MINEPIA/PACA, 2009).

Groundnut cultivation suffers from the persistence of rosette and foliar diseases, empty pods, pests in the field and in stock. The effect of seed-eating birds can represent a loss of 50 to 70% of production if no treatment/net is put in place (MINADER/MINEPIA/PACA, 2009). Birds dig up seeds at seedlings, consume them by destroying spikelets, which hinders photosynthesis and leads to lower yields (PLGFV, 2015).

Input risks

Access to quality inputs remains a major constraint on agriculture in the Ntui council. The different groups of inputs such as (i) seeds and seedlings, (ii) phytosanitary products and pesticides, (iii) fertilisers and fertilisers and (iv) treatment equipment and devices found in points of sale are not always of good quality. This is mainly due to the significant weight of the informal sector in the supply of inputs, with the exception of the few inputs through formal channels. For crop crop production, seeds, mineral fertilizers and plant protection products are the largest items in operational production costs.

Risk related to the storage and preservation of agricultural products

The lack of storage and conservation infrastructure and the low processing of agropastoral products imply significant post-harvest losses. These losses contribute to the lack of stability of food supplies, which are highly dependent on the storage capacity of agricultural products and the security of livelihoods at the producer level. Losses generally occur at all stages after harvest. They can be classified into three categories, often related: (i) quantitative/physical loss (losses often related to pest attacks; (ii) loss of quality affecting the value of the product; (iii) opportunity costs resulting from low added value in relation to actual market potential.

Insufficient and poorly adapted product processing capacity

The low level of processing of agro pastoral products affects the storage capacity of foodstuffs and is considered a major factor in the loss. At the national level, industrial processing is limited to certain types of speculation (cocoa, coffee, palm oil, rubber, tea, cane sugar, maize and cotton).

At the commune level, cassava is the main crop that is the subject of real processing activity. There are a large number of artisanal companies processing cassava into cassava sticks, gari, chips, starch,

etc. While most are traditional, some processing units owned by groups or by private individuals on the markets are semi-industrial (mill, grater, press, etc.). However, these units are not suitable for industrial production. The cost of processing equipment is high and therefore not very accessible to small rural producers (especially women).

Regarding breeding, the packaging and processing of products remain very limited. Small processing units (slaughterhouses, delicatessen, feed mills) are developing and are supported by MINEPIA. However, they remain on an artisanal scale and mainly supply primary processing products.

Table 13: Summary of the difficulties associated with storage by speculation

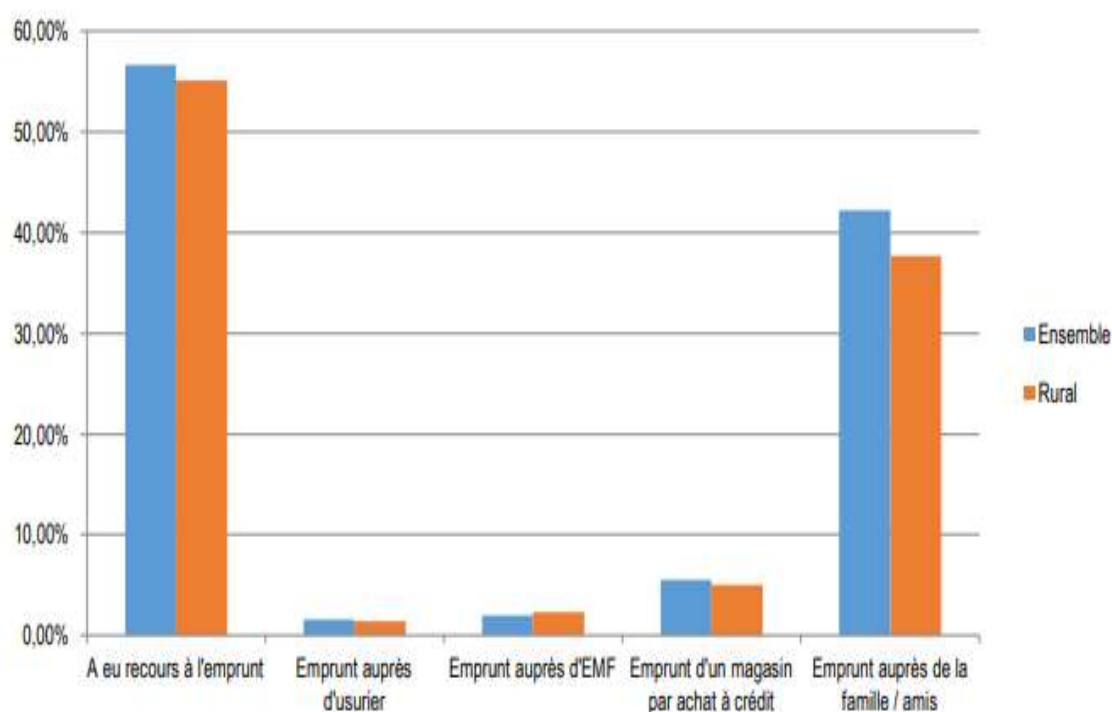
Crops	Main problems related to the storage and processing of products
Maize	Most numerous storage structures (even if insufficient, especially in the South) Drying difficulties (harvest period when humidity is high)
Cassava	Fragile food products that once dug up degrade quickly. Isolation of production areas which results in losses due to the lack of transport infrastructure Traditional storage method: keep standing in the field (land use, reduced starch yields, lignification)
Plantain	Landlocked production sites, especially in the rainy season Product handling problem (loading and unloading). Poor marketing conditions (sun, on the ground)
Palm oil	Isolation of both industrial and village plantations, during harvesting, packaging, storage, transport, sale and marketing. Low level of equipment of village organizations for processing and low performance of artisanal presses (12% oil yield compared to 20-22% for agro-industries)
Breeding	Poor quality of animal feed leading to longer breeding periods and lower quality animals (reduction of farmers' earnings) Lack of slaughterhouses and packing centres that do not allow us to offer quality products. Absence of a cold chain for meat and fish products. Very limited shelf life.

Source: MINADER/DADER, 2022

Risk related to access to credit

A constraint with significant consequences in terms of low agricultural productivity in the Ntui council is the very limited access to agricultural financing. Cameroon's financial sector is generally underdeveloped and remains highly centralized. The banking sector is characterized by a very low penetration rate and low amounts of credit allocated to the rural sector. Family and friends remain the preferred source of funding, as shown in the figure below.

Figure 14: Level of agricultural financing in Cameroon



Source: World Bank (2020)

The inadequacy of funding in rural areas is reflected in:

- Difficulties in accessing credit: only 2% of the working population in rural areas have a loan in a formal institution;
- The inadequacy of financing structures (one microfinance institution for every 149,000 inhabitants) and products adapted to the rural sector;

- The lack of information and the low mobilization of rural savings (57.9% of the population in rural areas say they save, but only 7.8% do so in a formal MFE);
- The low capacity of producers to set up bankable projects.

Since the early 2000s, the microfinance sector in Cameroon has experienced a boom marked by increased market penetration, an increase in the number of microfinance institutions and an increase in the volume of credit granting operations. However, financing for agriculture remains very limited (outstanding MFIs represent 5% of loans), in particular due to the lack of mechanisms to control the risks inherent in short-term purchases (inputs) and longer-term investments (agricultural equipment, storage infrastructure). The costs of financial services are prohibitive for the vast majority of family farms. This lack of access is explained by (i) high credit risk associated with a lack of conventional long-term savings and collateral in rural areas; (ii) high transaction costs and cumbersome procedures; (iii) poor knowledge of the market, semi-formal financial institutions and the needs of farms (Directorate General of the Treasury and Financial and Monetary Cooperation, MINFI, 2011).

4.1.2.1. Livestock Diseases

Animal diseases are one of the major constraints to the development of livestock sectors in Cameroon in general. According to the 2015 PADFEL report, these diseases contribute to more than 70% of the low competitiveness of livestock farming (MINEPIA/PADFEL, 2015). Several diseases are endemic in the Centre region in general, and the commune of Ntui is not immune to these scourges:

- African swine fever, which is the leading cause of losses in the pig sector. The risk of disease is particularly high in the Centre and Littoral regions, followed by in the East, North-West, South and South-West regions. Since 2010, it has been present in the northern regions in part because of the importation of the contamination from Chad.
- Newcastle disease, which causes significant income losses in village poultry farms. Between 2012 and 2013, the epidemiological surveillance network recorded 14 outbreaks of Newcastle disease, representing 47,377 cases, of which 77% mortality rate.
- Avian influenza: Cameroon has experienced two major crises due to avian flu in the last 10 years, in 2006 in the Far North region and in 2016 in the Centre region. According to OIE

reports on the latest H5N1 flu, between May and June 2016, 7040 poultry died due to H5N1 and 26,981 poultry were slaughtered. The losses concern not only the cost of slaughtered poultry but also the loss of income following the drastic reduction in the price of poultry and eggs on the markets (in 2006, the price was halved, a decrease due to a psychosis developed by the populations regarding the consumption of potentially infected meat (Teleu Ngandeu et al., 2006) and losses from export bans on poultry and poultry products in the subregion.

