



Côte d'Ivoire and WFP

Women-Adapt: Enhancing the climate change adaptive capacity of smallholder farmer communities in Poro Region, focusing on vulnerable women and youth

Project Feasibility Study

GCF SAP Funding Proposal

July 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
APO	Agricultural Professional Organization
ANADER	Agence Nationale d'Appui au Développement Rural
BNDA	Banque Nationale de Développement Agricole-
BOAD	Banque Ouest Africaine de Développement
BFA	Banque pour le Financement de l'Agriculture
BFGD	Bureau de Formation et de Conseil en Développement
BVP	Bureau de Vente de Producteurs
BICICI	Banque Internationale pour le Commerce et l'Industrie de Cote d'Ivoire
BNI	Banque Nationale d'Investissement
CNCA	Caisse Nationale de Crédit Agricole
CNRA	Centre National de Recherche Agronomique
CRU	Climatic Research Unit
CGAP	Consultative Group to Assist the Poor
C2D	Contrat de Désendettement et de Développement
FSDS	Financial Sector Development Strategy
FCIAD	Fonds Compétitif pour l'Innovation Agricole Durable
FIRCA	Fonds Interprofessionnel pour la Recherche et le Conseil Agricole
GGGI	Global Green Growth Institute
GGW	Green Great Wall
GHG	Greenhouse Gas
IGREENFIN	Inclusive Green Finance (GCF-IFAD Funding Proposal 183)
IWRM	Integrated Water Resources Management
INDC	Intended Nationally Determined Contribution
INADES	Institut Africain de Développement Économique et Social
IPCC	Intergovernmental Panel on Climate Change
IFAD	International Fund for Agricultural Development
IsDB	Islamic Development Bank
MFI	Micro-Finance Institutions
MINEDD	Ministère de l'Environnement et du Développement Durable
MINADER	Ministère de l'Agriculture et du Développement Rural
MFFE	Ministère de la Femme, de la Famille et de l'Enfant
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contributions
NMD	National Meteorological Directorate
NBFI	Non-Bank Financial Institution
NSIA	Nouvelle Société Interafricaine d'Assurance
OCPV	Office d'aide à la commercialisation des produits vivriers
OHADA	Organisation pour l'Harmonisation du Droit des Affaires
PLHIV	People Living with HIV
PLWG	Pregnant and Lactating Women and Girls
PADFA	Programme d'appui au développement des filières agricoles

PADCI	Programme filières agricoles durables de Côte d'Ivoire
PNCC	Programme Nationale Changement Climatique
PNIA	Programme National d'Investissement Agricole
PACIL	Projet d'Appui à la Commercialisation et aux Initiatives Locales
PAHA II	Projet d'Aménagements Hydro-Agricoles dans les Régions du Haut Sassandra et du Fromager II
PRO2M	Projet d'appui au développement des filières Manioc et Maraîchers en Côte d'Ivoire
PAHS	Projet d'Aménagement Hydro agricole de Sangopari
PARFACI	Projet d'Appui à la Relance des Filières Agricoles de Côte d'Ivoire
PAIA-ID	Projet d'Appui aux Infrastructures Agricoles dans la région de l'Indenie Djuablin
PDC-ID	Projet de Développement des Chaines de valeur dans la région de l'Indénié-Djuablin
2PAI-	Projet de Pôle Agro-Industriel dans la région du Bélier
PPCA	Projet de Promotion de la Compétitivité de la Chaine de valeur de l'Anacarde
PSNDEA	Projet de Solutions Numériques pour le Désenclavement des zones rurales et l'e-Agriculture
PROMIRE	Promoting zero-deforestation cocoa production for reducing emissions in Côte d'Ivoire
SAP	Simplified Approval Process
SODEXAM	Société d'Exploitation et de Développement Aéroportuaire, Aéronautique et Météorologique
SGBCI	Société Générale de Banque de Cote d'ivoire
UEA	University of East Anglia
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USSD	Unstructured Supplementary Service Data
WSC	Water and Soil Conservation
WAAPP	West African Agricultural Productivity Programme
WA BiCC	West Africa Biodiversity and Climate Change Program
WFP	World Food Programme

PART I: CÔTE D'IVOIRE IN A CHANGING CLIMATE

1. Context

Despite its marginal contribution to global warming, Côte d'Ivoire is highly vulnerable to climate change hazards, in particular droughts, floods, interannual rainfall variability and increasing coastal erosion. According to climate projections, the country would be confronted by 2050 with the combined effect of rising temperatures (from +1.3 to +2.3°C)¹, variation in rainfall (from -2 to +5%)² and rising sea levels (up to 1.2 meters)³. Climate change impacts will have severe repercussions to the country's sustainable development goals.

Moreover, economic development and climate are inextricably linked and without adequate measures, climate change and variability will jeopardize the hard-won progress made in recent decades and could push millions of Ivorians into poverty. According to the Intergovernmental Panel on Climate Change (IPCC), climate change could reduce the Gross Domestic Product (GDP) of Africa as a whole by 2-4% GDP by 2040 and 10-25% by 2100⁴. For Côte d'Ivoire, this would correspond to an equivalent loss of francs CFA (CFAF) 380 to 770 billion (approx. between US\$ 701 to 1,421 million by using exchange rate of 1 USD = 541.85 XOF, 01 May 2021).

These losses would be divided between the agricultural sector, human and natural resource's capital and socio-economic infrastructures. More seriously, climate change could push an additional 2% to 6% more households into extreme poverty by 2030⁵. For Côte d'Ivoire, this would correspond to nearly 1 million additional people in extreme poverty (people living on less than \$1.90 a day⁶), on top of the 6.6 million poor people today. Socio-economic impacts caused by the COVID-19 pandemic could further amplify and extend the poverty gap.

To respond to these concerns, the Government of Côte d'Ivoire strives to implement measures that will improve the adaptation of vulnerable communities, especially smallholder farmers who have limited resources available to cope with the adverse effects of climate change.

To address the needs of rural communities in one of the most vulnerable areas to climate change, the Poro Region, the Government of Côte d'Ivoire and the World Food Programme (WFP) have designed and developed a Funding Proposal that will be submitted to the Green Climate Fund (GCF) through the Simplified Approval Process (SAP). The proposal is aligned with the GCF Country Programme, the National Climate Change Strategy, the National Development Programme, the National Agricultural Investment Programme, and the Country's international commitments like the Nationally Determined Contribution and the Third National Communication. The Global Green Growth Institute (GGGI) has provided support in the development of the initial drafts of the Concept Note and the Pre-Feasibility Study. GGGI will be also involved in supporting the

¹ All projections are based on the results of the global model climate and sea level change projections, which are the base of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5 - www.ipcc.ch) and the climate analysis carried out by the WFP Vulnerability Analysis and Mapping (VAM) Department.

² Ibidem

³ Ibidem

⁴ According to the Intergovernmental Panel on Climate Change (IPCC, 2007)

⁵ Ibidem

⁶ World Bank, 2020

implementation of some activities along with MINADER and WFP, the designated Executing Entities.

2. Country Profile

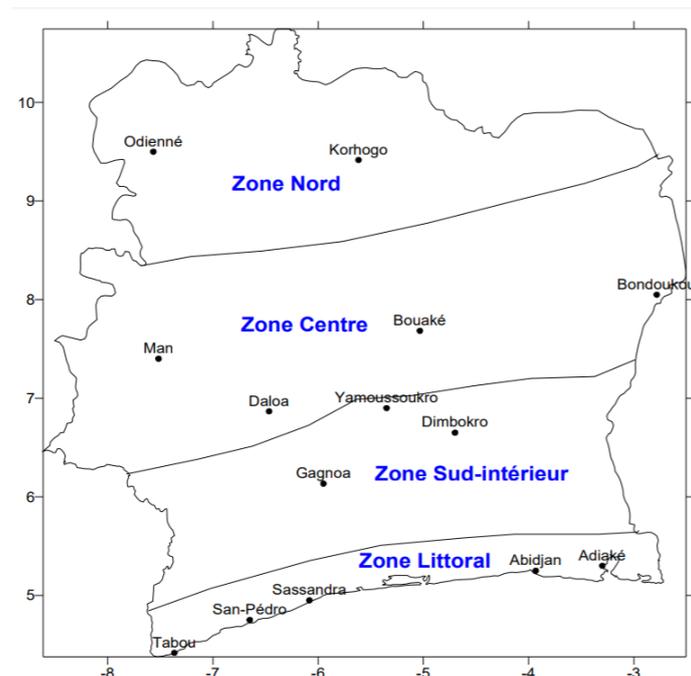
2.1 Overview

2.1.1 Geography

Located in West Africa along the Gulf of Guinea, Côte d'Ivoire covers an area of 322 462 km². The country is bordered by Mali and Burkina Faso in the north, the Atlantic Ocean in the south, Ghana in the east, Guinea and Liberia in the west. The relatively uneven terrain is made up of plains in the south, upper plateaux in the center, and mountains in the north and west, with the highest point being Mount Nimba (1753 meters).

The climate is generally warm and humid, ranging from equatorial in the southern coasts to tropical in the centre and semiarid in the north. Côte d'Ivoire is divided into four large agro-climatic/agro-ecological zones based on biophysical and socioeconomic characteristics. The zones include the Zone Nord, the Zone Centre, the Zone sud-Intérieur and the Zone Littoral (figure 1).

Figure 1. Agro-ecological zones in Côte d'Ivoire



Source: <http://www.wamis.org/agm/meetings/etdret09/WOS2-Coulibaly.pdf>

The Zone Nord area is characterized by a single rainy season whose annual height is between 1000 mm and 1400 mm, concentrated from July to September. The Zone Centre shows a rainfall of between 1000 and 1600 mm, thus allowing two annual crop cycles. The Zone Sud-Intérieur is characterized by rainfall ranging between 1200 and 1600 with two rainy seasons, with the main wet season starting in December and the smaller one from August to October, and two dry seasons. Finally, the Zone Littoral is greater than 1600 mm, again with two rainy seasons and two dry

seasons. Overall, there are three seasons in total: warm and dry (November to March), hot and dry (March to May), and hot and wet (June to October), seasons are however gradually shifting because of climate change.

The country suffers from high rates of deforestation estimated at a rate of 200 000 hectares of loss per year⁷. Between the early 1960s and now, the forest cover of Côte d'Ivoire has declined from 16 million hectares to 2 million hectares. With the current rate of deforestation, Côte d'Ivoire is expected to lose all its national forest by 2034. The main factors of deforestation remain the exploitation of the forest for agricultural expansion, mining, timber and firewood energy (e.g. charcoal used by approximately 47% of the urban population)⁸, as well as bush fires.

2.1.2 Administrative system

The administrative system in Côte d'Ivoire is composed of 31 regions grouped into 12 districts, in addition to 2 autonomous districts which are Abidjan and the capital Yamoussoukro. Districts are considered as decentralized territorial entities whose mission is to lead major projects, superregional planning and to bring out the regions' economic potential. The different districts and their regions are listed in the following table.

Table 1. Districts and regions in Côte d'Ivoire.

Districts and regions in Côte d'Ivoire	
<i>Districts</i>	<i>Regions</i>
Lacs	Bélier, Iffou, N'zi, Moronou
Comoé	Indenie-Djuablin, Sud-Comoé
Denguélé	Folon, Kabadougou
Gôh-Djiboua	Gôh, Lôh-Djiboua
Lagunes	Agnéby-Tiassa, Mé, Grands ponts
Montagnes	Tonkpi, Cavally
Sassandra-Marahoué	Haut-Sassandra, Marahoué
Savanes	Poro, Tchologo, Bagoue
Bas-Sassandra	Nawa, San-Pedro, Gbôklè
Vallée du Bandaman	Hambol, Gbèkè
Woroba	Béré, Bafing, Worodougou
Zanzan	Boukani
<i>Abidjan</i>	<i>Abidjan</i>
<i>Yamoussoukro</i>	<i>Yamoussoukro</i>

Source: Third National Communication to the UNFCCC, 2017

⁷ Zero hunger strategic review for Cote d'Ivoire (2018).

⁸ BNEDT. 2015. Gestion durable des ressources forestières. Rapport pour les Etats généraux de la forêt, de la faune et des ressources en eau, 31 Juillet 2015 ; 89p

Figure 2. Administrative map of Côte d'Ivoire



2.1.3 Rural and urban development

In 2019, Côte d'Ivoire ranked 165th out of 189 on the United Nations Human Development Index. It has a population of 26.3 million people, of which 48.4% are female, 60% are under 25 and 46% live below the poverty line⁹. The 2015 national household survey carried out by the National Institute of Statistics, shows that poverty is more acute in rural areas (56.8%) than in cities (35.9%), with rates that tend to increase from South to North and from East to West, totaling to 6.6 million poor people¹⁰. Poverty takes its toll on the country in many ways. For instance, Côte d'Ivoire as

⁹ National Institute of Statistics, 2015

¹⁰ World Bank, 2020

one of the highest rates of HIV/AIDS in West Africa. The collapse of health facilities in the north, as a result of years of conflict, has made the situation worse. The disease has affected thousands of families, and as a result, many children are orphaned and vulnerable. Many impoverished families cannot afford antiretroviral therapy. Poverty rates are typically higher in the north, where smallholder farmers produce cereals, yams, cotton and livestock¹¹. The high level of poverty in the northern rural areas is deeply rooted in the poor infrastructure and degraded facilities causing marginal rural development. In fact, the infrastructure gap between the more affluent urban areas and the poor rural areas is compelling: 33% of the urban population has access to improved sanitation facilities compared to 10% of the rural population; 88% of the urban population has access to electricity compared to 29% of the rural population.¹² For telecommunications, 16% of households in urban areas has access to the internet compared to only 2% in rural areas.¹³ Although the 3G network covered 89% of the population in 2018, only around 23% were mobile internet users mostly due to the inability to afford smartphones and low digital literacy rates.¹⁴ In 2012, 80% of people in Côte d'Ivoire reported having access to water infrastructures, with a higher percentage of access in the southern urban area (92%) compared to the northern rural area (68%). This is due to the limited maintenance of water facilities, mostly in the north, and the increasing uncontrolled urbanization which is adding pressure to the country water availability with infrastructures that cannot cope.

2.1.4 Economy

Côte d'Ivoire has enjoyed steady economic growth since the end of the 2011 post-electoral crisis. The average income per capita has increased by almost 49%, going from US\$1.131 in 2011 to US\$1.692.5 in 2018, contributing to place Côte d'Ivoire as a lower middle-income country with an annual GDP growth rate of 7.5%¹⁵. However, this has not translated into inclusive socio-economic development for most of the population and many differences remain between the Northern and the Southern part of the country.

Since 2014, an increase in subsistence farming has led to a 12% growth of the primary sector of Côte d'Ivoire, contributing to 20.1% of GDP¹⁶. The secondary sector, which accounts for 26.6% of the GDP, reported a total of 3.7% growth thanks to the increase in the activities related to building constructions and public works (15.5% growth), as well as food industry (8.6% growth). Finally, the tertiary sector, which is contributing to 53.3% of the GDP, reported a 10.2 % growth since 2014, mainly thanks to the growth in retail trade (11.1%) and transportation (9.7%)¹⁷.

The agricultural sector (including crops, livestock and fisheries) employs nearly 70% of the country's economically active population and accounts for over 76% of export earnings¹⁸. However, despite its critical importance to the economy, the sector has had only a modest impact

¹¹ Survey Poverty in Côte d'Ivoire, Borgen Magazine 2017

¹² World Bank, World Development Indicators (most recent year is 2015 for sanitations facilities – cf. Table 3.12 – and 2012 for electricity).

¹³ Gallup Survey, 2015

¹⁴ <https://oxfordbusinessgroup.com/overview/getting-connected-rising-mobile-penetration-and-headline-sector-growth-speed-economic-development>

¹⁵ The Economist Intelligence Unit: Côte d'Ivoire Country Report, 2018.

¹⁶ World Factbook, 2020

¹⁷ Third National Communications to the UNFCCC, 2018

¹⁸ World Bank, 2017.

on income growth and poverty reduction in rural areas. 90% of active population in agriculture is constituted by women. Generally, women grow crops for self-support such as cassava, maize, banana, and vegetables. Men grow crops for commercial purposes, such as cacao, coffee, palm and rubber, as they own sufficient land. Women do not own any land or resources, and they do not have money to buy the equipment to process the agricultural products. Furthermore, fewer literacy rate compared with men, they have difficulty in accessing micro-credits or small loans.¹⁹ Agriculture– and especially primary commodities – is highly sensitive to fluctuations in international prices which in turn have an adverse and volatile impact on revenues for rural households. As for fishing, while it represented only 0.9% of GDP in 2014, it directly generated 100 000 jobs and indirectly supported 700 000 people. The forest industry, once of the most important in Africa, is rapidly shrinking and survives essentially by targeting gallery forests and trees outside domain forests. It employs 10 000 workers and contributes to an estimated 1.7% of GDP.

The industry sector employs 13% of the population in Côte d’Ivoire²⁰ of which 32% are women²¹. Mineral extraction contributes 0.2% of GDP and employs between 5000 and 8000 people. Mining and oil production are expanding thanks to new drilling sites put in place throughout the country.

The impact of COVID-19 to the Ivorian economy has been remarkable by cutting down GDP and downsizing projections for economic growth in 2020. Indeed, prior to the COVID-19 health situation, the outlook remained favorable, with a projected growth of about 7% like estimates of 2019. This figure has been revised downwards, following the slowdown in exports and the introduction of COVID-19 containment measures, which put a brake on the economy activity in the first half of 2020. GDP growth is now expected to be around 1.8%²².

2.2 Status of Food and Nutrition Security

The country’s Global Hunger Index score fell from 32.6 to 24.9 between 2000 and 2019, but the current score is still classified as “serious”.²³ In fact, an estimated 10.8% of the people were food insecure in 2018²⁴ and especially the severe form of food insecurity has disappeared in almost all regions. Food insecurity affects more women-headed households and agricultural households (14.3%), particularly in the north, northeast and west, whose productivity and production are constrained by climate shocks, unsustainable agricultural practices, environmental degradation, high post-harvest losses (as high as 40%). Access to food is constrained by limited infrastructure, deficient market facilities, and poor dietary diversity²⁵.

¹⁹ Country Gender profile, JICA, 2013 and UNDP 2020

²⁰ World Bank, 2017

²¹ <http://www.cnpc-mcc.ci/index.php/fr/actualites-media/news/item/236-evaluation-de-la-participation-economique-des-femmes-en-cote-d-ivoire>

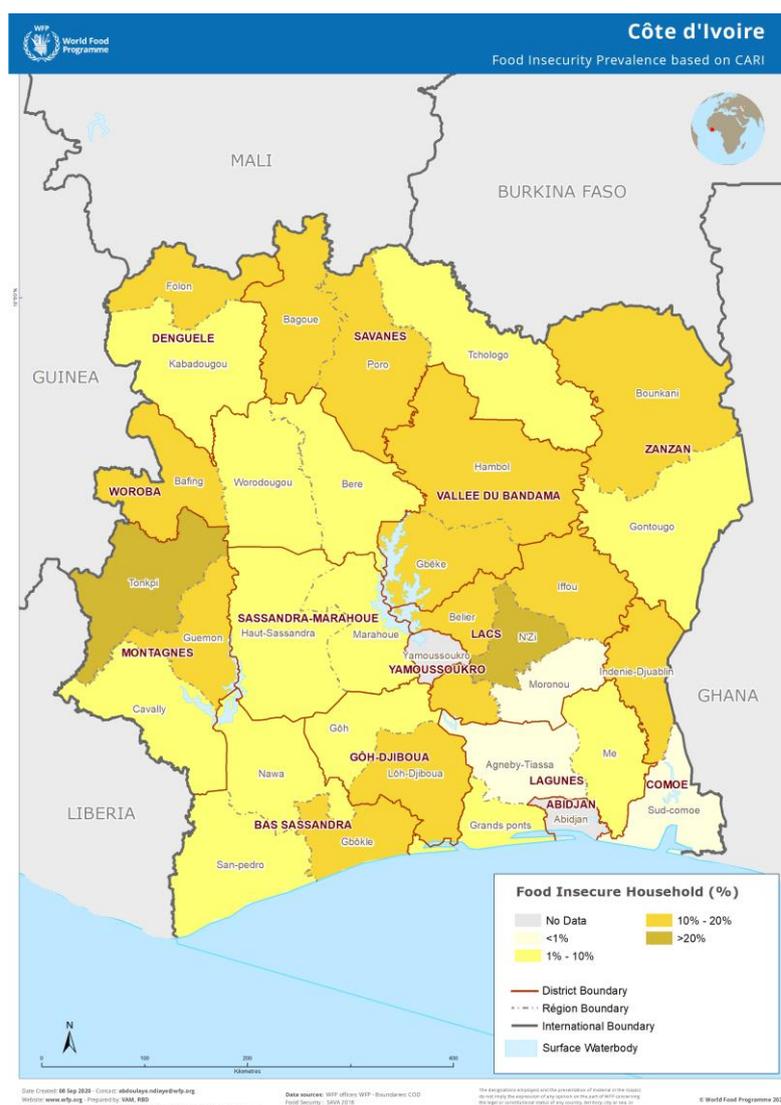
²² “Taking Stock and Looking Ahead: Côte d’Ivoire and the COVID-19 Pandemic”, World Bank, 2020

²³ <https://www.globalhungerindex.org/pdf/en/2019/Ivory-Coast.pdf>

²⁴ SAV. 2018. Agricultural Season and Food Vulnerability Monitoring (Suivi de la Saison Agricole et de la Vulnérabilité Alimentaire).

²⁵ Country Strategic Plan 2019 – 2023, World Food Programme

Figure 3. Food insecurity values per region



Source: Transforming Rural Communities Strategy Document from WFP, 2020

Nationally, 30% of children under five suffer from chronic malnutrition. Malnutrition also affects pregnant and lactating women and girls (PLWG), people living with HIV (PLHIV), orphans and food-insecure vulnerable children. 16.7% of children had low birth weight in 2016²⁶. Stunting rates stand at 29.6% in the north and 25.6% in the west, although overall rates decreased from 29.8% in 2012 to 21.6% in 2016²⁷. The Government has given high priority to nutrition. It is committed to achieving the goals of the Decade of Action on Nutrition and it joined the Scaling Up movement in 2013. The Government created a National Nutrition Council in 2016 led by the Prime Minister to ensure coordination of nutrition activities at the highest level.

²⁶ Ministry of Planning and Development. 2017. The situation of women and children in Côte d'Ivoire (La situation des femmes et des enfants en Côte d'Ivoire) (2016).

²⁷ Ministry of Health. Demographic and Health Survey Multiple Indicator Cluster Survey (Enquête démographique et desSanté et à indicateurs multiples) (2011–2012).

The COVID-19 health situation and the sanitary measures imposed by the Government to contain the spread of the disease, impacted negatively on the economic activities as well as on the livelihoods of households. Over 80% of households' jobs have been affected by containment measures, increasing up to 86% for the private sector²⁸. In densely populated coastal areas, schools, markets and businesses had to close temporarily and employment rate dropped, with the informal sector being more affected. However, 94% of households in District of Abidjan reported an acceptable level of food consumption. On the other hand, marginal communes and poor households were the most affected²⁹. In the rest of the country, the crisis spread uncertainty about business and livelihoods activities with reduced food consumption and limited or nil market and employment demand. The northern regions and urban areas have been more exposed to food insecurity, malnutrition and uncertain livelihoods³⁰.

2.3 Agricultural Sector

Endowed with favorable agroecological conditions and abundant water resources, Côte d'Ivoire has the potential to become self-sufficient in meeting national food crop needs. Côte d'Ivoire has a total cultivable land area of 17 million hectares, corresponding to 53% of the country's total area. The potential for irrigable land is estimated at 430,685 hectares. However, even though the country abounds in quantities of surface water, only 56,560 hectares are developed, and 32,484 hectares exploited.³¹

Côte d'Ivoire is at the forefront of Africa for many agricultural export-oriented cash crops such as cocoa, coffee, rubber, palm oil, banana, pineapple, cotton, coconut, and cola nut. It is the world's largest producer and exporter of cocoa beans and cashew nuts, with other expanding export productions, including coffee, rubber, palm oil and mango. Commercial agriculture is mainly practiced in the Southern agroecological zone where the humid and dense forest is located making half of the country's total area. This is the most populated area and attracts large flows of both internal and external migrants. Cash crops benefit from the bulk of agricultural investment and usually involve more sophisticated production techniques. Cash crops suffer from limited value chain integration among farmers, intermediaries, and processors, which prevents the country from increasing downstream transformation of its food production. Cash crop agriculture is potentially lucrative, but it also entails considerable risk, as volatile international commodity markets determine export prices.

Staple food production is practiced across the country for domestic consumption. Maize, yams, pigeon peas and groundnuts are produced and consumed predominantly in the northern regions, yam in the center and cassava and plantain in the south. Rice is consumed in all regions.

The main food production systems are: (i) rain-fed and irrigated systems for rice; (ii) the peri-urban system for vegetable market gardening; (iii) the fallow system for yam and, incidentally, cassava; (iv) the rain-fed agriculture-livestock system for cereals, mainly maize and cattle breeding.

²⁸ COVID-19 Household Survey, UNDP, 2020

²⁹ COVID-19 Food Security Baseline Assessment in Abidjan, WFP 2020

³⁰ Economic impacts of COVID-19 in Côte d'Ivoire, IPA 2020

³¹ Recensement Des Exploitants Et Exploitations Agricoles (REEA) 2015/2016

Over 90% of farmers in Côte d'Ivoire are smallholders with less than 4 ha of land for 7.1 household members³². About 22% of rural households are headed by women, mostly between the age of 36 to 40³³. Around 59% of farm parcels is dedicated to staple production whereas 63% is oriented towards agroindustry or export. Most of the farmers are illiterate and rely on traditional, manual, small-scale rainfed agriculture for their livelihoods. Food crops (maize, rice, yams, groundnuts) and cotton are the main crops of the savannah region in the north, where farms average only 3.5 hectares, reflecting higher labor requirements for the crops grown and the difficulty of attracting seasonal labor³⁴. Small-scale, land extensive, low-input, low-output farming is heavily impacted by climate change hazards. The rural population in the north is mostly affected, since rainfall is more erratic and the potential for improving production and productivity, particularly for food crops and livestock, has not been properly exploited. Staple food production receives little support from either the public or private sectors (except for rice). Despite that, the relatively strong performance of the food crop subsector over the last few years has enabled the country to become self-sufficient in most key staple crops (except for wheat, rice and dairy)³⁵.

About 42% of farms have less than 1 ha and use 4.7% of the total national farmed area; 24% of farms have more than 5 ha and use 74% of the area. About 50% of food farms produce mainly for their own needs and 50% can generate surpluses for markets.³⁶

The agriculture sector in Côte d'Ivoire is confronted by several environmental and natural resource management challenges which include³⁷: (i) the decreasing trends in precipitation during the main rainy season from June to October registered over 1951-2000 and more frequent and intense extreme weather events, such as floods and droughts, linked to a changing climate³⁸ (ii) persistence of extensive shifting farming, based on slash-and-burn; (iii) a practice of bush fires; (iv) severe deforestation for timber and firewood causing also soil erosion and land degradation and (v) a disruption of ecological balances and fragmentation of the landscape caused by deforestation, mining and encroachment due to population growth.

In terms of modernization, the rates of agricultural equipment and adoption of modern production techniques remain very low. Agricultural mechanization is currently limited to a few sectoral areas and excludes most farmers. As a result, the country's agriculture remains largely extensive and shifting, and is characterized by low productivity, and an unfavorable impact on the environment. In the northern regions, weak infrastructure is also a limiting factor for the renovation of the agriculture sector. In particular, production, processing and marketing facilities are insufficient or obsolete.

In addition, food production is often neglected in agricultural research and sector development strategies, resulting in small-scale, traditional, and mostly informal agriculture. In fact, it is mainly driven by an aging rural population, little trained in modern production techniques that use family work force and rudimentary tools. A general concern remains in the poorly organized food value chains and post-harvest losses that are as high as 40% for major staples and can range from 27% to

³² National Census (REEA), 2015

³³ FAO synthesis of REEA results, 2017

³⁴ Country Profile Côte d'Ivoire, LandLinks report, July 2017

³⁵ World Bank, Digital Solutions for Sustainable Development (P160418)

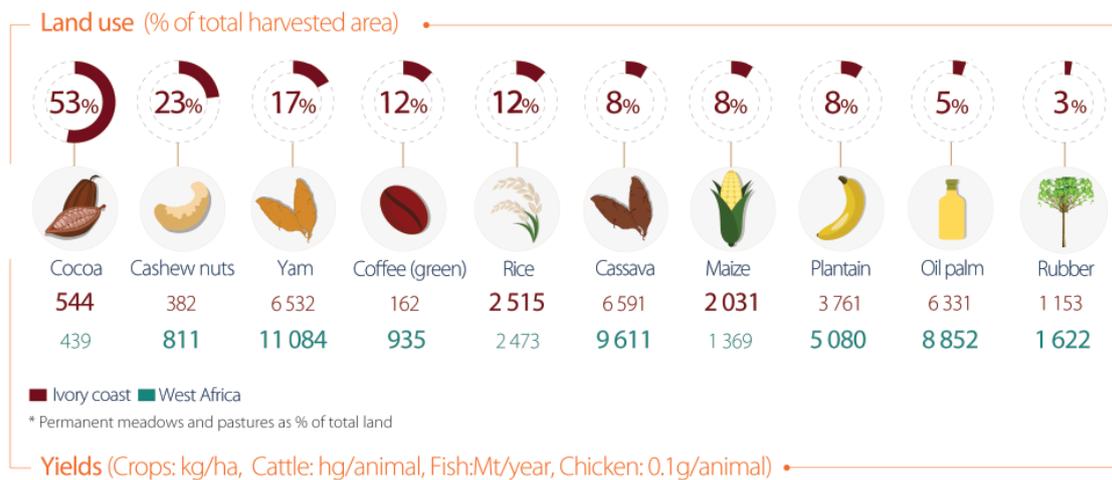
³⁶ Côte d'Ivoire "Zero Hunger" National Strategic Review

³⁷ DJE. K.B. 2014. Document de stratégie du Programme National Changement Climatique (2015-2020). 84 pages + Annexes

³⁸ <https://climateknowledgeportal.worldbank.org/country/cote-divoire>

50% for tubers and bananas. For cereals, post-harvest losses sometimes reach 16%³⁹. Nevertheless, prices of food crops are less impacted by international price volatility and compared to cash crops often represent greater economic security but tend to offer more limited returns.

Figure 4. Main Food Security Production systems in Côte d'Ivoire



Source: *Climate-Smart Agriculture in Côte d'Ivoire (2018)*, FAO

Yam is mainly produced in the northern part of the country and contributes about 4.7% of GDP. Yam also provides about 510 Kcal/day/inhabitant, making it the second energy source just after rice. Rice is produced in the country under three production systems (rainfed, lowland and irrigated) and contributes 1.72% of the agriculture GDP. Plantain is produced mainly for the domestic market and normally grown in association with coffee and cocoa. Cassava is grown on 4/5 of the national territory, but it is the forest region which provides most of the production. Maize is mainly grown in the northern regions. Perennial crop-based systems include cocoa, cashew nut, coffee, rubber and palm tree-based systems. Cocoa is mainly produced in the Zone Littoral and constitutes the pillar of the Ivorian economy contributing about 15% of GDP in 2019⁴⁰. Cashew is mostly cultivated in the Zone Nord of the country and it contributes 1.3% of GDP⁴¹. Cashew production in Côte d'Ivoire increased by 40% from 2009 to 2013 placing the country as the second largest producer in the world⁴².

The issue of land ownership and tenure rights remains a major concern in Côte d'Ivoire. The relationship between ethnic Fulani (mostly foreign) pastoralists and the sedentary Sénoufo farmers of the savannah region of northern Côte d'Ivoire is in the process of transformation as land available for grazing becomes scarcer, as farmers increasingly turn to tree crops such as mangoes and cashews to boost their income. Traditionally, transhumant pastoralists have been allowed to roam freely over harvested and fallow fields where their cattle grazed crop residues and grass. The land benefitted from the application of manure, and the Fulani herders also sometimes cared for cattle owned by local farmers⁴³. As competition for land increases as well as climate shocks, however,

³⁹ Climate-Smart Agriculture in Côte d'Ivoire (2018), FAO

⁴⁰ BAD, 2020. Initiative de financement à long terme en Côte d'Ivoire Rapport du diagnostic pays / Septembre 2019

⁴¹ Ibidem

⁴² Ibidem

⁴³ Country Profile Côte d'Ivoire, LandLinks report, July 2017

local farmers are beginning to institute grazing fees or trying to prohibit the passage of livestock in the farms with associated tensions and conflicts. In addition, problems of access to land tenure, especially for women and youths, are still factors of social tensions that undermine national reconciliation and the revival of economic activities.

Poor access to good quality inputs, including seeds and breeding materials, water and energy needs, access to credits and markets, continues to have a negative impact on the productivity and incomes of smallholder producers. In fact, farmers have limited access to agricultural inputs, only using on average 8 kg of fertilizer per hectare at national level which marginally exceeds the 6 kg per hectare corresponding to the amount used in sub-Saharan Africa⁴⁴.

The agricultural sector is mainly financed by international cooperation projects through grants and loans and government programs. Between September 2012 and December 2015, out of the total CFA 1,294 billion (US\$ 2.31 billion) of investments mobilized, 61.1% came from donors ("technical and financial partners"), 21.7% from the private sector and 17.2% from the State.

Programme National d'Investissement Agricole De Deuxieme Generation (PNIA II) will require a total investment of CFAF 12,361 billion (US\$ 22.81 billion), i.e. an average of CFAF 1,120 billion (US\$ 2.0 billion) per year, including CFAF 728 billion (US\$ 1.34 billion) of private investment (65%) and CFAF 392 billion (US\$ 0.72 billion) of public investment (35%)⁴⁵.

The forestry sector is also economically very important and represents a valuable natural capital. The forests are mostly owned by the State with barely a 2% belonging to private owners⁴⁶. The high deforestation rates, at around 3% annually, are mainly due to agriculture, cocoa production in the South, replacing natural evergreen forests with open shaded production systems.

In the Southern regions where the majority of naturally regenerated evergreen secondary forests are located, extensive cocoa production and lumber supply for densely populated coastal areas represent a big threat to forested ecosystems. The Northern regions are mostly characterized by extensive savannah where trees are scattered or distributed along the river edges. They have been impacted by expansion of staple crop production, gold mining, illegal logging for charcoal and firewood and in some cases for timber and wood construction. In the Northern regions, deforestation is significant and has seriously contributed to and amplified the impacts of climate change. As result, microclimate is altered particularly in the deforested hilly plains and in the water catchment areas where effects of droughts and shifting seasonal patterns cause less favorable to secure a sufficient food production.

Encroachment due to demographic growth is also an important cause of deforestation all over the country.

Côte d'Ivoire has made strong commitments since 2014 to decouple agricultural production from deforestation and restore forest cover to 20% of the territory by 2030, from the current 11%. These commitments were first integrated into the country's National REDD+ Strategy, adopted in 2017.

⁴⁴ Ibidem

⁴⁵ Programme National d'Investissement Agricole II (2017 – 2025)

⁴⁶ Timber trade portal, 2020

The strategy articulates the country's multisectoral response to boost forest restoration and zero-deforestation agriculture.⁴⁷

The impact of COVID-19 pandemics in the agricultural sector in Côte d'Ivoire has been significant, affecting food security and agribusiness development. Major value chains have been disrupted along with staple food production and distribution. Urban areas have been the most affected for being cut off from food production zones due to sanitary travel restrictions. However, the situation in Côte d'Ivoire is gradually recovering and markets are getting restocked with local fresh products whereas imported supplies remain limited due to international travel restrictions.⁴⁸ Because of non-intensive crop farming with limited use of inputs, drop of chemicals price, availability of workforce and local food consumption with limited movements to the southern coastal areas, Poro region is recently experiencing better access and availability of local food produces.

2.4. Banking, Financial Services and Financial Inclusion

Conventional banks, Microfinance Institutions, financial services offered by mobile operators, as well as village tontines, offer financing opportunities to the rural world. In the past, the government set up several institutions to collect funds and to grant loans to farmers in rural area. However, these institutions have experienced successive bankruptcies due to high deficits, low level of reimbursement and mismanagement and governance.⁴⁹ These are the specific cases, among others, of: Caisse Nationale de Crédit Agricole (CNCA, 1959-1968); Banque Nationale de Développement Agricole (BNDA, 1969-1991) and Banque pour le Financement de l'Agriculture (BFA, 2004-2014).

Currently, the banking sector consists of over 25 commercial banks with about 600 bank branches and 930 ATMs, and total assets worth over \$9 billion. In addition, the microfinance sector consists of 50 institutions with 375 branches and total assets over \$64 million at the end of 2017 (see table on microfinance in annex 7). The sector suffered from the political crisis and from structural governance issues that resulted in a continued decrease of the number of licensed institutions from 92 in 2006 to 50 in 2018. While the number of traditional financial cooperatives registered a dramatic decline from 90 in 2006 to 34 in 2018, the number of limited companies grew from two to 16 in the same period.

According to the Financial Inclusion Insights⁵⁰, only 14% of adults who borrowed reported taking loans from banks; 2% borrowed from microfinance institutions (MFIs). These results suggest that access to credit from formal institutions is very limited in Côte d'Ivoire. Farmers, mostly smallholders, have poor access to credit and finances. Agricultural loans for these smallholders continue to be viewed as very risky by banks. This is because private banks are reluctant to provide loans to rural small-scale farmers as they see them as cumulating too many risks: low levels of capitalization, unstable revenue flows, lack of formal credit history, difficulty in evaluating small

⁴⁷ EU REDD and Global forest Watch portals, 2020

⁴⁸ Covid-19 and food security, CIRAD, 2020

⁴⁹ Cote d'Ivoire " Zero Hunger" National Strategic Review,

⁵⁰ Côte D'ivoire Analytical Report Fieldwork Conducted August - October 2017

farmers' repayment capacity, lack of collateral such as titled land, the influence of exogenous factors such as weather conditions, and the limited legal avenues for enforcing contracts.

Where credit is available, interest rates are often too high compared to the average rate of return of farmers' investments. This translates into a low bank account ownership rate and a low percentage of adults having the possibility to benefit from a mortgage.⁵¹

In 2014, the Government of Côte d'Ivoire, in partnership with the World Bank and the International Monetary Fund, formulated the Financial Sector Development Strategy (FSDS). The purpose of FSDS was to address obstacles to financial inclusion and promote a greater role for the financial sector in promoting growth. To promote financial inclusion, some of the items included in the FSDS are: restructuring public banks, promoting transparency of financial information, deepening the financial market by diversifying the capital market, increasing the professionalism of the microfinance sector, and broadening access to microcredits and digitalized financial services.

Since 2010, telephone companies such as Moov, Mobile Telephone Network (MTN) and Orange have facilitated access to financial services by launching the Mobile Money services and develop e-payment solutions. For instance, Advans Côte d'Ivoire⁵² in collaboration with Consultative Group to Assist the Poor (CGAP) and in partnership with MTN, a Mobile Network Operator (MNO), identified branchless banking solutions for cocoa farmers, and offered farmers a remunerated digital savings account using a Unstructured Supplementary Service Data (USSD) channel that is accessible on all phones and easily usable by all farmers. Other examples of the uptake of e-payments include using mobile money for payments for solar kits provided to rural residence to generate electricity.

Financial inclusion is on the rise with mobile money. In 2017, two in five adults (40%) were financially included via an account registered in their name with a mobile money service, bank, and/or Nonbank Financial Institution (NBFi). A smaller proportion of women (31%) than men (50%) were financially included. Moreover, the prevalence of financial inclusion among urban adults (53%) was nearly double that of rural adults (27%). Financial inclusion was driven primarily by mobile money services; only 2% of adults who were financially included did not have a mobile money account⁵³.

Except for a select few (Advans and Baobab), microfinance institutions still struggle to adopt and deploy new digital delivery channels to reach unbanked segments of the population. Advans and Baobab offer innovative products for the rural world. Indeed, they promote the financial inclusion of these populations through the digitalization of traditional tontines⁵⁴. Both offer a similar suite of digitalized financial services such as savings schemes, micro-credits, loans and risk transfer mechanism (micro-insurances) through an extensive network of service providers dispersed in the country⁵⁵.