4.1.2.2. Ability to adapt to climate shocks

Adaptive capacity can be defined as the ability of a system to modify its characteristics or behaviour in order to better cope with the effects of external changes (Füssel and Klein, 2006). This step assesses the capacity of the studied socio-ecological system to react and adapt to climate change. Strategies in this context are at several levels of responsibility, both for the national authorities in charge of providing strategic responses to these climate shocks, and for the populations who suffer from these shocks.



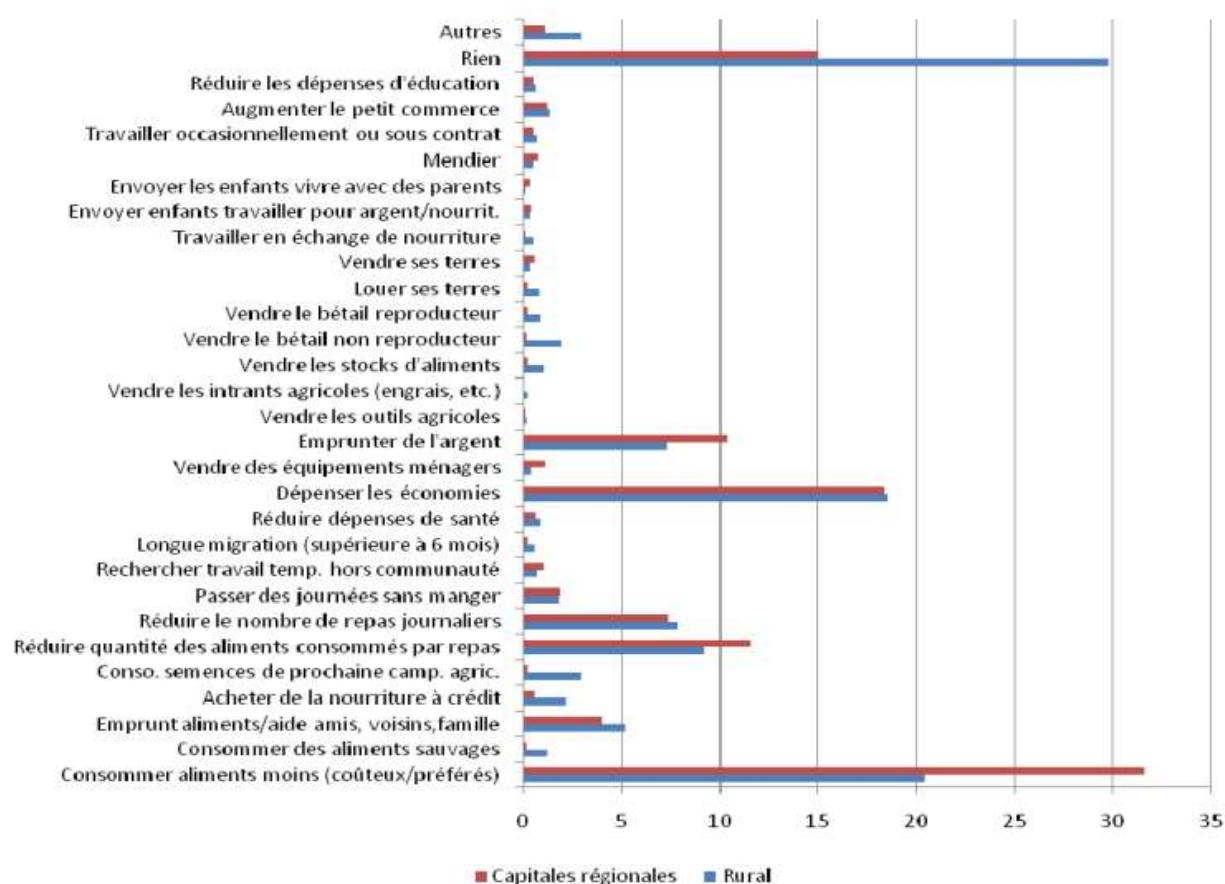
At the institutional level

i. Traditional risk management strategies for rural households in Cameroon

In response to a one-off crisis or to meet their needs during the lean season, households use different risk management strategies that are more or less damaging in the long term. According to the MINADER/WFP CFSVA vulnerability analysis reports (2007, 2011), the first strategy of households is to contract their food consumption and reduce their expenditure. Households are changing their diets: eating cheaper food, reducing the number of meals and rations, eating crops early or eating seeds for the next season... If the crisis is more severe, households may be forced to decapitalize by urgently selling livestock, crops and agricultural inputs (fertilizers, production tools). They can also borrow money from friends and neighbours or get into debt from shopkeepers (buying food on credit). Some households need to reduce their health or child-rearing expenses (taking children out of school to reduce the direct and indirect costs of schooling). The adverse effects in terms of human capital are significant and long-lasting.

According to the MINADER/WFP 2011 report, almost two-thirds of rural households used at least one survival strategy in the week preceding the survey. The highest rates were recorded in the South, North and Northwest. In the event of a shock, more than half of food-insecure households borrow money for food.

Figure 15: Distribution of households according to responses to shocks



Source: MINADER, /WFP, 2020

ii. Establishment of market information systems and an early warning system

Access to information is a key factor in agricultural risk management. Market information systems (MIS) are the main tools used to collect, analyse and disseminate information on food prices. This information is essential to improve the efficiency of value chains and to enable farmers and herders, but also all actors involved in agricultural value chains (traders and processors), to manage market risks. The MISs must make it possible to monitor changing market conditions (e.g. transaction

costs, market access standards), to manage fluctuations in food prices (price risk) and to implement appropriate policies for the development of agricultural value chains in the context of the fight against food insecurity.

iii. The development and implementation of a risk management plan related to access to agricultural inputs

Access to quality inputs is highlighted in the first part of this report as an important risk factor in agriculture in Cameroon. Agricultural inputs in Cameroon are governed by three distinct regulatory frameworks: (i) framework on seeds and plant material, (ii) framework on pesticides and phytosanitary treatment equipment, and (iii) framework on the fertilizer subsector. We review the three frameworks here in order to examine the extent to which the State or private operators have been able to put in place plans and strategies to reduce these risks for producers.

iv. The creation of an agricultural insurance market in Cameroon

Insurance is a classic market tool for managing transferable risks through a system of premiums and compensation organized into branches of activity. Insurance operations are classified into two main branches: the life branch (comparable to personal insurance) and the non-life branch (property and casualty insurance – Fire, Accidents, Miscellaneous Risks and Transport, also known as damage insurance). In Cameroon, the sector is well organized with three categories of stakeholders: national and sub-regional regulators, national and international market operators, and related professions represented mainly by the profession of technical expert.

v. Other market instruments: Local storage, warrantee, contract contracts

Three main actions concern the management of the risk of price volatility: (i) support for storage resources; (ii) the promotion of warranted credit through MFIs and producer federations and confederations; (iii) support for contractualization between producers and processors or exporters, which makes it possible to facilitate trade and participate in the stabilization of prices.

vi. Support for microfinance and credit security

To manage the strong constraint linked to the low financial resources allocated to agricultural investment, several tools can be used, in particular subsidy funds to subsidize interest rates and subsidize investments that have an impact on agricultural risk management (e.g. storage infrastructure), guarantee funds to secure medium-term credits, etc. There are many public initiatives and development projects in favour of the rural world in Cameroon. According to the 2016 MINADER/PADMIR report, the total amount of funding for ongoing projects is estimated at nearly USD 390 million, with aid concentrated mainly in the Northern, Far North and West regions. Several funds have been created to finance agriculture.

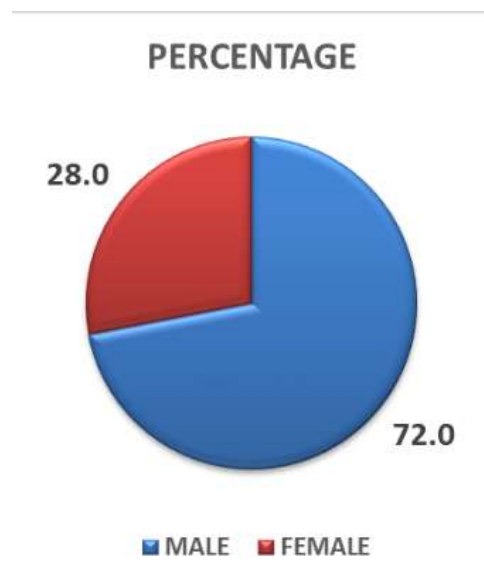
- From 2000 onwards, the Investment Fund for Agricultural and Community Micro projects (FIMAC – a trust fund managed by MINADER) provided MFIs with lines of credit to finance agricultural projects. This fund is still active and concerns 155 MFIs for a portfolio of 700 million CFA francs.
- In 2006, the State set up the Social Development Financing Fund (FOFIDES) with a view to perpetuating the microcredit component of the Poverty Reduction and Actions in Favour of Women (PREPAFEN) project, co-financed by the AfDB, the UNDP and the State to the tune of 19 million Euros²¹.
- In March 2014, the PADMIR Facilitation Fund, with a budget of USD 4.54 million, aims to encourage MFIs to provide medium-term loans on affordable terms to promote investments along the agro pastoral value chain in the Centre, Far North, West, North and North-West regions. At the end of April 2016, the facilitation fund is in partnership with 5 networks of MFIs and 16 independent MFIs with 91 points of service through the signing of 33 partnership agreements. Since 2014, 80 loans have been released (total amount of loans of 807 million CFA francs).

The Facilitation Fund has established a temporary credit insurance facility to partially cover capital losses on loans made from its resources. Collaboration with the ARIZ guarantee body of the French Development Agency (AFD)²² is one of the recommendations of the study on the institutionalization of the PAMIR facilitation fund (MINADER/PADMIR, 2016).

4.1.3. H2: Higher levels of knowledge about innovative mechanisms for regenerative agriculture among stakeholders are associated with increased opportunities for accessing climate finance.

The sample distribution reveals that most respondents are male, comprising 72.0% of the total, while female respondents account for 28.0%. Notably, a concerning finding is that all respondents (100%) reported being unaware of the concept of climate finance. This lack of awareness is concerning because it suggests that farmers are not well-informed about financial support mechanisms related to climate change and sustainable agriculture. The reason for this gap is that the majority of farmers have limited formal education, which significantly restricts their access to information on climate finance. Additionally, farmers may have limited opportunities to engage in workshops or international conferences where such topics are discussed, further compounding their lack of awareness. This lack of awareness indicates a significant misunderstanding among farmers, which could adversely affect their engagement with regenerative agricultural practices.

Figure 16: Sample distribution according to the gender of the farmers



Analysis of farmers' perceptions of climate finance provides important insights into their understanding of its nature and sources. When asked whether climate finance differs from public aid, only 22.22% affirmed that it is different, while a substantial majority (77.78%) believed that

climate finance is essentially a form of public aid. This suggests a prevailing consensus among the respondents that climate finance is closely linked to public assistance.

Furthermore, the belief that climate finance is exclusively provided by multilateral institutions is strong, with 88.89% of respondents affirming this viewpoint. This perception may limit their understanding of the broader landscape of climate financing, which includes various sources beyond multilateral institutions.

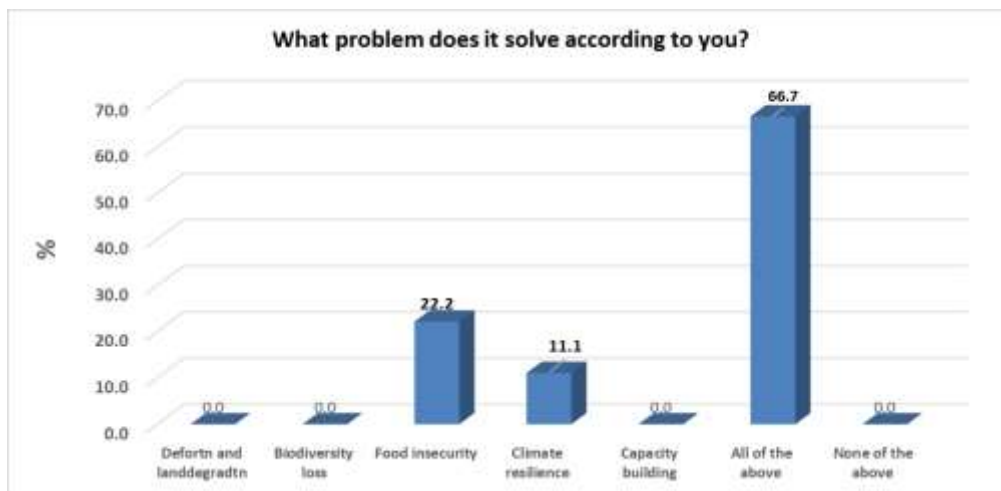
Regarding the specific sources of climate finance in Cameroon, among the 125 respondents, only a few identified particular entities. For instance, 11.11% mentioned the Green Climate Fund, while another 11.11% referred to the Adaptation Fund, and 11.11% highlighted Bilateral Aid. However, a significant 55.56% selected "all of the above," indicating a belief that multiple entities contribute to climate finance. This suggests that while some respondents recognise individual sources, there is a predominant perception that various organisations collectively play a role in providing climate finance. The limited identification of specific institutions may reflect a need for increased awareness and understanding of the diverse mechanisms available for climate financing.

When asked whether everyone, including individuals, NGOs, entrepreneurs, or local governments, can access climate finance funds, a strong consensus emerged. A total of 88.89% of respondents believed that all stakeholders can access these funds, while only 11.11% disagreed. This overwhelming agreement suggests a positive perception of inclusivity regarding access to climate finance within the community. Understanding that various stakeholders can benefit from these resources may encourage broader participation in climate-related initiatives.

The financial resources employed to address climate change reveal insightful perspectives among respondents. Out of 125 participants, 66.67% indicated that economic resources are utilised to mitigate the effects of climate change through public, private, and alternative sources. Additionally, 22.22% mentioned that these resources are used to build resilience against climate change impacts. In contrast, 11.11% recognised using local, national, or transnational finance to support climate change mitigation and adaptation actions. Overall, these responses strongly acknowledge the role of diverse financial resources in addressing climate change impacts.

The responses regarding the problems targeted by climate finance reveal significant insights into farmers' perceptions. Out of the 125 respondents, 66.67% identified deforestation and land degradation, or biodiversity loss, as primary issues climate finance addresses. Meanwhile, 22.22% acknowledged that climate finance helps tackle food insecurity, and 11.11% indicated its contribution to climate resilience. This distribution suggests that farmers view climate finance as a crucial tool for promoting food security and enhancing climate resilience while recognising its broader potential to address multiple environmental challenges.

Figure 17: The problems targeted by climate finance



Respondents indicate a lack of awareness among the surveyed farmers regarding regenerative agriculture. All 125 respondents reported being unfamiliar with the concept, signalling that regenerative agriculture is not recognised as an essential approach within the community. This lack of familiarity presents a solid foundation for further discussions and initiatives to promote regenerative practices, potentially enhancing agricultural sustainability and resilience to climate change.

A strong consensus emerged when asked whether regenerative agriculture is essential for Cameroon in overcoming its carbon emission challenges. A total of 88.89% affirmed its importance, while none responded negatively. Fourteen respondents (11.11%) expressed uncertainty. This overwhelming agreement highlights the perception that regenerative agriculture plays a vital role in addressing carbon emissions in the country, which could lead to increased support for initiatives and practices that promote it.

Responses regarding the regions where regenerative agriculture is practised revealed diverse engagement among surveyed farmers. Of the 125 respondents, 22.22% identified the Centre region as a site of practice. Fourteen respondents each pointed to the North, West, North West, South West, Far North, Littoral, and Adamawa regions, representing 11.11% of the responses. Notably, no responses indicated that regenerative agriculture is practised in the East or South regions. This distribution suggests recognition of regenerative agriculture in various parts of Cameroon, particularly in the Centre region, while indicating engagement in multiple other areas.

Regarding the crops involved in regenerative agriculture, all 125 respondents indicated that crops such as coffee, cocoa, bananas/plantains, maize, and potatoes are all part of regenerative practices. This unanimous response suggests that the farmers do not associate specific crops with regenerative agriculture but consider all applicable crops relevant.

The high level of awareness regarding the practice of regenerative agriculture in the Ntui division also stood out, as all 125 respondents confirmed that it is not currently practised there. This strong consensus indicates that regenerative agriculture should be recognised and potentially integrated into agricultural practices in Ntui.

When discussing factors influencing the transition to regenerative agriculture, all 125 respondents identified financial incentives, environmental concerns, and market demand as significant motivators. Additionally, 44.44% acknowledged that government policies play a role, while only 11.11% selected "all of the above." This overwhelming agreement highlights the multifaceted nature of the factors driving the shift toward regenerative agriculture, underscoring the importance of financial support, environmental awareness, market dynamics, and government policies.

Responses concerning awareness of innovative financial mechanisms revealed a complete lack of recognition among the surveyed farmers. None of the 125 respondents indicated familiarity with such mechanisms, suggesting a significant gap in knowledge that could hinder access to funding and resources necessary for adopting sustainable practices.

Finally, regarding the understanding of innovative financial mechanisms, all 125 respondents selected "all of the above" when presented with definitions, suggesting they associate these concepts with their understanding of innovative financial approaches. This unanimous response

signifies a general familiarity with the concepts and applications of these mechanisms, indicating potential knowledge of how they can support adaptation and mitigation efforts in agriculture.

In conclusion, while farmers clearly agree on the importance of climate finance and regenerative agriculture in addressing environmental challenges, their lack of understanding and awareness of innovative financial mechanisms suggests that enhancing knowledge in this area could significantly improve access to climate finance. This gap points to the need for targeted educational initiatives to empower farmers and facilitate their transition to sustainable agricultural practices.