⁵¹ World Bank, Digital Solutions for Sustainable Development (P160418)

⁵² Advans provides credit and savings products and a range of financial services tailored to entrepreneurs, traders, artisans and their families, and small and medium enterprises

⁵³ Ibidem

⁵⁴ <https://www.advansgroup.com/media/news/savings-and-loans-for-women-in-rural-areas/>

⁵⁵ <https://baobabgroup.com/ci/> - <https://www.advanscotedivoire.com>

Microinsurance products have existed in Cote d'Ivoire since 1993. Sunu Insurance is the pioneer. Most of the microinsurance products developed are related to life, disability and cash hospital insurance. The International Labor Organization (ILO)'s Impact Insurance Facility⁵⁶ partnered with Barry Callebaut, a leading manufacturer of chocolate and cocoa products, and the insurance company Sunu, to offer small cocoa farmers affordable life insurance and productivity loans as a package. The loans give them access to the materials they need, as well as, training, a savings account, a mobile wallet and peer-coaching⁵⁷.

However, this microinsurance product does not cover farmers against the adverse effects of climatic hazards. This is why there is room for financial inclusion improvement by linking vulnerabilities to climate change shocks with financial services provided by local operators to respond to those impacts or mitigate the risks. For example, incidence of droughts and shifting rainy seasons in agricultural production could be mitigated by growing drought-tolerant varieties and using solar pumping financed by micro-credit. In case of yield losses due to climate shocks, micro-insurance could cover economic losses of selected smallholder producers. Also, preferential financial incentives could be provided to farmers implementing sustainable agriculture practices and adopting climate-resilient technologies. The limited outreach of MFIs to farmers, but also the limited structure level of most value chains (except cocoa, coffee and cotton) explain limited success of microinsurance to farmers.

One example of success is the one that allowed Care International and Advans to work together to provide digital financial services to people in rural areas. Microinsurance products can be developed with such innovative microfinance platform. Care International promoted also financial inclusion through the Village Savings and Loan Association (VSLA) methodology, geared toward facilitating access to micro-credits and linking rural communities with financial service providers, mobile network operators and markets⁵⁸.

2.5. Smallholder access to market

Agricultural production and market conditions improve from North to South. Indeed, access to rural and food markets is limited particularly in the Northern regions that are less connected to urban markets and export trade. Road network, processing and storage facilities, electricity and telecommunications are better distributed and/or maintained in the richer southern part of the country where priority cash crops such as cocoa, cashews, rubber, coffee and cotton are grown.

⁵⁶ The ILO's Impact Insurance Facility works to enable the insurance sector, governments and their partners to embrace impact insurance as a way of reducing households' vulnerability, promoting stronger enterprises and facilitating better public policies. It was launched in Cote d'Ivoire in 2018.

⁵⁷ https://www.ilo.org/global/about-the-ilo/newsroom/features/WCMS_712949/lang--en/index.htm

⁵⁸ https://www.care-international.org/files/files/Report_CARE_event-Building_Africa's_financial_ecosystem_for_development-25_Oct_2017-final.pdf
<http://footprint2africa.com/topics/finance/care-international-project-provides-financial-inclusion-750000-households-rwanda-burundi-ethiopia-cote-divoire/>

Government and private investors are focusing on cash crops value chains and their sectoral contribution to GDP. In the National Investment Programme for the Agriculture Sector⁵⁹, the Government has identified some strategic regions of investment based on their physical, infrastructural and economic potential. The main goal would be to increase the crop productivity and climate-resilience of value chains and improve the industrialization and export of key products in the so-called “*agropoles*”⁶⁰ that have been designated according to the agro-ecological and agribusiness suitability. The Government planned the development of the country second agropole in the northern region for a value of 152 million Euros⁶¹.

Smallholders in Côte d’Ivoire face three main challenges that constrain them from accessing the markets.

Challenge 1: Smallholder producers professionalization and access to credit : Small producers have very weak organizational, technical and operational capacities, due in particular to insufficient supervision (public supervision neglected due to the limited resources of the national support and advisory structure), the high illiteracy rate and organizational empowerment, especially among women, weak technical skills and weak control of prices and markets of the few structured farmer’s organizations (Organisations Professionnelles Agricoles/OPA) involved in the food agribusiness. Small producers are mainly informal groups, which, moreover, find it difficult to adapt to the context of the Organisation pour l’Harmonisation du Droit des Affaires (OHADA) law. The level of training and information as well as the negotiating capacities of small producers are relatively low. All these constraints make it difficult for small producers to access credit to finance their activities. Even microfinance institutions, set up to solve this problem, are reluctant to grant them credit. To this must be added the small size of the areas farmed by small producers, which does not allow for economies of scale in terms of acquiring inputs and transporting produce.

Challenge 2: improvement and diversification of the agricultural production and application of food safety procedures : Lack of knowledge and/or weak application of good agricultural practices, limited varietal diversification, insufficient or non-existent supervision, non-compliant use of chemical products (pesticides and fertilizers) and ignorance of toxicological classes, poor management practices for empty pesticide packaging, use of water unsuitable for watering fruit and vegetables, lack of food safety specifications, ignorance of hygiene techniques during production of certain foodstuffs are all constraints that limit the market value of the food products of small producers.

Challenge 3: Improvement of handling, storage, conservation, and processing systems for the products of small-scale producers: This causes considerable post-harvest losses and reduced availability of food stocks. The means of storing food products of small-scale producers are still traditional. They consist mainly of granaries and drying racks. Storage warehouses and cold chains are insufficient or non-existent. At the level of processing, the system is mostly artisanal (mortar,

⁵⁹ Plan National Investissement Agricole (PNIA), 2012 – 2016 et 2017 - 2021

⁶⁰ The nine *agropoles* are designated areas of the country where the Government and partners will invest in agro-sylvo-pastoral and fisheries programmes that respect the environment and agro-ecological zones as well as the needs and capacities of local women and men. These investments should benefit all stakeholders, whether local, national or regional.

⁶¹ Commodafrica, 2016

scraper, etc.). Processing equipment (crushers, huskers, presses, etc.) is insufficient. Some villages do not even have any. The lack of means for fresh storage and processing and inadequate means of transport and conservation of most food crops leads to very high post-harvest losses.

2.6. Gender context

In Cote d'Ivoire, women represent almost half of the total population. Despite recent efforts, Côte d'Ivoire remains one of the countries with the highest gender inequality rates in the world ranking 157th out of 162 countries on the Gender Inequality Index (GII) in 2018 Index⁶². Low completion rates of lower secondary education (35.5%), disparities in learning between girls and boys (the secondary completion rate for girls is 42.7% while for boys is 55.5%), maternal mortality (645 for 100 000 live births), infant malnutrition and youth unemployment (36% of young people between the ages of 15 to 35) along with around 46% of poverty in 2019 are contributing to unsustainable development and inequality in the country. The GINI Index for Côte d'Ivoire was reported at 41.5% in 2015⁶³ showing income inequality particularly among vulnerable groups including women.

Poverty is currently affecting more women (47.4%) than men (45.4%), with unemployment rate being higher for women (11.9%) than for men (7.4%). The situation is even more critical in the rural area. Data from the National Institute of Statistics highlight that 75% of rural women are living below the poverty line. And they are often deprived of basic social services. Some socio-cultural factors perpetuate traditions that are harmful to girls and women. These are illiteracy, female genital mutilation, domestic violence, land tenure rights, poor access to land and to financial services etc.

Women represent the majority of workers, including in the agriculture sector where they represent 90% of the agricultural labour force⁶⁴, but they hold just 8.6% of salaried jobs and they are poorly represented in cash crops (coffee, cocoa, and cashew).

Food production in Côte d'Ivoire is "mainly" done by women and represents about 70% of agricultural value added. In commercial activity, women outnumber men. Despite this, women still draw from all their efforts fewer resources than men.

Custom excludes women from land ownership even though they produce and market most of the food in Côte d'Ivoire⁶⁵. Indeed, women are often marginalized in terms of access and control of production assets⁶⁶, access to land and participation in decision making over the use of common resources⁶⁷. Only 8% of women hold land titles, compared with 22% of men⁶⁸.

⁶² HDI 2019 Analysis for Côte d'Ivoire, UNDP 2019

⁶³ Data World Bank, 2020

⁶⁴ National Institute of Statistics, Abidjan, 2013

⁶⁵ <https://land-links.org/country-profile/cote-divoire/#1528484265604-d813d6fe-4a17>

⁶⁶ FAO. 2012. Cadre de programmation pays (2012- 2015). Côte d'Ivoire. 30 pages.

⁶⁷ Ministry of Planning and Development. 2017. National development plan 2016–2020 (Plan national de développement 2016–2020).

⁶⁸ World Bank. 2017. Situation Economique en Côte d'Ivoire: Et si l'émergence était une femme (And if the émergence was a woman?).

Women's access to education is still a problem. Indeed, the literacy rate for young people aged 15-24 is 47.2% for women, and 63.8% in men. According to the study on promising sectors and value chains in the regions of Gbeke, Poro, Tonkpi and District of Abidjan led by ANADER and Care International, 70% of women food producers are illiterate and more than 95% of these women have never received any training in the occupation practiced by them.

Child labour is also a concern in Côte d'Ivoire, particularly in agriculture production seeing the involvement of 5% more girls than boys aged between 5 and 17⁶⁹.

Aware of these inequalities, the Government of Côte d'Ivoire issued policies, took measures and promoted initiatives to reduce gender gaps and ensure equal opportunities to women.

These include, among others (i) the creation in 1998 of the Independent Literacy Service within the Ministry of Education, (ii) the establishment in 2000 of the National Education Fund in order to improve the literacy rate of women; (iii) the National Policy on Equal Opportunities, Equity and Gender adopted in April 2009 (iv) the establishment of the "Women and Development Funds" aimed at strengthening women's entrepreneurship; (v) the "Support Fund for Women of Côte d'Ivoire" (FAFCI), amounting to FCFA 1 billion (US\$ 0.5 billion) , set up in 2012 by the Presidency of the Republic, which aims to enable women to easily access⁷⁰.

Despite these achievements, women lack access to agricultural inputs and other production resources. Moreover, lack of access to finance limits income-generating activities, which severely limits their empowerment and affects their organizational structure⁷¹.

3. Vulnerability to Climate Change

Côte d'Ivoire's vulnerability to climate change is one of the highest in the world, with the country ranking 142nd out of 181 according to the ND-GAIN Matrix (2018).⁷² On the basis of the same Index, it is the 51st most vulnerable and the 31st least ready country in the world. About one-third of its population is living within 100 km of the coast. Climate change in Côte d'Ivoire is mainly manifesting through rising temperatures and sea level, rainfall variability, shortening of the rainy season, more frequent dry spells during the rainy season, increased duration and severity of dry seasons, and increased incidence of floods and coastal erosion.

3.1 Observed Historical Climate Variations:

Climate parameters in Côte d'Ivoire have been observed during the period 1979-2015. The majority of Côte d'Ivoire experiences relatively low rainfall variability on an inter-annual basis, except for the far north. Historical long-term trends across the regions show only slight increasing

⁶⁹ National survey of employment and child labour 2013 (Enquête nationale sur la situation de l'emploi et du travail des enfants (ENSETE 2013))

⁷⁰ Côte D'ivoire "Zero Hunger" National Strategic Review

⁷¹ Ibidem

⁷² <https://gain.nd.edu/our-work/country-index/rankings/>

temperatures with statistical significance in the Komoe Headwaters Region. Historical long-term trends in rainfall change are small. However, all regions do show a statistically significant decrease in the frequency of rainfall but an increase in the frequency of extreme rainfall events⁷³.

Historical Temperature trends⁷⁴:

Historically, temperatures over West Africa have increased by 0.5-0.8°C between 1970-2000. The latter two decades of this period have seen a greater magnitude of change. Temperature observations between 1990-2000 indicate increasing temperatures over Côte d'Ivoire with temperatures have risen by 0.5°C 1.6°C throughout the country in the period 2001-2010. Mean annual temperature in Côte d'Ivoire has significantly increased at a rate of 0.1°C average per decade over the last 30 years, with 2016 being the second warmest year on record, since 1961. Studies carried out by the NMD show that between 2001-2010 average temperature is increased by 0.5°C, compared to the average temperature in the 1980s.

Historical Rainfall trends:

The northeastern, central, and southwestern regions of Côte d'Ivoire saw a decrease in rainfall between 1970-2000⁷⁵. Station data from stations located throughout the country exhibit decreasing trends in precipitation during the main rainy season of June-October during the period 1951-2000⁷⁶. Although surface water resources are abundant in Côte d'Ivoire an important decrease and higher variability of precipitation have been recorded over the last 80 years. Between 1951-1980, rainfall registered a decrease of 6% over the Ivorian territory with more substantial decreases of 13% in Sassandra and 11% Adiaké, both located in the coastal zone respectively south-west and south-east. Rainfall patterns showed a particular decrease and variability over the 1980s-1990s, as shown in the data in Annex 2 developed by SODEXAM. According to the same source, the rainy season has been shortened by an average of 10 to 27 days on the coast with an average start-up delay of two weeks. Within the national territory, there is a reduction in the length of the season by between 10 to 20 days in the Zone Nord, 20 to 30 days in the Zone Sud-Interieur , and 10 to 28 days in the Zone Centre.

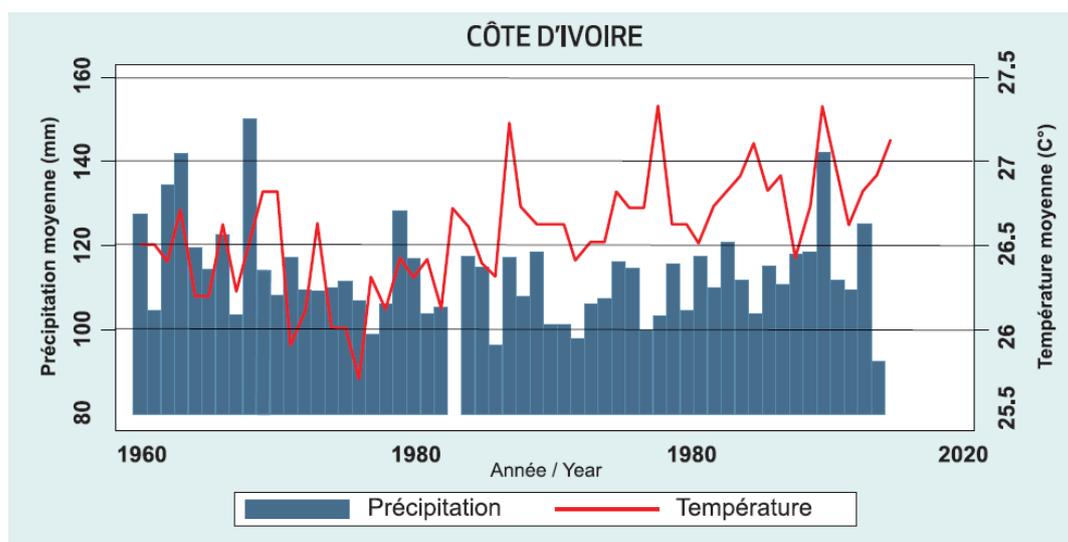
⁷³ Côte d'Ivoire national climate change profile, AfDB, 2018

⁷⁴ Climate Knowledge Portal, World Bank 2020

⁷⁵ Climate Change National Strategy 2015-2020

⁷⁶ Climate Knowledge Portal, World Bank 2020

Figure 5. Evolution of annual temperature and rainfall in Côte d'Ivoire



Source : Auteurs à partir des données du Climatic Research Unit (CRU)

3.2 Projected climate change trends

Temperature:

Mean annual temperatures over West Africa are projected to increase by 3°C to 6°C by the end of the 21st century for Representative Concentration Pathway (RCP) 4.5 and RCP8.5 (Coupled Model Intercomparison Project, Phase 5/CMIP5 included in the IPCC 's fifth Assessment Report). In Côte d'Ivoire, average mean annual temperature will rise by 1.9°C in 2050 (RCP 8.5, High Emission)⁷⁷. The likely range of projected change in annual mean temperature is from is from +0.9 to +1.5°C by 2030, from +1.3 to +2.3°C by 2050 and from +1.5 to +4.1°C by 2085. The very likely range is from +0.8 to +1.7°C by 2030, +1.0 to +2.8°C by 2050, and 1.0 to +5.2°C by 2085, with the greatest increases being in the Northern parts of the country where malnutrition rates are already high. Confidence in these figures is medium but a temperature increase is expected based on all scenarios. The change in annual mean temperature can be considered medium-strong⁷⁸.

Precipitation:

By the end of the 21st century many CMIP5 models project mean precipitation over West Africa to increase during the rainy season with a small delay to the start of the rainy season. In Côte d'Ivoire, mean annual precipitation will fall by -17.9 mm in 2050 (RCP 8.5, High Emission) whereas the frequency of extreme rain events may remain constant or increase in the future⁷⁹. On

⁷⁷ Climate Knowledge Portal, World Bank

⁷⁸ All projections are based on the results of the global model climate and sea level change projections, which are the base of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5 - www.ipcc.ch).

⁷⁹ Climate Knowledge Portal, World Bank

the other hand, the RCP 4.5 model (Low Emission) projects a daily precipitation reduction by 8% between April-July rainy season by 2100⁸⁰.

The likely range of projected change in annual total precipitation in Côte d'Ivoire is from -2 to +4% by 2030, from -2 to +5% by 2050 and from -2 to +7% by 2085. The very likely range is from -3 to +6% by 2030, -4 to +8% by 2050, -4 to +8% by 2080, with most projections showing an increase. The likely range of projected change in the intensity of heavy rain events is from 0 to +8% by 2030, from +1 to +12% by 2050 and from 0 to +15% by 2085. The very likely range is from 1 to +13% by 2030, -3 to +17% by 2050, -2 to +22% by 2085, with only a few projections showing a decrease. Based on all scenarios, heavy rainfall events are expected to increase. The likely range of projected change in the duration of long-lasting dry spells is from -6 to +1 days by 2030, from -8 to +1 days by 2050 and from -8 to +1 day by 2085. The very likely range is from -13 to +3 days by 2030; -15 to +3 days by 2050; -23 to +3 days by 2085⁸¹.

3.3. Access to Climatic and Weather Information

In Côte d'Ivoire, meteorological services are managed by the National Meteorological Directorate (NMD) of the Société d'Exploitation et de Développement Aéroportuaire, Aéronautique et Météorologique (SODEXAM). It is responsible for observations, studies and forecasts specialized in meteorology. It carries out weather and climate forecasts. It coordinates all climate change mitigation and adaptation activities at the national level, and research and development projects related to agrometeorology, hydrometeorology and climatology. There is also networks of automatic weather stations set up in the framework of agricultural programmes and projects, including the WAAPP (West African Agricultural Productivity Programme), the Swiss Centre for Scientific Research (SCSR), the Wascal programme (West African Science Service Center On climate change and Adapted Land use), ICRAF (World Agroforestry Centre).

SODEXAM has a station in the Poro region, specifically in Korhogo, for the monitoring of weather activities in the northern zone.

Many projects integrating the transmission of agro-climatic data to producers have been carried out or are under way in Côte d'Ivoire. The Projet d'Appui à la Production Agricole et à la Commercialisation (PROPACOM) Western extension has enabled the acquisition and installation of 220 rain gauges for farmers in its intervention zone (Tonkpi, du Kabadougou, du Folon, du Bafing, du Worodougou et du Béré). The farmers from the Agricultural Professional Organization (APOs) have been trained in the installation, reading of the rain gauges and then in the recording and collection of rainfall data. Gaps are mostly due to poor maintenance or lack of spare parts for the weather stations causing malfunctioning or discontinuity, unreliable data collection and analysis, and training of operators on using and reading the instruments.

⁸⁰ Climate Change National Strategy 2015 - 2020

⁸¹ All projections are based on the results of the global model climate and sea level change projections, which are the base of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5 - www.ipcc.ch).

The *Projet de Solutions Numériques pour le Désenclavement des zones rurales et l'e-Agriculture (PSNDEA)*, a project under the supervision of the Ministry of the Digital Economy in partnership with the ministries in charge of Agriculture and the Cashew e-Extension Project target many cotton farmers in the northern Cote d'Ivoire for the implementation of digital services, potentially including agro-meteorological services.

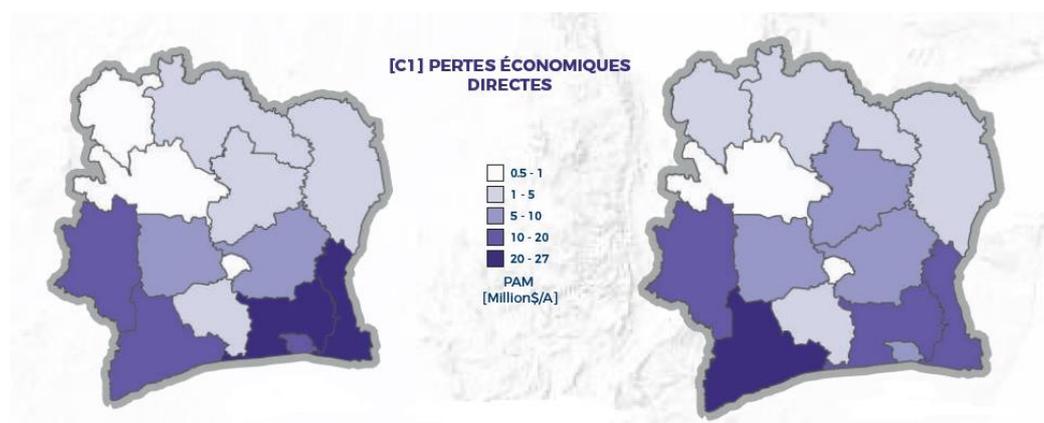
4. Climate Change Impact on Agriculture and Food Security

4.1 National level

The change in climatic parameters over the last four decades has led to a mismatch between timeliness of rainfall and traditional growing seasons. Rainfall disturbances have had significant impact on cocoa production in Cote d'Ivoire. Cocoa yields fell by more than 20% during El Niño episodes compared with previous campaigns.⁸² The impacts of the changes also resulted in the loss of crops due to extreme climate events such as floods, drought, and bush fires. Floods are having considerable impacts on approx. 60 000 people per year, which accounts for 0.3% of the entire population. The most impacted areas are coastal zones, where 80% of the economic activities take place.

According to the study of the vulnerability of the agricultural sector to climate change in Côte d'Ivoire (MINESUDD, 2013), the effects of climate variability and change are less marked in Zone Littoral and Sud Interieur, characterized by a water deficit of less than 100 mm (zone Littoral), or between 100 and 300 mm (zone Sud Interieur). The shift, the shortening of the rainy seasons and the erosion of coastal areas particularly affect agricultural populations and fishing communities in zone Littoral.

Figure 6. Direct economic loss due to floods in present days (left) and projected (right)



Source: Côte d'Ivoire risk profile, UNDRR, 2018

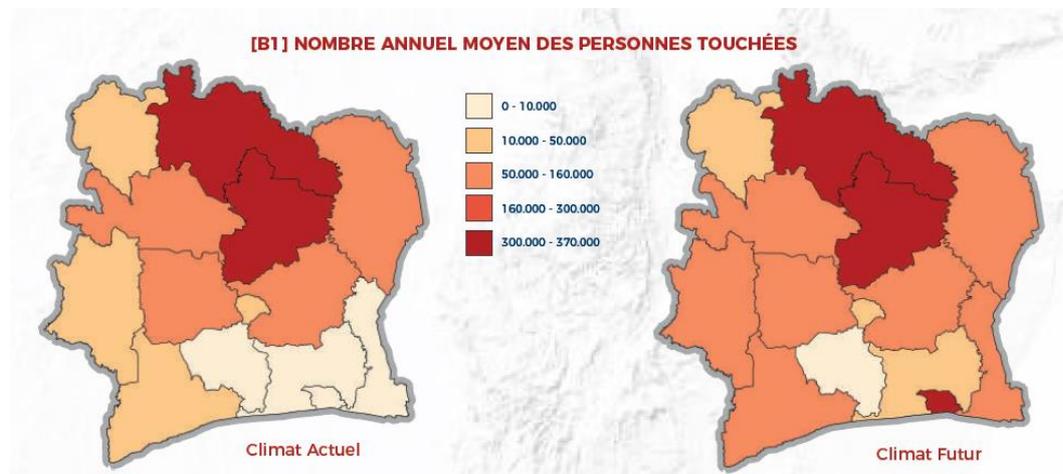
⁸² DJE.K.B. 2007. Impact des phénomènes ENSO sur la pluviométrie et leurs incidences sur la production cacaoyère. Conférence Internationale pour la réduction de la vulnérabilité des systèmes naturels économiques et sociaux en Afrique de l'Ouest face aux changements climatiques. Ouagadougou du 24 au 27 janvier 2007.

Particularly affected by flood is the cocoa production, happening in the Zone Sud-Intérieur and the Zone Littoral.

In addition to that, projections from the Intergovernmental Panel on Climate Change (IPCC) report a potential increase of sea levels of up to 1.2 meters in the Greater Bassam and Abidjan areas. This would lead to more flooded areas, leading in turn to heavy loss of lives and the forced relocation of numerous families and economic activities. Infrastructure and the agricultural sector could also be affected by the loss of dwellings, roads, schools, and health centers.

On the other hand, drought is impacting 1.3 million people (5.4 %) per year, mostly in the northern part of the country, already threatened by poor water infrastructure. If we consider population growth, the number will increase to 7.9 % (2,4 million people).

Figure 7. Average year number of people affected by droughts in present days (left) and projected (right)



Source: Côte d'Ivoire risk profile, UNDRR, 2018

In fact, the northern part of Côte d'Ivoire, currently characterized by a single rainy season, is highly vulnerable and exposed to climate change variability and impacts on natural resources and agricultural production systems. Here, climate change effects manifest in (i) reduced rainfall, shortening rainy seasons and alteration of microclimates, (ii) the rise in temperature and heat winds, (iii) the drying up of streams and reduction groundwater's volume, (iv) the severity of the dry seasons and a high-water deficit and (v) the degradation and loss of soil fertility and plant cover and (vi) the increased incidence of pest and diseases and invasion of alien species. The Zone Centre presents similar vulnerabilities to the northern zone but with less significant decrease in precipitations. Agricultural production in Zone Sud-Intérieur and Zone Littoral is slightly less affected than in the Northern part of the country.⁸³

Information on the actual climate change impacts in the different agroecological zones in Côte d'Ivoire has been summarized in the table below, extracted from the Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC)

⁸³ Zero hunger strategic review for Cote d'Ivoire (2018).

Table 2. Climate change impacts in the different agroecological zones in Côte d'Ivoire

Zone	Main climate change impacts	Resulting vulnerability
Zone Nord	<ul style="list-style-type: none"> • Decrease of precipitations, increased severity of droughts, alteration of microclimates • Shortening of rainy seasons • Increase of temperatures and heat waves • Drying up of water streams and reduction of volumes of groundwater • High water deficit • Soil erosion and loss of vegetation • Loss of households production assets and migrations • Increased desertification and land degradation 	<ul style="list-style-type: none"> • High vulnerability of natural resources and agriculture production systems. • Loss of soil fertility and land productivity • Medium human vulnerability
Zone Centre	<ul style="list-style-type: none"> • Decrease of precipitations, droughts, alteration of microclimates • Shortening of rainy seasons • Increase of temperatures and heat waves • Drying up of water streams and reduction of volumes of groundwater • From high to average water deficit • Soil erosion and loss of vegetation • Loss of households production assets and migrations 	<ul style="list-style-type: none"> • High vulnerability of natural resources and agriculture production systems. • Loss of soil fertility and land productivity • Medium to low human vulnerability
Zone Sud-Intérieur	<ul style="list-style-type: none"> • Decrease of precipitations • Shortening of rainy seasons • Increase of temperatures and heat waves • Drying up of water streams and reduction of volumes of groundwater • From high to medium water deficit • Degradation and loss of forest cover 	<ul style="list-style-type: none"> • Medium vulnerability of natural resources and agriculture production systems. • Low human vulnerability
Zone Littoral	<ul style="list-style-type: none"> • Decrease of precipitations • Shortening of rainy seasons • Unpredictable rainfall during the year • Drying of water streams • Longer dry periods • Low water deficit • Degradation and loss of forest cover • Floods • Sea level rise • Coastal erosion 	<ul style="list-style-type: none"> • Medium to low vulnerability of natural resources and agriculture production systems. • Medium human vulnerability

Source: Côte d'Ivoire Third National Communication to the UNFCCC

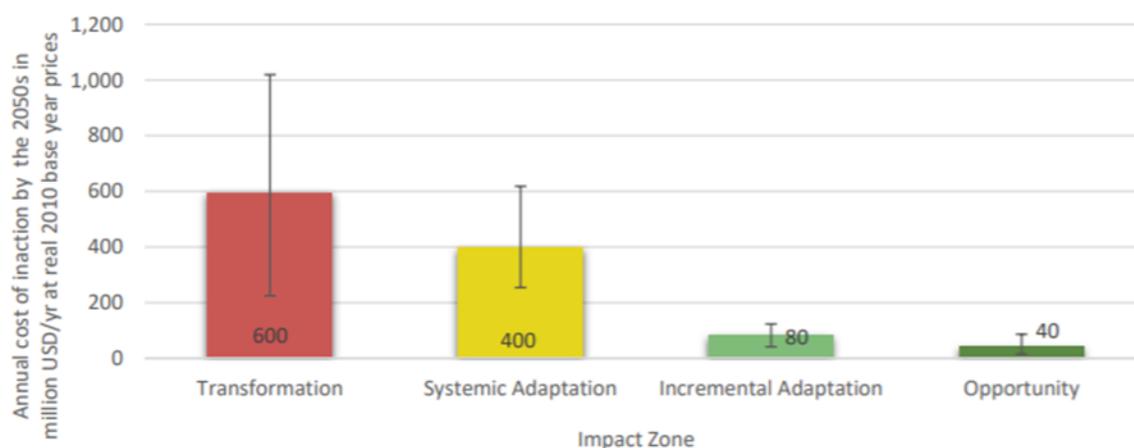
While both southern and northern zones are to be considered vulnerable to the impact of climate change, the northern rural zones are slightly more vulnerable due to the lack of infrastructures and their strong reliance on agricultural productivity, and where climate change is manifesting in in shortening of the rainy seasons, rise in temperature and heat winds, severity of the dry seasons and a high-water deficit.

5. Costs of Climate Change

Climate change could lead to a 2-4% GDP decline for the whole Africa by 2040, and this decline could reach 10% or even 25% in 2100⁸⁴. To put these percentages into perspective with the impacts on Côte d'Ivoire's GDP, this would represent between 380 and 770 billion CFA francs (approx. between US\$ 630 million to 1.3 billion). In addition, from 2% to 6% of additional households could become poorer by 2030 due to climate change. By way of comparison for Côte d'Ivoire, this would correspond to almost 1 million more people who would fall into extreme poverty (people living on less than US\$1.90 a day) who will add to the 6 million poor already identified in the country in 2015.

Based on a study carried out by UK Met Office and WFP in 2015, under a high Greenhouse Gas (GHG) emission level scenario and in absence of any adaptation effort, vulnerability to food insecurity in Côte d'Ivoire as a whole could increase by 14% by 2050 and up to 25% by 2080 in comparison to the current level of vulnerability. If joint action is taken towards a significant reduction of GHG emissions at global level together with major investments in adaptation at national level, Côte d'Ivoire could experience a reduction on the vulnerability to food insecurity by 15% from present day by 2050⁸⁵.

Figure 8. Cost of inaction for cocoa production in Côte d'Ivoire by the 2050s per impact zone in million US\$ per year.



The colored bars show the expected (mean) scenario, while the error bars represent the 90%-range. The cost of inaction used real prices with respect to the base year. Source: GGIAR 2018

Source: CGIAR 2018

Adapting to climate change will require further work to plan for impacts at regional and local level, to enable local and regional actors in the public and private sector to develop effective adaptation options at lower cost. Economic sectors highly dependent on weather variability such as agriculture, fishing and forestry are more threatened than other sectors and, therefore, have a

⁸⁴ According to the Intergovernmental Panel on Climate Change (IPCC, 2007)

⁸⁵ Low emissions scenario, known as RCP2.6, represents a rapid and sustained reduction in future global emissions resulting in an increase in global average temperature of 2C from pre-industrial era. High adaptation scenario refers to a scenario where both climate-sensitivity of agricultural production and the country's ability to cope with climate-related hazards have improved by up to 15% from present day. No adaptation scenario refers to both climate-sensitivity of agricultural production and the country's ability to cope with climate-related hazards stay at current levels. UK Met Office, WFP. 2015. Hunger & climate vulnerability index. <http://www.metoffice.gov.uk/food-insecurity-index/>.

greater need to adapt to climate change. In this context, the country remains vulnerable given its marked dependence on these sectors, sensitive to the climate and their low capacity to adapt. Another important aspect of adaptation lies in the early stage forecasting of more frequent and more destructive climate-related disasters, especially floods and bush fires.⁸⁶

6. Policies and Programmes

6.1 National policies

National priorities for climate change adaptation are outlined in the National Climate Change Strategy (2015-2020), the Nationally Determined Contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) (2020) and the Third National Communication to the UNFCCC (2017).

The Côte d'Ivoire National Climate Change Strategy (2015-2020)⁸⁷ primarily focuses on seven strategic axes integrating the five pillars initially defined in Bali during COP13 in 2007: shared vision, adaptation, mitigation, technology transfer and funding. This first pillar of the Strategy contains activities aimed at integrating climate change into the policies and strategies in place per economic sector, as well as into development planning, legal and institutional frameworks. The second pillar wants to boost national knowledge and awareness on climate change by strengthening technical and human capacities of government bodies thanks to promotional campaigns, website creation and integration of climate-related topics in schools.

The third pillar aims at implementing REDD+ and related activities to reduce the impacts of climate change. The fourth pillar is dedicated to strengthening actions for climate change adaptation and, therefore particularly relevant for the scope of this document. These actions include the formulation and establishment of a Climate Change Adaptation Strategy, due by 2020; the inclusion of climate change adaptation measures, recommended by the strategy, within land management and urbanization; and the establishment of a set of indicators to measure the adaptive capacity of the population in the different sectors. The fifth pillar focuses on research and technology transfer, while the sixth pillar aims at establishing an institutional framework to manage climate risks and which can also inform the national civil security law. Finally, the seventh pillar is about partnerships and cooperation to finance these actions.

The climate change Adaptation and Mitigation priorities identified for the agriculture sector have been outlined below:

- Implement an institutional and juridical framework for climate change measures
- Integration of adaptation in the sectoral plan, policies and budgets
- Integration of climate change in the public/private services contracts and procurement plans
- Awareness-raising and strengthening stakeholders' capacities

⁸⁶ Côte d'Ivoire National Climate Change Strategy (2015-2020)

⁸⁷ <http://www.environnement.gouv.ci/pollutec/CTS3%20LD/CTS%203.4.pdf>

- Implement mitigation sectoral measures through REDD+ and Nationally Appropriate Mitigation Actions (NAMA)
- Strengthen the adaptive capacity of vulnerable populations through implementation of National Adaptation Programme of Action (NAPA) or National Adaptation Plans (NAPs) and mainstreaming adaptation in rural and urban planning
- Implement a climate information and monitoring system to strengthen adaptive capacity
- Strengthen the meteorological recording and monitoring system
- Improve research and development
- Disseminate climate-smart technologies
- Implement disaster risk management plans

Submitted in 2015 and revised in 2020 the NDC of Côte d'Ivoire⁸⁸ presents the country's engagements to reduce the carbon footprint of its development by favoring mitigation options with high "co-benefits" (Section 2: Mitigation) like, for instance, climate-smart agriculture, better forests management and safe energy solutions for households cooking activities, and renewable energy for the transport sector. Commitments are also to strengthen the country's resilience to climate change (Section 3: Adaptation) by better managing water resources and irrigation systems, strengthening the technologies applied in the agricultural sector and training farmers for their use, reinforcing and protecting the coastal zones most vulnerable to floods. The NDC also aims at aligning Côte d'Ivoire's sectoral policies and strengthen its system for the implementation of tools to facilitate the achievement of these objectives (Section 4); and seeks at mobilizing all relevant resources for this purpose, including funding coming from both national and international sources (Section 5).

The prioritized adaptation and mitigation actions set forward for the agriculture and forestry sectors have been summarized below:

- Ensure consistency and coherency between PNIA 2 and national REDD+ policy
- Implement zero-net deforestation actions by decoupling agricultural production from forest conservation, eliminate slash-and-burn agriculture,
- Develop regional landscape management plans involving local communities
- Protecting and safeguarding land tenure rights
- Foster sustainable agriculture intensification by facilitating access to high-quality inputs, improved mechanization and promoting low-impact climate-friendly practices and green technologies including post-harvest tools,
- Promote conservation farming, crop and livestock association, agroforestry and sustainable soil and water management
- Knowledge dissemination and rural extension, adjust farming calendars and rationalize production techniques,
- Reinforcement of rural infrastructures to serve animal and vegetable products and fisheries,
- Implement sustainable forest management, implement land restoration and improve carbon stocks through village reforestation

⁸⁸https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/C%3%B4te%20d'Ivoire/1/Document_INDC_CI_22092015.pdf

- Promote Payment for Environmental Services (PES) and renewable energy schemes such as improved cookstoves, wood energy, use of agricultural residues, etc.
- Reduce vulnerability and improve resilience of vulnerable populations by: implementing agroecology practices, producing organic inputs and biopesticides, integrating farming and livestock production, restoring soil fertility and land productivity, promoting green technologies and access to high quality inputs, grow resilient species, reduce post-harvest losses, improve access to climate information and disseminate weather forecasts linked to farming calendars.
- Facilitate access of women to agricultural land.

Aware of the challenges and environmental issues both at international and national level, the Government of Côte d'Ivoire is committed to establishing a legal framework and development policies and the fight against climate change. Côte d'Ivoire signed the Convention in June 1992 UNFCCC and ratified it in November 1994 thus indicating its willingness to participate in the international effort against climate change.

As part of the commitments made to the UNFCCC, the country has prepared and submitted its First, Second and Third National Communication⁸⁹ under the UNFCCC in 2001, 2010 and 2017 respectively. The Third National Communication was the opportunity for the Government of Côte d'Ivoire to confirm its commitment to continue to integrate climate change into national policies and to create the best conditions for technology transfer, research and systematic observation, education and public awareness on the problem of climate change and possible sustainable solutions given the funding and available resources.

Through this communication, Côte d'Ivoire has started to put in place strategies and projects aimed at reducing its gas emissions greenhouse effect in the atmosphere by 2030. The main sectors of activity concerned are agriculture and energy. The country would be able to reduce its direct greenhouse gas emissions by 28% in 2030, from 43 407 Gg equiv. CO₂ in 2030 without any mitigation strategy to 31 241 Gg equiv. CO₂ in 2030 with mitigation strategies.

The main adaptation priorities and axes of intervention for the agriculture sector that were identified in the Third National Communication are outlined below:

- Knowledge development on climate change impacts and appropriate technologies: awareness-raising, identification and dissemination of appropriate technologies, early warning systems in place.
- Sustainable agricultural production to assure food security: land tenure rights, upgrade agricultural calendars, improve local crop varieties, high-quality inputs, improve water points for livestock production, strengthen soil and water management, pest and disease control, fisheries management.
- Sustainable management of natural resources: involve local population and stakeholders, improve water management through integrated water approach, reinforce soil fertility and land management, reduce deforestation and streamline actions in the agricultural plans

⁸⁹ http://www.un-gsp.org/sites/default/files/documents/3069145_cite_divoire-nc3-1-cote_divoire_-_third_national_communication.pdf

- Applied research to climate change adaptation: improve effective collaboration between research and rural extension institutions (FIRCA, SODEXAM, CNRA, ANADER, CRE, CRO, I2T, Universities, etc.) implement research projects on climate change adaptation.