Test of Hypotheses II:

Null Hypothesis (H0): There is no association between stakeholders' knowledge of innovative mechanisms for regenerative agriculture and their opportunities for accessing climate finance.

Alternative Hypothesis (H1): Higher levels of knowledge among stakeholders about innovative mechanisms for regenerative agriculture are associated with increased opportunities to access climate finance.

Validation of the Alternative Hypothesis (H1)

To formally validate the alternative hypothesis (H1), we analysed the survey findings as follows:

1. Knowledge Gap Identification:

The survey indicates that all respondents (100%) lacked awareness of climate finance, suggesting a significant barrier to engagement with financial opportunities.

2. Perception of Climate Finance:

Only 22.22% of respondents recognised the distinction between climate finance and public aid, indicating a limited understanding of diverse financial sources.

3. Access Perception:

Despite 88.89% of respondents believing that all stakeholders can access climate finance, their lack of knowledge about specific mechanisms diminishes the likelihood of actual engagement.

4. Recognition of Funding Entities:

Only 11.11% of respondents identified the Green Climate Fund and Adaptation Fund, highlighting a critical gap in awareness of available funding avenues.

5. Impact of Knowledge on Engagement:

The complete lack of recognition (100%) of innovative financial mechanisms suggests that stakeholders' ignorance directly impacts their ability to access climate finance.

Conclusion

These findings validate Hypothesis H2; the high levels of ignorance surrounding climate finance and innovative mechanisms among stakeholders are associated with reduced opportunities for accessing climate finance. To enhance engagement with climate finance and regenerative agriculture, it is imperative to implement targeted educational initiatives to increase awareness and understanding of these critical concepts.

This analysis provides an overview of the awareness and understanding of climate finance and regenerative agriculture in Cameroon, highlighting key insights into the sources of climate funding, accessibility, and the potential of regenerative agriculture to address environmental challenges.

All participants (100%) were aware of climate finance, though their understanding varied. The majority recognized climate finance as financial resources aimed at mitigating and adapting to climate change, particularly in agriculture. Commonly mentioned sources included international funds like the Green Climate Fund (GCF) and the Adaptation Fund. While there was strong consensus on the importance of addressing environmental challenges in agriculture, some nuances in definitions were noted, reflecting different levels of understanding.

There was a clear consensus among participants that climate finance differs from public aid. While public aid addresses a broad range of humanitarian needs, climate finance is specifically targeted at climate-related issues, with conditions and criteria related to environmental resilience. Although some participants noted that donor countries occasionally combine both, the distinction between the two was generally well understood.

In terms of the sources of climate finance available in Cameroon, international funds were identified as the primary contributors. Major sources included the Green Climate Fund, Adaptation Fund, and the Global Environment Facility, with contributions from bilateral donors such as Germany, France, and Japan. Additionally, regional organizations like the African Development Bank and UNDP were noted as key players. These responses underscore the diversity of sources supporting climate financing in Cameroon.

Despite the availability of these funds, access to climate finance is not universally available. Around 85% of participants agreed that access to climate finance is not universally available, with local governments, NGOs, and the private sector having better access. Some participants (15%) pointed out that eligibility is often project-specific, with certain projects being eligible based on their alignment with climate goals. The responses suggested that local farmers and smaller stakeholders face barriers in directly accessing climate finance and often rely on intermediaries or local organizations to navigate the complex funding landscape. This highlights the need for capacity-building efforts to enhance access for grassroots entities.

When discussing financial mechanisms for transitioning to regenerative agriculture, participants unanimously agreed that grants are the most beneficial mechanism compared to loans. This indicates that financial support through grants is seen as essential for promoting regenerative agricultural practices, which are considered crucial for addressing climate-related issues.

A majority of participants were familiar with regenerative agriculture, recognizing its principles of enhancing soil health and increasing biodiversity. Approximately 85% of participants were familiar with regenerative agriculture and its principles, such as enhancing soil health and increasing biodiversity. However, 15% of participants, particularly those from organizations without direct involvement in agriculture, showed less familiarity. This discrepancy suggests that while regenerative agriculture is gaining attention in Cameroon, its implementation is still limited, particularly in rural areas. The responses indicate a need for further education and outreach to increase awareness and understanding of regenerative agricultural practices.

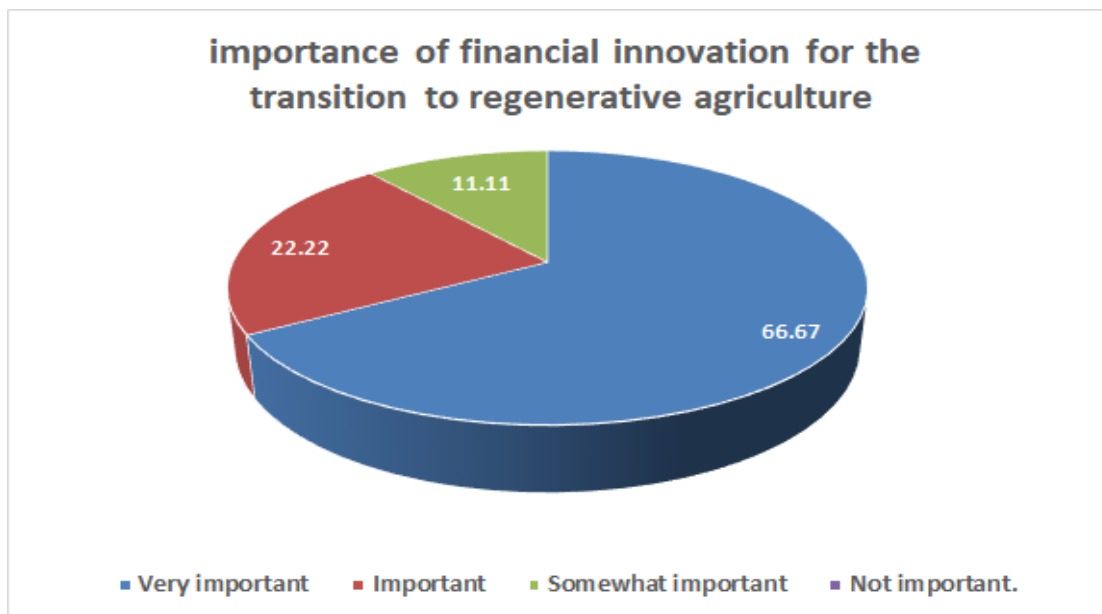
However, a small group of participants showed less familiarity, particularly those not directly involved in agricultural practices. This suggests that while regenerative agriculture is gaining traction in Cameroon, its implementation remains limited, especially in rural areas. The responses

emphasize the need for further education and outreach to improve awareness and understanding of regenerative agricultural practices across the country.

4.1.4. H3: climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, improving climate resilience and reducing emissions.

The importance of financial innovation for transitioning to regenerative agriculture is strongly recognized among surveyed farmers. Of the 125 respondents, 66.67% rated financial innovation as "very important," while 22.22% considered it "important." Only 11.11% considered it "somewhat important," and none deemed it "unnecessary." This strong emphasis indicates that farmers are aware of the potential benefits that innovative financial solutions can provide to support sustainable practices and enhance agricultural resilience.

Figure 18: The importance of financial innovation for transitioning to regenerative agriculture



There is also a robust belief in regenerative agriculture's capacity to reduce the agricultural sector's vulnerability. Of the 125 respondents, 77.78% rated its capacity as "very strong," and 22.22% assessed it as "fairly strong." None indicated that the capacity is "weak" or "very weak." This suggests significant confidence in regenerative agriculture's potential to enhance resilience and mitigate vulnerabilities, which could foster greater adoption of these practices.

Regarding the potential economic benefits of regenerative agriculture, 88.89% of respondents affirmed that it can lead to increased profitability, while 11.11% disagreed. This positive outlook reflects farmers' belief in the economic advantages of adopting regenerative practices. When asked if regenerative agriculture is practised in the study area, 77.78% indicated it is, while 22.22% said it is not. Among those who reported no current practice, 11.11% mentioned that measures are being taken to transition from conventional to regenerative agriculture, while 55.56% expressed uncertainty.

Farmers also strongly believe that institutions can use regenerative agriculture to reduce carbon emissions. Of the respondents, 66.67% affirmed that it can be effective for this purpose, while none answered "no." However, 33.33% expressed uncertainty. This suggests a strong belief in regenerative agriculture as a viable strategy for enhancing efforts to reduce carbon emissions. Regarding the institutional frameworks related to climate finance, 55.56% of respondents identified "all of the above" (including the National Climate Change Policy, Nationally Determined Contributions, and Climate Change Action Plan) as applicable frameworks. However, no respondents specifically identified the National Climate Change Policy, indicating a potential area for increased awareness.