Table 3. Summary of main climate change adaptation priorities identified in the strategic documents

Topic	Activities	Key players on the ground	Scope for the SAP project
Integrated water resource management	Water management plans, Rainwater harvesting, water points for animal production, solar pumping and improved irrigation techniques	Direction de la Gestion et Protection Ressources en Eau (Ministère des Eaux et Forets)	Integrated water management for food and water security
Sustainable and resilient agricultural production	Research and development, streamline collaboration, access to high-quality, inputs, appropriate technologies, technical assistance, pest and disease control, agro-ecology, land tenure rights, early warning and access to climate information/weather forecasts, residues and post-harvest management	FAO, WFP, Sodexam, AFD, ANADER	Access to climate information, scaling up of adaptive technologies, technical extension services
Sustainable natural resources management	Soil and water management, involvement of local communities, renewable energy	WFP, FAO	Scaling up of climate-smart soil and water conservation practices
Reduction of deforestation and land restoration	Agro-forestry schemes, land tenure, REDD+ associated with PNIA, landscape management plans, village reforestation, energy forests, efficient cookstoves, eliminate slash-and-burn	WFP	Scaling up of agroforestry, village reforestation and implementation of gabions and stony cordons,
Sustainable finance	Integration of adaptation in sectoral budgets, implementation of disaster risk management plans	IFAD	Access to micro-credits and implementation of micro-insurance schemes

The key players have been identified on the basis of the following criteria:

- Contribution to the climate change adaptation priorities as identified in the strategic documents,
- Potential technical synergies and complementarities with the SAP project,
- Room for collaboration and partnership,
- Possible co-financing contributions,
- Scaling up opportunities and knowledge systematization and dissemination,
- On the ground experience and presence in the target areas, and
- Opportunities for integrated low-emissions and climate-resilient rural development.

Cooperating partners/services providers, synergies, and complementarities with other initiatives in Poro Region have been described in Section 7.6 of the Feasibility Study.

6.2 Agriculture and Food Security Programs with Climate Adaptation activities

In 2018, the Government launched the Zero Hunger Strategic Review⁹⁰ process, aiming at strengthening efforts and accelerate progress towards achieving the Sustainable Development Goal 2 (SDG2) concerning the elimination of hunger and malnutrition by 2030. The Strategic Review presents a comprehensive overview of the main sectorial challenges of Côte d'Ivoire and put forward a series of recommendations related to the national legal framework, resource mobilizations, south-south cooperation, capacity strengthening at institutional level and programmes implementation that are food and nutrition security focused.

The review issued the following recommendations:

1. Fast-track the implementation of sectoral food security programs in order to significantly reduce the prevalence of food insecurity and under-nutrition,
2. Accelerate the implementation of nutrition-related activities indicated in the National Nutrition Programme to considerably reduce the prevalence of all forms of malnutrition,
3. Accelerate the implementation of specific PNIA sub-programs, to significantly increase the agricultural productivity and income of small producers,
4. Implement the programs of PNIA targeting climate change impacts to ensure the sustainability of the food production systems, and
5. Accelerate the implementation of specific PNIA sub-programs of the PNIA to foster the integrated management of biodiversity.

⁹⁰ https://docs.wfp.org/api/documents/WFP-0000111575/download/?_ga=2.229746140.1749686529.1587716498-1119087596.1523516528

Table 4. Actual agriculture and food security programmes with Climate Adaptation activities

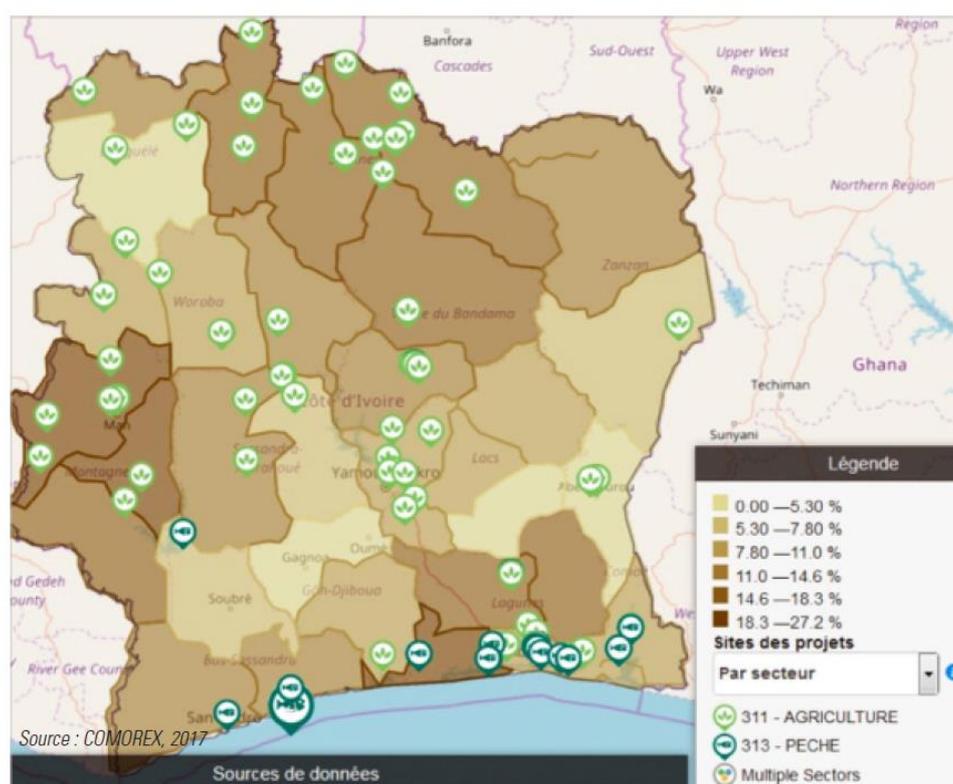
Short title	Partner	Activities	Synergies with the SAP
Country Strategic Plan	WFP	Sustainable livelihoods and ecosystems: conservation agriculture, intercropping, green technologies, climate-resilient practices, technical assistance, post-harvest management	Enhancement and scale up of application and dissemination of adaptation and mitigation practices, nature asset enhancement for climate-resilient livelihoods
Green financing IGREENFIN (5 countries in West Africa)	GCF/IFAD	Integrated climate-risk reduction financial services for a climate-resilient agricultural sector: micro-credits, small loans for investments, technical assistance for sustainable production, agroforestry, gender integration	Weather Insurances, financial support to OPA for climate-proofing technologies, implementation of business plans, organizational empowerment, climate-proofed agricultural infrastructure
Special Climate Development Fund (include North Regions)	AfDB	Access to climate information, pilot adaptation practices, awareness-raising and integrated decision-making	Dissemination of weather forecasts and climate-smart farm management
PADFA (focus on rice, vegetables, mango) Covering Poro Region	IFAD	Resilient value chains, rehabilitation of rice paddies, equipment for vegetable production and packaging, seed production installation of mango processing units, improvement of rural roads	Climate-friendly maize, rice and vegetable value chains
2PAI-Bélier	AfDB	Development of first agropole, agribusiness on the basis of PNIA2, modernization of infrastructure and value chain development	Food value chain strengthening, women entrepreneurship
PRO2M (focus on vegetables and Cassava)	UE	Vegetable and cassava value chain development, post-harvest management, marketing access,	Scaling up climate-resilient vegetable value chains
Propacom	IFAD, OPEC	Smallholder access to efficient production services, appropriate technologies and markets	Access to high-quality inputs and appropriate adapted technologies
PSNDEA	Ministry of Digital Economy	Focus on cotton and cashewnuts digital farming technologies. The project is relevant because cotton farmers are also staple crop producers, in particular of vegetables	Data-sharing, technical competences and leading capacities considering better access to inputs, insurance, technical assistance and climate information access.

		and maize diverting inputs provided for cotton production.	
FADCI (2016-2022)	AFD	Support of smallholder farmers	Technical assistance and trainings
Green innovation Water and Energy for Food (WE4F) ComCashew	GIZ	Climate-friendly, Energy and Water-efficient appropriate technologies for food and agriculture sector, renewable energy. Support to cashew nut value chain	Access to high-quality inputs and appropriate adapted technologies
Nutrition-sensitive agriculture in Poro Region	FAO	Support to farmer women groups, capacity-building, value chain development	Women entrepreneurship and leadership, adapted vegetable value chains
Youth Employment	FAO	Professionalization, entrepreneurship capacities	Climate-friendly digital technologies
Social protection	FAO	Poverty alleviation, reduction of vulnerability	Implementation of climate adaptation and DRM agricultural plans
PARFACI (2013-2019) Maize, soya, pork and fish farming, market gardening (covering Poro Region)	AFD, C2D	Sustainable production across the value chains, rural land law	Adapted Maize and vegetable value chains
PAIA-ID	AfDB	Rural infrastructure rehabilitation focusing on support of food crops,	Processing and marketing facilities of selected food value chains (maize, rice, vegetables)
PROMIRE	FAO	Zero-net deforestation in cocoa production	Community mobilization schemes
WA BICC West Africa	USAID, Tetra Tech	Biodiversity conservation, climate-friendly solutions, coastal resilience, scaling up interventions	Scaling up adapted nature-based solutions
Green Project Cargill	Impactum	Agroforestry schemes in cocoa production, agricultural diversification, reduced deforestation,	Intercropping and food system adapted diversification

UTZ Cocoa Climate Change Partnership	UTZ	Climate adaptation practices in cocoa production including Natural resource management and forest protection practices	Implementation and dissemination of nature-based adaptive solutions
Climate resilience	INADES	Restoration of soil fertility, microfinance program, climate-resilient practices, natural resource management, inclusive governance	Knowledge systematization, capacity building and preparation of training materials
Drought tolerant rice (covering Poro Region)	FIRCA, FCIAD, CNRA	Dissemination of improved drought-tolerant rice varieties	Access to high-quality adapted rice varieties
Animation Rurale	ARK, FIRCA	Strengthening resilience of vulnerable communities in the Northern Regions, soil conservation techniques with stony cordons to stop soil erosion, composting	Restoration of communal forest and farmlands

The map below reports the currently implemented programmes in the country related to food security and nutrition. As showed, the agriculture-related programmes are concentrated in all regions of Côte d'Ivoire, but mainly in San Pédro, in the regions of Gboklé, Tonkpi and Guemon. The programmes targeting fisheries are concentrated in the south, in the regions of Gboklé, Grands Ponts, Mé and Sud Comoé.

Figure 9. Distribution of food security and nutrition programmes in Côte d'Ivoire.



Source: Zero Hunger Strategic Review, 2018

6.3 WFP’s Comparative Advantage

Present in Côte d'Ivoire since 1969, the World Food Programme adopts an integrated programme approach which combines the dimensions of food security, nutrition, education, gender and climate adaptation, with a whole-of-community approach, focusing on women economic empowerment and capacity strengthening. The programmes are geographically converging in vulnerable areas (high food insecurity, malnutrition, illiteracy and exposed to climate shocks). In particular, WFP is targeting the areas in Côte d'Ivoire that are most exposed to climate change hazards like rural areas in Poro, Tchologo and Bagoue in the north, the western regions and the southern densely populated coastal areas. In addition, the WFP has been supporting school feeding and health initiatives in the country to sustain national school feeding programmes. In December 2019, nutritious hot meals were provided to 120,387 public primary school children in seven targeted regions across the country, to contribute to improving educational and nutritional status of recipient children. Moreover, quarterly take-home rice rations were distributed to 15,000 girls in fifth and sixth grades to encourage school attendance and completion of the primary education cycle⁹¹.

WFP’s agriculture support programme for women smallholder farmers serves as a platform to address multiple objectives, including food security, nutrition, education, gender equality, poverty

⁹¹ WFP Country Brief, December 2019

reduction, climate adaptation. Through this multidimensional programme, women farmers benefit from capacity strengthening activities (training on good agricultural practices, access to agriculture inputs and equipment, extension services, organizational structuring support, literacy training, nutrition sensitization) to increase their productivity, diversify food production, value-addition, market access in order to increase their revenues and lift them out of poverty. Increased and diversified food production will lead to increased availability of affordable and diverse nutritious foods on the local market. Increased production and revenues means that the women farmer groups are more resilient and better able to supply nutritious foods to the school feeding programme in their villages. This ultimately leads to improved food security and nutrition for the community as a whole.

More specifically, WFP's comparative advantage in Côte d'Ivoire can be summarized as follows:

- WFP is amongst the leading UN agency dealing with food security and nutrition that prioritizes vulnerable smallholder women farmer groups that are not structured as farmer organizations or cooperatives, thereby are often not beneficiaries from other development support; in Poro region, the WFP is providing assistance to 5 000 households (90% female-headed);
- WFP co-leads the activities of the Food Security Cluster and contributes to the development of the Integrated Food Security Phase Classification (IPC)
- WFP is one of the lead UN agency dealing with food security and nutrition with a deep field presence;
- WFP has existing agriculture support programmes for smallholder women farmers in the Poro region to improve food security and nutrition of communities living in zones at risk to climatic shocks;
- Through its ongoing agriculture support programmes for smallholder women farmers, WFP has made some initial investments to support women farmers on climate adaptation (i.e. use of solar powered irrigation system for year-round food crop production, use of solar dryers to reduce post-harvest losses and environmental impact);
- WFP is one of the few UN Agencies to support school feeding programmes and establishment of school gardens to ensure a sustainable supply of nutritious food;
- WFP adopts an integrated programme approach to achieve multiple development objectives for vulnerable communities focusing on the “*Communes de Convergence*” model⁹², as outlined in the current Country Strategic Plan 2019 - 2023;
- WFP is the sole UN agency with ownership of and experience in insurance asset protection products for smallholder farmers, and with a wide experience in anticipatory and early action through forecast-based financing and climate information services,
- WFP has developed a partnership with the private sector partner, Magic System Foundation, and UNAIDS to provide cash assistance to most vulnerable households in Abidjan,
- WFP's global expertise and experience fosters knowledge transfer and exchange of best practices to facilitate scale-up, and

⁹² A model based on strengthening resilience originally developed in Niger with the support of United Nations Agencies

- WFP is partnering with a wealth of Governmental Institutions (Sectoral Ministries, ANADER, SODEXAM, etc.), International Banks (African Development Bank, World Bank, etc.) UN Agencies (FAO, IFAD, UNDP, ILO, Unicef, etc.), Private sector bodies (Regional Agriculture Commerce Chamber, Bureau Vente Produits Agricoles, etc.), Financial Service Providers, and Non-Governmental Organizations to provide food assistance, support sustainable agriculture and natural resource management and integrated landscape restoration by mainstreaming climate resilience and gender equality.

Based on the key recommendations of Zero Hunger Strategic Review described in section 6.2, the WFP has developed its Côte d'Ivoire Country Strategic Plan (CSP) 2019-2023⁹³ with stronger emphasis on capacity strengthening with a view of shifting WFP-led programmes to government and community ownership. It considers the multisectoral and integrated dimension of hunger, malnutrition and gender. The current budget estimate for 2020 is of 15.6 million USD.

The CSP components include a Strategic Outcome 1 which aims at giving access for primary-school-age children and their households in food-insecure areas to adequate and nutritious food all year, through the provision of school meals, take-home rations and complementary services to primary-school-age children during the school year and the purchase of locally produced food for school meals.

Strategic Outcome 2 aims at providing populations affected by shocks with access to food to cover their basic food and nutritional needs during and in the aftermath of shocks. This is done through the provision of an integrated assistance package to affected populations, including food assistance and specialized nutritious food to children aged 6–59 months, pregnant and lactating women and girls and people living with HIV.

Strategic Outcome 3, which aims at improving the nutritional status of targeted children, women of child-bearing age and people living with HIV, constitutes an opportunity for the Government to support women smallholder farmers in a holistic way and to diversify food consumption by introducing policies to reduce post-harvest losses and promote sustainable access to markets. This will lay the foundations for a more robust economy that is less reliant on imports, offers better livelihood options for vulnerable populations and fosters resilient and sustainable national food systems. In fact, under this outcome, WFP will support the implementation of the national nutrition programme, with a focus on the development and implementation of a gender-responsive social behaviour change communication strategy; the implementation of the national strategy for the fortification of regularly consumed staples; enhancement of the primary education curriculum to include nutrition; and the generation of evidence on the activities in the national multisectoral nutrition plan.

This is complemented by Strategic Outcome 4 which will provide an integrated and gender-transformative assistance package to smallholder farmers, especially women's farmer groups, comprising training on good agricultural practices, equipment and social behaviour change communication-related activities that place value on local agricultural potential. Finally, Strategic

⁹³ https://docs.wfp.org/api/documents/WFP-0000101926/download/?_ga=2.205537747.1749686529.1587716498-1119087596.1523516528

Outcome 5 will contribute to strengthen capacity of national institutions to better target and manage food security, nutrition and social protection programmes.

The actual achievements and results of the WFP’s assistance in Côte d’Ivoire on the basis of the implementation of the 2019-2023 CSP and in particular for Strategic Outcome 4 are the following:

Flagship achievement: The capacity of rural communities, in particular of women smallholder producers, and government institutions to implement climate-resilient and sustainable agriculture and food security and nutrition measures is strengthened.

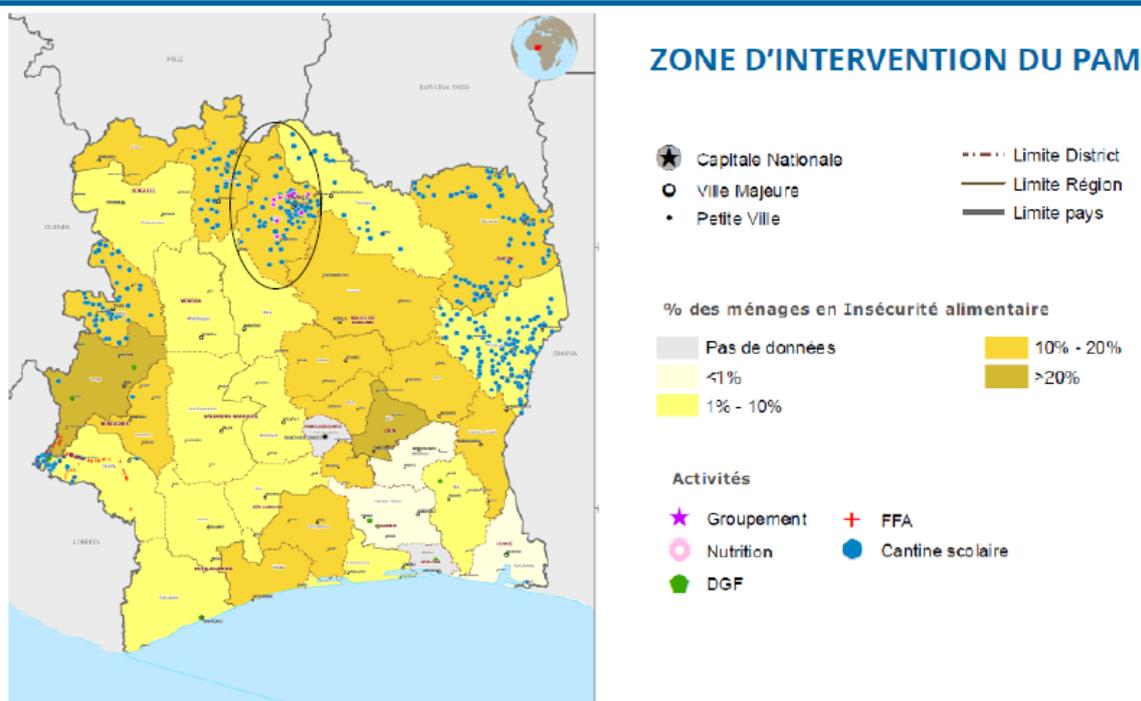
Flagship milestones and results in 2019 were the following⁹⁴

- 50 rural communities reached in Poro Region
- 5,000 rural households assisted
- 27,000 women smallholder producers supported
- 7,500 school children of 50 rural schools benefited from the school feeding programme
- 1,000 small-scale producers trained in climate resilient agriculture

The map below gives us an overview of the WFP's areas of intervention in Cote d'Ivoire.

Figure 10. Area of intervention of WFP in Cote d'Ivoire

WFP's STRATEGY IN COTE D'IVOIRE



Source. *Transforming rural communities' strategy through empowering women smallholder farmers in Côte d'Ivoire, WFP 2020*

⁹⁴ WFP Country brief, December 2019

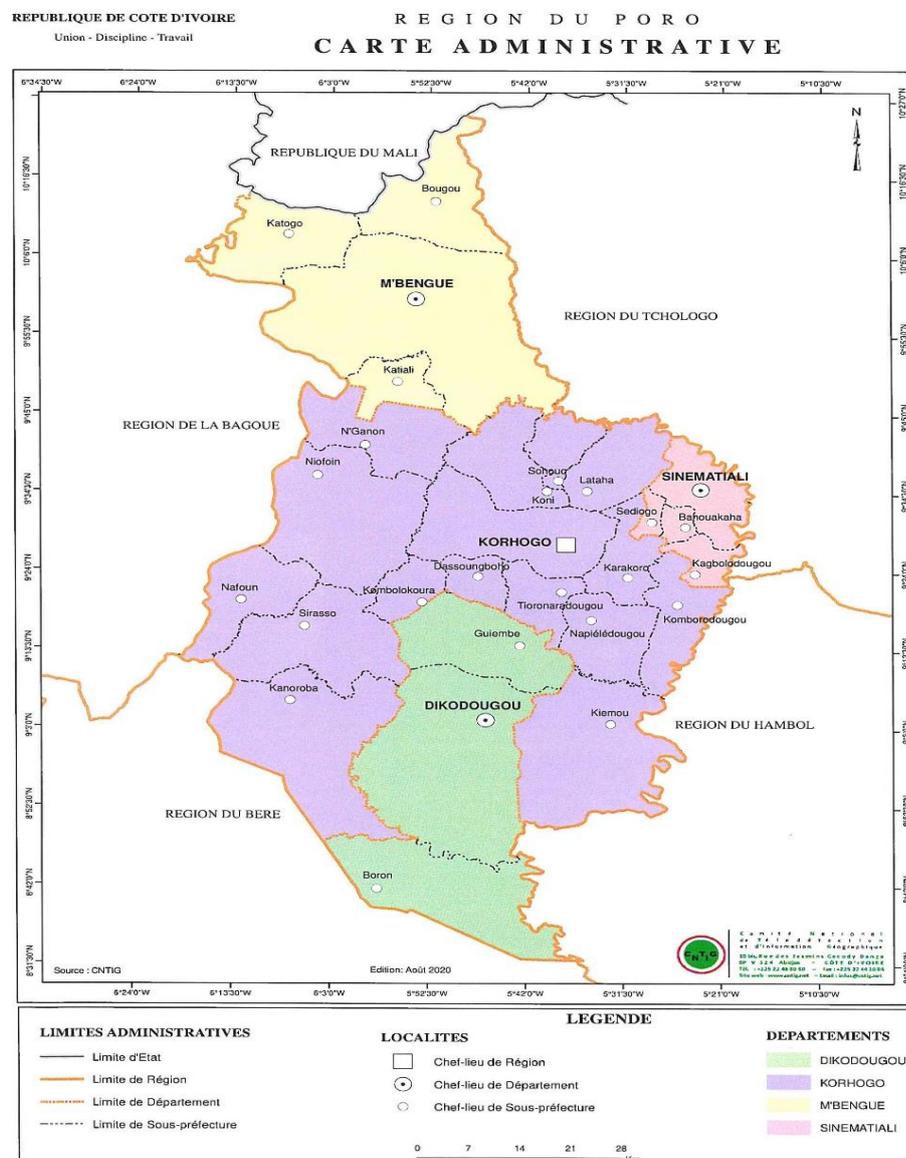
PART II: JUSTIFICATION OF PORO REGION

7. SAP Project rationale and targets

7.1. Geography

The Poro Region is in the extreme north of Côte d'Ivoire and covers a total area of 13,400 km². It is bordered to the north by the Republic of Mali, to the south by the Béré Region, to the east by the Tchologo and Hambol Regions and to the west by the Bagoué Region. According to the 2014 Cote d'Ivoire Population and Housing Census (INS, 2014) the Poro region population is 763,852 (380,508 males and 383,344 females).

Figure 11. Map of Poro region



The administrative system in Poro Region is composed of 4 departments grouped into 27 sub-prefectures and 11 *communes*. The capital of this region is Korhogo. The different departments with data on areas and population are presented in the annex 2.

7.2. Observed and projected climate trends in Poro

The baseline climate analysis of the past four decades (1986 to 2005) over the Poro region (Fig.12a, Savanes district which administratively includes Poro Region) indicates a trend of increasing temperatures. The mean temperature has risen approximately by 0.6°C. Future projections suggested an increase of average temperature by between 1.6° up to 1.8° C for 2040-2080 compared to the reference period 1986-2005 (Fig.12b and Annex 1, Climate Analysis presenting Poro Region Mean Annual Temperature Anomaly).

Regarding rainfall, 40 years (1981 – 2020) gridded rainfall dataset trends⁹⁵ revealed that Poro experienced a wet condition with some extremes from the early 90s to first decade of 2000. Conversely, the recent period is marked by ongoing rain deficits and drought conditions mainly in the crop sowing season (April to June) as well as in the core raining season, July to September (Fig.12 a and b). The lengthening of these deficits has led to dry spells and the reduction of 20 to 30 % of rainfall during cropping period which shortened growing season and the early development of the crops in the region.

Climate change is expected to exacerbate the current baseline state as RCP4.5 scenario for 2050 predicts a decrease of -10mm to -40mm of average changes in rainfall for the first months of the rainy season (May -June) with a relative increase up to 20 mm for July and September (Fig.13 c, left). Decline in rainfall coupled with increasing temperatures, may lead to more evaporation.

In addition to this regression in the volume of rainfall another alarming reality is observed. It is the interannual variation in rainfall. Rainfall increases or decreases sharply from one year to other and high variability is observed and projected for the onset of main rainy season (Fig.13 c, right). The same analysis over the last 40 years points out that inter-annual variations are very evident with oscillation up to 200 mm/y. As result, this leads to increased occurrence of dry spells and droughts which may contribute to reduce surface water resources, decline in groundwater, diminution of soil moisture and fertility, with negative implications for agricultural yields.

Poro has been affected by a series of extreme weather events (droughts and heat winds in 2004 and 2005, floods in 2006-2007, heavy rains in 2003) that disrupted food production and caused heavy losses to the agriculture sector. According to the Standardized Precipitation Index (SPI, drought index) changes are expected for the three drought indicators in 2050⁹⁶. April-June period generally shows a slightly decreasing tendency for both intensity and severity (except in the southern area where this latter decreases up to 30%) and a growing frequency of drought events.

The opposite happens for the July-September period, where stronger intensity and severity are expected in most of Poro while the frequency shows few changes. This is quite well aligned with

⁹⁵ Dataset produced by the Climate Hazards Center of UC Santa Barbara, refer to Climate Analysis provided in Annex 1

⁹⁶ Climate Analysis, Annex 1

the recent tendencies in drought distribution during this period and with the expected increase in rainfall variability.

The frequency of hot extremes and wet extremes are projected to increase in 2050 compared to the reference period 1986-2005⁹⁷ (). Based on a range of models, the IPCC suggests that future droughts and heavy rains in the Savanes region will be more intense, with larger peak wind speeds and heavier, ‘near storm’ precipitation. Heavy rain intensity is likely to increase but not necessarily droughts frequency. These projected trends will exacerbate the existing vulnerability of agricultural systems on which most of rural women depend for their livelihood if no adaptation measures are undertaken in a timely manner.

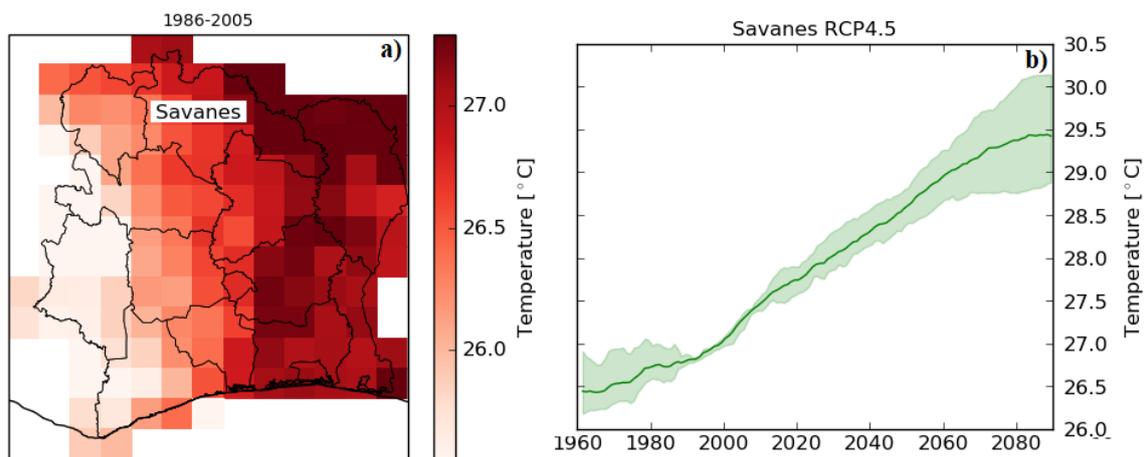


Figure 12: a) Temperature averages maps per districts in the Côte d'Ivoire over the reference period 1986-2005 based on the EWEMBI dataset. b) regional climate model projections for temperature displayed as 20 year running mean based on the emission scenario RCP4.5. The line represents the ensemble mean while the shaded area represents the model spread. Source: Modified from climate analytics (2021). Regioclim.climateanalytics.org/

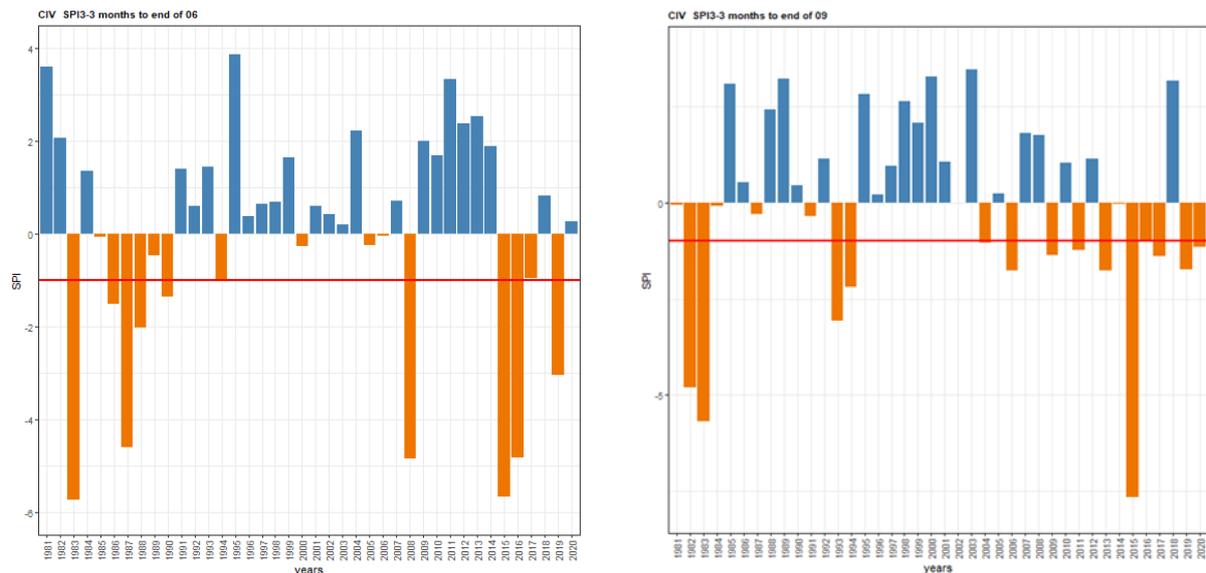


Figure 13: Standardized Precipitation Index (SPI) analysis for April to June (a) and July to September (b) from 1981 to 2020 based on Climate Hazards Center of UC Santa Barbara rainfall dataset c(below) Left: Rainfall average changes by 2050; Right: Rainfall variability changes by month by 2050

⁹⁷ Climate Analytics, 2021 <https://climateanalytics.org/tools/> - Regio Clim

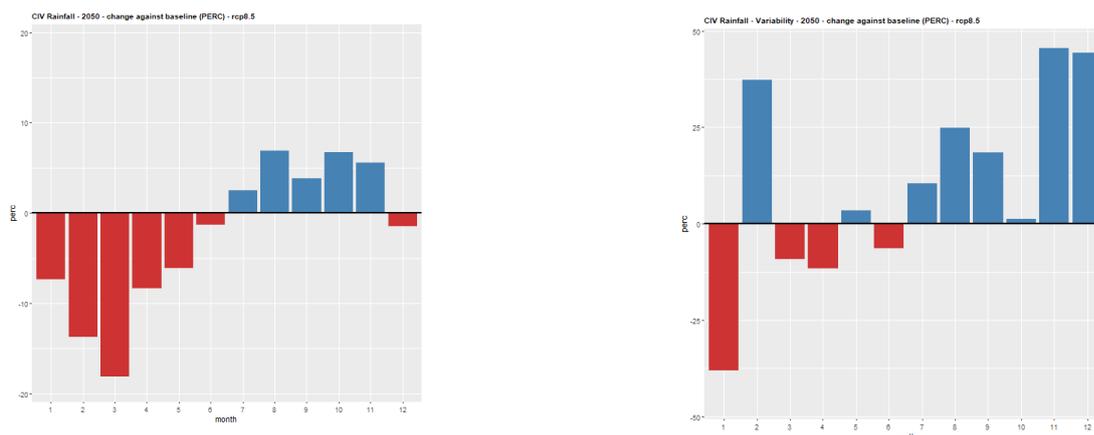


Fig 14: Left: Rainfall average changes by 2050; Right: Rainfall variability changes by month by 2050

7.2. Environmental and agricultural context

The northern part of Côte d'Ivoire, agroecological Zone Nord, is composed of the regions of Folon, Poro, Tchologo, Worodougou, Kabadougou, Hambol, Bere and Bagoue. It has a transitional tropical climate with a very hot and dry climate in December and January. The presence of the harmattan, a strong wind from the Sahara, lowers the temperature considerably. The great dry season (October - May) precedes the single rainy season marked by two rainy peaks, one in June and the other in September. The main vegetation is wooded savannah type, with trees, shrubs and grass.

Despite the fragmented and dispersed forest patches, deforestation is critical in Zone Nord. The forest area has decreased from 425,000 ha in 1990 to 300,000 ha in 2015. Deforestation (and land degradation) in this region is caused by gold mining (29%), timber trade and charcoal (25%), the expansion of human infrastructure (25%) driven by demographic pressure and agricultural expansion and livestock production (21%). Korhogo area, capital of Poro Region, has experienced large-scale deforestation with the construction of dams aimed at increasing rice potential (SODERIZ) as well as the extension of cotton and cashew nuts cultivation, orchards, etc.

Contributing factors to land degradation and loss of natural resources are also unsustainable production practices, weak forest governance, poor coordination between ministries over agricultural production and environmental conservation and lack of land tenure security.

The relationship between ethnic Fulani (mostly foreign) pastoralists and the sedentary Sénoufo farmers of the savannah region of northern Côte d'Ivoire is in the process of transformation as land available for grazing becomes scarcer, in particular as farmers increasingly turn to tree crops such as mangoes and cashews to boost their income. Traditionally, transhumant pastoralists have been allowed to roam freely over harvested and fallow fields where their cattle grazed crop residues and grass. The land benefitted from the application of manure, and the Fulani herders also sometimes cared for cattle owned by local farmers. As competition for land increases, however, local farmers are beginning to institute grazing fees⁹⁸.

The economy in Poro is based mainly on agriculture and livestock production with over 90% of farmers being smallholders due to land pressure with an average of 3.5 ha for staple food and cotton production reflecting high labor requirements and the difficulty to attract seasonal labor⁹⁹. The

⁹⁸ Country profile of Côte d'Ivoire, Land Links, 2017

⁹⁹ Country profile of Côte d'Ivoire, Land links, 2017

agriculture sector represents the main source of employment in this region counting with 4% of all farmers in Côte d'Ivoire. The number of households in 2015 was 56,502 with an average of 7.6 members (REEA, 2016). Women represent about 90% of the agricultural workforce in Poro, while 22% of rural households are female-headed¹⁰⁰.

Staple crops, mostly produced under rainfed mixed cropping systems, are maize, rice, yams, groundnut and potatoes. Vegetables are also important source of livelihoods in particular okra, tomato, cabbage, okra, bean, leafy vegetables, onion, pepper, peanut, eggplants, cabbage, cucumber, spinach, and pepper¹⁰¹. Cotton, mango and cashewnuts are the main commercial crops¹⁰².

The farming system in the area is a mixed crop-livestock farming system, mostly based on slash-and-burn. Natural regeneration of farmland, with field laying fallow, has become rare. More than 80% of producers also practice livestock farming (REEA, 2016). Cattle, sheep, goats, pigs and poultry (chickens and guinea fowl) are also present in the region.

Conflicts over land and water resources between farmers and herders have accentuated over the last decades due to the decreasing water availability and transhumance feature of the economy in the northern regions.

Food and water security, land tenure rights and implementation of community-tailored effective adaptation practices and technologies are the main livelihoods priorities and concern of local smallholders in a changing climate.

7.3. Rural development and infrastructure context

The Poro region is one of the poorest in Cote d'Ivoire with a poverty rate of 54%¹⁰³ compared to the national rate (46.3%). In rural areas, the poverty rate is 62,4%. Rural households in Poro are among the most vulnerable to food insecurity (20.5%)¹⁰⁴ and highly affected by chronic food insecurity (1.7%) leading to poor rural livelihood in this region. Poverty and food insecurity rates are higher among female-headed households because of their exclusion from community decision-making process and management of productive assets.

Climate change impacts (droughts, soil erosion, water scarcity) combined with human-induced land degradation, population growth and the lack of basic infrastructure in rural areas are determinants of the current poverty rates. In rural areas, access to drinking water is difficult in many villages. Where boreholes and wells are available, the demand for water often exceeds the availability, resulting in long queues and waiting periods near these points. A large part of the population depends on surface water of unknown quality for drinking, cooking and washing. The drying up of small rivers and groundwater makes it difficult to supply households with drinking water and hinders the development of market gardening and the irrigation of plots.

¹⁰⁰ National Census, 2015 and FAO synthesis, 2017

¹⁰¹ Étude Sur Les Filières Et Chaines De Valeur Prometteuses Dans Les Régions Du Gbeke, Poro, Tonkpi Et Du District D'abidjan. 2015

¹⁰² Source : Pre-feasibility study

¹⁰³ INS, 2015

¹⁰⁴ SAVA, août 2018

96,08% of the people have access to mobile telecommunications and internet networks. 77.1% of villages have no sanitation infrastructure at all¹⁰⁵.

The electrification rate is also very low. Only 106 out of 543 localities are electrified, i.e., 70.8% of villages live without electricity. This is one of the highest rates in the country. 8.20% of villages have access to solar energy and 1.33% have access to other energy sources.

Regarding educational infrastructure, 49.8% of villages have schools, making this area one of the least well-off in terms of basic educational infrastructure.

The road network is also in very poor condition. Out of 4,705 km of roads, only 163 km are paved, often in poor condition. The low density of the road network and the concentration of traffic on the main roads make the unpaved roads almost impassable, which greatly reduces their practicability across all seasons, causing the isolation of entire sections of the region. The advanced degradation of village tracks used to collect and transport agricultural products to the cities. The socio-political crisis (2002-2011) strongly affected and postponed the rehabilitation and maintenance of all roads and tracks.

7.4. Gender equality and social inclusion

In the socio-political organization of the villages, men are the leaders in the villages. Women are not invited in public assemblies and/or do not have the right to speak. Therefore, they have no decision-making power in the development of the village unless upon specific request from the men.

Economically disparities are evident between men and women in terms of access to land, farming equipment and financial resources. Farming equipment and, more specifically, harnessed crop oxen are the property of men.

Even though land is a family asset, it is managed by men in the household. Land is acquired by inheritance, bequest, temporary transfer but it is not sold. Women do not have the right to own property. However, the head of household land can make available to them lands to grow food crops and vegetables.