Regarding the pathways to accessing climate finance, 66.67% of respondents selected "all of the above" as viable methods, indicating an understanding of multiple avenues for obtaining funding. This includes direct access through accredited entities and project proposal submissions. However, only 11.11% believed that nationally accredited entities for receiving climate finance exist, while 88.89% expressed uncertainty. This highlights a significant knowledge gap that could hinder their ability to access available funding.

Responses to whether Cameroon has benefited from climate finance reveal considerable uncertainty among the farmers. None of the respondents believed the country has benefited, while 88.89% selected "no idea." This lack of awareness may reflect a broader gap in knowledge regarding the impact of climate finance in their community, which could impede future participation in initiatives.

The understanding of projects in the agricultural sector that have benefited from climate finance was also mixed. While 11.11% indicated that such projects exist, 55.56% answered "no," and

33.33% chose "no idea." This suggests a need for improved communication about the outcomes of climate finance in agriculture to enhance awareness and encourage participation. Regarding the types of agricultural practices that can benefit from climate finance, all respondents (100%) selected "all of the above," indicating that they believe sustainable agriculture, climate-smart agriculture, and regenerative agriculture are all potential recipients of climate funding. This unanimous agreement underscores the recognition that various practices can address climate change challenges and enhance agricultural resilience.

Finally, the responses regarding the types of financial support most beneficial for transitioning to regenerative practices also showed unanimous consensus. All 125 respondents selected "all of the above," reflecting an understanding that grants, low-interest loans, investment partnerships, and technical assistance are crucial for their transition to regenerative agriculture.

In conclusion, the findings suggest that climate finance initiatives have a significant potential impact on farmers' decisions to adopt regenerative agricultural practices in Ntui, particularly through enhancing their understanding of financial innovations and the benefits of regenerative practices. Addressing knowledge gaps regarding climate finance and its benefits could further support this transition, ultimately improving climate resilience and reducing regional emissions.

Test of Hypotheses III:

Null Hypothesis (H0): Climate finance initiatives do not positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, nor do they improve climate resilience or reduce emissions.

Alternative Hypothesis (H1): Climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, improving climate resilience and reducing emissions.

The analysis of the survey findings aimed to validate the alternative hypothesis (H1), which posits that climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui. A significant majority of farmers (66.67%) rated financial innovation as "very important," while 22.22% considered it "important," highlighting their recognition of the value of financial innovation in supporting sustainable practices. Furthermore, 77.78% of

respondents expressed confidence in regenerative agriculture's ability to reduce vulnerability, and 88.89% affirmed its potential for increased profitability. This indicates a readiness among farmers to transition from conventional methods to regenerative practices, influenced by the availability of climate finance.

Additionally, two-thirds of respondents (66.67%) believe that regenerative agriculture can effectively reduce carbon emissions, aligning with climate finance goals. While over half (55.56%) recognized applicable climate finance frameworks, there remains a lack of specific awareness regarding the National Climate Change Policy, pointing to the need for improved education. Many farmers expressed uncertainty about the benefits of climate finance in Cameroon, with 88.89% unsure if the country has gained from such initiatives. Notably, all respondents agreed on the importance of various types of financial support, such as grants and low-interest loans, for transitioning to regenerative agriculture.

In conclusion, the survey findings strongly support the alternative hypothesis (H1) that climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui. The high levels of recognition of financial innovation, confidence in the benefits of regenerative agriculture, and consensus on the importance of financial support suggest that addressing knowledge gaps about climate finance could further facilitate farmers' transition to sustainable practices, ultimately improving climate resilience and reducing emissions in the area.

This analysis reveals insights into the current state of climate finance and regenerative agriculture in Cameroon, particularly regarding access to funds, the role of national accredited entities, and the practice of regenerative agriculture.

A significant portion of the respondents (about 90%) highlighted that climate finance is primarily accessed through national accredited entities, government ministries, or by submitting proposals to international organizations. Local NGOs and grassroots organizations, while mentioned less frequently, can also access funds if they meet the necessary criteria. This indicates that while there is a clear pathway for accessing climate finance, the formal process may create barriers for local entities with limited capacities in proposal development or project management.

All participants (100 %) acknowledged the existence of national accredited entities in Cameroon for receiving climate finance. While the Ministry of Environment and the Ministry of Agriculture were consistently identified as key players, there were mentions of other national or regional bodies. This suggests a general understanding of the entities involved but also points to the need for greater clarity on their roles and how they operate within the broader climate finance landscape.

Regarding regenerative agriculture, most participants approximately 85% noted that it is promoted in some regions, particularly in the Littoral and West regions, though it is not yet widespread in areas like Ntui. Regional disparities, lack of infrastructure, limited training, and resistance from local farmers were cited as significant barriers to wider adoption. This underscores the need for more targeted efforts to promote regenerative agriculture in regions that face these challenges.

Finally, the vast majority of participants (90%) recognized the importance of regenerative agriculture in reducing carbon emissions. Practices such as agroforestry, crop rotation, and soil restoration were seen as key strategies for carbon sequestration and climate change mitigation. However, a small number of participants viewed its importance as "fairly important," suggesting that while the potential environmental benefits are widely acknowledged, more work is needed to fully integrate regenerative agriculture into national strategies and ensure its broader implementation.

4.1.4. H4: the challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in ntui.

The responses from the surveyed farmers indicate a strong consensus on the challenges encountered when accessing innovative financial mechanisms for regenerative agriculture. All 125 respondents (100%) selected "all of the above," recognising multiple obstacles such as lack of information, high costs, limited availability, and the complexity of application processes. This unanimous response highlights the significant barriers farmers perceive, suggesting that these challenges impede their ability to adopt regenerative practices. To address these issues, targeted support and resources are essential. Efforts to improve information dissemination, simplify application processes, and reduce costs could play a crucial role in facilitating access to the financial mechanisms necessary for transitioning to regenerative agriculture.

Further insights into the specific challenges faced reveal a range of perceptions among the farmers. Out of the 125 respondents, 44.44% acknowledged "all of the above" as challenges, while 11.11% identified issues such as the large proportion of climate lending, and another 11.11% pointed out that international resources are not directly managed by countries but rather by accredited or implementing entities. Additionally, 22.22% highlighted the lengthy and complex procedures for releasing funds under the UNFCCC, which can delay access following project approval. Another 11.11% noted the requirement for mobilising counterparts at the national level, which can lead to significant resource planning constraints. This distribution underscores the complexity of navigating climate finance mechanisms and the various obstacles farmers face in accessing these funds. Addressing these challenges through improved processes, support, and education could greatly enhance access and utilization of climate finance for agricultural initiatives.

The responses regarding the specific problems Cameroon faces in accessing climate finance further illuminate key challenges. Out of 125 respondents, 55.56% selected "all of the above," indicating a recognition of multiple issues hindering adequate access to climate funding. Among these, 11.11% identified the insufficient availability of funds to meet the growing adaptation and mitigation needs in vulnerable regions, while another 11.11% cited the lengthy and complex procedures for fund disbursement under the UNFCCC. Additionally, 11.11% mentioned challenges related to mobilising counterparts at the national level and the inability to secure and enhance the role of the private sector, alongside weak institutional capacity. This multifaceted nature of Cameroon's challenges in accessing climate finance underscores the need for targeted interventions, such as improving funding availability, streamlining processes, and strengthening institutional capacity, to enhance access for sustainable regional development.

Moreover, the role of government in promoting innovative financial mechanisms for regenerative agriculture was met with unanimous agreement. All 125 respondents (100%) indicated that the government should take active steps, including providing funding, creating supportive policies, facilitating partnerships, and raising awareness. This consensus reflects a comprehensive understanding of the various roles that government can play in fostering an environment conducive to innovative financial solutions. Additionally, 55.56% of respondents emphasised the necessity of a multifaceted approach to support regenerative agriculture, further highlighting the importance of government involvement.

In conclusion, the challenges faced in accessing climate finance mechanisms are perceived as significant barriers that hinder the effectiveness of regenerative agriculture practices in Ntui. These barriers impede farmers' adoption of sustainable practices and negatively affect food security in the area. Addressing these challenges through improved access to information, streamlined processes, and robust government support is essential for enhancing the effectiveness of climate finance initiatives and promoting food security through regenerative agriculture.

Test of Hypotheses IV:

Null Hypothesis (H0): The challenges faced in accessing climate finance mechanisms do not hinder the effectiveness of regenerative agriculture practices do not negatively affect food security in Ntui.

Alternative Hypothesis (H1): The challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in Ntui.

The analysis of the survey findings aimed to validate the alternative hypothesis (H1), which asserts that challenges in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices and negatively affect food security in Ntui. All 125 respondents unanimously identified multiple barriers, including lack of information, high costs, limited availability, and complex application processes, indicating that these obstacles significantly impact their ability to adopt regenerative practices. Additionally, 44.44% of respondents recognised specific challenges such as managing climate lending by accredited entities and complex fund disbursement procedures under the UNFCCC. This highlights the intricate nature of accessing climate finance and its direct implications on the effectiveness of regenerative agriculture.

Furthermore, the respondents emphasized the need for governmental support in promoting innovative financial mechanisms, reflecting an understanding that supportive policies and increased funding are essential for overcoming these barriers. The perceived challenges are likely detrimental to food security; as regenerative agriculture plays a crucial role in enhancing food supply. Over half of the respondents acknowledged systemic issues, such as insufficient funding and complex procedures, which further impede access to climate finance. The findings indicate a

pressing need for targeted interventions to improve access and support for climate finance, which would ultimately enhance the effectiveness of regenerative agriculture practices and contribute to food security in the area. Overall, the survey supports the alternative hypothesis (H1) by underscoring the significant barriers hindering sustainable agricultural practices in Ntui.

The challenges in accessing climate finance were widely acknowledged by the participants. Over 90% identified bureaucratic hurdles, technical documentation requirements, and a lack of local capacity as significant barriers. Many participants also pointed out that the complexity of the application process, as well as limited knowledge about available funds, complicates the access to climate finance for local actors. Furthermore, some respondents noted that communication gaps between funding agencies and local stakeholders, along with regional disparities in access, particularly in rural areas like Ntui, exacerbate these challenges. The consensus emphasizes the need for simplification of procedures and increased capacity at the local level to effectively access these funds.

And lastly, a large portion of participants (around 85%) recommended greater investment in education, research, and capacity-building programs for farmers, highlighting the importance of training on regenerative agriculture practices. Additionally, a strong consensus (75%) advocated for increased government engagement in international partnerships to secure accessible climate finance for smallholder farmers. The need for policies that incentivize regenerative agriculture, such as subsidies or technical assistance, was also emphasized by several participants. These recommendations point to the need for a multi-faceted approach to scaling up regenerative agriculture, focusing on education, policy support, and financial incentives to foster wider adoption.

4.2. PRESENTATION OF PARTICIPANTS

The participants in this study consist of 13 key stakeholders involved in climate finance and regenerative agriculture. These participants include representatives from governmental ministries, local delegations, and six NGOs. Below is a brief introduction to the participants:

- Ministry of Environment, Protection of Nature, and Sustainable Development
- Ministry of Agriculture and Rural Development
- National Observatory of Climate Change

- Departmental Delegate of the Ministry of Agriculture and Rural Development (Mbam et Kim)
- Ministry of External Relations
- Ministry of Forest and Wildlife
- Departmental Delegate of the Ministry of Environment, Protection of Nature, and Sustainable Development (Mbam et Kim)
- UNDP (United Nations Development Programme)
- FAO (Food and Agriculture Organization)
- SOCONTUI (Society for Conservation of Nature in Cameroon)
- IDH (Sustainable Trade Initiative)
- JICA (Japan International Cooperation Agency)
- Young Volunteers for the Environment

These stakeholders were interviewed to understand their knowledge and perspectives on climate finance, regenerative agriculture, and the barriers and opportunities within the context of Cameroon, specifically focusing on the Ntui region.

Conclusion

In summary, the analysis of the interviews indicates that while there is a broad awareness of climate finance and regenerative agriculture, barriers such as limited access to funds, bureaucratic challenges, and a lack of local capacity hinder the effectiveness of climate finance mechanisms in promoting regenerative agricultural practices. Recommendations highlight the importance of targeted education, policy reforms, and increased financial support to overcome these challenges and foster a more sustainable agricultural future in regions like Ntui. The findings underscore the need for comprehensive strategies that integrate knowledge, resources, and stakeholder collaboration to drive the transition towards regenerative agriculture.

4.3. PERSPECTIVES

Building on the findings of this study and the data collected from different stakeholders, several perspectives emerge for strengthening the role of climate finance in promoting regenerative agriculture in Ntui. These perspectives revolve around three key actors: the Government, Civil Society/NGOs, and the Population.

1. Government

Government institutions widely recognize the potential of climate finance. About 90% of government officials interviewed highlighted that the lack of a dedicated structure significantly limits access to available funds. They emphasized the need to establish a specialized unit within the Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) and the Ministry of Agriculture and Rural Development (MINADER). This unit would not only design projects in line with international funding criteria (e.g., Green Climate Fund, Adaptation Fund) but also train and support local populations, particularly farmers in Ntui.

Around 80% of officials further suggested that this unit could centralize coordination, simplify administrative procedures, ensure transparency, and provide technical support to local actors seeking to access climate finance. They also stressed the importance of collaborating with climate finance experts to develop technically sound projects aligned with national and international development priorities.

2. Civil Society and NGOs

From the perspective of NGOs and civil society organizations, about 75% of respondents reported that the lack of updated information on funding opportunities is a major barrier. They also noted insufficient coordination with government institutions, which limits the effectiveness of local initiatives.

Approximately 70% of NGOs emphasized their role as information relays, technical advisors, and project incubation supporters. They advocate for stronger partnerships with the government to implement joint capacity-building programs, ensuring funds are used efficiently and that projects remain community-centered.

3. Population (Farmers and Local Communities)

The local population, particularly farmers, expressed strong expectations regarding climate finance. Around 85% of farmers interviewed stated that they were unaware of available climate finance opportunities or the procedures to access them, despite recognizing the importance of regenerative agriculture for soil fertility and resilience against climate shocks.

About 80% of farmers suggested that forming local associations or cooperatives would allow them to work collectively, improve credibility with funders, and facilitate access to funding. Collective organization also provides opportunities to exchange knowledge, experiment with innovative practices, and gradually build local expertise.

Conclusion

These responses highlight a convergence of opinions:

- Government (90%) emphasizes the need for a dedicated climate finance structure.
- NGOs and civil society (75% and 70%) call for better access to information and stronger partnerships with the government.
- The local population (85% of farmers) favors collective organization to improve access to opportunities and benefit from project outcomes.

A coordinated effort among these three actors, anchored by a strong government framework, supported by the technical and advocacy capacities of NGOs, and grounded in organized community participation could transform climate finance into a concrete tool for resilience, food security, and sustainable development in Ntui.

4.4. RECOMMENDATIONS

Education and training can significantly enhance the future of regenerative agriculture in Cameroon. Developing capacity-building programs for farmers will empower them with knowledge about regenerative practices, emphasising the importance of soil health, biodiversity, and ecosystem management. Additionally, launching awareness campaigns will inform local communities about the benefits of regenerative agriculture, fostering a culture of sustainability.

Policy support is also crucial for the growth of regenerative agriculture. Advocating for government incentives, such as financial subsidies for farmers adopting regenerative practices, can facilitate this transition. Furthermore, integrating regenerative agriculture into national agricultural policies and climate action plans will ensure it receives the attention and resources needed for widespread implementation.

Research and development play a pivotal role in advancing regenerative practices. Supporting local research initiatives focused on indigenous practices and crops can help tailor solutions to Cameroon's unique agricultural landscape. Collaborating with academic institutions will also

provide valuable insights into the impacts of regenerative practices on productivity and sustainability.

Community engagement is vital for the successful adoption of regenerative agriculture. Encouraging the formation of farmer cooperatives allows local producers to share resources, knowledge, and market access. Additionally, involving communities in decision-making ensures that practices are culturally relevant and practical.

Financial access is another key component. Facilitating access to microfinance options will enable smallholder farmers to invest in regenerative practices. Improving infrastructure to enhance access to markets, water, seeds, and tools will further support these efforts.

Ecosystem restoration initiatives like reforestation projects can significantly benefit regenerative agriculture. Implementing agroforestry systems that integrate trees within agricultural landscapes will improve soil health and provide additional income sources for farmers.

Monitoring and evaluation are essential for continuously improving regenerative practices. Establishing systems for collecting data on the impacts of these practices on soil health, biodiversity, and crop yields will facilitate adaptive management and ensure that farmers can make informed decisions.

Finally, focusing on climate resilience is essential for future agricultural sustainability. Encouraging the cultivation of drought-resistant crops and implementing efficient water management techniques, such as rainwater harvesting and improved irrigation practices, will help farmers adapt to climate variability. By embracing these strategies, Cameroon can foster a robust regenerative agriculture sector that enhances food security, protects the environment, and supports local communities.

4.5. CHALLENGES

Many difficulties were encountered during the realization of this study. Amongst these are ;

- The poor states of the roads leading to the farmlands, which made the journey long and tiring;

- The difficulty in exchanging during the interviews because of the language which lengthened the duration of interviews. The majority of the rural population were illiterate as such, they had difficulties in understanding the questions they were asked;
- Another difficulty was the unavailability of certain actors, in particular the Regional Delegate of MINADER of the Mbam and Kim and the climate finance expert of the Ministry of Finance to answer the questions because of their multiple occupations.
- Data availability and quality. Accessing reliable and comprehensive data on climate finance allocations, agricultural practices and crop yields was challenging. Data were varying in quality and accuracy, making it difficult to draw valid conclusions.
- Another difficulty was understanding the complexity climate finance. Understanding the various climate finance mechanisms (such as grants, carbon credits and loans) and their applicability to regenerative agriculture can be really intricate and the farmers were hesitating to fully invest in new practices without guaranteed financial returns.
- There was also the problem of limited awareness. Farmers had limited knowledge of available climate finance opportunities and as such made them less engaged thereby affecting their participation.