Women play a central role in the agricultural sectors, especially in vegetable and staple food production. Women's groups in northern Cote d'Ivoire and especially in the Poro region are essentially agricultural, with rice, maize, potato, eggplant, tomato, onion, groundnut and okra being the main crops grown. Very few groups own the land they cultivate. Moreover, these groups have constraints related to agricultural production, conservation and marketing of production. They do not have enough agricultural equipment and have not received training in new techniques for processing and conserving their agricultural production. All this contributes to low agricultural yields compared to CNRA standards¹⁰⁶

¹⁰⁵ Côte d'Ivoire, Recensement des Exploitants et Exploitations Agricoles 2015/2016

¹⁰⁶ The Reference Survey of Agricultural Groups Supported by WFP

Women's groups face difficulty marketing their products. In fact, almost three out of four groups (70%) experience marketing constraints of their agricultural production. The main constraint mentioned by the groups is the lack of transportation to evacuate their production¹⁰⁷

Few have access to credit from microfinance institutions or banks. In the last twelve months almost 36% of heads of households, 17.59% of whom were women, used a loan mainly from relatives and friends (17.3%) compared to 6.6% from banks and microfinance institutions. Among those who did not take out a loan at the over the last twelve months, 53.5% said they could do so mainly with relatives and friends.

The lack of training (Literacy, marketing and management, the agricultural techniques, organization and community life and nutritional education), conservation methods, and equipment for processing the products are also constraints mentioned by the recipients¹⁰⁸.

In addition, they lack water reservoirs or irrigation motor pumps (90% of groups). Access to quality seeds and inputs are problems for the settlements in the Poro region. In fact, 60% do not have access to seeds, while 80% have difficulties in access to fertilizers and 85% do not have any phytosanitary products¹⁰⁹.

At the level of producers, the workforce is essentially a family one where work is shared between men, women and children. Man's work generally consists of clearing land, felling, burning, pruning, making fences against animals and building storage granaries. Women's work consists of sowing, weeding, harvesting, transporting, preserving, managing the granary and processing. As for the children, depending on their age and sex, they help the man or the woman. The average number of agricultural workers per farm is four. Working groups or self-help groups are a form of community work in the villages. They are organized by people of different ages but on a rotating basis. Each member is responsible for bringing food and drink to the group that has come to help them.¹¹⁰

Women are generally involved in the retail sale of farm products, particularly fruit, vegetables and processed products (cakes, toasted corn, etc.). The commercial activities of the women take a back seat after the accomplishment of household tasks or even work in the plantation of her husband or the head of the household. Women are responsible for the sale of food crops and vegetables while men ensure the selling of cash crops (cotton, cashew nuts, etc.)

The decision related to major household expenses are made by the head of household. Men manage income from cash crops. However, women manage their own income from, for example, vegetables farms and retail sales. They often take care of daily expenses such as meals, clothing, childcare, etc. They are also responsible for the household's daily expenses.

Women's access to financial resources, such as credit, is difficult because of conditions to access to set by financial structures. Women's incomes are low as a consequence of low productivity, caused

107 Ibidem

108 Ibidem

109 Ibidem

¹¹⁰ Study on promising sectors and value chains in the regions of Gbeke, Poro, Tonkpi and District of Abidjan. 2015

by a lack of resources to acquire modern inputs or engage in new income-generating activities. Financial institutions find it so risky to make loans to them.

Ethnic groups (Foulani, Senufo, Malinke) are integrated and participate in the village activities without concerns. However, land tenure rights are strictly regulated by customary rights depending on the crops grown. In case of food production, all ethnic groups receive a piece of land to grow food for household consumption. In case of commercial exploitation, i.e cashews and cotton production, Senufo males are the driving force owning medium of large-scale farms and/or leading cooperatives of small and medium-size producers.

The triple burden of malnutrition, represented by micronutrient deficiencies, undernutrition and overnutrition, is heavily affecting youths and children with significant incidence in Poro Region. Given the limited government resources and remoteness conditions, the school feeding needs remain important in the region.

Youth are scarcely involved in asset protection management activities and mainly are contributing to the informal sector. Work opportunities revolve around mainly in farming activities either at household or cash crop seasonal workers. Lack of innovative technologies exclude young people from more rewarding and appropriate jobs such as Information and Communication Technologies and provision of Digitalized Financial Services.

7.5. Vulnerability rationale

According to the pre-feasibility findings and consultations carried out from November 2019 to June 2021, Poro Region has been identified as the area of intervention for this project on the basis of the following criteria and preliminary conclusions. A comparative analysis of the most vulnerable regions in Côte d'Ivoire based on climatic and socio-economic criteria has been inserted in Annex 2.

1. Climate change exposure:

The main findings of the Climate analysis for Poro Region carried out by WFP highlight the following trends (see Climate Analysis in Annex 1 for details):

HISTORICAL

- Increasing rainfall inter-annual variability in the core of the season (JUL-SEP)
- Reduction of rainfall amounts during the start of the season (MAY-JUN)
- APR-JUN period is more affected by drought events and occurrence of heavy droughts is increasing in the last years.
- Since 2004, annual alternations of dry and wet years are evident for the period JUL-SEP highlighting a kind of increasing variability.

- Quite high variability in the date of the start of the season that could affect the timing of agriculture preparation activities and the sowing with possible negative impacts on the crop production

CHANGES BY 2050

- Slight increase in annual rainfall and strong increase in inter-annual variability
- The annual rainfall increase is mostly due to a generalized increase in the second part of the year JUL-NOV. Rainfall decrease at the beginning of the season is confirmed
- The increase in variability is mostly due to the changes occurring in the months in the core of the season (JUL-SEP)
- A growing frequency of lighter drought events (low intensity and severity) is expected in APR-JUN
- The opposite happens for the JUL-SEP period, where drought events with stronger intensity and severity are expected
- Annual max temperature will raise for about 1.6 C. MAY and JUN are the months with higher increases (it must be noted that rainfall is expected to reduce during these months). Increasing temperature will lead to increasing ET
- Slight shift (delay) of the season timings (both start and end) is expected (aligned with the decrease of rainfall amounts at the beginning of the season and the increase in the second part of the season)

Findings from community consultations, indicated that climatic disturbances started to be felt in the 1980s in the Poro region, expressing through rain variability, alteration of microclimates, longer dry spells and stronger incidence of extreme weather events such as droughts and heat winds (Harmattan) storms and increased occurrence of pests and diseases. The rains, falling during the single rainy season, have reportedly not been regular since 1980s.

Historically, based on stakeholder consultations, reduced rainfall, and shortening rainy seasons have been observed along with heat winds and drying up of rivers and streams.

Besides the climate analysis conducted¹¹¹, this negative trend in rainfall is confirmed by the wider literature. Between 1940 and 2010, rainfall has reduced by 28.9% in Abidjan and 7.7% in Korhogo¹¹². For Poro region that has only one rainy season this represents a substantial loss and a risk for the future of agriculture as main source of livelihoods¹¹³.

¹¹¹ See annex 1 for details

¹¹² Climate-Smart Agriculture in Côte d'Ivoire, FAO, 2018

¹¹³ Étude de la vulnérabilité du secteur agricole face aux changements climatiques en Côte d'Ivoire, PNUD 2013

Extreme events have been highlighted through the Perception of Extreme Weather Events and the Changing Landscape study, summarized in the table below:

Table 5. Extreme climate events since 1980 and other observed changes in the environment in Poro Region

Extreme weather events and other observed changes			Changing landscape
Drought year since 1980	Flood year since 1980	Change in harmattan	Vegetation
1983-1984	1980-1981	Decreasing harshness of cold	Soil erosion Degradation of the vegetation cover and increasing desertification
2004-2005	Very heavy rainfall in 2003	Warmer and drier wind	Disappearance of water courses and drying up of dams and rivers
	2006-2007	Strong dust that accompanies it when we didn't see it before.	Disappearance of plant and animal species

Source : *Variabilité Climatique Et Changements Dans L'environnement À Korhogo En Côte D'ivoire : Mythes Ou Réalité ?*, European Scientific Journal February 2016 edition vol.12, No.5

2. Vulnerability of agriculture and food systems:

Climate change hazards, particularly droughts, heavy rains and interannual rainfall variability, have intensified and they are triggering major impacts to the agricultural production, food and water security in Poro Region. The direct consequences on agriculture are a shortening of the average duration of the vegetative growth periods (delay of the start of the cropping season), a sharp alteration of microclimates, a weak growth in biomass, yield losses, increasing proliferation of pest and diseases and a reduction in the productive potential of agroecosystems (reduction in arable land due to their degradation, diminished soil fertility, increased exposure of plants to water stress and depletion of surface water volume in most areas). At the livestock level, it influences the availability of fodder and promotes the emergence of pathogenic vectors for livestock. In addition, social impacts to the communities, such as internal displacements, forced rural migrations and clashes between farmers and herders over natural resources have been reported and are predicted to increase. Human-induced deforestation, land degradation and desertification processes have compounded climate change impacts, increasing smallholders' food and water insecurity¹¹⁴.

Climate models project major declines in crops yield at different warming level¹¹⁵. Table 6 shows the impacts of climate change on some key food and cash crops grown in northern Côte d'Ivoire. Cereal crops, tubers and food crops will be affected by climate change and their production will decline significantly. Data from literature review are combined with projections provided by the

¹¹⁴ Climate change vulnerability study, UNDP 2013

¹¹⁵ Section 7.5 and Annex 1 of Prefeasibility study for climate analysis of Poro Region (2021)

recent Climate Analysis for Poro Region conducted by WFP’s Vulnerability Analysis Department between October 2020 and March 2021. The crop yield change analysis is based on the results of the intercomparison of multiple global gridded crop models within the framework of the Agricultural Model Intercomparison and Improvement Project and the Inter-Sectoral Impacts Model Intercomparison Project. Projections to 2050 for RCP85 have been utilized. The analysis looks at estimates the changes in yields and in yield inter-annual variability expected by 2050 in the study area.

Table 6. Projected impacts to commercial and staple crops in 2050

Crops	Projected impact in 2050
<i>Maize</i>	Losses greater than 25% in the northwest regions (Ahossane et al., 2013).
<i>Rice</i>	Rice yields could drop by up to 45% in irrigated lowland, 19% in rainfed lowland, and 24% in rainfed upland in 2070 (Van Oort and Zwart, 2018)
<i>Sweet potatoes and Yam</i>	Losses at around 3 million tonnes (Ahossane et al., 2013).
<i>Cashew</i>	Earnings in the lower regions and in the northeast (Agneby, N’zi-comoé, Moyen comoé and the lakes region), but losses equivalent to 40% in the northwest (the regions of Savanes, Denguélé and Worodougou) (CIAT, 2011).
<i>Cotton</i>	Minor impacts (CIAT, 2011).

On the basis of the WFP Climate Analysis for Poro Region, maize yield is expected to decrease on average from 4% to more than 6% by 2050 while yield inter-annual variability shows a slight increase. A higher effect of decrease, up to 19% of yield drop is also expected for rain-fed rice. Cashew nut production will also fall by more than 40% whereas 10% would be the yield loss for cotton¹¹⁶. Findings from stakeholder and communities’ consultations carried out for Poro Region corroborate a similar vulnerability status of rain-fed staple crops such as maize and rice which are the main cereals consumed in the Region. The project formulation team was constrained to collect more precise baseline data during the development of the Funding Proposal. At project inception efforts will be dedicated to improving the baseline (Historic and projected changes) and vulnerability analysis for the selected food value chains (maize, rice and vegetables).

Table 7. Climate change hazards and projected impacts with project adaptive measures to cope with them.

Climate change hazards in Poro Region	Impacts to selected project crops by 2050	Adaptive measures proposed by the project
Droughts, interannual rainfall variability	Maize and rice: yield reduction up 20-25%, increased incidence of fall armyworm to maize, Vegetables: drop of production in irrigated plots and off-seasonal harvest,	Technical assistance and trainings on adaptive farm management. Implementation of conservation agriculture, use of drought tolerant varieties, hedge row farming, intercropping, mulching and cover crops, application of

¹¹⁶ Ahossane et al., 2013 and CIAT, 2011 and Economic Risk Profile Of The Ivorian Agricultural Sector, August 2020

	Shifting cropping patterns Potential conflicts between farmers and livestock producers over water resources	organic fertilizers, small-scale drip irrigation, climate information services, crop insurance schemes, microfinance instruments including access to loans and credits
Floods, heavy rains	Loss of crops and farm plots, damages to rural irrigation infrastructure	Planting of forest and fruit trees, agroforestry, plantation of fruit and forest tree species, climate information services, microfinance instruments including access to loans and credits
Heavy winds	Reduction of crop production, damages to staple crops, higher evapotranspiration	Windbreaks, hedge row crop production, agroforestry

Increasing dry spells and droughts have caused a water deficit and reduction of water sources for household and agricultural production. Degradation and desertification exacerbated in Poro due to lengthy dry season, shifting weather patterns and rainfall variability combined with higher temperatures.

The lack of water for agriculture (and for domestic consumption) is also a major issue. Indeed, boreholes have low yields (about 3m³/hour), making groundwater resources scarcely exploitable for irrigation. Surface water requires storage through water retention, given the configuration of the hydrological regime. Transhumance is also a major concern in the area for water scarcity and increased desertification and loss of soil fertility. Conflicts among farmer and herders over land tenure rights have intensified prompting the government to identify transhumance corridors to halt deforestation and clashes over waterpoints.

3. Vulnerability of smallholder producers

Smallholder farmers in Poro Region, in particular women and youth are facing several challenges and barriers towards mainstreaming climate change adaptation in their livelihoods.

a. Increased exposure of food production systems to more frequent and intense climate change hazards and shocks

Poro region is experiencing a changing climate with increased frequency and incidence of hazards and climate variability. The start and duration of the rainy season has become more unpredictable, causing a shift and alteration of cropping calendar and affecting farmers' production and livelihoods. Incidence of droughts and dry spells has become more severe overtime, reducing soil fertility and agroecosystems productivity. In addition, proliferation of pests and diseases, whether

native and imported, has become more significant and unpredictable due to a changing climate. Tough meteorological stations are installed, and climate data are recorded, weather forecasts and other climate information services are limited to cash crop producers and are not reaching the majority of smallholder farmers in the region preventing an efficient planning of farming activities.

b. Limited awareness and access to adaptive production inputs and assets as well as climate tools and services

Access to fertilizers is limited, and farmers try to cope in the best way they can. As cotton is the only crop benefiting from input credits from the cotton companies, part of the fertilizer purchased is used to grow food crops. Aware of the needs of the producer, the cotton companies make easy the access to fertilizers¹¹⁷. Unfortunately, these fertilizers and the plant health products used for cotton plantations are not suitable for food crops.

In a survey carried out by WFP in the Poro region with groups supported by it, 85% of groups consider the lack of agricultural inputs as major material constraints limiting their production capacity¹¹⁸. Women's groups face difficulty marketing their products. In fact, almost three out of four groups (70%) experience marketing constraints of their agricultural production. The main constraint mentioned by the groups is the lack of transportation to evacuate their production¹¹⁹

In addition, they lack some production assets such as water reservoirs or irrigation motor pumps (90% of groups). Access to quality seeds and inputs are problems for the settlements in the Poro region. In fact, 60% do not have access to seeds, while 80% have difficulties in access to fertilizers and 85% do not have any phytosanitary products¹²⁰.

In addition, smallholders express a limited understanding of climate change, risks, and drivers of vulnerability, with limited access to climate/weather information, with women and youths most affected. Planning and decision-making is detached from last mile climate/weather information while risk transfer mechanisms (micro-insurances) have been used for cotton only.

c. Unsustainable agricultural practices and lack of adaptive technologies

Slash-and-burn, poor soil and water management, bush fires, residue burning, monoculture in case of cash crops, limited crop diversification and climate-resilient agroecology practices, lack of appropriate technologies reduce productivity and constrain sustainability of agroeco and food systems in the medium and long terms. Soil impoverishment and loss of topsoil is one of the major concerns of agricultural producers. Deforestation aggravated by unsustainable land use practices is one of the causes of soil erosion and degradation. Technical and organizational capacity around the adoption and dissemination of climate-resilient technologies and practices is also a considerable limitation to restore agroecosystems productivity and improve food security given actual and future climate risks at farm and community levels.

¹¹⁷ Vulnerability and feasibility studies for the Agricultural Resilience Programme in Northern Côte d'Ivoire, focusing on the cotton sector. April 2020

¹¹⁸ The Reference Survey Of Agricultural Groups Supported By WFP, August 2019

¹¹⁹ Ibidem

¹²⁰ Ibidem

d. Water scarcity and loss of soil fertility

Due to climate change, water is increasingly becoming the main limiting factor for sustainable agricultural production in Poro Region. Water resources are unsustainably or insufficiently exploited. According to the regional direction of ANADER in Cote d'Ivoire, there were 129 lowlands in 2017 that could be used for food production in Poro Region. However, there are not all exploited. According to the aforementioned source, there are in Poro Region about 25 dams used for agricultural activities. However, it should be noted that most of these infrastructures need to be repaired, limiting crop water supply. Irrigation is mostly focused on cash crops and counter-season small-scale vegetable production.

Extensive and itinerant farming, gold mining, timber, charcoal and firewood production are causing widespread land degradation and soil losses in Poro region. Climate change is adding its impacts in terms of increasing desertification and soil erosion due to droughts and extreme rainy events.

Soil and water management practices are implemented through international projects for limited duration of time and due to limited involvement (like for cash transfers projects or weak extension support) for dissemination they are scarcely appropriated by producers. Farmer field schools and farmer-to-farmer approaches that have demonstrated effective results across Côte d'Ivoire are yet scarce in Poro Region.

e. Heavy post-harvest losses

The lack of packaging, conservation, processing and selling facilities make post-harvest losses unavoidable and to ensure that products are sold under the best conditions. Packaging is usually of bad quality due to the lack of adequate machinery and training. The main food crops like maize, rice, yam and vegetables are the most affected by post-harvest losses whereas specialized cash crops including cotton, cashews and peanut are less concerned.

f. Limited financial opportunities to incentivize climate-proofing investments

The region lack credit structures to finance farmers. Indeed, no commercial bank (SGBCI, BICICI, NSIA, SIB etc.) finances agricultural activities because of the risk of the speculation adopted by farmers and the majority of farmers are not able to provide guarantees requested¹²¹.

According to the study on promising sectors and value chains in the regions of Gbeke, Poro, Tonkpi and District of Abidjan led by ANADER and Care International, 90% hoard their earnings and do not have an account in a financial institution in spite of the turnover they generate at the end of these activities.

Smallholder farmers have limited financial services that are suited to their economic conditions and needs. Poro Region offers limited opportunities to provide savings and loans, with fewer participation of private companies and risk aversion by providers to release loans for climate-proofing investments. Relatives and tontines are the easiest way to get loans or access to finance.

121 Plan Stratégique de Développement du Département de Korhogo, 2007

Indeed, according to the reference survey of agricultural groups supported by WFP, almost 36% of heads of households, 17.59% of whom were women, used a loan mainly from relatives, friends (17.3%) compared to 6.6% from banks, and microfinance institutions. 53.5% of head of households said they could get credit mainly with relatives and friends. Another option is getting access to credits provided through the Village Saving and Loans Associations (VSLA), approach promoted by Care International across West Africa. Micro-insurance schemes are available for life-savings and in some cases for asset protection, mostly for large producers whereas are not an option for climate shocks.

Agricultural insurance products are mostly oriented to the production of commercial crops, specifically cotton and in some cases cashews. Smallholders and staple food producers are generally excluded from access to tailored insurance products. Microinsurance products developed with cooperatives of maize producers have led to mixed experiences. Macroinsurance schemes directly subscribed by the Government work at national level with African Risk Capacity (ARC) for major extreme events and producers in Poro have benefited from drought- related coverage in 2019-2020¹²².

Local Governments lack the financial capacity to implement national and local plans including for the scaling out of climate-proofing measures in response to climate change threats and impacts.

g. Lack of market information

Prior to the 1990s, the majority of food crop production was for consumption. Since the 2000s, farmers manage to sell some surplus on the markets. The markets are held weekly in the Poro region. Market infrastructure is poor in Poro Region; particularly physical marketplaces are mostly informal at village level. Processing and stocking facilities are insufficient or inadequate for most of food products.

Farmers, especially women who grow food crops, suffer from a lack of information about the prices of the goods they sell. There is in Côte d'Ivoire the Office d'Aide a la Commercialisation des Produits Vivriers (OCPV) responsible for collecting information on the markets and making it available to the main operators (buyers, sellers). However, OCPV do not have adequate material and equipment to manage a good market information system. Thus, farmers do not have the necessary information on prices to producers (field prices) and very often remain helpless in the face of intermediaries in price negotiations. This lack of information exposes them to loss of income because they are often forced to sell their products at relatively lower prices than the day's prices.

4. Volatile socio-economic context

Economic activities are mainly devoted to agriculture and supporting agri-business services that represent the main source of livelihoods for about two-third of the active population in Poro Region. Formal or structured organizations of producers including cooperatives are focusing on commercial crops value chains. Most of rural population is dedicated to farming in different forms either with family or workers. Women have limited land tenure rights and beside production are

¹²² Refer to Annex 6 for the preliminary feasibility study on insurance products in Poro Region.

occupied with processing and commercialization. The prevalence of population is illiterate with high rates of food insecurity or malnutrition. The impacts of COVID-19 in the country and particularly in the northern regions have been significant in terms of food availability and sanitary restrictions in farmlands and rural markets. Reduced movements and limited market sales have contributed to increasing the food insecurity and malnutrition in Poro region.

The main constraints for rural communities living in Poro Region during the COVID-19 pandemic have been the following:

- Workforce for farm labour were scarce, reducing availability of workers during high demand periods such as land preparation and tillage, sowing, weeding and harvesting.
- Travels and market activities were restricted reducing processing and commercialization of food products and affecting revenues of rural communities
- Processing, storage facilities, inputs and financial providers were closed affecting production and post-harvest activities.

5. Land degradation and loss of natural resources

Climate variability and extreme weather events led to a change in the landscape¹²³, and this was asserted by local populations that expressed major concern around land degradation and loss of productivity. Climate change impacts in Poro Region have triggered a deterioration of the natural capital stock, in particular of degradation of ecosystems, loss of land productivity and increased desertification. A situation characterized by the disappearance of watercourses and the dewatering of dams, rivers, and shallow-wells.

Due to high deforestation rates, biological corridors have been disrupted and ecosystems fragmented. Microclimates in once forested hills and river edges have been altered, affecting water availability and soil fertility.

6. Gender inequalities:

Despite their critical participation and contribution to the household's economy, women and female-headed households have higher levels of food insecurity and poverty than male-headed household¹²⁴ due to their exclusion from community decision-making process and inequalities in terms of literacy and access and ownership of productive assets¹²⁵. Issues around land tenure rights, traditional customs, literacy, access to production inputs, participation in structure organization and representation in decision-making committees create a gender imbalance and unequal involvement of women in economic activities. The impacts of COVID-19 have aggravated the food and nutrition security and economic vulnerability of rural households due to sanitary restrictions,

¹²³ Variabilité Climatique Et Changements Dans L'environnement À Korhogo En Côte D'ivoire : Mythes Ou Réalité ?, European Scientific Journal February 2016 edition vol.12, No.5

¹²⁴ SDG national review for Côte d'Ivoire

¹²⁵ Gender Inequality Index 2018 for Côte d'Ivoire equals 157th out of 162 countries

including reduced movements to farmlands and limited market and commercialization activities. Over 80% of households' jobs have been affected by containment measures, increasing up to 86% for the private sector¹²⁶. As a result, poverty rates and food insecurity are higher in the female population and female-headed households of Poro region.

7.6. Programmes and main stakeholders in the agriculture and food security sector

Table 8. Climate change, agriculture and food security projects in Poro Region

Topic and Projects	Organizations	Key activities	Synergies
Food and nutrition security Climate-resilient agriculture	WFP	Strengthening technical and organizational capacities of smallholder farmers Food distribution to school canteens Inputs and technical assistance for staple and vegetable production Facilitating the access to microcredits and to climate information and weather forecasts Awareness-raising and training on nutritive food and hygiene practices Facilitation of market information and leveraging farm to market alliances Support to rural community and household post-harvest facilities	- Technical Assistance for climate-resilient production - Facilitate access to high quality inputs, micro-credits and market information - Disseminate climate information
PPCA 2018- 2023	World Bank	Technical and financial support to cashew nut value chain	- Access to loans - Implementation of climate-resilient practices
PSNDE	World Bank	Promotion of digitalized financial services Dissemination of climate-smart technologies	- Access to micro-credit and potentially micro-insurance schemes - Inclusion of Climate-smart farming technologies

¹²⁶ COVID-19 Household Survey, UNDP, 2020

Food security and climate-smart agriculture programs	AfDB, FAO, AFD, FIRCA	Capacity development, integration of climate-proofing technologies, soil and water conservation, land restoration, etc.	Access to high-quality inputs and climate information, training and technical assistance on climate-smart agriculture
Project for sustainable soil and water management in 50 sites of Poro Region	ARK (local ONG)	Stone bunds, microdams, lowland management,	Scaling up of actual initiatives
Agroforestry against soil erosion	ANADER	Implementation of 9 hectares of agroforestry plots in the village of Zonguitakaha	
Protection against heavy winds and soil erosion	WFP	Implementation of windbreaks in the frame of measures to support smallholder producers in northern Côte d'Ivoire	

Many stakeholders work in the different components of the agricultural sector. They are institutional actors, support actors, production actors, processing actors, sales actors and consumers.

Table 9. Main stakeholders in Poro Region

Institutional and support actors	<ul style="list-style-type: none"> - Regional Department of MINADER - Regional Department of Ministère des Ressources Animales et Halieutiques (MIRAH) - Agence Nationale d'Appui au Développement Rural (ANADER) - Centre National de Recherche Agronomique (CNRA) - Agence pour le Développement de la filière RIZ en Côte d'Ivoire (ADERIZ) - Office d'aide à la Commercialisation des Produits Vivriers (OCPV) - Bureau Vente aux Producteurs (BVP) - Chambre Régionale des Métiers (CRMB) - Conseil Régional- Poro Région
Civil Society Organizations, technical partners	<ul style="list-style-type: none"> - Animation Rurale de Korhogo (ARK) - Impactum - Care International
Production actors	<ul style="list-style-type: none"> - Farmers - Organisations Professionnelles Agricoles (OPA)/Farmers associations - Inputs suppliers (Callivoire , Semivoire, Ivograin, Cotivet....)
Processing actors	<ul style="list-style-type: none"> - Owners of processing units (rice husking unit; unit for grinding maize...)
Sales actors	<ul style="list-style-type: none"> - Wholesalers - Retailers - Professional trade organizations - Restaurants - Supermarkets
Consumer	<ul style="list-style-type: none"> - School and university canteens - Military barracks (gendarmerie, military) - Households, etc.

Source. Étude Sur Les Filières Et Chaines De Valeur Prometteuses Dans Les Régions Du Gbeke, Poro, Tonkpi Et Du District D'Abidjan. 2015

Table 10. Structures that support the development of commodity chains

Type of support	Structure
Funding	<ul style="list-style-type: none"> - FIRCA - Agence Française de Développement (AFD) - FIDA
Technical and commercial	<ul style="list-style-type: none"> - ANADER - CNRA - Aderiz and AfricaRice¹²⁷ - Agence Emploi Jeunes (AEJ)¹²⁸ - OCPV - National Chamber of Agriculture

Source. Study on promising sectors and value chains in the regions of Gbeke, Poro, Tonkpi and District of Abidjan. 2015

7.7. Status of Adoption of Climate Resilient Practices and Technologies

The Government of Côte d'Ivoire through the support of technical and financial partners has promoted the adoption and dissemination of climate-resilience practices and technologies with varied degrees of success. Moreover, NGOs and Civil Society Organizations have implemented several actions to improve the livelihoods 'climate-resilience of rural households in Poro. The main climate-friendly solutions made available and disseminated to smallholder producers have been summarized below.

- High-quality inputs: drought-tolerant seed varieties and planting materials, applied research on improved fodder, cash (cotton, cashews, peanut) and food (maize, sorghum, millet, rice, yams etc.) crop varieties
- Agroforestry schemes, reforestation of villages and assisted natural regeneration, windbreaks
- Efficient cookstoves and other renewable energy solutions
- Crop association, intercropping, conservation agriculture, mulching and use of cover crops and vetiver
- Soil and water conservation techniques including gabions, stony cordons, contour lines and water retention structures
- Post-harvest management
- Composting and biogas generation
- Biopesticides production
- Solar pumping, green technologies
- Solar drying
- Hermetic Silos and Hermetic bags
- Water points for livestock consumption

¹²⁷ AfricaRice is a CGIAR Research Center – part of a global research partnership for a food-secure future

¹²⁸ The Agence Emploi Jeune (AEJ) is the public service for youth employment in Côte d'Ivoire. It supports the development of skills among the country's young people and contributes to developing their employability.

Further details on the activities and practices promoted and disseminated by WFP, most of them coinciding with the above-mentioned technologies have been included in Annex 8.

PART III: IDENTIFICATION OF PRIORITIES AND ACTIONS

7.8. Gap Analysis and Identification of climate-resilient intervention priorities

Smallholders will be increasingly unable to adapt to a changing and variable single rainfall season that is characterizing Poro Region. Women and youth, who have lesser access to productive assets in comparison with male producers will be exponentially and disproportionately disadvantaged by climate change impacts. For example, interannual rainfall variability and droughts will impact severely women farmers, traditionally staple and vegetable growers causing decreasing productivity and increasing post-harvest losses of their food systems. Moreover, climate shocks will affect smallholder communities by eroding soil and water stocks and increasing land and natural capital degradation. Consequently, rain-fed reliant livelihoods are undermined, and with limited coping alternatives, government capacities are stretched to help meet recurring food needs.

Findings from national and community consultations corroborate the high vulnerability of smallholder communities to climate change hazards in Poro Region. The following challenges have been identified:

- a) Low yields and poor crop diversification due to poorly adapted farming practices and reliance on rain-fed systems with limited access to climate-resilient technologies.
- b) Restricted horticulture potential due to limited water, suitable land, and shading, being driven by climate change.
- c) Degraded watersheds from the overexploitation of agricultural land and water resources, as a result of a changing climate, driven also by deforestation, as forest resources are exploited for alternative sources of income, especially charcoal-making.
- d) Reduced financial capacities from the loss of income, undermining investment in livelihoods and their adaptation to the changing climate.
- e) Weak integration of smallholder farmers in food value chains, market outlets missing, aggravated by poor post-harvest handling practices/technologies, which limits livelihood diversification.

The table 11 below, designed from consultations with stakeholders and communities (ANADER, MINADER, MINEDD BFCD, ARK, IRC, SODEXAM etc.), provide an overview of the main gaps and barriers to adaptation to climate change and proposed interventions.

Table 11. Barriers and intervention priorities

Gaps	Barriers	Menu of Interventions	Partners
<p>KNOWLEDGE: Limited data availability and weak access to climate information and weather forecasts to better cope with climate change impacts and extreme events</p>	<p>Smallholders farmers and women associations access limited and sometimes unreliable information that make them unable to adjust farming calendars and plan properly agricultural activities</p>	<ol style="list-style-type: none"> 1. Disseminate climate information to smallholder farmers and women association via their mobile phones and (community) radio programs; 2. Support rural technical advisory services to assist farmers with adjustment of farming calendars and adoption of climate-friendly technologies 3. Train youths in the use of climate-proofing digital technologies 4. Improve data collection and analysis to improve forecasts, decision making process and communication tools <p><i>The project will promote knowledge dissemination through peer-to-peer exchanges, access to climate information, and systematization of lessons learned (activities 1.4, 2.2 and 3.3)</i></p>	<p>SODEXAM, ANADER</p>
<p>TECHNICAL: Unsuitable agricultural practices and weak technical capacity of smallholder producers to adopt and scale up climate resilient technologies</p>	<p>Smallholder farmers and farmlands remain highly vulnerable to climate impacts and are unable to implement climate-resilient food production systems and integrate risk financing solutions in their management system</p>	<ol style="list-style-type: none"> 5. Facilitate the access of farmers to improved and adapted inputs (stress tolerant crops, biopesticides, composts, etc.) 6. Training farmers on innovative, appropriate climate-smart agricultural technologies including drone monitoring 7. Improve integrated soil fertility management including composting and conservation farming 8. Improve biodiversity management through natural assisted regeneration and village reforestation, including windbreaks 	<p>ANADER</p>

		<p>9. Improve water conservation and management including rainwater harvesting systems and implement water retention techniques</p> <p>10. Improve integrated pest and disease management</p> <p>11. Assess and improve post-harvest management with focus on processing and storage</p> <p>12. Implement farmer field schools and lead farmer’s exchange visit for replication and scaling up of climate-resilient technologies</p> <p><i>The project will address this barrier through the provision of awareness-raising workshops, technical trainings, distribution of agricultural kits (quality seeds, vegetable materials, basic agricultural tools,) installation of village nurseries, small-scale irrigation kits and soil and water conservation structures, processing and storing equipment, (activities 1.2, 2.1, 2.2 and 3.2).</i></p>	
<p>FINANCIAL: Limited access to financial services/ instruments to sustainably implement adaptive measures</p>	<p>Smallholders' farmers and women associations have limited financial capacity to invest and integrate adaptive and sustainable solutions in their food production systems</p>	<p>13. Provide women’s access to e-commerce market services and enhance their capability to use it in reinforcing their economic resilience</p> <p>14. Promote index-based insurance (II)¹²⁹ products customized for smallholder farmers</p> <p>15. Facilitate farmers’ access to loans and participation in VSLA for productive investments in Climate-resilient agriculture and diversified livelihoods.</p>	<p>Cooperatives, Microfinance institutions IFAD’s IGREENFIN project</p>

¹²⁹ WII compensates them with payouts in case of rainfall deficits, and thus prevents them from selling productive assets or enacting other negative coping strategies (such as reducing food intake), while making them feel confident to make investments in agricultural inputs and other IGAs.

		<p>16. Provide training on financial literacy/ inclusion and organizational management</p> <p><i>The project will support the establishment of risk transfer scheme (index-based insurance) and village-based savings and loans association, the development of business plans, market linkages between FOs and local markets and school canteens (Activities 1.3, 3.1 and 3.3)</i></p>	
<p>SOCIAL: Gender inequalities and poor participation of women and youths in planning, management and decision-making processes</p>	<p>Smallholder women farmers in Poro have limited access to quality inputs and productive assets including fertile lands. As they are involved in rainfed staple crop and vegetable production, government support is fragmented compared with commercial cash crops. Women also have lower literacy compared with men and weaker training and technical capacities. They are assigned with many responsibilities at farm and household levels but fewer opportunities to play a leading/managerial role.</p>	<p>17. Improve participation and women and youths in village committees</p> <p>18. Mainstream women and youth participation in the capacity building activities</p> <p>19. Develop gender specific activities such as processing, commercialization, supply of food to school canteens, school gardens and training on nutritious food</p> <p>20. Promote specific activities for young people such as climate-smart digital innovations and technologies</p> <p>21. Promote gender balanced village reforestation, soil and water conservation and environmental conservation activities</p> <p><i>The project will support livelihoods specific activities of women-led FOs and female-headed households such as vegetable and staple food production, processing and commercialization. Activities will include leadership and organizational empowerment, financial literacy, and technical/managerial capacity development (All project activities will focus on addressing this barrier).</i></p>	<p>UN Women</p>

<p>REGULATORY: Implementation of climate change adaptation measures identified in development and climate adaptation plans</p>	<p>Rural communities and local authorities don't systematically and sustainably implement adaptive measures for livelihoods' resilience</p>	<p>22. Mainstream adaptation measures and earmark resources for resilience-strengthening into the local development plans</p> <p>23. Promote multistakeholder consultations and public-private partnerships for the development and implementation of climate adaptation plans</p> <p>24. Improve government and communities' involvement in decision-making process around climate adaptation</p> <p>25. Support development and implementation of community-based disaster risk management plans</p> <p>26. Improve the engagement of local government and communities in the identification and management of Climate-resilient Nature-based Production and Climate-proofing Asset Management Initiatives</p> <p><i>The project will address this barrier through the identification and integration of climate-resilient solution into local development (village/commune) plans with allocation of appropriate resources for their implementation (activities 1.1, 1.2, 2.2 and 3.2)</i></p>	<p>Adapt'Action Facility (AFD) / National Adaptation Plan process (UNDP)</p>
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Opportunities to cope with a changing climate and overcome/addressing gaps and barriers exist in terms of strengthening technical and financial capacities, enhance entrepreneurship/leadership skills, mobilizing multi-stakeholder collaboration, involvement of communities and support of government authorities, improve access to climate information, raising awareness, facilitate knowledge dissemination and provide income generating activities through climate-resilient and low-emissions sustainable investments.

7.9. Proposed project objectives, approaches and areas of intervention

Based on the predicted impacts of climate change and the gaps and barriers on the target region, the adaptation measures identified through the different strategies and policy documents, as well as the challenges and needs highlighted during the consultation process, the Theory of Change was developed to define and guide the main project interventions.

The approach that has already successfully proven by the WFP in other African countries¹³⁰ consists in promoting risk reduction, risk preparedness, prudent risk taking and risk transfer measures through improved and diversified agricultural production, reduced post-harvest losses and access to climate and market services. As such, the project will tackle technical, financial, regulatory and gender barriers in a systematic and integrated manner. Hence, the project will implement a ‘package’ of integrated gender-sensitive and transformative solutions that aim at strengthening adaptive capacities and enhance the climate-resilience of vulnerable smallholder farmers focusing on women and youth and adapt their livelihoods to a changing climate. Given the “holistic” strategy and interconnections between climate-related and anthropic drivers, the beneficiaries communities will be mobilized to implement and scale up climate-resilient solutions associated with high environmental and social co-benefits. The incremental impact of the project consists in streamlining actions for climate empowerment in an integrated and gender-transformative manner.

Maize, rice and vegetables are the targeted food crops following findings from community and stakeholder consultations combined with climate and livelihoods analysis, The main reasons for this selection have been articulated below¹³¹:

1. Rice and maize are very vulnerable to climate change hazards and shocks with significant impacts during production and post-harvest phases;
2. Both play a major food security role since are the dominant staple crops that are culturally traditionally consumed in Poro Region whereby women are the main producers;
3. Vegetables have both nutritional value and economic benefits for smallholder households;
4. They are traditionally produced and traded by women-led FOs and promote the participation of young people and other vulnerable groups such as ethnic minorities and peoples with disabilities;
5. Participation of private providers (financial services, insurers, inputs, etc) is important across the food value chains;
6. The adaptation potential for selected crops is high: diversification with adapted varieties, sustainable intensification of production, association with other crops including sorghum and millets, potential for uptake and dissemination of good practices;
7. Traditional food production has an aggregator effect and ownership/sustainability impact within the community;

¹³⁰ R4 Rural Resilience Initiative (R4), information available at: <https://www1.wfp.org/r4-rural-resilience-initiative>

¹³¹ See section 7.11 of feasibility study for selection criteria

8. Adaptive technologies through mainstreaming of appropriate measures (C1) and adaptative farming (C2) will promote organizational and community engagement and empowerment;
 9. A number of initiatives have been implemented for the same staple and commercial crops with several lessons learned and experiences to be scaled out and replicated; and
- Agroecological production of food crops have land restoration and other environmental and social benefits. CBPP will ensure that the above arguments will be integrated in the project exit strategy as part of the community/household ownership and sustainability approach.

Through these solutions, the project **aims** to:

- (i) Reduce climate vulnerability of smallholder farmer communities in Poro Region and enhance climate-resilience of their food production systems
- (ii) Increase food and water security of rural communities, in particular of women, youths, and children, including school canteens and school gardens through improved food production and diversification
- (iii) Mainstream climate adaptation and disaster risk management into local development policies and plans
- (iv) Strengthen smallholder producers' technical and organizational capacities, improve entrepreneurship/leadership skills, and facilitate community mobilization and appropriation of climate-resilient technologies
- (v) Increase generation and use of climate information in decision-making
- (vi) Improve access to financial services to promote adoption and dissemination of climate-friendly farming technologies.

The project will streamline the following **approaches**:

- a) Support rural communities to implement soil and water conservation and **land restoration adaptive measures** to reduce village-level vulnerability
- b) Climate-resilient sustainable **food production intensification** through provision of gender-transformative agricultural package of inputs, equipment, and technical assistance
- c) Strengthening **value chains** of vulnerable crops to climate change impacts supporting the government "*agropoles*" vision. This will include implementation and dissemination of climate resilient practices and technologies including renewable energy solutions for production, processing, storing and commercialization of priority food crops such as maize, rice and vegetables
- d) Promote **Farm-to-Market Alliances** to absorb increased and diversified food production and ensure a steady provision of food to school canteens and e-commerce food markets
- e) Enhancing adoption and scaling up of climate-friendly (low emissions/adaptive) techniques through **Farmer Field Schools** and peer (leadership focused) farmers exchanges
- f) Improve financial literacy, entrepreneurial and organizational management of vulnerable households in particular those headed by **females**

- g) Strengthening income-generating and value-added linkages between **nutritious food production and school canteens** for adaptive food diversification
- h) Facilitate **rural employment** and particularly the participation of **youths** through promotion of climate-friendly digital technologies
- i) **Mainstreaming** climate adaptation and risk reduction measures in local development plans and scaling up the implementation of community-based adaptive and inclusive solutions targeting the most vulnerable “*Communes de Convergence*”
- j) Enhance the **community mobilization** and **women leadership** around village development through implementation of livelihoods Climate Resilience/Disaster Risk Management plans and cash transfers for climate-proofing soil and water conservation infrastructure and land restoration activities
- k) Scaling up **Financial Inclusion** to promote climate-proofing investments by vulnerable smallholder communities
- l) **Public-private partnerships** set up for the dissemination and scaling up of climate adaptation measures
- m) Protection and sustainable management of **Nature-based assets** and scaling up of Climate-smart **nature-based solutions** for land restoration and improved food productivity
- n) **Risk transfer and risk reduction** through adaptive practices, micro-insurance schemes and enhanced access to climate information and weather forecasts.
- o) The **Food Assistance for Assets (FFA)** approach envisages the provision of cash-based transfers to beneficiaries to execute activities related to assets creation and/or rehabilitation.

Human-induced deforestation, land degradation and desertification processes have compounded climate change impacts, increasing smallholders’ food insecurity. Given the integrated project intervention approach and interconnections between climate-related and anthropic drivers, the beneficiaries communities will be mobilized to implement and scale up climate-resilient solutions associated with high environmental benefits such as land, soil and ecosystem restoration.

The validated project framework for the SAP project has been outlined below. Components, outputs, and activities have been listed following extensive consultations with communities and key stakeholders and considering ownership and sustainability of the interventions. The proposed framework will be further validated at project inception including a detailed description of project activities per each targeted village and site of intervention.

The project will strengthen adaptive capacities and enhance the livelihoods resilience of smallholder farmer communities by disseminating a ‘package’ of integrated, gender-sensitive and transformative solutions identified on the basis of the identified barriers and intervention priorities along with the above-mentioned strategic approaches. It is structured under three intertwined components that tackle climate change hazards (droughts, interannual rainfall variability and heavy floods and winds) and the above-mentioned adaptation barriers.

The *gender-transformative* nature of this project revolves around the highly significant participation, strengthening of skills, leadership, managerial and financial capacities of women for all project activities from community to household levels. Women smallholders will increase access to productive assets and will reinforce their food production systems including a more equitable participation in the food value chain. The access and management of productive access will be guaranteed through concertation and formal agreements stipulated with local authorities and village representatives who will safeguard that adaptive and gender-transformative empowerment will mainstreamed. Female-headed households and women-led FOs will be involved in climate empowerment actions such as:

- Awareness-raising about climate change hazards and impacts to local livelihoods (C2)
- Participatory mapping of selected climate-resilient measures to address adaptation barriers (C1)
- Training and capacity-building on adaptive livelihoods options, climate risk products and services for small-scale food production (C2),
- Creation and/or rehabilitation of productive assets (land, quality inputs and tools, services) across the food value chains (C1 and C2).
- Implementation and dissemination of a set of integrated adaptive measures including nature-based solutions and climate-risk management tools (C1 and C2)
- Empowerment of women-led FOs through financial literacy, organizational management, access to savings and loans (C3)
- Linkages with markets and improved sales of staple crops and vegetables while fostering climate-proofing investments (C3)
- Improved gender equality and reduction of gender-based violence (C1, C2 and C3)

Empowerment of women smallholder farmers and women-led FOs will be measured by adopting quantitative and qualitative smart indicators and verification sources as follows:

- Increased access of women farmers to fertile lands and use of quality inputs and services (field assessments, HH baseline and monitoring surveys, evaluation reports)
- Improved access to water irrigation schemes (VAM maps, field reports, surveys)
- Production of diversified food produces, and incomes generated by women-led FOs (business plans, accountant records, market agreements)
- Increased adoption and dissemination of on-farm climate resilient practices and technologies (surveys, training and field visit reports)
- Improved participation and maintenance of community and ecosystem-based facilities and structures (surveys, field reports)
- Access to microcredits, microinsurance and other climate services
- Involvement in Farmer Field Schools and peer-to-peer exchanges and knowledge dissemination events (Field reports)

The selection of assets to be developed, rehabilitated, and managed has been made in consultation with relevant project stakeholders. All proposed assets will enable targeted rural communities to develop strong disaster risk mitigation and adaptation capacities to address, respectively, the causes and the impacts of climate change. They include (associated components are indicated in brackets):

- (C1) Restoring **natural ecosystems** (reforestation, lowlands management);
- (C2) Enhancing **food system productivity and resilience** disseminating climate-smart practices at farm and household's level such as minimum tillage, Zai-hole, half-moon, alley-cropping, inter-cropping, fallows, improved seeds (short-cycled, drought-tolerant), bio-fertilizers and bio-insecticide, backyard gardens and orchards;
- (C1-C2) Improving **soil and water conservation** (mulching, compost incorporation, establishment of ground cover crops, soil erosion control plants such as vetiver grass bamboo, windbreaks, stone-bunds and the rehabilitation of water catchment structures such as mini-ponds and small dams);
- (C1-C2) Improving **biodiversity conservation at farm and community level** such as living hedges, wildlife refuges, habitat for beneficial birds and insects, pollinators, afforestation/reforestation (degraded lands, school-grounds and other public domains);
- (C3) Improving smallholder farmers' **processing and storage capacity** to reduce post-harvest losses due to climate shocks. The development of storage structures and facilities (mini warehouses, drying platforms, improved traditional granaries and cribs) will be done in consultation with extension services, local artisans and other private sector actors (aggregators and traders).
- (C2-C3) Empowering rural women through **food processing entrepreneurship**. Food processing is one of the ways to reduce post-harvest losses and offers income generating opportunity for women and youth. Under this component, the project will invest in the development of the following foods-processing livelihoods: (i) **community-level staple grains milling units** and (ii) **market-driven food processing** (drying and milling facilities, mostly running on solar power or other renewable sources) enterprises operated by women and youth;
- (C1) Providing **reliable climate data** to inform agricultural production activities and to be used as a basis for developing climate index insurance. The project will enable SODEXAM to enhance the capacity of its current Automatic Weather Stations (AWS) for increased observatory efficiency and acquire, distribute, and train beneficiaries on the use of georeferencing, weather and climate-related instruments such as GPS and Manual Rain Gauges.

1. C1. Promote the use of gender-sensitive climate-risk management measures

The component will implement community-based adaptation measures to increase the resilience of rural communities and restore the capacity of communal lands to cope with climate change hazards. An estimated 70 villages will be targeted, while identification and validation of the specific sites of intervention and associated activities will be conducted at project inception according to the targeting process and Community-based Participatory Planning (CBPP) findings. Following

community and stakeholder consultations, the main criteria for selection of sites and activities included¹³²:

- ✓ Incidence of climate impacts
- ✓ Climate vulnerability of households and productive assets
- ✓ Adaptive capacities of rural communities
- ✓ Level of food and water insecurity and malnutrition
- ✓ Degradation of natural resources
- ✓ Availability and implementation of climate-resilient technologies
- ✓ Presence of Lead farmers and Farmer Field Schools for climate change adaptation
- ✓ Number of vulnerable and climate-resilient households
- ✓ Presence and distribution of climate-proofed infrastructure
- ✓ Financial services for climate-friendly technologies
- ✓ Activity of rural advisory and technical extension services
- ✓ Structure and functionality of community-based and farmers organizations
- ✓ Initiatives undertaken by WFP and/or other stakeholders

Output 1. Increased dissemination of community-based risk preparedness measures and use of climate information services and insurance products

This output will leverage the dissemination of community-based adaptation measures through local development plans and the implementation of on-the-ground restoration measures to enhance climate-resilience of rural population. Vulnerable households will also enhance their climate-risk management capacity through access to climate information services and insurance products.

• **Activity 1.1 Integration of climate change adaptation and disaster risk reduction measures in local development plans**

The activity will mainstream climate change adaptation in communal plans to identify appropriate measures and resource availability. The project's strategy for developing climate change response plans involves the following steps:

- 1- Participatory assessment of risks associated with climate change;
- 2- Vulnerability analysis in each village (who is more vulnerable, why and how);
- 3- Definition of hazard response plans and an adaptation strategy
- 4- Analysis of the costs and benefits of each strategy
- 5- Selection of relevant strategies and planning, budget, definition of roles and responsibilities, and adoption of an implementation schedule

The project will accompany the communities in the implementation of some of these adaptation measures through Activity 1.2.

At the regional level, the Regional Council, which is a decentralized government department responsible for promoting the social, economic and cultural development of the region,

¹³² Refer to Section 7.11 of the Feasibility study for details

prepares five-year development plans. The same is true for the town halls at the communal level. This process takes into account the needs of the villages through consultations at the departmental and regional levels with community leaders (youth, men, women).

To facilitate the integration of the adaptation measures selected in this project into the communal and regional development plans, the project will involve both the Regional Council and the city halls in the various project launch, review and coordination meetings. The communities will also be prepared to advocate with local authorities for the integration of their adaptation measures into the regional or communal development plans during these different consultations.

- **Activity 1.2 Implementation of community-based adaptation/risk management measures in vulnerable villages**

This activity will promote improved water management and water use efficiency, as well as enhanced soil fertility through a set of integrated restorative activities to build and/or rehabilitate community-based productive assets and conserving natural resources, while also providing food assistance in the form of cash transfers. It will therefore have a direct impact on the improvement and conservation of ecosystem services. WFP will work with beneficiary communities to rehabilitate community-based water harvesting and management schemes, mini-dams, ponds and protect soils through the establishment of small-scale farm terraces and tree planting. Other community level assets to be created or rehabilitated will consist of post-harvest management infrastructures for drying crops and storage facilities, including mini-warehouses and improved traditional granaries. Interventions under this activity will be implemented using WFP's Food Assistance for Assets (FFA) approach. FFA activities foresee the participation of 3,247 households, directly benefitting 16,235 people, spread in the most vulnerable villages which will be identified within the targeted departments. A phased approach will be adopted to cover the geographical and population targets by planning FFA activities in the project's first year, implementing over the next three years. The last year will be dedicated to consolidation of activities, to enhance sustainability. The exit strategy aspects will be embedded in activity design from the onset. The FFA works and people's participation will be identified based on vulnerability criteria and defined in a participatory manner at the project inception. To further identify the type of assets to be created or rehabilitated, WFP will first conduct feasibility and technical field assessments in target districts and communities, using corporate tools such as the Seasonal Livelihoods Programming (SLP) and the Community-based Participatory Planning (CBPP). Those productive assets will build on the natural capital, land suitability and location of the agroecological zones, within a watershed management approach. As such, the project will intervene at micro-catchment level where the most vulnerable communities are located. Before, during and after these assessments, WFP will work closely with all stakeholders, including local women's organizations/associations/groups/networks, community members, community-based organizations, NGOs, local authorities, and other technical cooperating partners and service providers. For the execution of activities, the integrated participatory approach will revolve around:

- Asset creation strategies – context-based and area-specific strategies to be identified through participatory planning to address the root causes of food insecurity and the impacts of climate change. Such strategies are informed by WFP food security monitoring findings which are used to select project participants at the household and community levels. Through CBPP, a list of productive assets and community priorities will be developed in a participatory manner. The planned FFA interventions will be based on the number, scale and size of works per village. The initial list developed during project design and during consultations with communities includes small-scale farm terraces, small-scale irrigation with solar pumps, rainwater harvesting (contour farming, half-moons, zai-pits), tree plantation schools, and village-based storage facilities. FFA will consider traditional facilities and scaling up nature-based solutions at micro-catchment and village levels. To ensure equitable participation, planning of assets creation and implementation of FFA activities will be done in accordance with agricultural calendar and women tasks and roles in the communities and households. Assets that will reduce women’s burden will be prioritized in the decision-making process, such as woodlots for firewood collection and water conservation points. Likewise, women will be exempted from some physically heavy activities such as pond excavation and digging terraces.
- Throughout FFA implementation, WFP provides food assistance in the form of cash transfers to the project participants to cover basic food needs for a given period of time, and allow communities to work on the assets, normally three months per year (“periode de la soudure” or lean period). Cash will be directly transferred to participants through digital technologies by contracting mobile service provider operators. FFA activities will be implemented over three years from the second year of project implementation to support households and community for the most needed period while in return assets are created or rehabilitated. FFA implementation will be executed on the basis of local vulnerabilities, as well as assets creation and priority needs of the targeted vulnerable villages¹³³.
- Upon completion, the assets created or rehabilitated will be owned and managed by the beneficiary communities themselves. It is expected that through FFA-type climate-resilient activities and nature-based solutions, about 1,340 ha of degraded lands will be restored over five years in the project area. WFP in partnership with its stakeholders will conduct follow-up assessment across project sites in the post-completion period to ensure the benefits are shared fairly among community members and to encourage effective maintenance of the assets. Increased land productivity, natural asset rehabilitation and ecosystem restoration will enhance resilience of food systems and agricultural production, building linkages with school feeding program included under component 3. Asset creation will also contribute to advocate for women’s access to land and land tenure rights: over the years, WFP has led efforts in collaboration with local partners to advocate for land to be secured for women farmers in the Poro region and elsewhere in Cote d’Ivoire. This was done by restoring/rehabilitating donated lands which were often marginal and heavily degraded. Restored lands become a value and empowering resource for women farmers and this is why WFP intends to scale up this approach under the GCF project.

¹³³ This will consider the fact that some departments are less populated and/or more vulnerable than others as well as the fact that needs for asset creation and rehabilitation are different according to their economic/ecological productivity or conservation status.

- **Project Management Committees-** WFP puts community participation at the forefront of its asset creation strategy, together with technical assistance from its cooperating partners. Members of the committees encourage decision-making and equal participation by women and men in needs assessments, prioritization, design, and implementation of activities. Specifically, women will receive training and support in leadership and decision-making roles.

WFP will ensure that targeted communities and local stakeholders are involved in all aspects of planning, design, and implementation of assets creation and livelihoods activities. Implementation will take into account the principles of gender equality, inclusiveness, protection, and accountability to beneficiaries, and provide them with a feedback mechanism. All activities will be screened against environmental and social risks and as required, mitigation actions will be identified and carried out accordingly. In addition to CBPP, WFP will facilitate awareness raising and sensitization to obtain buy-in and engagement from everyone, especially traditional leaders, mobilize local resources that will be needed for the success of the project. MINADER as the institutional EE will play an important monitoring role to ensure coordination with decentralized authorities and support to the targeted communities.

- **Activity 1.3 Provide Index-based Insurance to mitigate climate change impacts**

Smallholder men and especially women across the world are highly vulnerable to climate-related risks and have very limited access to the risk and financing tools that can provide protection from the resulting financial losses. Over the past decade, WFP has become a UN leading agency in incorporating microinsurance solutions into broader strategies to manage climate risks in food insecure areas. WFP promotes microinsurance solutions through its flagship approach for integrated climate risk management, the R4 Rural Resilience Initiative (R4), that includes access to microinsurance, risk reduction and financial services that address both the climatic as well as non-climatic drivers of vulnerability. This integrated approach is designed in such a way that the different components (risk reduction activities, climate risk insurance, savings for risk retention and prudent risk taking) help participants gradually strengthen their food security, productivity, incomes and climate resilience and as such become able to pay for the full insurance premiums with their own cash and can transition out of assistance.

Through this activity, WFP plans to make climate risk insurance solutions work for female-headed households and vulnerable smallholders in the Poro region, leveraging livelihoods diversification options implemented under activities 1.2, 2.2 and 2.3 against climate shocks. The index-based microinsurance products will provide a coverage to 10,500 households led by women or where women are direct beneficiaries of the product. Female-headed households will benefit from insurance premium coverage by (i) engaging in trainings and capacity building activities during the first year of the project with the aim of implementing climate-resilient or conservation agriculture practices and technologies in their farms (activities 2.1 and 2.2), and by (ii) applying the agricultural good practices that resulted from the trainings in the following project years. The exact conditionality will be defined at project inception phase, also taking into account the seasonal calendar. The activities supported by index-based insurance in the

project will follow the environmental and social screening process to confirm its eligibility in order to ensure their alignment with the eligible activities described in table 1.1 in Annex 12.

To support the adoption and encourage the sustainability of an index-based microinsurance product, WFP anticipates making cash contribution towards established insurance premium amounts in the following proportion during project implementation: year 1, 100% of the premium is paid by the project, year 2, 80% is paid by the project, year 3, 60% is paid by the project, year 4, 40% is paid by the project and year 5, 100% the premium is entirely paid by participants. As climate resilience and food production are strengthened during the course of the project, thanks to the integrated approach, WFP will gradually reduce insurance subsidies and increase farmers' cash contribution. This way, vulnerable households can access index insurance by participating in risk reduction activities that promote resilience by steadily reducing their vulnerability to shocks over time. In return, it is also expected that insurance companies will gradually increase their investments and commitment in this field and region, allowing WFP to progressively phase out. The cash contribution will be fully set during project inception when insurance beneficiaries' ability and willingness to pay the insurance premium will be further assessed. The GCF proceeds will be used to support the design of the index-based microinsurance products (through selected service providers) and also subsidize the insurance premiums of beneficiaries. The project will clearly explain what is expected from participants in terms of cash contribution year after year until full graduation. In its capacity as executing entity, WFP will partner with SODEXAM (Societe d'Exploitation et de Developpement Aeroportuaire Aeronatique et Meteorologique – the National Meteorological Service of the country), ANADER (National Agency for Rural Development Assistance – the rural extension and advisory agents of MINADER), experienced insurance companies and service providers and selected distribution channels to implement the index-based insurance package.

The insurance company (service provider) will be responsible for the design of the index insurance product, meaning that it will collect additional data from farmers to design an adapted index to the need of coverage of the targeted beneficiaries. WFP will select and procure the insurance provider through a tender process, considering that multiple players are already offering index insurance products on the market. The insurance provider is usually a local insurance provider and as such must be a licensed and regulated entity in Cote d'Ivoire. Criteria for insurance companies' selection include, among others: overheads (compared to benchmark), experience in inclusive insurance, and in particular in index insurance, reinsurance strategy for climate insurance, organizational structure for inclusive insurance. WFP has built an expertise on this and can leverage its intelligence collected in other countries to select the best partner. Insurance companies are assessed through a technical (various general information and technical capacities) and a financial (price structure) proposal. Depending on the conditions, WFP can either look for a one-year agreement, or for a Long-Term Agreement (LTA), lasting 2 or 3 years with the possibility of extension.

The insurance industry in Cote d'Ivoire is part of the CIMA area (regrouping 14 countries in West and Central Africa), with a unique insurance regulation, including a specific regulation (Book VII) on microinsurance and specific decree on index insurance. The State of Cote d'Ivoire is supervising the application of this regulation, and approving microinsurance products.

Finally, the technical service provider involved in the implementation of this activity will monitor the performance of the index during the season and will communicate to the insurance company if the index has triggered after the end of the coverage period. Payouts are then triggered automatically based on the index. The exact value triggered will be known after index development during the project implementation. The accuracy and correctness of calculations and data for the index payouts are the responsibility of the insurance company which will also validate whether a payout event has occurred.

Once this has been confirmed, the insurance company will transfer the money to the payout distributor (to be selected during inception when looking at distribution channels). The distributor will then transfer the money to beneficiaries via the most appropriate channel(s). Ideally the insurance company will pay directly to beneficiaries, however based on WFP experience, beneficiaries rarely have access to bank accounts, mobile wallets, and other systems that can facilitate direct reception of payouts. In this sense, the distribution party is the entity or system that will facilitate that payout process. The idea will be to use the most cost-efficient model; if there are digital delivery channels available, WFP will encourage using those. Please consider that the same distribution channel used for payout distribution will be used for premium collection when farmers are contributing to pay their premium.

After payouts distribution, WFP will check if all beneficiaries have received the payout but will not be directly involved in the claims distribution. It is important to mention that WFP does not charge a fee for collecting/paying the insurance premium to the insurance provider on behalf of the insured/final beneficiary.

- **Activity 1.4: Scale up the access and use of reliable, tailored, and timely climate information and weather forecasts**

The activity will allow women smallholder farmers and other end-users across the food value chain to access tailored information for community-based adaptive planning and decision-making. WFP will partner with SODEXAM to disseminate user-friendly climate information through SMS, WhatsApp, bulletins, leaflets, radio broadcasting sources and radio listening groups (identified as the most appropriate and preferred communication channel by end-users). Women will directly participate in the co-production of agricultural advisories and farming decisions. ANADER, acting as cooperating partner, will provide technical assistance and backstopping to targeted farmers for the appropriate use and dissemination of climate and weather information for tailored-made farming activities.

C2. Improve technical capacity and empower Women-led Farmer Organizations

This component focuses on increasing the adaptive capacity of women smallholder farmers belonging to Farmers' Organizations through climate-awareness, capacity building and scaling up of adaptive technologies and approaches in households' farmlands.

Output 2. Increased women smallholders' adoption of climate-resilient practices and technologies in their family farms

Individual and groups of women farmers will improve their productivity and diversify their crop production by implementing nature-based agricultural practices and technologies and from benefiting from technical assistance and climate information services and index-based insurance products developed under component 1.

- **Activity 2.1: Awareness-raising, capacity-building and organizational empowerment of smallholder farmers with focus on women and youth**

The activity will support the capacity development of women smallholder producers via trainings (e.g., in-person courses, seminars, webinars, e-learning); exchanges (e.g., peer-to-peer field visits, conferences, workshops, sharing platforms, communities of practice); technical assistance (e.g., expert missions, backstopping) focused on the implementation and scaling up of climate-resilient measures in households' farmlands. Such measures include conservation agriculture practices (no burning, light ploughing to avoid releasing more carbon, incorporation of straw in the soil to increase the concentration of organic matter, grass strips, etc.), agroecological agricultural practices (crop rotation, crop-legume association, mulching, composting, etc.). In addition, awareness-raising campaigns will be included to leverage sensitization to target households (farmers and vulnerable communities). This activity, conducted in partnership with MINADER/ANADER, will provide the enabling environment for the scaling up and dissemination of adaptive technologies and practices planned under activity 2.2 and 3.2. Adaptive technologies and practices will be validated at project inception with the intention of systematizing successful and scalable experiences and lessons learnt under activity 3.4 (knowledge management)

- **Activity 2.2: Dissemination of adaptive nature-based agricultural practices, technologies and approaches**

Adaptive practices include provision of quality seeds of drought-tolerant varieties, implementation of conservation agriculture and agroecology practices, agroforestry, biopesticides and compost artisanal production through the establishment of farmer field schools, model farms, demonstrative plots and peer-to-peer exchange visits supported by extension and rural advisory to women' farmers groups provided by ANADER. Moreover, the project will promote the adoption of the best agro-ecological practices such as minimum tillage, crop rotation, fallow, intercropping, mulching, and cover-cropping. Capacity development, technical backstopping, distribution of agricultural booster kits (seeds of adapted crop varieties, composts, biopesticides, small-scale irrigation kits, tools, etc.) is the main approach for uptake and dissemination of adaptive measures at household level. The CBPP will inform about targeting and needs of women smallholder farmers and farmer groups that will be supported by the project. At the inception, tailored work plans will be prepared for every targeted village. They will entail the distribution of agricultural booster kits, the technical assistance, the establishment of Farmer Field Schools (FFS) and the regular follow up of adaptive practices and technologies implemented by farmers. During the inception phase and through the project duration, agreements with FOs will be defined for continuous rolling out and scaling up of the adaptive measures. These agreements are moral obligations of the community to the project actors, reflecting their willingness to implement the project activities. It is not intended to

create civil obligations for which the non-execution could be appealed to the courts. These agreements will be signed between ANADER on the one hand, and the agricultural groups with community leaders on the other. WFP will manage the procurement and contract local Service Providers (SP) to assist with the CBPP, develop and implement the workplans at community (activity 1.1.2) and household and FO levels.

ANADER rural extension and advisory agents through MINADER as the institutional EE will conduct supervision and monitoring of implementation on the ground and will facilitate the dissemination of adaptive technologies and participatory approaches (FFS, peer-to-peer exchanges, lead farmers, demonstration plots, etc.). The participatory approaches will have a catalyzing effect in supporting the uptake and dissemination of the proposed technologies across vulnerable villages and targeted food value chains (maize, rice and vegetables).

C3. Market access and financial inclusion

The component is supporting community and household-based ownership and sustainability of the adaptive measures through increased financial and market access, post-harvest management and knowledge dissemination. This component ensures that climate-proofing investments implemented respectively by communities and farm households under components 1 and 2 are sustained and spread across the Poro Region.

Output 3. Smallholder FOs improve market access, set savings schemes and leverage partnerships to strengthen financial support across the food value chains

Climate adaptation measures are disseminated and continued after the projects thanks to the improved access to saving and loans mechanisms and complementarities generated with other resilience initiatives and enhanced market alliances.

- **Activity 3.1. Support FOs to develop business plans and community-based saving and loans mechanisms for climate-proofing investments**

This activity will focus on improving the financial literacy of members of female-headed FOs and support the development of climate-resilient business plans to ensure complementarity with other climate-resilient initiatives, in particular, IFAD's IGREENFIN GCF Project (FP183). The establishment of Village-based Saving and Loans Associations (VSLA) will be another critical element to protect and incentivize climate-proofing investments and provide seed money for the implementation of business plans. Local partners (usually NGOs) are hired to create new VSLA groups or strengthen existing ones. The groups usually receive technical support on various processes and topics like group formation, leadership, and loan and saving processes. However, no GCF proceeds will be used for providing loans/seed money under this activity. Through individual or group savings, farmers can build a financial base that serves multiple purposes: increase investment capacity, manage idiosyncratic and covariate shocks. For instance, they provide a buffer for short-term needs, retaining risks within households and communities and increasing their ability to cope with more frequent and less severe shocks not covered by insurance. Group savings can be loaned to individual members for income-generating activities, agricultural investment or to members with particular needs, providing a

self-insurance mechanism for the community. With time, VSLA can be used to pay insurance premium and to promote or establish an Exit strategy for insurance premium payment, by progressively increasing cash contribution as income generation develops. Setting up several savings funds for different purposes, including for agricultural investment, insurance premium payment, and for risk management can support participants' graduation and build their resilience to climate and other shocks.

Finally, the establishment of VSLA, already proved successful in Western Africa will allow better efficiencies across the food value chain through for example the purchase of adapted inputs, agricultural products and tools for short-cycle crops which is the case for the selected project crops (maize, rice, and vegetables). The resources provided to the VSLA will derive from the contribution of members of FOs that will improve the sales of agricultural products through adaptive crop production and improved market linkages.

- **Activity 3.2 Improve processing and storage capacity to reduce post-harvest losses due to climate shocks**

It is expected enhanced and diversified productivity from improved capacity development and implementation of adaptive measures. This activity will improve access to post-harvest processing and storage technologies in favor of smallholder producers and actors across the food value chain. Small-scale processing equipment will include mills for maize and rice flour production and solar driers for vegetables whereas silos and hermetic bags will be provided for efficient storage.

- **Activity 3.2 Build farm to market alliances between FOs and school canteens and local markets**

This activity will strengthen the capacity of targeted women smallholder producers to sell farm products through various options including improved linkages with school canteens and local markets. Moreover, the activity will strengthen capacities of public and private structures involved in food product commercialization with support of technology and IT equipment which focuses on youth inclusion.

WFP has already established a channel to disseminate of market information through radio broadcasting and enhance partnerships between women-led FOs and the national/local markets and the school feeding program implemented across the country, in particular for sale of nutritious food such as off-season vegetables. This activity will exploit the potential of the market information services by including all the FOs covered by the project, facilitating producer-buyers exchanges, and promoting alliances across the selected food value chains (maize, rice and vegetables) with local suppliers and intermediaries.

- **Activity 3.4 Systematization of good practices and knowledge-sharing of adaptive solutions across food value chains**

This activity will collect and systematize successful experiences and lessons learnt related to adaptive technologies and good practices that have been implemented under activities 1.2, 1.3, 2.2 and 3.2. The deliverable of this activity will be a technical compendium of adaptation measures that will be shared with stakeholders with the intention to expand the dissemination and institutionalize the practices into local and national policies and plans.

The project seeks to roll out a participatory process which will call for evidence-based and results-driven interventions which will demonstrate that when key root causes of inequalities are addressed both men and women can bring about positive change in their communities. The project will create an enabling environment to bring to the front of the discussions with local stakeholders the importance of women to have equal access to improved agricultural inputs and means production. Women are usually given access to less productive marginal lands on which to carry out their crop production. To address this inequality, the project will engage men and youth to support with land-reclamation and land-restorations and erosion control activities. Women like men will be given an opportunity through this project to have access to the right kind information rearing agricultural inputs and ability to learn and share best practices and appropriate technologies. For example, improved drought-tolerant seeds, integrated pest management. Local inputs dealers will equally be involved to source appropriate women-friendly means of production and technologies.

The project's focus on cooperatives and women farmer groups structured around school meals programmes can create a physical space where women can build their confidence level regarding learning and adopting new technologies but also gain negotiation and decision-making skills. Equally important the cooperative activities will enable women farmers to have a new source of income independently from the household's resources. Other areas where the project can improve the adaptive capacities of women and men alike is the facilitation to make weather and agriculture and market information readily available to both. The project will ensure wide and inclusive dissemination of information regarding cropping calendars, food prices, insurance, and micro-credit products etc. ...)

The transformational potential and added value of the project revolves around strengthening the adaptive capacity and empowering smallholder farmers, in particular women and youths, who represent about 90 percent of direct beneficiaries, to reduce their vulnerability to climate shocks and sustainably improve the resilience of food production systems. The incremental impact of the project consists in streamlining Actions for Climate Empowerment in an integrated and transformative manner. The project mainstreams an integrated community-based risk management approach: Risk reduction, risk preparedness, risk transfer, risk retention and prudent risk taking that builds upon the R4 Programme successfully implemented by WFP in other areas of the continent, including West Africa.

The innovative elements of this project consist in strengthening the technical, organizational and financial capacity of smallholder producers in order to:

- Mainstream climate risk and adaptive management practices through climate and market information,
- Support climate-resilient land restoration through creation of productive assets,
- Enhance awareness and knowledge and promote the dissemination of climate-proofing technologies across priority food value chains,
- Introduce index-based micro-insurance products and strengthen financial inclusion of farmers in Poro Region as an approach that promotes climate-smart investments,
- Leverage effective organizational capacity and women empowerment,
- Promote linkages and complementarities with other GCF Great Green Wall Umbrella Programme Initiatives, in particular the IGREENFIN GCF FP 183 by strengthening the capacity of FOs to become self-sustaining through the development of business plans, and
- Support the establishment of market alliances between FOs and private actors to ensure the sustainability of the activities after the project.

In addition, the project will support the application of national adaptation strategies and plans at community and household levels by mainstreaming and implementing climate-resilient measures such as soil and water conservation, micro-watershed land restoration, adapted and sustainable staple crop production as part of the integrated livelihoods risk reduction strategy. Eventually, FOs in particular women and youths' associations will be able to increase and diversify food supply to school feeding programmes and local markets through enhanced production, improved processing and storage, and better access to climate, financial and market services.

Sustainability and viability considerations:

As shown in past GCF proposals from WFP, the project sustainability is centered on the integrated capacity-building and risk management integrated approach. The increase and diversification of agricultural production will improve food system resilience, and this coupled with improved market access will result in increased incomes and livelihood diversification benefits for communities.

The adaptive practices and technologies promoted by the project under Components 1 and 2 have proven to be self-sustaining thanks to an increase of productivity, reduction of post-harvest losses, minimum environmental impacts and climate-risks transfer. Efficient targeting and enrolment of beneficiaries and selection of project sites will include ownership and sustainability considerations of the adaptive technologies and livelihoods diversification options implemented. The project will therefore increase technical and risk financing capacity and revenues of smallholder farmers, especially women and youth allowing them to continue the activities after its completion. In-kind labor contributions by local communities in soil and water conservation, farmer field schools, land restoration and post-harvest activities will support ownership.

Sustainability of the interventions will be ensured for each component as follows:

- Component 1: Adaptation at community level: Partnership with GGGI and MINEDD, already involved in NAP and readiness plan, will assist in mainstreaming adaptation into local

development plans. That will mobilize support and resources from local governments and private stakeholders. Soil and water conservation and restoration of communal lands will promote ownership and sustainable management. Climate information services and insurance products would facilitate community and household-based climate-proofing investments on a sustainable basis. Farmers will initially be able to pay subsidized insurance premium through better adapted farming practices, further described under Component 2. As climate resilience is strengthened, and thanks to the integrated approach, WFP will gradually reduce insurance subsidies and allow farmers to purchase insurance coverage through their own cash contributions. This will also be articulated with Component 3 on financial inclusion and specifically with savings and loans structures.

- Component 2: Adaptation at household/farm level: technical and organizational capacity of smallholder producers will be strengthened and after the project backstopping assured by MINADER and ANADER. Implementation of cost-effective adaptive technologies will be backed by products and services established under component 1 with the aim of feeding a sustainable and continuous demand by users. Based on the WFP 's experience and lessons learnt in Poro combined with successful results from other projects, the adaptive practices and technologies promoted by the project have proven to be self-sustaining thanks to increase of productivity, reduction of post-harvest losses, minimum environmental impacts and climate-risks transfer.
- Component 3: Financial and market sustainability: Adaptive technologies disseminated under component 2 would increase and diversify agricultural production and reduce post-harvest losses increasing foodstuffs supply to local markets and to WFP school canteens. Increased household's incomes and livelihoods benefits would promote other climate-smart investments included in the climate-smart business plans to ensure a positive rate of return. The mid-term assessment and final evaluation will determine achievements and progress in terms of increased technical capacity and revenues of smallholder farmers, especially women and youth. In particular, the mid-term evaluation will provide guidance and arrangements on continuation of project activities its completion by increasing use of savings and investment capacity thanks to a more efficient risk financing approach. These would in turn allow small farmers to be able to pay for useful services (such as insurance and climate services).

The existence of a dynamic financial sector (microfinance, microinsurance and mobile banking) in Côte d'Ivoire provides the foundations for introducing risk financing solutions to support smallholder farmers in the Poro region. Microfinance and microinsurance products not only can help smallholders absorb the most frequent and less severe shocks as well as transfer the risk of the most catastrophic shocks respectively, but they can also allow smallholder farmers to have a more stable revenue and increase their capacity to invest, plan and generate more income.

Also, based on successful experiences in other countries by WFP, financial literacy, and progressive cash contributions from farmers over the duration of project implementation would prepare the smallholder FOs to be better organized and efficiently managed. The index insurance will become sustainable as the project builds the capacity of farmers to afford the premium, considering the project integrated approach. WFP will introduce the cash contribution and design a graduation

strategy, so that farmers can be fully resilient and autonomous thanks to the articulation with saving schemes.

Similarly, government and community ownership are mainstreamed into project design to ensure sustainability. Implementation of adaptive and climate-risk management measures at farm and village levels will strengthen the enabling environment (integrating preparedness, risk reduction, risk transfer and prudent risk-taking approaches), bringing women producers to the heart of decision-making while empowering them to assume new responsibilities. Activities geared towards improving market access will guarantee that beneficiaries can take advantage of present and new market opportunities such as school canteens and local markets. Increased and diversified food production reduced post-harvest losses, climate-proofing investments will be associated with adequate market outlets, synergies across the value-chains and with other projects to make them sustainable in the long-term.

Participation of private players, either through the provision of financial services, market alliances (under Component 3) or Index-based Insurance (under Component 1) will leverage sustainability across the selected food value chains. To strengthen complementarities with other larger and longer-standing climate-resilient initiatives, the project will build synergies with the IGREENFIN GCF project 183, by strengthening the capacity of FOs and ensuring that eligibility criteria for financial support are met. In particular, the project will adequately prepare the FOs with financial literacy and equip with tools such as green value chain business plan to ensure that sustainability and exit strategy approach are effectively designed and well-tailored to the needs of the target organizations. Furthermore, the project will share knowledge and systematize good adaptation practices to leverage stakeholder engagement and ensure replicability after its completion, in alignment with other demonstrated models, such as the WFP's integrated risk management approaches funded by GCF in several African Countries.

Quality and effectiveness of climate information services will be assured through multiple communication strategies including mobile phone, community radio broadcasting and agricultural and rural advisory services. Smallholder farmers will be trained to use those services in a continuous way as part of their climate-resilient management approach.

Regarding insurance in particular, private stakeholders are currently developing index insurance products in other regions. An updated screening of insurers, service providers for product design, delivery mechanisms, and types of products will be conducted at project inception to fast track the introduction of such products to the project beneficiaries. So far, 2 insurance companies (Axa, Atlantic) offer such products. Several service providers (Inclusive Guarantee, Risk Shield, Pula Advisors) are already operating in the country on different crops, including maize. They will be instrumental in ensuring the right degree of ownership by local operators, and thus a sustainable approach. In addition, linking insurance projects with savings will increase the affordability of the insurance product. It will also contribute to retaining risk and investing in inputs. This plays a key

role in terms of smallholders and FOs financial self-sufficiency and long-term sustainability of the activities.

Farmers' organizations and village committees will be strengthened to ensure good management and regular maintenance of collective climate-proofing technologies such as water retention or flow regulation structures. In addition, they will be tasked for monitoring the achievements during project implementation and ensuring continuity of interventions. After the project end, the government will provide support to the facilities and structures established and uptake the dissemination of climate-resilient technologies through MINADER's extension and rural advisory structures.

The project will contribute to establishing at least 70 Village-based Saving and Loans Associations (VSLA), one per each targeted village. Participation in the VSLA will depend on the sustained contribution provided by every member who will also belong to FO. VSLA will provide an alternative localized and customized source of credits for small-scale/village-household based climate-proofing investments, such as the installation of water saving technologies and purchase of quality inputs and tools. The project will support the organizational empowerment of FO and the implementation of business plans to improve yields and leverage market linkages across the value chain. Improved incomes in the short and medium term (during and after the project implementation) will enable FOs members to pay off the microinsurance premium and support climate-proofed investments, for example for the installation of solar pumping, energy-saving processing equipment, purchase of quality seeds and tools, establishment of community nurseries and storing facilities etc.

All interventions in the SAP proposal are designed in line with the use of GCF grant finance and comply with the principles set out in Annex III to decision B.05/07. In line with GCF guidance (B_10_06) grant elements are tailored to i) the incremental cost or the risk premium required to make investments viable ii) for demonstration effect, i.e. where there is clear demonstration effect in relation to innovative technology, approach or market, iii) to cover technical assistance, or iv) to meet the additional costs of climate action that would otherwise not be available, particularly for vulnerable groups including women and youth. The proposed interventions clearly meet these criteria, with a focus on public goods (e.g., climate resilient agroecosystems), as well as capacity building and technical assistance to scale-up climate resilient food production systems. The interventions are targeting climate support for vulnerable groups (women smallholder farmers).

7.10. Country ownership and synergies with other climate-resilient initiatives

Côte d'Ivoire is challenged by several developmental priorities that hinder an adequate response to actual and projected climate change impacts. This is amplified by the current COVID-19 pandemic that imposes public health restrictions and diverts important funding resources to implement emergency sanitary measures. Reducing climate vulnerability and achieving food and water

security in Poro Region are considered main government priorities that are constrained on the ground by funds shortage for climate-resilient interventions. The Government of Côte d'Ivoire seeks complementary financial resources from the GCF to strengthen the adaptive capacities of women smallholder farmers in Poro Region as the first best option concessionality instrument in alignment with the national strategic framework.