CONCLUSION

In conclusion, the research underscores the critical role of climate finance in fostering regenerative agriculture in the Ntui district. The study highlights the need for enhanced awareness of climate impacts among local farmers, the utilization of existing climate finance mechanisms, and the exploration of innovative financing models. By addressing these areas, stakeholders can work towards building resilient food systems that mitigate climate change and promote sustainable agricultural practices. This research not only contributes to the academic discourse on climate finance and agriculture but also serves as a practical guide for policymakers and practitioners in the field.

GENERAL CONCLUSION

At the end of my two years of training in Master's "Training, Education and Sustainable Development (FEDD)", the result of my research led to the writing of this thesis. During this breath-taking journey, answers were provided to the major problem of determining how climate

finance can influence the adoption of regenerative agricultural practices in the Ntui Center region of Cameroon. Improving the knowledge and building the capacity of the populations of Ntui with regard to Climate Finance and how the latter can further be used to promote climate friendly agricultural practices such as regenerative agriculture. Indeed, this situation of under-information and lack of capacity are major elements that hinders the effective deployment of climate finance for regenerative agriculture. It constitutes an obstacle to achieving the Sustainable Development Goals (SDGs) which cannot be achieved without transitioning to a more sustainable and less emission agriculture, that ensures access to food and reduces poverty. The long-term work devoted to writing this thesis was thorny, however the fruit of my research significantly helped me to understand the relevance of this study.

Climate finance has been an important element in curbing the effects of climate change for Cameroon and sub-Saharan countries at large. Many researchers have observed that the slow rate of accessibility of climate finance in African countries, has been a hindering factor for many mitigation and adaptability initiatives that would have been put in place to reduce the vulnerability of African communities to the adverse effects of climate change. Therefore, it is of utmost importance to revamp the general system through making information accessible to everyone, capacity building (that is training programs that are developed for local stakeholders on climate finance mechanisms and proposal writing and also through technical assistance by providing support for the preparation of project proposals and understanding financial instruments), simplifying application processes, strengthening Local institutions, innovative financing mechanisms, improving data availability and awareness campaigns.

Concerned with the methodological approach, it is in line with social sciences and several data collection techniques allowed us to collect the necessary information. These are documentary exploitation, questionnaires and interviews through which we obtained all the data analysed in this work which led us to verify our hypotheses. We used the qualitative tool for data collection. We analysed and interpreted our data using the Descriptive analysis. However, we also adopted inferential analyses where we made conclusions about a larger population of Ntui based on the 125 sample. Here, statistical techniques such as hypotheses testing was done to draw conclusions about the views of populations. This analysis shows that the populations of Ntui are unaware of the existence of climate finance and their promotion would be a trigger for their adoption. One of the

obstacles to the non-use of climate finance by the populations of Ntui is due to the fact that the populations are not sufficiently informed of their existence and their lack of capacity. The analysis of our results allowed us to demonstrate that our specific and general hypotheses have been verified and confirmed. We can say in general that informing and building their capacity is essential in the promotion of the use of climate finance because it will allow populations to Identify the funds, understand their objectives and be able to write bankable projects. Thus, we suggest that the public authorities should put a particular emphasis on the popularization of climate finance because many people do not know that there are climate funds that can be used as an alternative to their personal funds. A law should be created that is more specific to the field of climate finance. In terms of proposals, some recommendations were formulated after taken into account the different proposals given by various officials during the interviews and problems posed by the farmers during the survey work. These pertinent remarks coupled with those highlighted in the national determined contribution (NDC), shall give more impetus on how the financial system of the various climate funds can be ameliorated to give access to all, for the promotion and adoption of regenerative agriculture and shall obviously contribute to meet the targets of National Determined Contribution and those of the Sustainable Development Goal no.13 and Goal no.2.

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ANNEXES

Annex 1 : Research Authorization

Annex 2 : Data Collection Tools

Annex 3: Figures

REPUBLIQUE DU CAMEROUN

Paix – Travail – Patrie

UNIVERSITE DE YAOUNDE I

FACULTE DES SCIENCES DE
L'EDUCATION

DEPARTEMENT DE CURRICULA
ET EVALUATION



REPUBLIC OF CAMEROON

Peace – Work – Fatherland

THE UNIVERSITY OF YAOUNDE I

THE FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM
AND EVALUATION

Le Doyen
The Dean

N° 175/24/UYI/FSE/D

AUTORISATION DE STAGE

Je soussigné, **Professeur BELA Cyrille Bienvenu**, Doyen de la Faculté des Sciences de l'Education de l'Université de Yaoundé I, certifie que l'étudiante **MAKEM Yoland**, Matricule **22W3598**, est inscrite en Master II à la Faculté des Sciences de l'Education, Département : **CURRICULA ET EVALUATION**, Spécialité : **FORMATION, EDUCATION ET DEVELOPPEMENT DURABLE**.

L'intéressé doit effectuer son stage en vue de la préparation de son diplôme de Master Professionnel. Elle travaille en codirection avec le **Pr NDJEBAKAL SOUK Emmanuel** et **Pr Didier MULNET**. Son sujet est intitulé: « *Evaluation du rôle du financement climatique sur l'agriculture régénérative au Cameroun : Cas de la zone D'Obala* ».

Je vous saurai gré de bien vouloir la recevoir et mettre à sa disposition toutes les informations susceptibles de l'aider à conduire ses travaux de recherches.

En foi de quoi, cette attestation de stage lui est délivrée pour servir et valoir ce que de droit.

Fait à Yaoundé, le... **2.7. MAI. 2024**



Pour le Doyen et par ordre

Jacques Evouma
Professeur

REPUBLIQUE DU CAMEROUN

PAIX—TRAVAIL—PATRIE

MINISTERE DES ENSEIGNEMENTS
SUPERIEURS

UNIVERSITE DE YAOUNDE 1

FACULTÉ DES SCIENCES ET DE
L'ÉDUCATION



REPUBLIC OF CAMEROON

PEACE—WORK—FATHERLAND

MINISTRY OF HIGHER EDUCATION

UNIVERSITY OF YAOUNDE 1

FACULTY OF SCIENCES AND
EDUCATION

Questionnaire

Genre : Femme

Homme

Niveau d'instruction : Primaire

Secondaire

Supérieure

Tranche d'âge : 15-25

25-35

35-45

45 et plus

Taille du ménage :

Profession :

I. Higher levels of knowledge about innovative mechanisms for regenerative agriculture among stakeholders are associated with increased opportunities for accessing climate finance;

1. Are you aware of climate finance? Yes ☐ No ☐

2. How do you define climate finance?

Funding for actions mitigating climate change from various sources (public, private, alternative) ☐

Funding for building community resilience against climate change from various sources ☐

Financial support for local, national, or transnational climate adaptation and mitigation efforts

☐ all of the above ☐ none of the above ☐ Other (please specify) ☐

3. What problems does climate finance aim to solve?

Deforestation ☐ biodiversity loss ☐ food insecurity ☐

capacity building ☐ all of the above ☐ none of the above ☐

others (please specify) ☐

4. Is climate finance different from public aid? Yes ☐ No ☐

5. What are the sources of climate finance in Cameroon?

Green Climate Fund ☐ Global Environment Facility ☐ Adaptation Fund ☐
 World Bank Climate Investment Fund ☐ Bilateral Aid ☐ Multilateral Development
 Banks ☐ United Nations Agencies ☐ Non- governmental organizations ☐
 all of the above ☐ none of the above ☐ Others (please specify) ☐

6. What are the pathways to accessing these funds?

Direct Access through accredited entities ☐ Indirect Access through national or
 international organizations ☐ Project Proposal Submission ☐ all of the above ☐
 none of the above ☐ Others (please specify) ☐

7. Is everyone eligible to access these funds? Yes ☐ No ☐

8. Are you familiar with regenerative agriculture? Yes ☐ No ☐

9. Is regenerative agriculture important for overcoming carbon emission challenges?

Yes ☐ No ☐

10. Is regenerative agriculture practiced at the national level? Yes ☐ No ☐

11. Where is it practiced in Cameroon? Centre ☐ East ☐ North ☐ South ☐
 West ☐ North West ☐ South West ☐ Far North ☐ Littoral, Adamawa ☐

12. Is it practiced in Ntui? Yes ☐ No ☐

13. If No, are measures being taken to transition from conventional to regenerative agriculture?

Yes ☐ No ☐

14. What crops are involved in regenerative agriculture?

Coffee ☐ Cocoa ☐ Banana/plantains ☐ Maize ☐ Potatoes ☐
 all of the above ☐ none of the above ☐ Others (please specify) ☐

15. What factors can influence the transition to regenerative agriculture?

Financial incentives, Environmental concerns ☐ Market demand ☐ Government
 policies ☐ all of the above ☐ none of the above ☐ Other (please specify) ☐