The interventions of the project are aligned with the strategic priorities of the Government of Côte d'Ivoire. The project is part of the National Development Plan (2021-2025) that plans to get built environments and reduce poverty while improving climate resilience of the country. The project is also aligned with the National Climate Change Strategy (2015-2020) as the Government intends to promote and strengthen the country's adaptation to climate change by improving populations adaptative capacities. As included in its the Nationally Determined Contributions (NDCs), Côte d'Ivoire planned to decouple agriculture and deforestation by promoting zero-deforestation and climate resilient agriculture. The country aims to achieve food security through sustainable intensification of agricultural production using climate-resilient technologies and adaptive farming practices. This is in accordance with the National Agricultural Investment Plan (PNIA2, 2018-2025), the Third National Communication to UNFCCC (2017) and the National Strategy for Smart Climate Agriculture (2018-2025). In November 2020, Côte d'Ivoire endorsed in its GCF Country Programme, whereby the project is included as part of the adaptation priority investments aiming at improving food security while promoting climate-smart agriculture. It also builds upon recommendations of the national Zero Hunger Strategic Review¹³⁴ and on the Gender Inclusive process for the development of the National Adaptation Plan.

Tables 12 and 13 below outline the alignment between the NDC and TNC with some of the proposed project interventions. Moreover, the project contributes directly to the implementation of the PNCC by taking into account many areas of interventions spanning from institutional support to awareness-raising and dissemination of appropriate adaptive technologies.

Table 12. Alignment of project outputs with elements of the Nationally Determined Contribution

Target	Priority sectors	Measures of implementation	Project activities in alignment with national priorities
	Agriculture	<ul style="list-style-type: none"> • Improve production technologies through access to improved and adapted inputs • Developing storage and preservation units to limit high post-harvest losses • Develop seasonal forecasts that strengthen the resilience of farming practices to climate change 	<p>Activity 2.2</p> <p>Activity 3.2</p> <p>Activity 1.4</p>

¹³⁴ Refer to Section 7.8 of the pre-feasibility study for details

Reducing vulnerability and increasing resilience	Water resources	<ul style="list-style-type: none"> Improving irrigation efficiency to limit water consumption Building the capacity of farmers and others irrigation users 	Activity 1.2 and 2.2 Activity 2.1
	Forestry and land use	<ul style="list-style-type: none"> Promote sustainable land management by techniques to improve the conservation of water and soil (CWS). 	Activity 1.2 and 2.2
	Hydrometeorological disaster management	<ul style="list-style-type: none"> Inform, educate and communicate on hydrometeorological risks Systematically assess loss and damage and ensure post-disaster recovery and construction 	Activity 1.3 and 2.1 Activity 1.3

Table 13. Alignment of project outputs with elements of the Third National Communication to the UNFCCC

Primary Goals	Project activities in alignment with national priorities
Raise awareness and ensure the transfer of technology in climate change	Activities 2.1, 2.2, 3.1, 3.4
Increase the productivity of production systems to ensure food and nutrition security	Activities 1.2, 2.1, 2.2, 3.1, 3.2

Table 14. National policies and regulations applicable to project activities

Subsector	Law or regulation	Institution
Agriculture	National Agricultural Investment Plan (PNIA2, 2018-2025), local development plans	MINADER
Climate	National Strategy on Climate Change (2015-2020), the Nationally Determined Contribution (NDC), the Third National Communication to UNFCCC and the National Strategy for Climate-Smart Agriculture (2018-2025), GCF Country Programme, CBA plans, NAP development process Act No 2014-390 of 20 June 2014 Guidance on Sustainable Development	MINEDD
AFOLU	NDC, Third National Communication, Law No. 2002-102 of February 11, 2002, to establish, manage and finance national parks and nature reserve	MINEDD
Water	National Water Policy (2019) Law No. 98-755 of 23 December 1998 of the Water Code	Ministry of Water and Forestry and National Environment Agency (ANDE)
Land tenure rights	Law No. 98 - 750 of December 23, 1998 (<i>as amended by Act No. 2004-412 of 14 August 2004</i>) relating to rural	National Assembly

	land (article 1), states that any Ivorian individual is entitled to own land. National Development Plan (2021 - 2025)	
Environment	Law No. 96-766 of 3 October 1996 of the Environmental Code Environmental Impact Studies 96-894 - Decree of 3 November 1996	MINEDD and ANDE
Gender	Ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1995 National Gender Policy (2009) National Gender Strategy (2014)	National Assembly Ministry of Family, Woman and Child

Synergies will be developed with ongoing structures and programmes implemented in Poro Region. For instance, with interventions supported by AfDB, WFP, IFAD, FIRCA, FAO focusing on water management, conservation agriculture, soil improvement and delivery of high-quality inputs. Microfinance institutions such as Advans and COOPEC and mobile money platforms have been identified as potential partners for the provision of financial services. Synergies will be built with SODEXAM and the cotton production companies for the dissemination of agroclimatic information and appropriate agrometeorological services via radio station networks. Incentive-based community and private sector participation across food value chains will ensure cost-effectiveness and ownership of the investments.

Participation of private players, either through the provision of financial services market alliances (under Component 3) or Index-based Insurance (under Component 1) will leverage sustainability across the selected food value chains. To strengthen complementarities with other larger and longer-standing climate-resilient initiatives, the project will build synergies with the recently approved IGREENFIN GCF project (FP183), by strengthening the capacity of FOs and ensuring that eligibility criteria for financial support are met. In particular, the project will adequately prepare the FOs with financial literacy and equip with tools such as green value chain business plan to ensure that sustainability and exit strategy approach are effectively designed and well-tailored to the needs of the target organizations. Furthermore, the project will share knowledge and systematize good adaptation practices to leverage stakeholder engagement and ensure replicability after its completion, in alignment with other demonstrated models, such as the WFP's integrated risk management approaches funded by GCF in several African Countries.

Regarding insurance in particular, private stakeholders are currently developing index insurance products in other regions. An updated screening of insurers, service providers for product design, delivery mechanisms, and types of products will help target the project activities to fast track the introduction of such products to the project beneficiaries. So far, 2 insurance companies (Axa, Atlantique) offer such products. Several service providers (Inclusive Guarantee, Risk Shield, Pula Advisors) are already operating in the country on different crops, including maize. They will be

instrumental in ensuring the right degree of ownership by local operators, and thus a sustainable approach. In addition, linking insurance projects with savings will increase the affordability of the insurance product. It will also contribute to retain risk and invest in inputs. This plays a key role in terms of smallholders and FOs financial self-sufficiency and long-term sustainability of the activities.

Table 15. Collaboration opportunities on climate-resilient initiatives in Poro Region.

Topic	Project and partner	Item
Climate-resilient technologies for smallholder producers	PAFARCI FIRCA	Seed Production of drought resilient varieties in collaboration with CNRA
	PRO2M	Access to high-quality seeds and other inputs
Soil and water management	PPCA /ICRAF and Peleforo Gon University	Soil fertility restoration
Climate information	PPCA/ ICRAF and Sodexam	Use of mobile technology to disseminate weather forecasts
Women empowerment	AFD Intercoton project under preparation	To be defined
Access to climate finance services	IFAD/IGREENFIN	Complementarities for support of FOs that have developed business plans and have solid organizational competences
Access to microinsurance for risk transfer	AXA - Atlantique	Development of index-based climate insurance
Financial services	FIRCA	Access to microcredits
Financial inclusion of smallholder farmer organizations	IFAD	Support to OPA supported by the project

7.11. Potential Project Beneficiaries and selection criteria

The project will target vulnerable smallholder farmers focusing on female-headed households, community-based organizations, NGOs and women groups. Rural advisory and technical extension services will be also included in the target groups. The estimated number of potential direct beneficiaries is of 70,000 smallholder producers households (90% women) with an average farm size of 3.5 hectares. The project will build financial and technical capacities of 70 Agricultural Professional Organizations and train an estimated 200 technicians and extensionists, processors and storekeepers on the application and dissemination of climate-resilient agricultural and environmental practices and technologies. The project will work in about 70 vulnerable villages covering the four Departments and provide food assistance to 70 school canteens, reaching approximately 14,000 schoolchildren. The estimated number of indirect beneficiaries is of approximately 210,000 persons corresponding to approximately 20% of the population living in

Poro Region (who will benefit from more productive and diversified climate resilient production systems and therefore will have improved their food, water and nutrition security status.

The project will strengthen land tenure rights of smallholder women farmers by supporting asset creation, homestead gardening and group empowerment for staple and vegetable production. The project team will support the negotiation and signature of land agreements to secure land tenure rights for women-led FO and women farmer leaders. Access to productive assets and infrastructure will be negotiated within communities whereas land will be negotiated with traditional chiefs for allocation to FOs. Land allocation for farming purposes will be concluded with existing groups (40) and will be expanded with the new FOs (30). There will be about 70 agreements signed with community leaders for plots that will be granted to the FOs for vegetable production. Local authorities are involved in validating and supervising agreements Also, climate-smart land restoration will increase land availability, and this will increase land for women-led FOs.

To increase participation of women in decision-making, the project will envisage the use of specific timing (calendars), venues and media outlets, platforms, and technologies that are in practices in local, frequented, used, adopted by women to deliver project interventions. Attendance and participation, habits, cultural beliefs such as village market days & places clinics/hospitals, worship centers etc. could be leveraged to enable women to fully take advantage of the project's intended results.

The people and villages will be respectively targeted and selected based on the following criteria:

- Intensity and frequency of climate change impacts
- Climate vulnerability of households and productive assets
- Adaptive capacities of rural communities
- Level of food and water insecurity and malnutrition in the target
- Degradation of natural resources due to climate shocks
- Availability and implementation of climate-resilient technologies
- Presence of Lead farmers and FFS for climate change adaptation
- Number of vulnerable and climate-resilient households
- Presence and distribution of climate-proofed infrastructure
- Financial services for climate-friendly technologies
- Activity of rural advisory and technical extension services
- Structure and functionality of community-based and farmers organizations
- Initiative undertaken by WFP and/or other stakeholders

A detailed analysis of criteria and profile of potential beneficiaries, targeting and selection of villages and communities will be completed at project inception. Design of food production systems will also be conducted during CBPP. The food crops for this project (maize, rice and vegetables) have been selected based on the following criteria:

- Climate vulnerability

- Importance of produce in relation to food and nutrition security
- Economic and cultural importance
- Participation of women, youth and other vulnerable groups across the food value chain
- Adaptation potential: sustainable intensification, diversification, livelihood opportunities
- Alliances and partnerships with markets and school feeding programs
- Participation of financial services and input providers
- Scaling up and replicability of adaptive practices and technologies
- Synergies and complementarities with other projects

7.12. Implementation Arrangements

As requested by the Government of Côte d'Ivoire, WFP will be the Accredited Entity (AE) and one of the Executing Entities (EE) responsible for the oversight, procurement, reporting and monitoring of project activities. Present in Côte d'Ivoire since 1969, WFP has been operating in alignment with the national development priorities. WFP's operations consist of interventions to improve food security and livelihoods' resilience, reduce malnutrition, promote market alliances, support school feeding and enhance education and improve gender equality. The project is aligned and contributes to the Strategic Outcome 4 of WFP's 2019-2023 Country Strategic Plan: "Enhance food systems to be more sustainable and resilient". Upon the onset of the COVID-19 pandemic, WFP has introduced protective measures in its operations in line with Government's guidelines.

The Government of Côte d'Ivoire will act as the other Executing Entity (EE) through the MINADER. MINADER will be the sectoral counterpart institution tasked for the provision of technical assistance, knowledge dissemination, coordination and liaison with project beneficiaries to support ownership and sustainability of the interventions. WFP and MINADER will enter into a Subsidiary Agreement in the form of a Memorandum of Understanding (MOU), which will be legally binding. No other specific agreement is required to legally implement the proposed project. WFP has developed a solid partnership with MINADER and the technical structures under its supervision, such as ANADER and FIRCA, in different programmes in the country as well as other partners involved in the execution such as SODEXAM. WFP confirms the demonstrated outstanding performance of all partners in terms of managing the resources and achieving the technical objectives. The execution of the project activities will be distributed as follows:

- a. Component 1: Acting as co-EE, WFP will work with Service Providers (SP) for the integration of adaptation measures in local development plans. WFP will implement soil and water conservation and land restoration measures in vulnerable villages through FFA involving local communities. Also, WFP will set up the insurance products and strengthen the climate information services, the latter in partnership with SODEXAM. It will manage procurement of goods and services under this component. MINADER, acting as co-EE through ANADER, will task field technicians of ANADER for the capacity-building, organizational empowerment and technical assistance of this and the following project component.

- b. Component 2: MINADER, acting as co-EE through ANADER, will lead capacity-building, training, and technical backstopping to smallholder farmers. WFP, acting as co-EE, will support ANADER for development of training materials, field missions and procurement and distribution (together with support of SP) of agricultural booster kits and processing equipment.
- c. Component 3: MINADER, acting through the Interprofessional Fund for Agricultural Research and Advisory (FIRCA), will support the development of business plans and financial management training of FOs. MINADER will also work with the Global Green Growth Institute (GGGI) for the systematization of good practices. WFP will implement village savings and loans groups and facilitate the access to market information and leverage market alliances.

Acting in its capacity as executing entity, WFP will enter into Field Level Agreements (FLAs) with cooperating partners for the implementation of climate change adaptation measures (i.e. training, sensitization, planning, organization of communities for the realization of assets and technical supervision). These are usually NGOs and/or public entities. In the case of this project, cooperating partners will include ANADER and SODEXAM for the dissemination of climate services, the transfer of skills to communities for rainfall monitoring and the use of climate information in agricultural activities. Some NGOs might also be selected as cooperating partners.

Acting in its capacity as executing entity, WFP will enter into service contracts with service providers, that is to say the private sector or any entity that will be procured to provide a service. In the case of this project, they include for instance insurance companies, microfinance companies and telephone operators for the transfer of cash to the participants.

As for the contractual arrangements with the beneficiary groups which will be encouraged to act as food suppliers for schools, WFP has no formal contracting tools with the beneficiaries (whether individuals or associations). The commitments are based on mutual trust and understanding of the benefits for the whole community. WFP is implementing these types of projects in other regions: as an example, in 2022, farmers association donated 32 tons of food to schools in similar arrangements.

Table 16. Roles and responsibilities of Executing Entities for the implementation of project activities

Component	Output	Activities	EE Roles and responsibilities
Component 1. Promote the use of gender-sensitive climate-risk	Output 1. <i>Increased dissemination of community-based risk preparedness measures and use of climate information</i>	Activity 1.1. Integration of climate change adaptation and disaster risk reduction measures in local development plans	This activity will be executed by a Service Provider (SP) contracted by WFP through GCF grant. MINADER will participate in the review as key stakeholder.
		Activity 1.2. Implementation of community-based adaptation/risk	This activity will be executed by WFP through SP and beneficiaries' communities that will be involved

management measures	<i>services and insurance products</i>	management measures in vulnerable villages	through Food Assistance for Assets (FFA) modality. WFP will be in charge of purchasing materials and tools for the works. Communities will receive cash for the implementation of land restoration and soil and water conservation measures. MINADER/ANADER technicians will supervise the execution of works and WFP will contribute to running and field visits costs. Execution costs will be covered by the GCF grant
		Activity 1.3 Provide Index-based Insurance to mitigate climate change impacts	This activity will be designed and executed by WFP with participation of experts from HQ and Regional Bureau. Local insurance companies will be contracted as SP. MINADER/ANADER technicians will be trained on the structure and operation of the insurance scheme
		Activity 1.4 Scale up the access and use of reliable, tailored and timely climate information weather forecasts	WFP will execute this activity with support of SODEXAM and mobile operators that will be contracted as SP. MINADER/ANADER technicians will train smallholders on the use of climate information. Training and supervision costs will be covered by WFP through the GCF grant
Component 2. <i>Improve technical capacity and empower Women-led Farmer Organizations</i>	Output 2. <i>Increased women smallholders' adoption of climate-resilient practices and technologies in their family farms</i>	Activity 2.1 Awareness-raising, capacity-building and organizational empowerment of smallholder farmers with focus on women and youth	MINADER/ANADER will execute this activity while WFP will provide oversight and support for the targeting, development of training materials and field operations.
		Activity 2.2 Dissemination of adaptive nature-based agricultural practices, technologies, and approaches	WFP will execute this activity with involvement of SP for the field work. WFP will also be responsible for the procurement of the agricultural booster kits that will be provided to vulnerable farmers. MINADER/ANADER will facilitate technical backstopping and regular monitoring of the uptake and participation of smallholder farmers in FFS, lead farmers and other scaling up mechanisms. Field missions will be covered by the GCF grant and WFP co-financing
Component 3. <i>Market access and financial inclusion</i>	Output 3. <i>Smallholder FOs improve market access, set savings</i>	Activity 3.1. Support FOs to develop business plans and community-based saving and loans mechanisms for climate-proofing investments	This activity will be jointly executed by WFP and MINADER with support of SP. In particular, WFP will establish the savings and loans groups while MINADER, through FIRCA, will provide

<i>schemes and leverage partnerships to strengthen the financial support across the food value chains</i>		training and support the development of business plans of FO.
	Activity 3.2. Improve processing and storage capacity to reduce post-harvest losses due to climate shocks	WFP will execute this activity which includes the procurement of the required equipment, materials and tools that will be distributed to the selected Farmer Organizations (FO). Purchases will be partly co-financed by WFP. Technicians of MINADER/ANADER will provide technical assistance and regular backstopping covered by GCF grant.
	Activity 3.3. Build farm to market alliances between FOs and school canteens and local markets	WFP will be responsible for the execution of this activity that includes the market information provision.
	Activity 3.4. Systematization of good practices and knowledge-sharing of adaptive solutions across food value chains	This activity will be executed by MINADER with contribution of GGGI as main SP. WFP PMU will support the set up and supervise the implementation facilitating data and information review.

Three main committees will be set up to ensure that the project's objectives are met.

- **A Project Steering Committee (PSC)** will be created at the beginning of the project implementation and will meet twice a year. Its main role will be to supervise the implementation of the project, monitor achievement of project milestones and ensure that objectives are being accomplished; examine compliance with the requirements of the Ivorian Government, WFP and GCF; ensure the implementation of the identified risk management plan. It is composed by the MINEDD, the MINADER and the WFP.
- **A Project Task Force (PTF)**, will be created and convened by the MINEDD to accompany the project during its life and to advise on technical issues. It will monitor the implemented activities at the technical level and ensure they respond to the standards and norms under each component. It is composed by the MINADER through the FIRCA, its Departmental Directions and ANADER at local level, Ministère de la Famille, de la Femme et de l'Enfant, Ministère de l'Education Nationale, de l'Enseignement Technique et de la Formation Professionnelle (MENETFP), SODEXAM, SUNU, COOPEC, GGGI, Conseil Regional of Poro Region and the Prefecture of Poro Region.
- **A Project Management Unit (PMU)** will be responsible for the day-to-day management and implementation of the activities, including baseline data collection, field surveys, consultations with beneficiaries, preparation and follow-up of the annual work plan and budget, monitoring and dissemination of lessons learnt and successful experiences, under the guidance of the PSC. It is set-up and managed by the WFP. It is composed by a project coordinator, gender, environmental and social officer, finance officer, procurement support and administrative

support. A mid-term project evaluation will be conducted to evaluate progress towards expected outputs whereas the final evaluation will be conducted at the project end to assess achievement of results and systematize lessons learnt and successful experiences,

MINEDD is the National Designated Authority (NDA) for the GCF and has the responsibility to coordinate climate change adaptation and mitigation projects in the country. MINEDD will be responsible for ensuring alignment with national climate change adaptation priorities, for coordinating the different ministries and national counterparts linked to project implementation, and for providing an advisory and monitoring role to WFP across the implementation of the project. The MINEDD will chair the Project Steering Committee (PSC) and assist in monitoring the achievement of the expected outputs. The MINADER will be the vice-chair of the PSC and be responsible for technical delivery, institutional ownership and sustainability of the interventions supporting complementarities with the IGREENFIN GCF Project and other climate-resilience-building initiatives. The PSC will meet twice a year to monitor the achievement of project milestones and ensure that objectives are being accomplished.

The Ministry of Women, Family and Children and the Ministry of Solidarity and the Fight against Poverty will be consulted on the identification of beneficiaries and on all project activities relating to gender mainstreaming. The Ministry of Education, through the Direction des Cantines Scolaire (DCS), will be involved in the identification of beneficiary localities, but also in sensitizing communities to supply the school canteens with food. At the beginning of each year, it will assist in planning the needs of the canteens. It will take part in any consultations or working sessions aimed at establishing commercial links between the school canteens and the agricultural groups. These ministries will be members of the project steering committee.

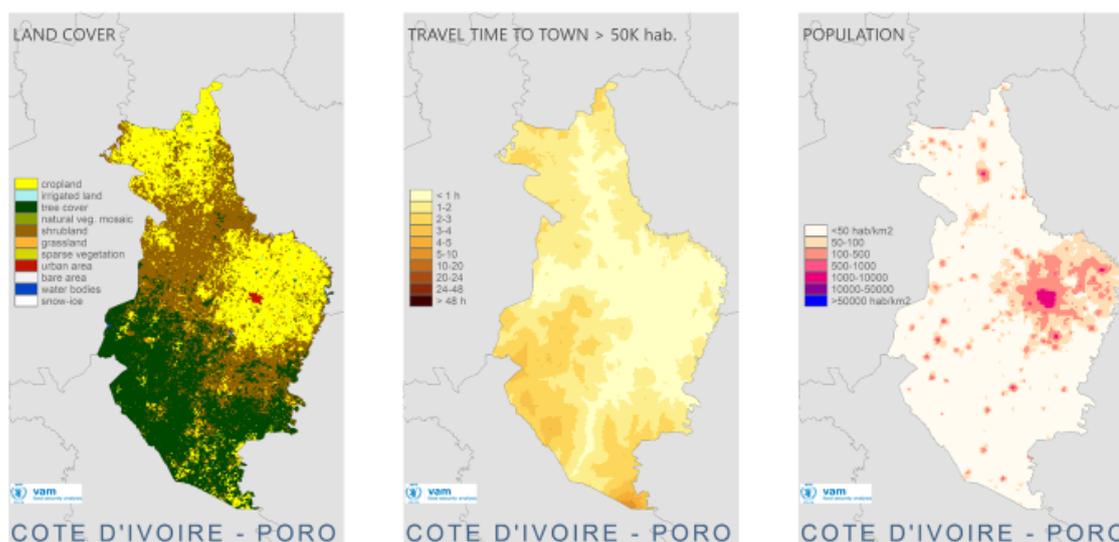
GGGI will support the systematization and enabling environment for the dissemination of good adaptation practices. Other cooperating partners that have been pre-identified during the pre-feasibility assessment are: SODEXAM for climate-related information, microfinance institutions and mobile money platforms for insurance and financial services and Bureau de Vente aux Producteurs for market information services. At project inception, the cooperating partners will be confirmed to better take into consideration the possible evolution of the context in the Poro region and at national level.

In addition, there are other potential partners for the implementation of index-based microinsurance products that have experience in the Region with similar products, such as Axa, UNACOOPEC and Inclusive Guarantee. They will be procured and contracted as service providers according to WFP's procurement rules and their capacity to provide the necessary services will be assessed during the procurement process. They will not manage GCF proceeds. In addition, it is important to note that the insurance contract, for the insurance coverage, is between the insurance provider and the beneficiary.

A mid-term project review will be conducted to assess progress towards expected outputs whereas a final project evaluation will be conducted at the project end to assess achievement of results and systematize lessons learnt and successful experiences.

The analysis of potential risks related to the project implementation/management including stakeholder's involvement has been included in Annex 6 of the FP package.

SETTING THE SCENE: some essential layers



MAIN FINDINGS

HISTORICAL

Increasing rainfall inter-annual variability in the core of the season (JUL-SEP)

Reduction of rainfall amounts during the start of the season (MAY-JUN)

APR-JUN period is more affected by drought events and occurrence of heavy droughts is increasing in the last years.

Since 2004, annual alternations of dry and wet years is evident for the period JUL-SEP highlighting a kind of increasing variability.

Quite high variability in the date of the start of the season that could affect the timing of agriculture preparation activities and the sowing with possible negative impacts on the crop production

CHANGES IN 2050

Slight increase in annual rainfall and strong increase in inter-annual variability

The annual rainfall increase is mostly due to a generalized increase in the second part of the year JUL-NOV. Rainfall decrease at the beginning of the season is confirmed

The increase in variability is mostly due to the changes occurring in the months in the core of the season (JUL-SEP)

A growing frequency of lighter drought events (low intensity and severity) is expected in APR-JUN

The opposite happens for the JUL-SEP period, where drought events with stronger intensity and severity are expected

Annual max temperature will raise for about 1.6 C. MAY and JUN are the months with higher increases (it must be noted that rainfall is expected to reduce during these months). Increasing temperature will lead to increasing ET

Slight shift (delay) of the season timings (both start and end) is expected (aligned with the decrease of rainfall amounts at the beginning of the season and the increase in the second part of the season)

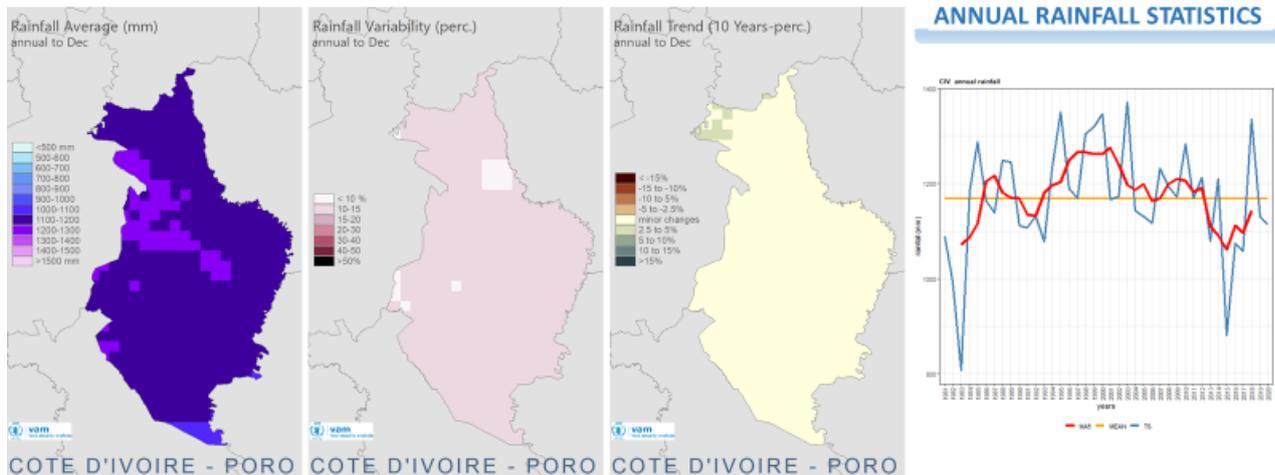
Rainfed maize yield decrease

¹³⁵ Carried out by WFP's Vulnerability Assessment and Mapping Department (2020-2021). The climate analysis will be updated at project inception in coordination with SODEXAM and other cooperating partners

RAINFALL: HISTORICAL ANALYSIS

The historical analysis is based on 40 years of rainfall gridded dataset produced by the Climate Hazards Center of UC Santa Barbara.

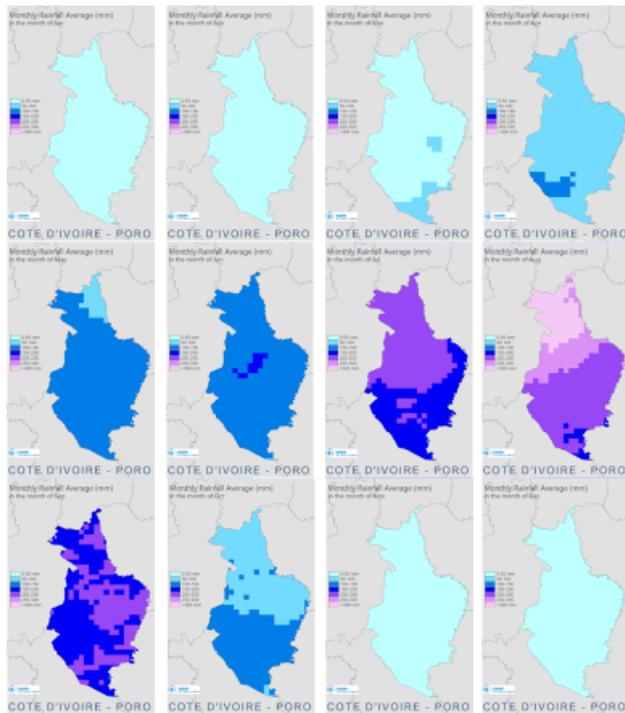
The analysis looks at the patterns of long-term average, inter-annual variability and temporal changes across the study area.



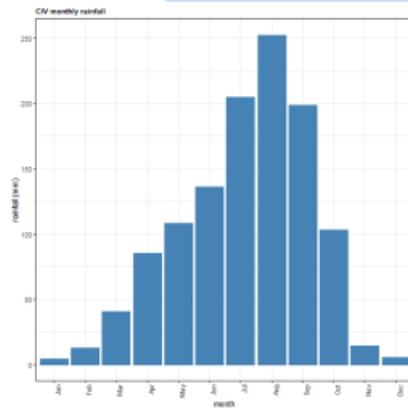
In Poro, rainfall amounts are generally above 1000 mm/year (map to the left). Inter-annual rainfall variability* is between 10-15% while major long terms trends are not evident (map to the right).

The chart to the right shows a plot of the all-Poro annual rainfall from 1981 to 2020. The blue line in the chart shows total annual rainfall values. The red line shows a 5-year moving average that smooths sharp year on year variations and highlights broader patterns of variation. The orange line is the long-term average. Regardless of the two very dry seasons (the last one quite recent – 2015), a long period of above-average rainfall is evident from the early 90s to first decade of 2000, then a dry period has started, and it is still on-going, except for 2019, (see red line). Inter-annual variations are also evident with oscillation up to 200 mm/y.

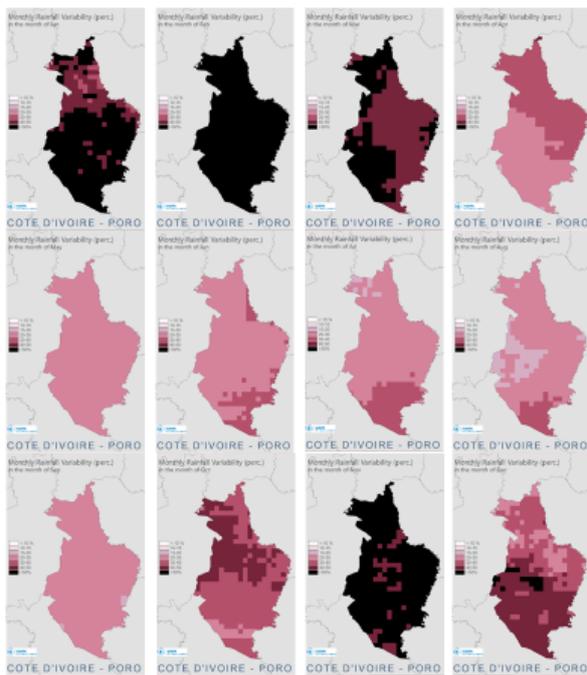
*Inter-annual variability quantifies how much seasonal rainfall varies from one year to the next. It is expressed by the coefficient of variation of the annual rainfall



MONTHLY RAINFALL AMOUNTS



Despite medium terms fluctuation (the two cycles seen in the previous chart), the annual rainfall amounts are quite high, so it is important to see the monthly distribution and how it fits with the crop calendar. AUG is the month with higher rainfall amounts (250 mm on average in all-Poro) and it is characterised by a quite strong north to south geographic distribution. JUL and SEP are the other two main contributors to the annual amounts (JUL to SEP period contributes to about 50%). MAY and JUN are particularly important as this is the sowing period for the cereals, poor rainfall and drought in these two months can strongly impact the vegetation development and production.

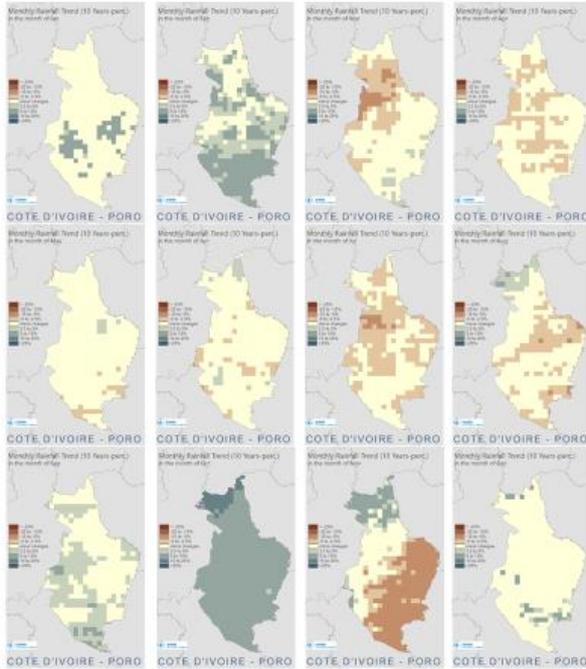


MONTHLY RAINFALL VARIABILITY

Except for the dry months from NOV to MAR, the inter-annual variability is about 20-30% of the monthly rainfall.

This variability impacts mostly on MAY and JUN rainfall (the most critical period) as a reduction of 20 to 30 % of rainfall during these months can have negative impacts on the sowing and the early development of the crops.

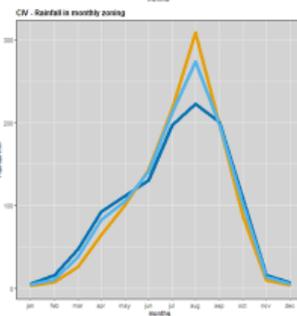
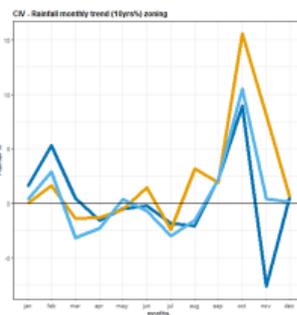
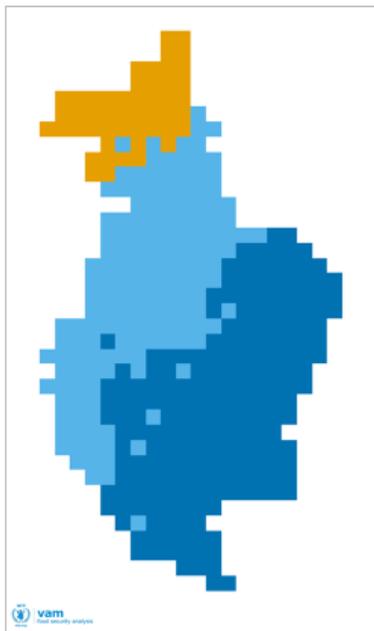
MONTHLY RAINFALL TRENDS



The main important rainfall period fits with the crop calendar meaning MAY to OCT but as already mentioned, the critical periods are the beginning of the season (MAY-JUN) and the flowering period (broadly AUG).

If we focus on this period, not very evident trends are present in MAY-JUN, while JUL shows some negative trends mostly in the northern areas.

AUG and SEP, even with different signs, show some scattered trends while OCT has a quite strong positive trend (but the season is almost completed at this stage).



MONTHLY RAINFALL TRENDS ZONING

Monthly rainfall trends are here combined into areas of relatively homogeneous behaviour by cluster analysis (see map and chart to the top, the chart to the bottom is the monthly rainfall amounts in the cluster areas for reference).

This analysis reveals three main areas of trend variation:

- The orange zone present minor trends from JAN to AUG then it shows positive trends, particularly in OCT and NOV.
- The light blue zone presents light negative trends until SEP, then has a positive peak in OCT and followed by no trends until DEC
- Finally, the dark blue zone has a positive trend at the beginning of the year, then very light variations until OCT when there is a positive peak, immediately followed by a negative one in NOV.

In general terms, this analysis does not show very evident trends during the core of the rainfall season (MAY-OCT) except for a negative trend in JUL common to the three zones.

The Standardized Precipitation Index (SPI) is a widely used index to characterize meteorological drought on a range of timescales (usually from 1 to 24 months). The SPI is based on the probability of precipitation for any time scale. The probability of observed precipitation is then transformed into an index. Droughts are commonly classified by type as meteorological, agricultural and hydrological, and differ from one another in intensity, duration and spatial coverage.

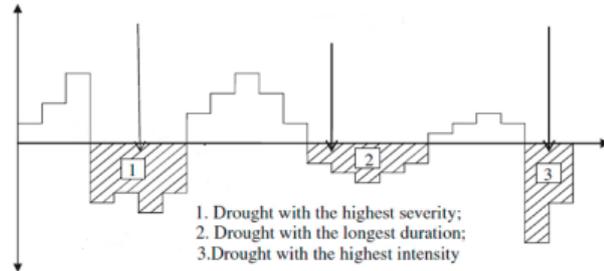
Different timescales of SPI are indicated for studying each of these typologies: SPI1 is used for meteorological drought, SPI3 to SPI6 is used for agricultural drought, and SPI6 to SPI24 is useful for hydrological drought analyses.

For any given region, increasingly severe rainfall deficits are indicated as SPI decreases below -1.0 , while increasingly severe excess rainfall are indicated as SPI increases above 1.0 .

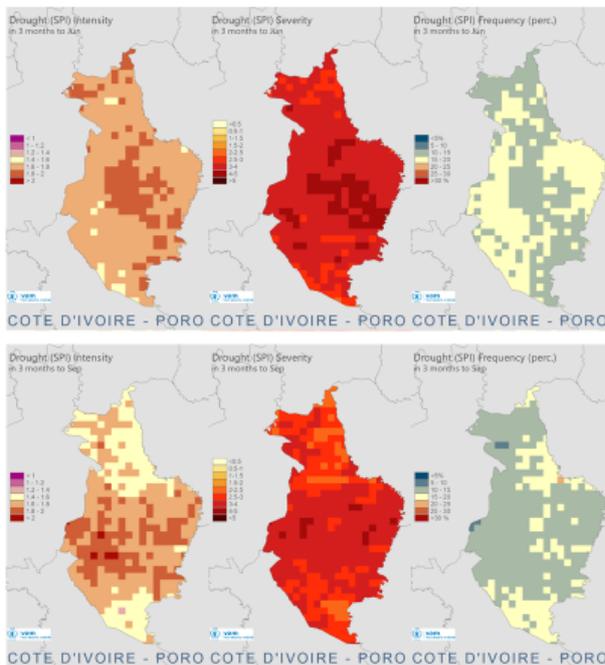
Drought can be analysed according different characteristics. In this study we have focused on the following:

- drought intensity: it is the average value of a drought index below the critical level
- drought severity: it indicates the cumulative deficiency of a drought parameter below the critical level
- drought duration*: the number of consecutive months in which the drought index is below the critical level
- drought frequency: the number of times the drought event occurs divided by the years in the time-series, expressed in %

Characteristics are here calculated by using the SPI3 (three months) as it can give information for both meteorological and agricultural drought, and a threshold (critical level) of SPI below -1 that indicates severe deficits.



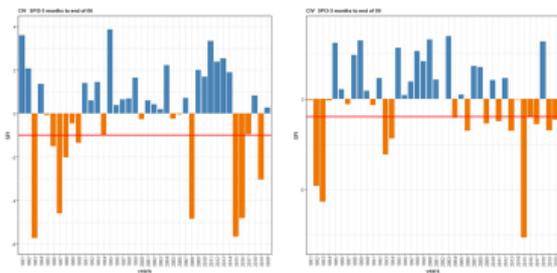
* Drought duration is not considered in this study



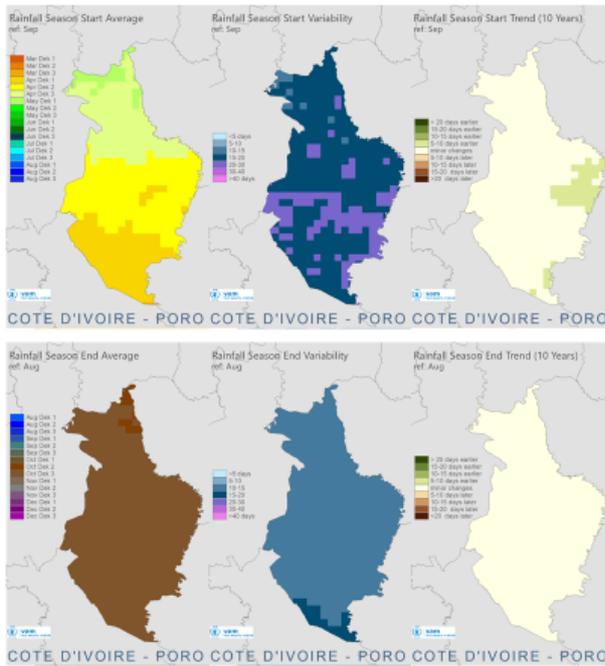
SPI analysis has been done on two sub-periods: APR-JUN - the start of the season –and JUL-SEP - the core of the season.

For all three indicators the APR-JUN period (maps above) is more affected by drought events. Generally drought frequency since 1981 is 1 to 2 drought seasons out of 10 (10 to 20%), but this average hides the temporal distribution. Looking at the plots below (SPI values for all-Poro) it is evident that in recent years the occurrence of heavy droughts (orange bars) is increasing in APR-JUN period (plot to the left), 3 out of 6 strongest droughts have occurred in the last 6 years. The plots also show that in some cases the drought started in APR-JUN tends then to lessen in the following months, but some other droughts suddenly appear during JUL-SEP period (plot to the right).

Finally, a recent series (since 2004) of annual alternations of dry and wet years is evident for the period JUL-SEP highlighting a kind of increasing variability.



RAINFALL SEASON TIMINGS



The average start of the rainfall season (maps to the top) has a clear south to north gradient, with earlier starts (APR) in the southernmost areas and occurring progressively later towards the north (early MAY). The start of seasons variability ranges from 15 to 30 days in most of the area, while trends are not evident.

The end of the season (maps to the bottom) does not show any evident geographic pattern, it mostly ends in the second part of OCT with a variability of about 5-10 days and no trends.

The most important finding concerning rainfall season timing is the quite high variability in the date of the start of the season that could affect the timing of agriculture preparation activities and the sowing with possible negative impacts on the crop production.

Rainfall season timings definitions:
 Start of the season is defined as the first dekad (10 days period) that meets the following criteria: at least 25mm of rainfall in the first dekad and at least 20mm of rainfall in the next one.
 The end of the season is defined as the last dekad that meets the following criteria: at least 10mm of rain and at least 10mm of rainfall in the previous ones.

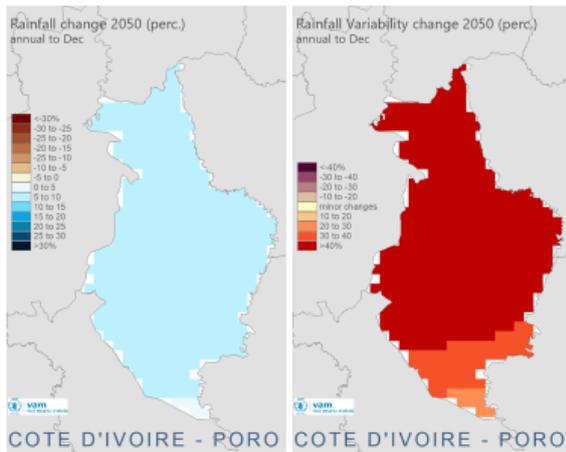
RAINFALL: CLIMATE CHANGE ANALYSIS

The climate change analysis is based on bias-corrected climate datasets made available by the Copernicus Climate Change Service. Projections to 2050 for RCP85 have been utilised.

The analysis looks at estimates the changes in rainfall amounts and inter-annual variability expected by 2050 in the study area



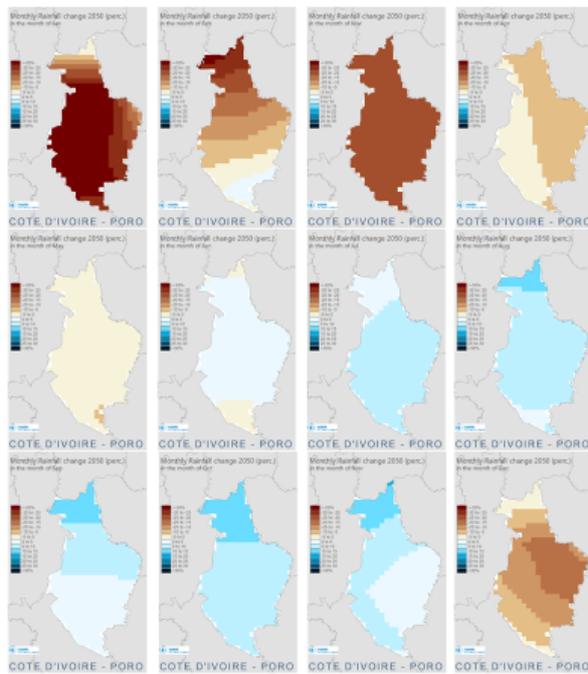
ANNUAL RAINFALL CHANGES (2050)



A slight increase (0 to 5%), annual rainfall amounts is estimated for 2050 (map to the left)

Changes in rainfall amounts are an important indicator but inter-annual variability is a climate factor of major importance as well. As well know, precipitation variability connects extreme wet and dry events, floods and droughts, which pose threats to economic activities, environment, and limits livelihood options.

According to the analysis, precipitation variability is estimated to increases on the entire area, particularly in the northern zones (map to the right)

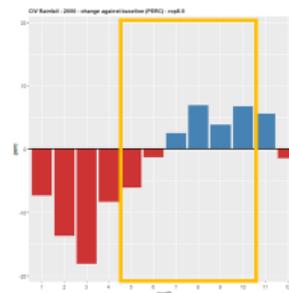


MONTHLY RAINFALL CHANGES (2050)

Monthly rainfall changes in 2050 (in %) are shown in the maps to the left.

The annual rainfall increase, seen on the previous page, is mostly due to a generalized increase in rainfall in the second part of the year. This is quite well aligned with the finding of the historical data analysis where rainfall increase where detect from AUG onward. The signals related to the starting phase of the rainfall season are less strong, but they generally point to a slight reduction in rainfall amounts (this agrees with the historical analysis as well)

The plot below summarises the all-Poro rainfall average change by month (the orange box highlights the rainfall season)



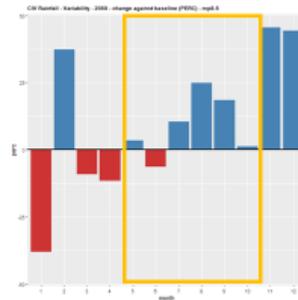
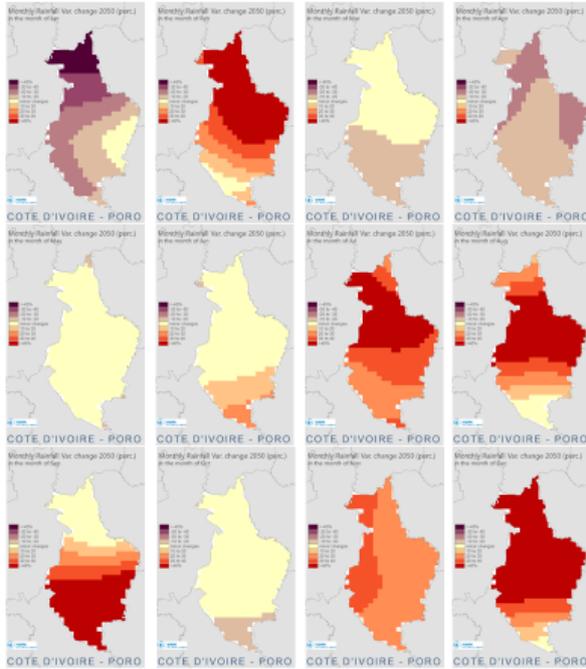
MONTHLY RAINFALL VARIABILITY CHANGES (2050)

Monthly rainfall inter-annual variability changes in 2050 (in %) are shown in the maps to the left.

As seen on a previous page, inter-annual rainfall variability is expected to increase in Poro.

Months in the core of the season (JUL-SEP) are the most interested by these expected changes. The drought analysis showed in a previous section, has highlighted this behaviour in the last years (since 2004) and the findings of the climate change analysis seem to go in the same direction.

The plot below summarises the all-Poro rainfall variability changes by month (the orange box highlights the rainfall season). Increasing variability is evident in the core of the rainfall season

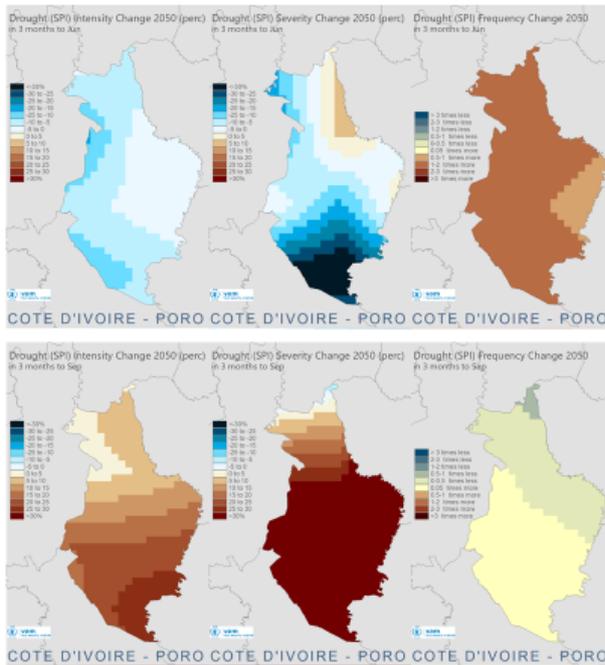


SPI (DROUGHT INDEX) CHANGES (2050)

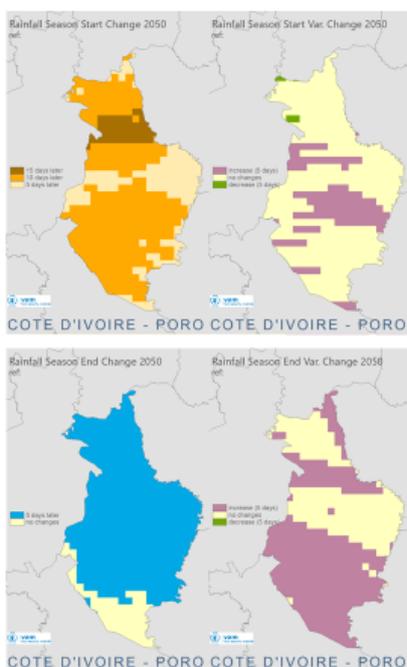
The maps to the left show the changes for the three drought indicators in 2050. As done with the historical data, the SPI analysis has been carried out on two sub-periods: APR-JUN - the start of the season –and JUL-SEP - the core of the season.

APR-JUN period generally shows a slightly decreasing tendency for both intensity and severity (except in the southern area where this latter decreases up to 30%) and a growing frequency of drought events.

The opposite happens for the JUL-SEP period, where stronger intensity and severity are expected in most of Poro while the frequency shows few changes. This is quite well aligned with the recent tendencies in drought distribution during this period and with the expected increase in rainfall variability



RAINFALL SEASON TIMINGS CHANGES (2050)



The maps to the left show the changes in start and end of the rainfall season in 2050.

The start of the season is expected to be slightly delayed (up to 15 days), this confirms the outputs of the rainfall monthly distribution change analysis with a reduction of rainfall in the first part of the season. A slight increase in the variability of the date of start is also present.

The end of the season is expected to be slightly delayed (this align again with the rainfall monthly distribution change analysis), increased variability is also expected.

Finally these results confirm that a slight shift of the season timings is expected in Poro for 2050

Rainfall season timings definitions:

Start of the season is defined as the first dekad (10 days period) that meets the following criteria: at least 25mm of rainfall in the first dekad and at least 20mm of rainfall in the next one.

The end of the season is defined as the last dekad that meets the following criteria: at least 10mm of rain and at least 10mm of rainfall in the previous ones.

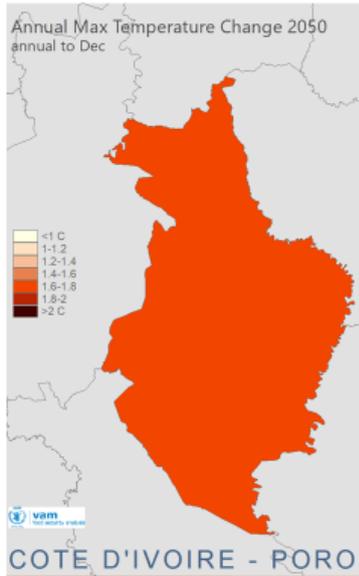
MAX TEMP.: CLIMATE CHANGE ANALYSIS

The climate change analysis is based on bias-corrected climate datasets made available by the Copernicus Climate Change Service. Projections to 2050 for RCP85 have been utilised.

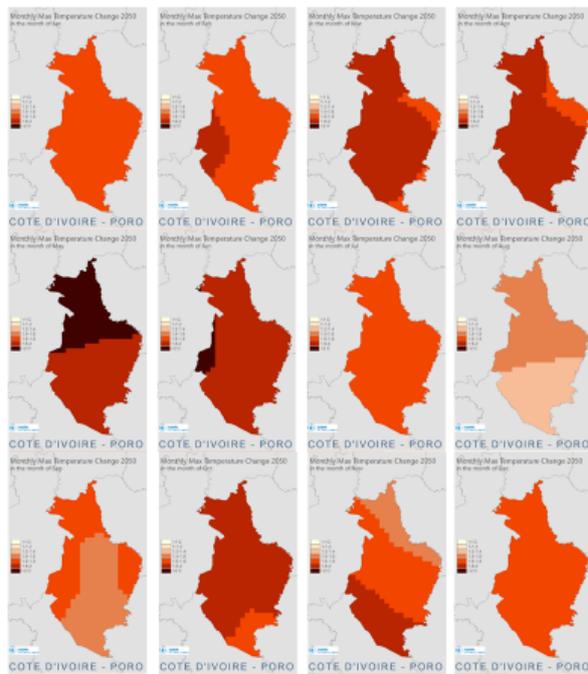
The analysis looks at estimates the changes in temperature expected by 2050 in the study area



ANNUAL MAX TEMPERATURE CHANGES (2050)



A generalised increase of annual max temperature of 1.6 to 1.8 degrees is expected for 2050



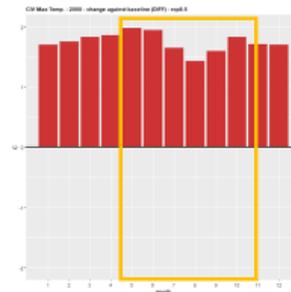
ANNUAL MAX TEMPERATURE CHANGES (2050)

Monthly max temperature changes in 2050 are shown in the maps to the left. The temperature will rise more than 1.6 degrees in most of the months except in AUG and, in some areas, in SEP and NOV.

MAY and JUN are the months with higher increases (up to > 2 degrees in the northern part). This fact, combined with the negative rainfall tendencies in the same period, has negative impacts on the first development phase of crops (the main sowing period is MAY-JUN).

Off-season crops and market gardener can be affected by the increase in temperature during the winter period

The plot below summarises the all-Poro temperature change by month (the orange box highlights the rainfall season)



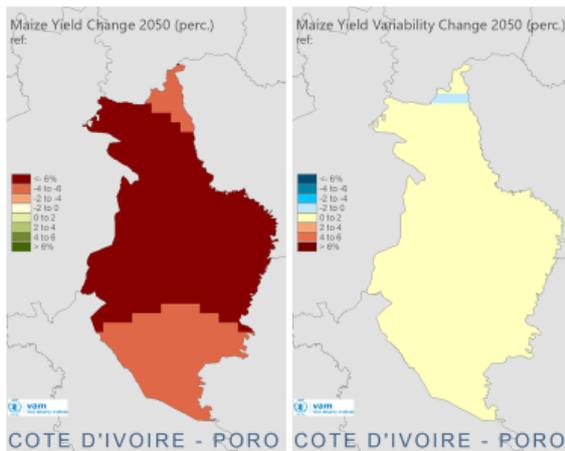
CROP YIELD CHANGE

The crop yield change analysis is based on the results of the intercomparison of multiple global gridded crop models within the framework of the Agricultural Model Intercomparison and Improvement Project and the Inter-Sectoral Impacts Model Intercomparison Project. Projections to 2050 for RCP85 have been utilised.

The analysis looks at estimates the changes in yields and in yield inter-annual variability expected by 2050 in the study area



RAINFED MAIZE YIELD CHANGES (2050)

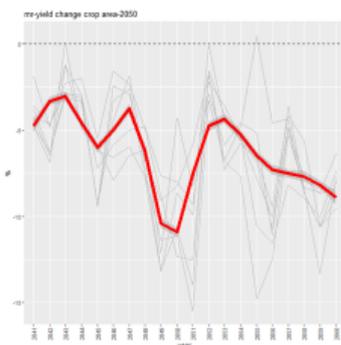


Changes in maize yield and inter-annual variability vs the baseline are shown in the maps to the left.

Maize yield is expected to decrease on average from 4% to more than 6% while yield inter-annual variability shows a slight increase.

The plot below shows the change by a single pixel in the crop area (grey lines) and the all-Poro crop area average for the period 2041 to 2060.

Yield anomaly is always negative in all pixels along the time-series, with high variability



Annex 2 Assessment of the most vulnerable regions in northern Côte d'Ivoire

The table below summarizes the most vulnerable regions among those of the north according to factors such as poverty, nutritional indicators, the food insecurity situation, literacy, and vulnerability of the agriculture sector to the impacts of climate change. The analysis of available information on the different development poles of the Northern zone shows the Poro region with at least four (4) indicators considered critical and where sensitivity to climate impacts is high.

Table 17. Vulnerability analysis of the different regions of Northern Côte d'Ivoire

Development Pole	Region	Capital city	Poverty Rate in 2018	Literacy rate (% illiterate farmers, REEA, 2016)	Nutritional indicators		Food Insecurity Status (Household Rate), SAVA 2018		Agriculture Sector Climate Change Vulnerability Study, MINEDD-UNDP 2013
					Prevalence of chronic malnutrition (%) SMART 2011	Underweight (%), EDS MICS, 2016	Chronic (% of household)	Transition (% of household)	
North	Poro	Korhogo	54	89.8	43.6	18.1	11.7	3.0	Strong
North	Tchologo	Ferke	65.6	84.1	43.6	18.1	3.5	0.7	Strong
Center-North	Hambol	Katiola	56.1	78.6	28.5	11,1	3.6	8.5	Medium
Northwest	Worodougou	Seguela	54.5	71.5	37.7	14,8	2.3	0	Medium
Northwest	Folon	Minignan	70.1	84.3	37.7	14,8	11.7	3.7	Medium
Northwest	Kabadougou	Odienne	71.7	78.8	37.7	14,8	4.3	1.3	Medium
Northwest	Bere	Mankono	55.8	81.2	37.7	14,8	1.8	2.5	Medium
Northwest	Bagoue	Boundiali	68.5	87.3	37.7	14,8	7.9	5.8	Medium

Legend

Critical

Serious

Table 18. Localities in Poro region.

DEPARTMENTS				SUB-PREFECTURE	MUNICIPALITIES
Localities	Area (km ²)	Populations	Density (inhab/km ²)		
DIKODOUGOU	2,100	80,578	38,37	Boron	
				Dikodougou	Dikodougou
				Guiembe	Guiembe
KORHOGO	7,783	536,851	68,97	Dossoumboho	
				N'Gonono	
				Konoroba	
				Karakoro	Karakoro
				Kiemou	
				Kombolokoura	
				Komborodougou	Komborodougou
				Koni	
				Korhogo	Korhogo
				Lataha	
				Nafoun	
				Napie	Napie
				Niofouin	Niofouin
Sirasso	Sirasso				
Sohoun					
Tioroniaradougou	Tioroniaradougou				
M'BENGUE	2,600	87,811	33,77	Bougou	
				Katiali	
				Katogo	
				M'Bengue	M'Bengue
SINEMATIALI	680	58,612	86,19	Bahoukaha	
				Kagbolodougou	
				Sediogo	
				Sinematiali	Sinematiali
TOTAL	13,400	718,944	53,65	27	11

Source: Local data, WFP and GGGI

Annex 3 National Weather Services

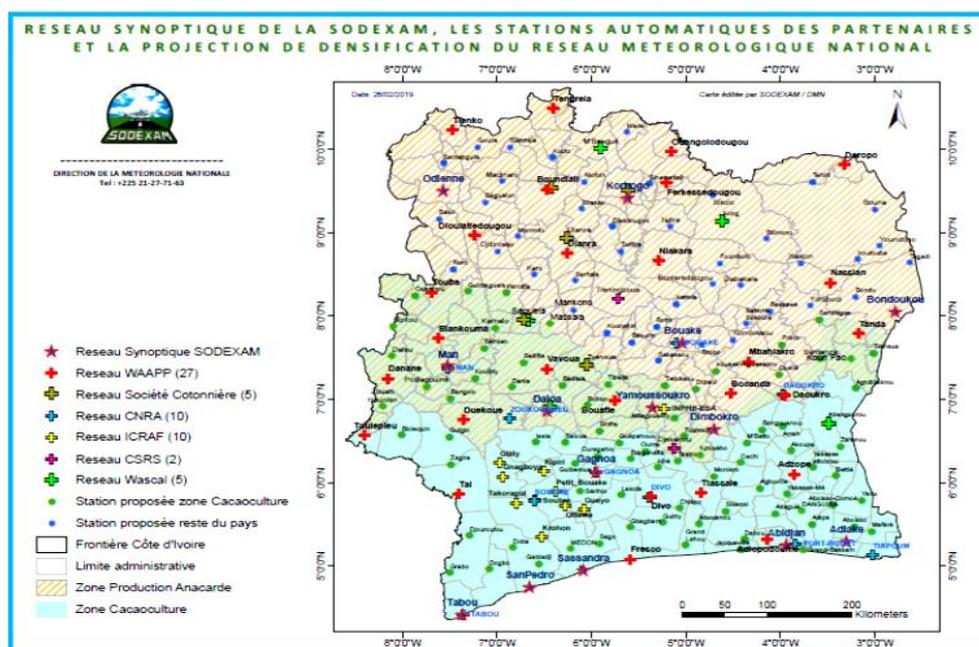
The synoptic network of SODEXAM, the automatic stations of the partners and the densification projection of the national meteorological network is presented in the table below.

Table 19. Climate observation network in Côte d'Ivoire

Type	Number
SODEXAM Synoptic network	14
SODEXAM Climatic stations	06
SODEXAM pluviometric stations	180
ASECNA Synoptic network	01
WAAPP network	27
Cotton companies network	05
CNRA Network (agro meteorological station)	26
ICRAF Network	10
SCSR Network	02
WASCAL Network	05
Proposed station cocoa zone	78
Other proposed station	43

Source: Extract from Vulnerability study of the cotton sector in Northern Côte d'Ivoire and proposal of adaptation options and the Third National Communication to the UNFCCC

Figure 14. Meteorological stations network in Côte d'Ivoire



Source: Vulnerability study of the cotton sector in Northern Côte d'Ivoire and proposal of adaptation options

Annex 4 Adaptation priorities and list of some Adaptation programs

The PNCC, INDC, and the Third National Communication set the adaptation priorities identified to cope with the impacts of climate change in Cote d'Ivoire. As the main source of livelihoods for the most vulnerable is agriculture, the priorities for the agriculture sector in terms of adaptation needs have been further detailed, categorized in the key strategic documents, and summarized below:

Water Resources:

- Implement Integrated Water Resources Management (IWRM)
- Develop agro-pastoral dams to facilitate the watering of livestock
- Develop water catchments/ hydro-agricultural areas and reservoirs to improve food production
- Improve the efficiency of irrigation to limit water consumption
- Harness rainwater and floodwater (collection and storage of runoff water)
- Strengthen the capacities of farmers and other users in terms of irrigation

Arable land, crop yields and crop production:

- Develop the agro-ecological approach (soil fertility management practices, development of the use of organic fertilizers and compost from household waste and agricultural waste, the association of agriculture with livestock)
- Promotion and intensification of the production and use of high-yield and disease-resistant seeds, particularly those resistant to climatic factors and diseases (excluding Genetically Modified Organism and hybrids)
- Improve production technologies through access to improved and adapted inputs (food seeds, fodder, drought-tolerant forestry, animal gene bank, manure and compost management to improve soil fertility, etc.)
- Develop storage and conservation units to limit high post-harvest losses
- Promote and disseminate cultivated species resilient to climate change
- Develop seasonal forecasts that strengthen resilience to climate change in farming practices
- Promote women's access to rural land
- Rationalizing the use of chemical inputs and facilitating the use of biological inputs.

Deforestation, land degradation and desertification issues

- Improve silvicultural species, promote agroforestry, restore degraded land.
- Promote sustainable land management by techniques for improving water and soil conservation (WSC).
- Develop the landscape approach for sustainable land management and water and soil conservation
- Facilitation of the rehabilitation of degraded lands and reforestation of savannah areas, and strengthen stocks of carbon in degraded forests through the promotion of village reforestation

- Reforestation with fast-growing wood-fuelled species; Promotion of improved stoves and Promotion of alternatives to charcoal.

Energy

- Improving access to electricity and energy at accessible prices ;
- Increasing the use of renewable energies in electricity production.

Adaptation programs have been proposed in each vulnerable sector (Agriculture, livestock, energy, Land use, Forests, Water resources and Coastal zones) to cope with it in the short, medium and long terms according to the different climatic, socio-economic, and environmental scenarios. The table below presents those programs identified in the Third National Communication.

Table 20. Adaptation Programmes for the agricultural sector identified in the Third National Communication

N	PROJECT	STRUCTURE	AMOUNT FCFA	AMOUNT US\$
1	Technology for the introduction of "rainguard" in rubber farms for the protection of latex against rainwater.	CNRA	32 300 000	58 727
2	Technological action plans to produce vegetable seeds for the restoration of soil fertility.	ANADER	27 250 000	49 545
3	Technological action plans to capture groundwater using a human-powered pump.	Office Nationale de l'Eau Potable (ONEP)	8 000 000	14 545
4	Technological action plans for the supply of drinking water by improved village water systems (HVA) in rural areas.	ONEP (National Drinking Water Office)	65 000 000	118 181
5	Technological action plans to produce neem leaf-based insecticides against seasonal pests of cocoa and mango trees (cocoa tree mirids, mango tree mealybugs).	ANADER	500 000 000	909 090
6	Technological action plans to produce rubber clones and water-stressed varieties of cocoa, banana and rice seeds.	CNRA	2 027 000 000	3 685 454
7	Technological action plans for the rapid multiplication of water-stressed plantain and cassava varieties.	CNRA	527 000 000	958 181

8	Technological action plans to produce yam seed from aerial stem cuttings.		62 000 000	112 727
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Source. *The third national communication to UNFCCC*

The Government of Côte d'Ivoire, in partnership with technical and financial partners, has defined and implemented several food and agriculture programmes. Some of them include climate change adaptation activities.

GCF FP183: IFAD's green financing (IGREENFIN)

This is an integrated and innovative approach to environmental finance that combines financial and technical support. To this end, it provides a range of tools and services designed to meet the demands of all stakeholders, particularly in the Green Great Wall (GGW) band. These include financial incentives (lower interest rates, longer duration, investment subsidies), support for structuring green investments, assistance in setting up an environmental and social management system and a gender policy, and the valorization of the results obtained (e.g. energy savings, ha of agroforestry, avoided CO2 emissions, etc.). Since the approval of the Niger Simplified Approval Process (SAP) project, many countries (Burkina Faso, Côte d'Ivoire, Ghana, Mali and Senegal) and their agricultural and national investment banks have already requested IFAD support to pursue similar projects with the GCF. This has led to the formation of a coalition of local public banks (agricultural and investment banks) that are ready to embrace green financing for low-emission and climate-resilient agriculture

The **Programme d'appui au développement des filières agricoles** (PAFDA, 2018-2025) co-financed by the Government and the **International Fund for Agricultural Development (IFAD)**, aims to contribute to poverty reduction and stimulate economic growth in the Poro, Bagoué, Tchologo, Hambol and Gbèkè regions. Thus, the project will focus on the development and rehabilitation of rice paddies and vegetables, the construction and equipment of grouping and packaging centres for vegetables, the rehabilitation of rural roads, the installation of rice mills and a cold chain for the conservation of vegetables, the installation of modern mango drying units and an industrial mango processing unit, support for seed production and the setting up of a network of seed distribution shops, support for the production of food crops (rice, vegetables and mangoes), and nutritional education.

The project for the development of soya, rice, maize and vegetables called **the Soya Project** (2019-2024), exclusively financed by the government, aims to boost the old soya project in the North-West (Odienné and Touba), which has been interrupted since the 2002 crisis, by rehabilitating existing infrastructure, upgrading the production system, setting up a marketing system and promoting the processing of these products.

The Projet de Pôle Agro-Industriel dans la région du Bélier (2PAI-Bélier, 2017-2022) co-financed by the Ivorian State and the **African Development Bank (AfDB)** should make it possible, through an innovative approach, to establish the preconditions for the emergence of an Agro-industrial pole

as the first agropole for the transformation and modernization of Ivorian agriculture in the centre of the country within the framework of the operationalization of the PNIA2. The "Restoration of productive capital" component aims to make substantial investments to rehabilitate, complete, extend or modernize public infrastructure, particularly in the areas of agricultural hydraulics, transport, socio-economic infrastructure, storage and marketing of agricultural products. The "Development of value chains" component mainly aims at removing the development constraints of the different segments of the value chains.

The **Projet d'appui au développement des filières manioc et maraîchers en Côte d'Ivoire** (PRO2M, 2017-2021), financed by the **European Union**, aims to promote the cassava and market gardening sectors in a more professional, efficient, organized and job-creating manner, controlling its production and marketing. It has been designed to provide answers to several concerns at the same time. These are: (i) providing support for food production by making agricultural equipment and inputs available; (ii) developing irrigated areas to ensure the availability and regularity of food and market garden production; (iii) improving the marketing conditions for cassava and vegetable products; (iv) promoting the mechanization and processing of cassava; (v) improving the nutritional status of the population. It covers the Poro, Tchologo, Bagoué, Kabadougou, Folon, Hambol, Gbèkè, Béré, Boukani, Gontougo and Indénié-Djuablin, Iffou, Moronou, N'Zi, Marahoué, Aries, La Mé, Agnéby-Tiassa, Sud-Comoé, Grands Ponts regions and the Autonomous District of Abidjan.

The **PROPACOM** Western extension (2014-2021), financed by IFAD, aims to support the improvement of the supply of food products and the valorization of its products. It covers the Tonkpi, Kabadougou, Folon, Bafing, Worodougou and Béré regions.

The "**Programme filières agricoles durables de Côte d'Ivoire** (FADCI, 2016-2022)" programme concluded between the Ivorian State and the **French Development Agency (AFD)** within the framework of the 2nd Contrat de Desendettement et de Développement (C2D) and which covers the national territory, aims to initiate and support changes in agricultural practices and resource management that will have positive impacts on the Ivorian population in terms of living conditions, social cohesion and human health. The programme is structured around three components: Component 1 will strengthen the economic sustainability of the sectors; Component 2 will provide public and private development actors with innovative tools for the preservation of natural resources; Component 3 will strengthen the State's regulatory role for food safety and its capacity to steer policies in the sector. Thus, the project supports : (i) the rehabilitation of 3 hydro-agricultural dams, the development of land for the production of market gardeners, rice and maize, and the construction of access roads for cotton, cashew nut and food crops; (ii) the construction of a national food control system through the setting up of an agency to coordinate food safety activities, the upgrading of four pilot sectors (pork, poultry, maize and vegetable) with support for the dissemination of good practices, and the establishment of a fund called the "Support Fund for Investments in the Agri-food Sectors (FAIFA) to support businesses in upgrading industrial tools, control and monitoring systems; (iii) the endowment of a competitive fund for sustainable agricultural innovation (FCIAD) to finance sustainable agricultural innovation projects, organize the sustainable agricultural innovation competition and the sustainable agricultural innovation

days (JINNOV); (iv) the setting up of a farm management council through the establishment and operation of pilot farm management council centers; and (v) the financing of a pilot project for a "forest friendly cocoa (CAF)".

The Projet de développement des chaînes de valeur dans la région de l'Indénié-Djuablin (PDC-ID, 2017-2020), co-financed by the State and the **African Development Bank (AfDB)**, aims to consolidate the achievements of the **Projet d'appui aux Infrastructures Agricoles dans la Région de l'Indenie Djuablin** (PAIA-ID) and, in the long term, to establish the conditions for the emergence of a real agropole in the Indenie-Djuablin Region. Thus, the project will focus on activities (i) to improve productivity, (ii) to support private operators in processing, marketing and the acquisition of means of transport for products, (iii) to create a local framework that promotes exchanges between producers, traders, processors and input suppliers.

The **Projet d'appui à la relance des filières agricoles de Côte d'Ivoire** (PARFACI, 2013-2019), financed by the **C2D**, provides support to food-producing sectors (maize, soya, market gardening, pork and fish farming) in the stages of production (development, seed production, fry production, acquisition of agricultural inputs and feed for breeding and fish farming), marketing (construction of pork meat sales outlets), The programme also supports the implementation of the Rural Land Law through awareness-raising campaigns, the training of those involved in the implementation of the law, the demarcation of village territories and the issuing of land certificates. It covers the Poro, Tchologo, Bagoué, Bafing, Tonkpi, Hambol, Gbèkè, Gontougo, Indénié-Djuablin, Iffou and N'Zi, Aries, Marahoué, Haut-Sassandra, Lôh-Djiboua, Nawa, Agnéby-Tiassa, Sud-Comoé, San-Pédro regions and the Autonomous District of Abidjan.

Projet d'appui aux Infrastructures Agricoles dans la Région de l'Indenie Djuablin (PAIA-ID, 2012-2019) co-financed by the **State and the African Development Bank (AfDB)**, implements a number of activities including the development of lowlands and the rehabilitation of rural tracks, the construction and rehabilitation of human-powered pumps, the rehabilitation of rural markets, the construction of rice storage warehouses, support for the production of food crops (rice, maize, groundnuts, cassava, plantain banana, yam and vegetables), and the setting up of an office for the sale of food products.

The **Projet d'Aménagements Hydro-Agricoles dans les Régions du Haut Sassandra et du Fromager II** (PAHA II, 2016-2018) co-financed by the State and the **Islamic Development Bank (IDB)** aims at building three dams in water retention land, developing downstream land on a net area of 332 hectares and strengthening the production and self-management capacities of farmers.

The **Projet d'Aménagement Hydro agricole de Sangopari** (PAHS, 2012-2019) in the Tchologo Region, co-financed by the State and the **Banque Ouest Africaine de Développement (BOAD)**, aims to build a water reservoir with a capacity of 4 379 000 m³, intensify production (rice, maize...) and improve the quality of life of farmers, The project will be supported by the development of land and the rehabilitation of rural roads, support in terms of agricultural inputs and the dissemination of technical itineraries, the reforestation of land, and support in terms of equipment and marketing infrastructures.

Promoting zero-deforestation cocoa production for reducing emissions in Côte d'Ivoire (PROMIRE). Funding proposal for the GCF by FAO.

The project will first finalize and operationalize the REDD+ architecture by building the institutional capacities to ensure effective implementation of the tools at national and subnational levels. At the same time, it will support a new agricultural model to begin a transitional path towards a low-carbon economy and effectively implement zero deforestation agriculture.

The African Development Bank (AfDB) Special Climate Development Fund

Cote d'Ivoire has benefited from funding of the AfDB to implement the Project to improve the resilience of Ivorian populations through better access to climate information.

This project aims to improve access to climate information, capitalize on climate information for the promotion of pilot adaptation practices, use climate information for informed and integrated decision-making at the local level.

The project has three main components:

- Improvement of access to climate information;
- Capitalization of climate information for the promotion of pilot adaptation practices in the North and Center of Côte d'Ivoire;
- The use of climate information for awareness raising and integrated and informed decision-making at the local level and in State Institutions

West Africa Biodiversity and Climate Change Program (WA BiCC)

The West Africa Biodiversity and Climate Change Program (WA BiCC) is implemented by Tetra Tech ARD on behalf of USAID. The overall objective of WA BiCC is to improve biodiversity conservation and promote development by favoring climate-friendly and low-greenhouse gas-emitting solutions across West Africa.

Under its Component 2, WA BiCC seeks to increase coastal resilience and adaptation to the effects of climate change across West Africa by identifying and promoting effective adaptation interventions and by creating a political environment conducive to the support and scaling up of appropriate interventions, by favoring two learning landscapes, including the Fresco Landscape in Côte d'Ivoire.

Green Project with the producers of the CARGILL cooperative

This project aims to improve resilience to climate change as well as the living conditions of CARGILL producers, in particular by promoting agroforestry in **Soubre, Meagui, San Pedro and Duekoue.**

In partnership with the Ivorian **NGO IMPACTUM Africa**, CARGILL, through its project, carries out the following activities: (i) sensitizing producers on the issues of environmental conservation, protection of natural resources, the fight against climate change, deforestation, tree ownership, forestry and land codes, agroforestry, and (ii) improving the resilience of cocoa plantations and supporting the agricultural diversification of producers through agroforestry.

Partnership cocoa and climate change in Cote d'Ivoire

As part of its sectoral partnership program entitled "UTZ SECTOR PARTNERSHIP", the sustainable farming and better opportunities for farmers, their families and our planet (UTZ) has set up a project called "Partnership Cocoa and Climate Change in Côte d'Ivoire".

This project aims to build capacity, encourage and engage smallholder farmers, cocoa producers and vulnerable groups to implement climate change adaptation, natural resource management and forest protection practices.

Animation Rurale de Korhogo

Animation Rurale de Korhogo (ARK) is a Non-Governmental Organization created in 1972.

It aims to support the organizational dynamics of farmers and, by extension, rural people. It is located in Korhogo and its scope of action covers the northern regions of Côte d'Ivoire, particularly the Savanes, Denguélé and Zanzan Districts.

This NGO has already implemented many projects including projects aimed at improving the resilience of populations against the effects of climate change. Indeed in 2019, this NGO managed the stony cordons project in the north of the country with a view to restoring sustainable soil fertility in Niele.

The technique consists of arranging blocks of stone in several rows in the fields following a proven technique to slow down rain erosion and improve water infiltration, thus promoting the reconstitution of degraded soils. Initiated by the Interprofessional Fund for Agricultural Research and Advice (FIRCA) with funding from the Competitive Fund for Sustainable Agricultural Innovation (FCIAD), this project integrates the production and use of compost.

Institut Africain de Développement Économique et Social (INADES) Formation

Present in Cote d'Ivoire since 1962, the association Inades-Formation implements resilience projects against climate change and food insecurity. In 2019, it received funds from the FIRCA to improve soil fertility in the regions of Tchologo, Gbeke and Marahoue.

It has four (4) main programmes in Cote d'Ivoire.

- The food systems programme based on family farming: to promote food systems based on family farming, for a sustainable agriculture, respectful of the environment and a dignified life for all, including the actors of this agriculture, headed by farmers.
- The Community Microfinance Program: to support disadvantaged communities in the setting up of a system of endogenous mobilisation of financing and self-financing based on solidarity and by the communities themselves.
- The climate change programme: helping communities build resilience and develop alternatives for the protection of natural resources.
- The inclusive governance agenda contributes to the self-determination of the different communities in terms of development models and to guard against the risks of privatization of common goods.

Dissemination of new varieties of rainfed rice tolerant to drought among farmers

Funded by the FIRCA) with funding from the Competitive Fund for Sustainable Agricultural Innovation (FCIAD), this project has been implemented by the Centre National de Recherche Agronomique (CNRA) in Poro Region, Guemon and Haut Sassandra region too.

This project, which focuses on the main rainfed ecosystems in sub-Saharan Africa and South Asia, aims to accelerate the development and availability of improved varieties that are tolerant to five major abiotic stresses: drought, flooding, salinity, iron toxicity and cold.

Other programmes

The table below gives an overview of some of these programmes related mainly to food security and adaptation to climate change.

Table 21. Projects relating to food security and climate change in Cote d'Ivoire between 2012 - 2020

PROGRAMMES	DONORS/ PARTNERS	OBJECTIVE	SECTOR
Support Project for the Revival of Agricultural Sectors (PARFACI)	AFD/C2D	To contribute to the fight against poverty and to stimulate economic growth in production areas. The envisaged development objective is to improve food security and household producers' income on a sustainable basis.	FOOD SECURITY
Support programme for the development of agricultural sectors (PADFA)	IFAD	Contribute to poverty reduction and stimulate economic growth in the regions of Bagoue, Poro, Tchologo, Hambol and Gbeke.	FOOD SECURITY
Support to Agricultural Production and Marketing Project-Western Expansion (PROPACOM)	IFAD -OPEC Fund for International Development	Contribute to the sustainable improvement of food security and income of the populations in the project areas through the access of small producers to efficient production services, appropriate technologies and markets. Contribute to the reduction of rural poverty and stimulate economic growth in the Districts of Bandama Valley (North Central), Savannah (North) and Zanzan (North East).	FOOD SECURITY
Green Innovation Centres for the Agriculture and Food Sector (GIC) in Côte d'Ivoire	GIZ	Innovation in the food and agriculture sector in selected rural areas of Côte d'Ivoire have contributed to a sustainable rural development.	SUSTAINABLE ENERGY
Water and Energy for Food (WE4F)	GIZ	The dissemination of climate-friendly, energy-efficient and water-efficient innovations has been stepped up for more productive and environmentally sustainable food production.	SUSTAINABLE ENERGY
Competitive Cashew Initiative (ComCashew)	GIZ	The competitiveness of the cashew value chain has increased in selected African countries (Benin, Cote d'Ivoire, Ghana, Burkina Faso, Mozambique)	ECONOMIC DEVELOPMENT
Vocational training in the sector of renewable energies and energy efficiency in Côte d'Ivoire	GIZ	The Government of Côte d'Ivoire is increasingly making specialised local technical expertise and management know-how available to the market for renewable energy and energy efficiency.	SUSTAINABLE ENERGY
Green People's Energy	GIZ	The conditions for supplying regions in rural Africa with decentralized renewable energy have improved, assisted by the involvement of citizens and the private sector.	SUSTAINABLE ENERGY
Professionalization of young people and promotion of agricultural employment in Ivory Coast	FAO	Capacity-building of unemployed youth through professional exposure and field experience in the areas of agricultural entrepreneurship with a view to strengthening their technical, entrepreneurial and practical capacities.	EMPLOYMENT
Promotion of nutrition-sensitive agriculture in support of women's groups in the Poro region	FAO	Ensure the production of a wide range of nutritious, culturally appropriate, healthy, high-quality food in sufficient quantities and at affordable prices to meet people's food needs on a sustainable basis.	NUTRITION
Emergency assistance for the fight against African Swine Fever in the Tchologo and Poro Region	FAO	- Control and eradication of confirmed outbreaks of African Swine Fever in Tchologo and Poro regions of northern Côte d'Ivoire - Strengthening food security and poverty reduction in the Poro and Tchologo Regions by improving biosecurity and pig production systems	FOOD SECURITY
Social protection, school canteens and rural youth employment	FAO	Protecting people against poverty, vulnerability and social exclusion.	POVERTY ALLEVIATION
Agricultural Sector Support Project in Cote d'Ivoire (PSAC)	AFD/ IDA/ BM	Contribute to increasing the income of producers benefiting from Project activities, by laying the foundations for strong and sustainable growth, generating employment in rural areas and from which small producers will be the first beneficiaries.	

Source. WFP and GGGI

Annex 5 Summary of climate change adaptation and food security projects in Poro Region

World Food Programme

Since 2016, WFP has been working at the national level and in the Poro region, supporting school canteens and small-scale farmers.

613 schools throughout Côte d'Ivoire, including 141 in the Poro region, have benefited from this programme. This programme consists of the distribution of hot meals in 141 schools (school canteens) and the quarterly distribution of dry food to girls in middle school classes in 141 schools. These school canteens are supplied with products from groups mainly composed of women (97%) and benefiting from the support program for small farmers.

43 groups in northern Côte d'Ivoire, including 29 in the Poro region, have benefited from the support programme for small farmers since 2017. This programme supports the national programme for the sustainability of school canteens.

It includes 4 components:

- Component 1 relates to strengthening the technical capacities of smallholder farmers to produce diversified and quality local food products, including nutrient-rich food crops.

The beneficiaries of this project benefit from support in agricultural inputs and equipment, technical supervision of the beneficiaries. This component takes into account a study on the possibilities of irrigation and the setting up of an adapted irrigation system for the benefit of the selected groups.

- Component 2 relates to strengthening the processing and sales capacities of small farmers to increase their income and reduce post-harvest losses.

Through this component the beneficiaries benefit from support in long shelf-life technology (silos, airtight bags), transport equipment (tricycle), processing equipment (huskers, mills, solar dryers). They are also trained in post-harvest management (drying, sorting, winnowing, storage, etc...) and are supported in the group sale of agricultural products through a marketing platform.

- Component 3 consists of strengthening the organizational and structuring capacities of small farmers, including the integration of young people, women groups and the improvement of literacy.

Beneficiaries are trained in community life. Illiterate people benefit from literacy courses. Support is also given to farmers groups for training.

- Component 4 relates to the promotion of the adoption by small farmers and communities of good nutrition and hygiene practices, including the consumption of locally diversified foods.

Beneficiaries are trained and educated to set up small gardens in their homes, culinary demonstrations are given to teach them how to make balanced meals and awareness raising on essential nutrition actions are also carried out.

For market information, the Bureau de Vente de Producteurs (BVP) has entered into partnership with the WFP as part of its resilience project in northern Cote d'Ivoire. The BVP is a marketing agency for small food producers based in the wholesale market of Bouaké. It stems from the Projet d'Appui a la Commercialisation et aux Initiatives project to support marketing and local initiatives (PACIL) carried out in 1998 and financed by the IFAD, the AfDB and the State of Côte d'Ivoire.

Projet de Promotion de la Compétitivité de la chaîne de valeur de l'Anacarde (PPCA)

The project will be financed over five years (2018-2023) with US\$236.11 million from an IBRD loan from the World Bank Group of US\$200 million and US\$36.11 million representing the contribution of the beneficiaries. The project will benefit from a contribution from the State of Côte d'Ivoire.

The project proposes to intervene at all levels of the value chain from production to exports, in particular local processing for export markets. It also involves giving priority to increasing orchard yields, strengthening sectoral institutions, further rehabilitation of warehouses and capacity expansion, as well as developing marketing infrastructure (including rural roads) and preparing cashew processing industries to meet the demands of the international market.

Projet de solutions numériques pour le désenclavement en zones rurales et l'e-agriculture (PSNDE)

The project will extend connectivity in rural areas and foster the development of sustainable agriculture through the integration of e-agriculture services. It aims to increase access to digital services and platforms in rural areas

With funding from the government (\$16 million) and the World Bank (\$70 million), the project is currently in its pilot phase in the 10 unconnected north and central west regions (6 in the north and 4 in the central-west) including the Poro Region. Speculation has been identified. There are food crops, rice, maize, manioc, yam, plantain and vegetables. Shea has also be selected.

This project will enable:

- To optimize the business related to agriculture by providing decision support solutions to the farmers by combining Machine to Machine equipment technology and information technology. By helping to adapt farming methods to climate change (sensors connected to intelligent agricultural equipment and digital management tools) to rationalize decisions in order to improve agronomic and environmental performance.
- Provide financial services to agricultural structures and farmers (secure mobile banking financial transaction service, project financing service).
- To contribute through information services (hotline, SMS advice, mobile fleet agriculture, data collection) to the supervision and support of farmers ...

Food agriculture and market gardening benefit from support and aid for the development of structures, as shown in the table below.

Adult literacy and training project to strengthen the production and marketing capacities of women's agricultural groups. The project was initiated by the World Food Programme in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO). It aims to train 20 endogenous literacy educators and to provide literacy training to 300 women in 10 villages in the region. Through this project, the WFP aims to empower the target populations and contribute to the sustainability of the National Food Programme.

Many other projects implemented by organizations such as FIRCA, IFAD and AfDB have been mentioned in table 20 below.

Table 22. Overview of project implemented in Poro Region

PROJECTS/PROGRAMS	DONORS/CONTRIBUTORS	COSTS	FUNDING TYPE	STARTING DATE	GOAL	SPECIFIC OBJECTIVES
Projet d'Appui à la Relance des Filières Agricoles (PARFACI)	AFD/C2D	FCFA 16 980 millions US\$30 millions	Grants	05-05-2015	To contribute to the fight against poverty and to stimulate the economic growth of the production areas. To sustainably improve food security and the income of household producers.	Revitalize the agricultural sector in IC; Improve the income of producers and effectively fight poverty in rural areas through the improvement of food production; Improve marketing channels; Support for the structuring of takeover bids; Support for the implementation of the law on rural land and support for the strengthening of the steering and strategic capacities of the ministries in charge of agriculture and livestock.
Projet d'Appui à la Production Agricole et à la Commercialisation (PROPACOM)	IFAD	FCFA 13 903 US\$ 25,27 millions	Don	16-03-2012	Contribute to the sustainable improvement of food security and income of the populations in the project areas through the access of small producers to efficient production services, appropriate technologies and markets.	To contribute to the reduction of rural poverty and stimulate economic growth in the Districts of Bandama Valley (North Central), Savannah (North) and Zanzan (North East).
	STATE		Counterparty	16-03-2012		
	Beneficiaries		Contributions Recipients	16-03-2012		
Projet d'Appui au Secteur Agricole en Cote d'Ivoire (PSAC)	WB/IDA	75 040	Loan	05-05-14	To contribute to the increase of the incomes of the producers benefiting from the Project activities, by laying the foundations for strong and sustainable growth, generating employment in rural areas and from which small producers will be the first beneficiaries.	Facilitate access to markets for the products of the targeted commodity chains; Improve the productivity of the commodity chains targeted by the project; Facilitate access to technologies for smallholders; Improve the institutional framework for the development of the targeted commodity chains; Ensure effective and efficient project management.
	WB/IDA		Don			
	AFD		Grants			
	YARNS (APROMAC, CCC, AIPH, INTERCOTTON)		Contributions Recipients			
	STATE		Counterparty			

Source. WFP and GGGI

Annex 6 Pre-feasibility assessment for an index-based insurance product in Poro Region

Background:

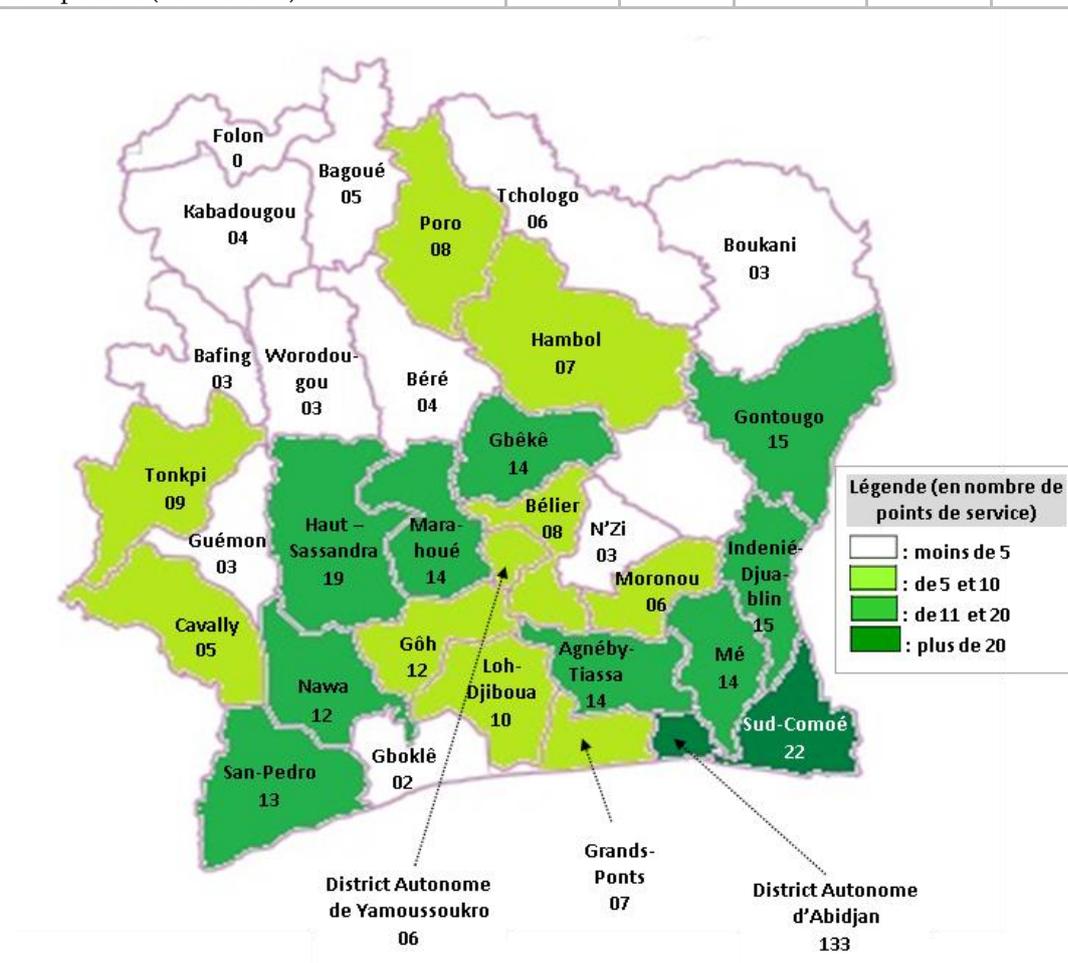
Poro Region is highly vulnerable to climate change, in particular droughts, flash floods, heat winds and interannual rainfall variability. For the first time ever, in 2019, the Government of Côte d'Ivoire subscribed a macroinsurance policy for rainfall shortage with the African Risk Capacity (ARC) for the Centre and North of the Country. ARC is an innovative insurance solution against extreme weather events offered to the African Union member states for the improvement of their planning and response capacity and protect food security of vulnerable peoples. Côte d'Ivoire is participating to ARC since 2014. Maize has been chosen as the reference crop for the AfricaRiskView (ARV) indexed parameters. ARC is also supporting local insurers for the development of indexed meso and microinsurance products.

Poro has also benefited from the implementation of pilot microinsurance products. The Global Index Insurance Facility (GIIF) of World Bank Group provided technical assistance and supported local insurance companies (AXA and Atlantique Assurance) for the development of indexed agricultural insurances for smallholders. AXA commercialized such product for maize and rice producers whereas Alliance Atlantique did de same for cotton growers, organized in their respective Cooperatives. Overall, there are 50 microfinance institutions in the country with 375 service points.

Table 23. Overview of the microfinance sector and financial services in Côte d'Ivoire

Indicator	Dic. 2016	Mar 2017	June 2017	Sept. 2017	Dic. 2017	Mar 2018
Number of registered institutions	54	52	52	51	51	50
Number of service points	346	344	350	374	375	375
Number of customers or members (@thousands)	1 168	1 179	1 287	1 350	1 261	1 644
Outstanding deposits (in billions FCFA)	210,1	225,3	296,7	306,6	278,2	262,2
Volume of loans set up during the quarter (in billions FCFA)	83,1	78,9	90,8	101,2	99,4	79,1
Outstanding credits (in billions FCFA)	189,9	198,2	219,3	259,3	270,4	266,1
Ratio of outstanding loans to outstanding deposits	90,4 %	88,0 %	73,9 %	100,4 %	97,2 %	101,5 %

Ratio of SFD respecting the risk (>90 days) portfolio procedure on a sample of the 20 most important (norm : 3 %)	30 %	20 %	15 %	10 %	15 %	15 %
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1. Development and implementation of index-based insurance products in Poro Region

Findings from consultations with communities and local stakeholders, outlined the following *opportunities* and favorable conditions:

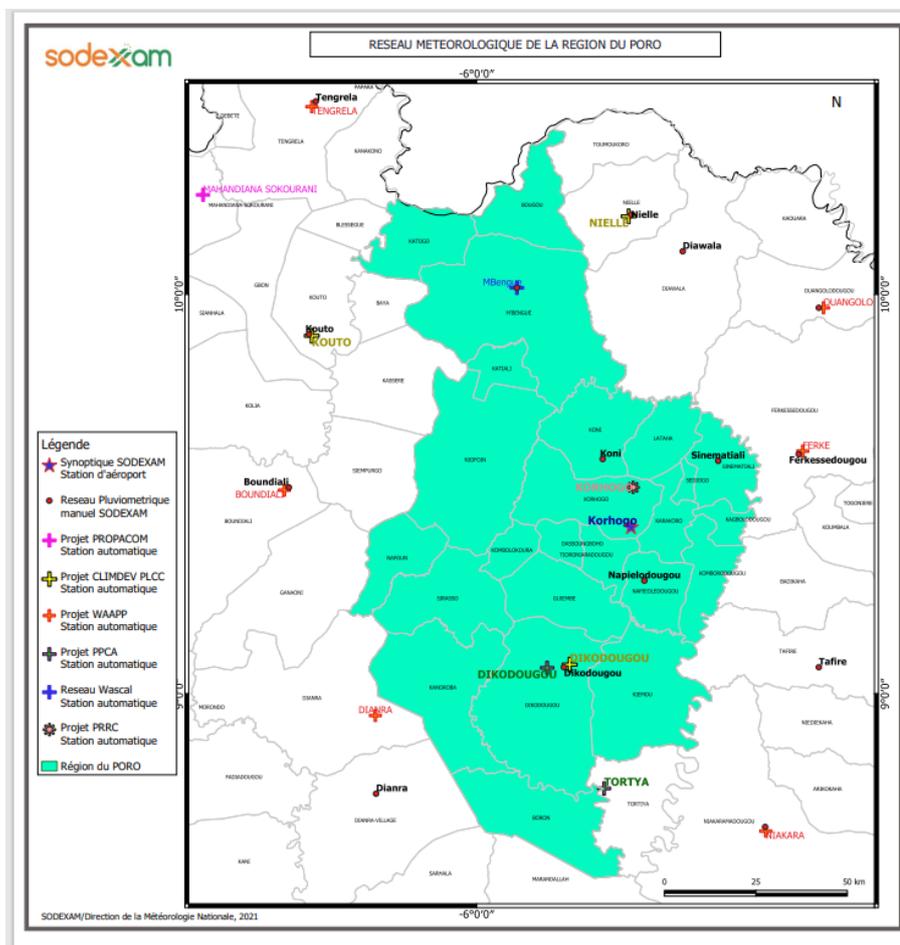
- Previous experiences implemented with staple (maize and rice) and cash (cotton) crops cooperatives reveal a strong interest has been manifested to subscribe to an insurance product in particular for recurrent droughts that affect the region.
- The development of previous insurance products could provide a baseline and data reference for other crops (vegetables) and for various typologies of producers in particular smallholders. UFACOCI has acquired good experience in facilitating access to small-scale producers and a well-established calibrated database.
- Based on ARC positive experience, local authorities and central government demonstrate a strong commitment and engagements to support index-based insurance products. MINADER has initiated a pilot for the establishment of a mainstream product for the agriculture sector. A data collection system has been developed for selected value chains. A preliminary study has been conducted with the Ministry of Economy and Finance which is coordinating ARC

products in the Country. UNDP has conducted a feasibility on insurance products in five key economic sectors in relation to major climatic and weather events.

- Several stakeholders expressed their interest and voiced that index-based insurances are a worldwide risk transfer mechanism with high potential of success in Côte d'Ivoire.

The *barriers and gaps* for the implementation of such as product would be the following:

- The impact of COVID 19 hit drastically people's livelihoods, in particular that of smallholders. Maize producers were unable to subscribe the microinsurance in 2020. There is a risk that serial pandemic waves and consequent heavy public health restrictions affect the local economy of rural communities.
- The challenge of structuring a cost-effective data collection system to ensure reliability and framed data analysis for the basis index. The weather station network in Poro is weak as shown in the map below provided by SODEXAM (see also Annex 3).

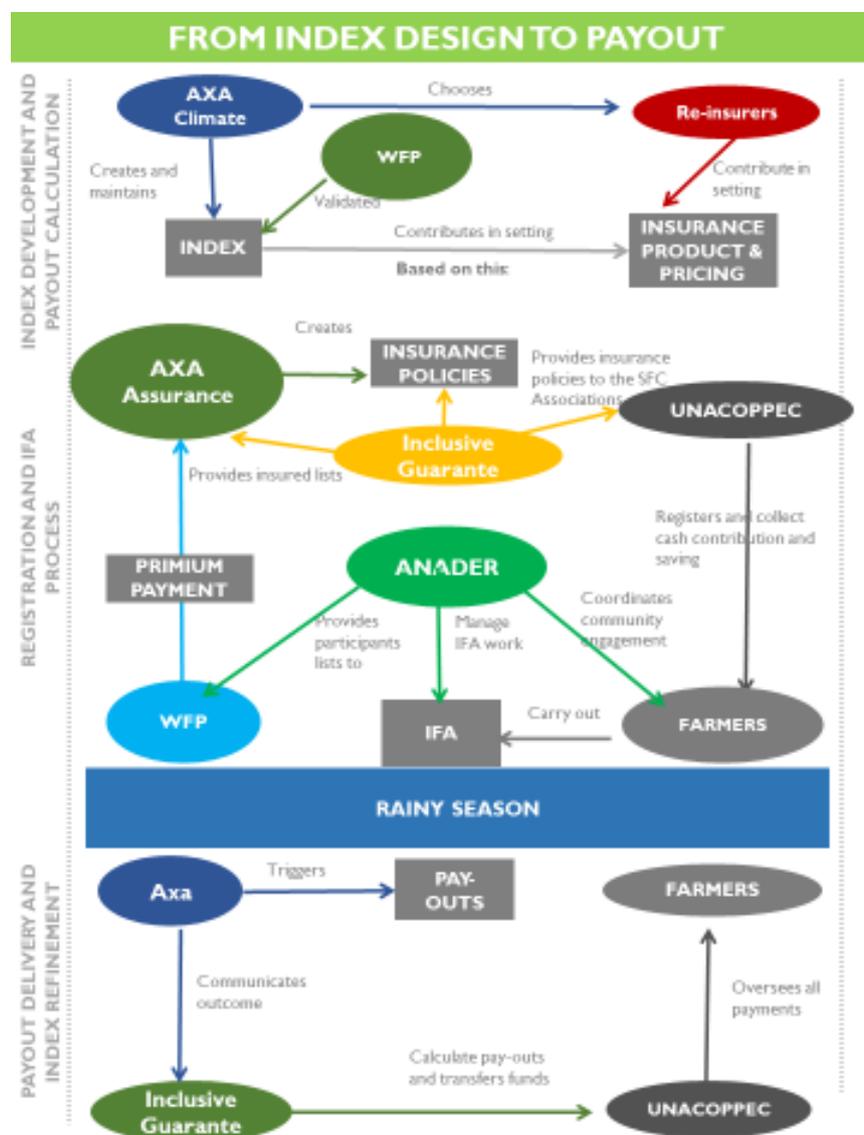


- The need to implement a solid insurance-provision system that would be at the time decentralized and institutionalized whereby the State plays a strong role in managing and supporting the sector while facilitating the participation of aggregators for its smooth and efficient development.

- The requirement to promote an enabling environment with sound partners and financial actors ready to boost the development of the index-based agricultural product.
- The importance of tailoring the product to the specific needs of farmers, their cropping calendar and production costs to ensure adequate coverage and sufficient paying capacity. A detailed assessment will be conducted at the project inception to identify and validate communities and key players.

2. Implementation framework

The following diagram illustrates the recommended design of the index-based insurance product for Poro Region



The roles and areas of support of potential partners for the implementation of index-based microinsurance products are presented in table 24.

Table 24. Roles of potential partners and service providers for the microinsurance products for Poro Region

Partner	Roles and areas of support
AXA	Given previous experience on insurance of maize and rice in Poro, AXA could be the main partner for the insurance inception phase. But WFP would need to conduct a tender process to select an insurance partner.
Inclusive Guarantee (IG)	To capitalize on their experience in technical support for the distribution of insurance products with AXA, IG could support as an advisory broker in: <ul style="list-style-type: none"> ✓Product design ✓Information/training producers ✓Manage memberships ✓Policy and claims management WFP would need to either conduct a tender or use some of its Long-Term Agreement (LTAs). So far only Pula, IRI and Blue Marble are still active LTAs.
UNACOOPEC	Through its value chain approach offered to producers, COOPEC could offer: <ul style="list-style-type: none"> • Assistance in inputs, pesticides and fertilizers • Credit supplies: 250,000 CFA /Ha on average depending on the cultivated area • Access to markets: support in marketing and commercialization. Example: for maize, once the production is mature, COOPEC begins to support producers in anticipating the sale of the harvest to processing units • Establishment of a mechanism that reduces direct financial transactions with producers COOPEC can fully play its role of distributor of insurance products by integrating insurance into its service package. In exchange, UNACOOPEC would receive a distribution commission from the insurer.
SODEXAM	Having the primary role of climate data management and delivery in the country, SODEXAM is an essential partner that can support in: <ul style="list-style-type: none"> • Development of indexes with the insurer, provided a weather index insurance is selected. For an area yield, another partner would be in charge of conducting the crop cut experiments • Provision of a good historical database and spread network of more than 200 rain gauges. • Estimation of crop water needs • Climatic characterization of the areas of intervention • Basic risk management confrontation of satellite data with rainfall data • Agro-climatic monitoring of the area • Awareness and training on climate risks • Development and dissemination of climate information to beneficiaries
ANADER	Leader in agricultural extension in Côte d'Ivoire and counting with a good experience of index insurance, ANADER could deliver technical assistance and rural advisory services by: <ul style="list-style-type: none"> • Raising awareness and training producers on the operation of agricultural insurance • Marketing product support • Monitoring of the realization of climate-sensitive assets to be implemented by targeted households to benefit from insurance coverage.

The insurance product would fit entirely with the project activities and feed the integrated climate-risk management approach. It would also complement the ongoing WFP interventions in Poro

aimed at strengthening the resilience of smallholder producers in particular women. The implementation modality would consist of “Insurance for Assets” or “Insurance for Works” already implemented in other R4 initiative in the sub-region. The approach would focus on providing climate-insurance for productive assets conditional to the implementation of climate-resilient practices and technologies at community (C1) or household/FO levels (C2) or participation in capacity-building activities. Such a framework could be linked with the School Feeding Programme, in terms of provision of Agricultural kits and organizational empowerment. Given the large participation of smallholders, FOs would be the natural target and the 53 existing FOs the logic entry point in view of future expansion. Moreover, the product could be potentially extended to other sub-sectors or participants in the value chain in the long term as a buffer for integration in livelihoods diversification options. That could be feasible after adequate implementation and capitalization of lessons learned.

Finally, it is worth outlining the complementary features of micro-meso-and macro-insurance products. While Poro is covered by ARC, smallholder farmers would be able to pay for a locally tailored micro-insurance. In case of loss or damage, farmers could benefit from either or both, provided they would be targeted as recipients from the early response financed by ARC payout. That complementarity would enhance their resilience to climate shocks. In case of reinsurance, ARC would be able to support micro-insurance providers. WFP has already managed similar experiences in the subregion.

Annex 7: WFP’s Work on Climate-Resilient Agriculture in Côte d’Ivoire

What WFP is doing alongside the government and partners to build the resilience of communities affected by climate change in Côte d’Ivoire has been described below.

1. Specific programmes and interventions that contribute to the development of a “Climate Resilient and Low Emission Smallholder Agriculture,” include:

A. Production

- Encourage minimum tillage of lands (conservation agriculture practices)
- Encourage expanding crop rotations, intercropping, agroforestry (alley cropping, conservation agriculture)¹³⁶
- Planting cover-crops or mulching or crop residues incorporation
- Organic fertilizers application versus nitrogen-based synthetic fertilizers
- Integrating livestock into crop-farming (organic manure)
- Renewable energy- solar powered irrigation systems



- Bio-intensive gardening (maximizing production on smaller plots of lands and backyard garden – keyhole garden for household food security and nutrition).

¹³⁶ Measures to conserve and restore soil and water: *zaï*, a farming technique consisting of digging pits (10,000 per hectare) in degraded land to concentrate organic matter and capture water; stone lines, anti-erosion devices consisting of blocks of stone arranged in rows in the fields; and living fences, hedgerows of tree or herbaceous species able to propagate easily and grow quickly



B. Post-harvest (reducing post-harvest losses)

- Improved timing for harvest operations (choosing recommended seed varieties)
- Improved harvesting practices post-harvest handling

C. Conservation, storage, transformation and marketing of product

- Improved product drying and storage: Eco-friendly & pesticides free storage solution set up on an elevated platform that allows unloading of grains through a downspout.



- Efficient & cost-effective Solar drying chamber technology helps reduce post-harvest losses and improve safety and quality of vegetables.



D. Supporting sustainable management of productive Assets

- Forestry, windbreaks, living hedges, firebreaks,
- Physical corrective measures to reduce soil erosion
- Nutrient & water use efficient technologies, etc.



E. Food processing

- Fuel efficient and appropriate cooking/processing technologies (improved cook-stoves for school canteens and parboiling of rice for example among others)

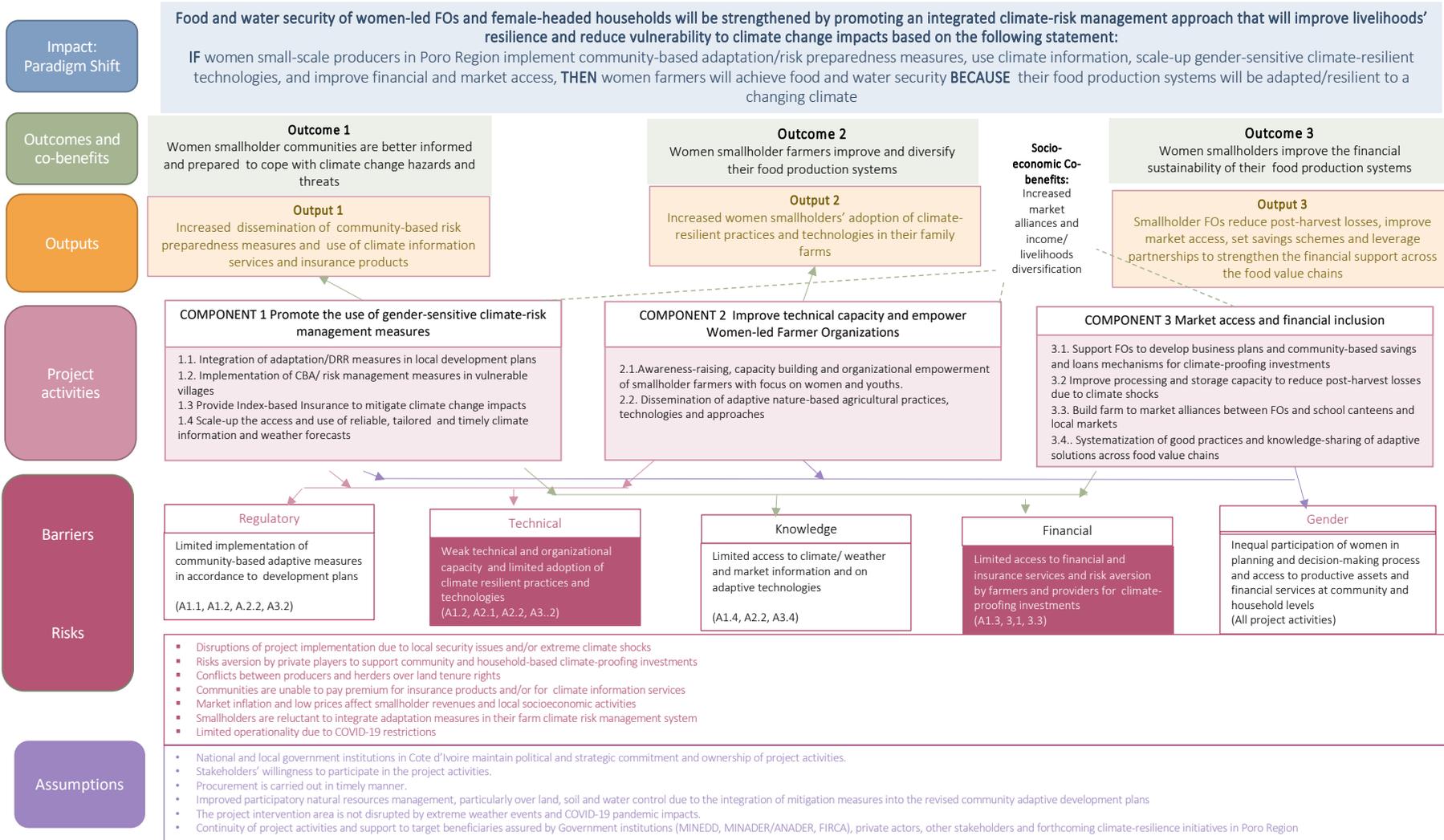
F. Reduce food waste

- Reduce use of chemical in processing and preserving food
- Use of green energy (solar systems, fuel efficient-cooking technologies etc. consolidate and opt for energy-efficient and cost-effective transportation and distribution networks
- Recyclable packaging material and technologies
- Wide campaign to inform, educate individuals, households, food catering in school meals program about the importance of eliminating food wastage.

POTENTIAL AREAS OF INTERVENTION- ARTICULATION OF ACTIVITIES

1. Enhancing access to inclusive climate-smart & resilience-building finance for smallholder women farmers and youth entrepreneurs in Cote d'Ivoire.
2. Building climate change resilience through comprehensive risk management
3. Farm to Market Alliance: Building consortium/partnerships of multiple organizations that make markets work better for smallholder (producers, aggregators, buyers and other agribusiness actors etc.)
4. Capacity building and technical assistance for FOs, MSMEs, Cooperatives particularly women and youth in the Agric Value Chain
5. Capacity building of FOs, MSMEs, Cooperatives to access BNI SDGs products
6. Provision of trainings in financial management, business plan development, market intelligence, climate-smart agriculture, etc.
7. Capacity building on enhancing post-harvest handling, value additions, market linkages
8. Capacity building in Valorization of waste materials (biogas, bio-char, grass-based fuel pellets etc.)
9. Adoption of digital financial inclusion technologies to overcome the absence of FIs at ground level
10. Participation in structured trading platforms (e-commerce)
11. Strengthening resilience and food security of the most vulnerable to enter into the productive sector –
12. Facilitate registration (profiling) of vulnerable women and youth to enable them to benefit from social safety net assistance packages
13. Organizational empowerment, cooperative development
14. Facilitate access to agriculture productive resources (land, water, technologies, credits, insurance/micro-insurance, etc)
15. Nutrition-sensitive agriculture – nutrition education- WASH (water, sanitation, hygiene)
16. Cross-cutting issues (gender, climate, environment, nutrition, inclusion, especially people with disabilities)

Annex 8: Theory of Change



TOC Description

The project is structured under three intertwined components that tackle the barriers for climate change adaptation of smallholder farmers in Poro Region. Women represent 90% of the target group, as such the project is specifically focused to promote a paradigm shift that improve the resilience of women to climate change impacts. Their vulnerability is compounded by climatic factors such as the traditional application of unsustainable or inappropriate agricultural/land management practices and technologies, low technical and financial capacity, lack of adequate climate-risk financing mechanisms and weak integration/implementation of adaptive measures in local development plans. Non-climatic drivers reinforce climate vulnerability of smallholders and farmers organizations when it comes to financial inclusion, market participation, access to microfinance and risk transfer/reduction schemes. Women-led FOs and female-headed households will be empowered to cope with climate change effects, in particular increasing water scarcity and interannual rainfall variability that affect small-scale food production, the main income source. The project will promote an integrated climate risk management approach that will mitigate risks and reduce vulnerability at community and household levels and across the food value chain.

Component 1 mainstreams adaptation in local development plans (*to overcome regulatory barrier*) and promote climate resilience at community level (*to overcome technical and knowledge barriers*). Adaptive measures, mostly focusing climate-smart land restoration, soil and water conservation and alternative livelihoods options, will be implemented at community level. They will be combined with climate risk management tools (*to overcome technical, knowledge and financial barriers*) such as climate information services and insurance products to promote climate-smart investments. Component 2 develops smallholder producers' capacity to adopt resilient practices and technologies that will be scaled up and disseminated in 14,000 vulnerable households (*to overcome gender, technical, knowledge barriers*). The activities will support adaptive practices across maize, rice and vegetables value chains whereby women represent 90 percent of the workforce in the agriculture sector. Farmer Organizations will strengthen their technical, organizational and financial capacity with support from Components 2 and 3 with the latter focusing on financial inclusion, reduction of post-harvest losses, development of market alliances and knowledge management (*to overcome gender, financial, knowledge barriers*). Component 3 will also develop synergies with other climate-oriented initiatives (specifically with the IGREENFIN GCF Project 183) developed under the GCF Great Green Wall Umbrella Programme.

Vulnerable communities will implement community-based adaptation measures based on the revised and adapted development plans. Communities will use climate products and services and protect land, soil and water, as well as other productive assets (Output 1) to be better prepared to cope with climate change hazards and threats (Outcome 1). Likewise, women farmers will implement and disseminate climate-resilient practices and technologies for staple and vegetable crop production and processing (Output 2) to diversify their production and enhance the resilience of their food systems (Outcome 2). Finally, women-led FOs will improve their access to market and to financial services including saving and credit schemes and business plans to promote climate-proofing investments, including interventions to reduce post-harvest losses (Output 3) to promote the sustainability and viability across the

maize, rice, vegetables value chains (Outcome 3). These outcomes will contribute to food and water security of vulnerable smallholder communities, in particular women households and FOs.

The project integrated approach will achieve the following co-benefits that will contribute to the paradigm shift of climate-resilient food secure women and rural communities:

- **Economic:** Improved household incomes due to the increased and diversified food production and reduction of post-harvest losses. Enhanced income-generation opportunities.
- **Environmental:** Reduced GHG emissions; restoration of ecosystems and ecosystem services. Water and soil conservation; increased soil fertility and soil carbon sequestration, reduction of desertification.
- **Social:** Increased people's knowledge of climate change and community/ecosystem-based adaptation measures. Improved planning and decision-making processes. Increased rural employment and reduced rural migration.
- **Gender:** Improved technical, financial, and organizational capacity and market participation. Enhanced access to land and recognition of land tenure rights to women FOs.

Annex 9: Screening for presence of Indigenous Peoples

The International Work Group for Indigenous Affairs (IWGIA) excludes the presence of indigenous peoples in Côte d'Ivoire while in the subregion, Niger, Burkina Faso, Chad and Central African Republic the presence of indigenous peoples is recorded. WFP works to uphold the United Nations 2030 Agenda for Sustainable Development in general and particularly the pledge to “leave no one behind.” In consideration of the GCF definition of “Indigenous Peoples,” available at paragraphs 13–16 of the GCF Indigenous Peoples Policy, there are no indigenous people, forest/hunter groups or pastoralist groups present in the areas targeted by the project.

In Côte d'Ivoire, the convivence of several ethnic groups are registered. It worth noting that all human rights are protected in Côte d'Ivoire as stated in the country's 2016 Constitution. Reference Title 1: Rights, Freedoms and Duties. Article 3 protects right to life. Article 4 protects the rights against discrimination based on religion, ethnicity, race, opinions, social status, or sex. The Malinke, Senoufo, et Fulani people make up predominantly the populations of the Poro region where the proposed project will be implemented, enjoy equally all the rights and privileges enshrined Cote d'Ivoire's Constitution. Nothing creates more enabling environment for the implementation of the proposed project, than the official motto, by which the Poro region prides itself by, “*terre d'accueil et de traditions*,” which means “a welcoming land and land of traditions.