16. Are you aware of innovative financial mechanisms? Yes ☐ No ☐

17. How do you define innovative financial mechanisms?

Mechanisms for adaptation funding ☐ Mechanisms for mitigation funding, Solutions to
 bridge traditional funding gaps ☐ All of the above ☐ None of the above ☐ Others
 (please specify) ☐

II. Climate finance initiatives positively impact farmers' decisions to adopt regenerative agricultural practices in Ntui, leading to improved climate resilience and reduced emissions ;

1. Are there national accredited entities for receiving these funds? Yes ☐ No ☐
2. What institutional frameworks exist for climate financing?
 National Climate change policy ☐ National Determined Contributions ☐
 Climate Change Action Plan ☐ All of the above ☐ None of the above ☐
 Others (please specify) ☐
3. Has Cameroon benefited from climate finance? Yes ☐ No ☐
 - o If yes, specify the funds.
4. Are there projects in agriculture benefiting from these funds? Yes ☐ No ☐
5. What types of agriculture can benefit from climate finance?
 Sustainable Agriculture ☐ Climate Smart Agriculture ☐ Regenerative Agriculture ☐ all of the above ☐ None of the above ☐ Others (please specify) ☐
6. What is the capacity of regenerative agriculture in reducing vulnerability to climate change? Very strong ☐ Strong ☐ Fairly Weak ☐ Very weak ☐
7. Can regenerative agriculture lead to increased profitability? Yes ☐ No ☐
8. How important are financial innovations for transitioning to regenerative agriculture?
 Very strong ☐ Strong ☐ Fairly ☐ Weak ☐ Very weak ☐

III. The challenges faced in accessing climate finance mechanisms hinder the effectiveness of regenerative agriculture practices, negatively affecting food security in Ntui.

9. What challenges exist in accessing these funds?
 High proportion as climate lending ☐ International resources managed by accredited entities not directly by countries ☐ Lengthy and complex procedures for releasing UNFCCC funds ☐ Resource provisions often require national counterpart mobilization leading to planning constraints ☐ All of the above, None of the above ☐

Others (please specify) ☐

10. What general problems do developing countries face in accessing climate funds?

Large proportion of climate lending ☐

International resources are not directly managed by countries but rather by accredited or implementing entities ☐

Procedures for releasing funds in the mechanisms under the UNFCCC are lengthy and complex and can take some time after project approval ☐

The provisions of resources very often require the mobilization of counterparts at the national level which often results to a resource planning constraint at the national level ☐

All of the above ☐ None of the above ☐ Others (please specify) ☐

11. What particular problems does Cameroon face?

Lengthy and complex procedures for releasing funds under UNFCCC ☐

Resource mobilization requirements create planning constraints at the national level ☐

Challenges in securing private sector involvement ☐ Weak institutional capacity ☐

all of the above ☐ none of the above ☐ Others (please specify) ☐

12. What are your recommendations for the future of regenerative agriculture in Cameroon?

13. What challenges do you foresee in accessing innovative mechanisms?

Lack of information ☐ High costs ☐ Complexity of application processes ☐

All of the above ☐ None of the above ☐ Other (please specify) ☐

14. What role should the government play in promoting innovative financial mechanisms?

Provide funding ☐ create supportive policies ☐ facilitate partnerships ☐

Raise awareness ☐ All of the above ☐ None of the above ☐

Other (please specify) ☐

REPUBLIQUE DU CAMEROUN

PAIX—TRAVAIL—PATRIE

MINISTRE DES ENSEIGNEMENTS
SUPERIEURS

UNIVERSITE DE YAOUNDE 1

FACULTÉ DES SCIENCES ET DE
L'ÉDUCATION



REPUBLIC OF CAMEROON

PEACE—WORK—FATHERLAND

MINISTRY OF HIGHER EDUCATION

UNIVERSITY OF YAOUNDE 1

FACULTY OF SCIENCES AND
EDUCATION

Interview Guide

Survey form on the role of climate finance in fostering Regenerative Agriculture in Ntui in the center region of Cameroon.

I. General information of the respondent

Identification Number.....
Date of Investigation.....
First and Last name of the respondent.....
Administrative Institution,
Sex.....
Function,

HYPOTHESIS H2: HIGHER LEVELS OF KNOWLEDGE ABOUT INNOVATIVE MECHANISMS FOR REGENERATIVE AGRICULTURE AMONG STAKEHOLDERS ARE ASSOCIATED WITH INCREASED OPPORTUNITIES FOR ACCESSING CLIMATE FINANCE.

1. Are you aware of climate finance?
If yes, how do you define climate finance?
2. What problems does climate finance aim to solve?
3. Do you believe climate finance is different from public aid?
4. What are the sources of climate finance available in Cameroon?
5. Is everyone eligible to access these funds?
6. Which financial mechanism is most beneficial for transitioning to regenerative agriculture?
7. Are you familiar with regenerative agriculture ?

8. What crops are involved in regenerative agriculture?
9. What factors can influence the transition to regenerative agriculture?
10. Are you aware of innovative financial mechanisms?
11. How do you define innovative financial mechanisms?

HYPOTHESIS H3: CLIMATE FINANCE INITIATIVES POSITIVELY IMPACT FARMERS' DECISIONS TO ADOPT REGENERATIVE AGRICULTURAL PRACTICES IN NTUI, IMPROVING CLIMATE RESILIENCE AND REDUCING EMISSIONS.

12. What are the pathways to accessing these funds?
13. Is regenerative agriculture important for overcoming carbon emission challenges?
14. Is regenerative agriculture practiced at the national level?
15. Where is regenerative agriculture practiced in Cameroon?
16. Is it practiced in Ntui?

If No, are measures being taken to transition from conventional to regenerative agriculture?

17. Are there national accredited entities for receiving these funds?
18. What institutional frameworks exist for climate financing?
19. Has Cameroon benefited from climate finance?

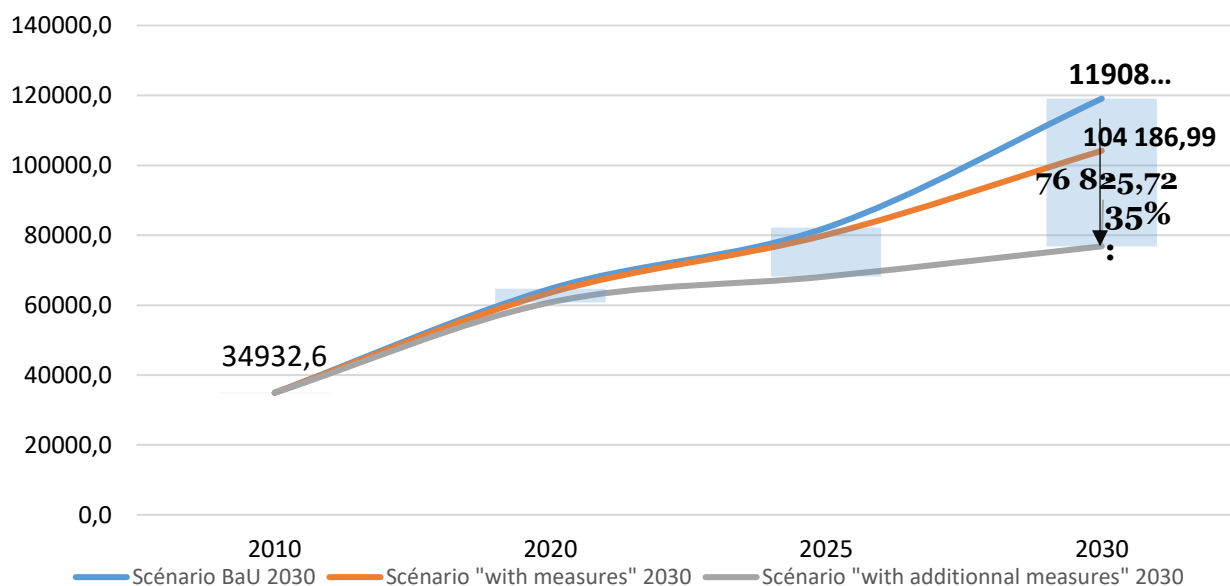
If yes, please specify the funds.

20. Are there agricultural projects benefiting from these funds?
21. What types of agriculture can benefit from climate finance?

HYPOTHESIS H4: THE CHALLENGES FACED IN ACCESSING CLIMATE FINANCE MECHANISMS HINDER THE EFFECTIVENESS OF REGENERATIVE AGRICULTURE PRACTICES, NEGATIVELY AFFECTING FOOD SECURITY IN NTUI.

22. What challenges exist in accessing climate finance?
23. What general problems do developing countries face in accessing climate funds?
24. What particular problems does Cameroon face in accessing climate finance?
25. What are your recommendations for the future of regenerative agriculture in Cameroon?
26. What challenges do you foresee in accessing innovative mechanisms?
27. What role should the government play in promoting innovative financial mechanisms?

Evolutions des émissions de GES du Cameroun suivant les différents scenarii (Gg Eq. CO₂)



The Sustainable Development Goals

