ADAPTATION FUND

FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: **Strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices**

Country: **COTE D'IVOIRE**

Thematic Focal Area: **AGRICULTURE, WATER MANAGEMENT**

Type of Implementing Entity: National Implementing Entity

Implementing Entity: **Fonds Interprofessionnel pour le Conseil et la Recherche Agricoles (FIRCA)**

Executing Entities: **Agence Nationale d'Appui au Développement Rural (ANADER)**

Amount of Financing Requested: $ 4,000,000

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

NOTE: The LOE should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☒ This proposal has been submitted before including at a different stage (concept, fully developed proposal)

☐ This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

Please note that fully developed proposal documents should not exceed 100 pages for the main document, and 100 pages for the annexes.

Project/Programme Background and Context

Cote d'Ivoire plays a key role for neighboring and landlocked countries with one of the best performing economies in Sub-Saharan Africa. A major pillar of the Ivorian economy, accounting for 19.8% of GDP and 75% of export in 2019, is the agricultural sector. While being the world's largest exporter of cocoa beans, Cote d'Ivoire's mostly rainfed cash crop production includes coffee, palm oil and rubber which are a source of revenue for the rural population. In addition to its economic importance, agriculture is the main means of subsistence for two thirds of Ivorian households. The production of cassava, maize, bananas and vegetables is used for self-sufficiency and is mostly carried out by women. Even though they account for 90% of the active population in agriculture, women rarely have ownership of agricultural lands and are mostly involved in self-subsistence. In Cote d'Ivoire, agriculture plays a dual key role in the economy and food security and nutrition in Cote d'Ivoire.

However, the consequences of climate change are exacerbating the vulnerability of the agricultural sector by directly affecting increasing temperature and changes in rainfall patterns. Shorter rainy seasons with an average two-week start up delay create a mismatch between weather calendars and crop seasons that jeopardizes food security of the populations who depend on their farm's production. Moreover, the shortening of average duration of vegetative growth periods, weak growth of biomass and a reduction of the productive potential of ecosystem result in production deficits and economic losses. Due to rapid urbanization, there is a strong demand for food products including rice, vegetables and aquaculture products. In contrast, production deficit is a risk that rainfed producers who generally engage in monoculture are subjected to. To mitigate the risk of famine and reduce the hunger gap of the Ivorian population, a paradigm shift in cultivation practices needed to consider in the context of climate change.

The climate change scenarios for Cote d'Ivoire are only expected to exacerbate the current pressures on temperatures and rainfalls. For Representative Concentration Pathway (RCP) 4.5 and 8.5, mean annual temperatures over West Africa are expected to rise by 3°C to 6°C by the end of the twenty-first century. By 2030, the estimated rise in annual mean temperature is expected to range from +0.9 to +1.5°C, +1.3 to +2.3°C by 2050, and +1.5 to +4.1°C by 2085, with the biggest rises in the country's northern regions, where malnutrition rates are already high. Many CMIP5 models predict that mean precipitation in West Africa will increase during the rainy season by the end of the century, with a slight delay at the start of the rainy season. In 2050, mean annual precipitation in Côte d'Ivoire will decrease by -17.9 mm (RCP 8.5, High Emission), whereas the frequency of extreme rain events may remain steady or increase[1]. By 2100, the RCP 4.5 model (Low Emission) predicts an 8% reduction in daily precipitation between April and July rainy season[2].

According to the ND-GAIN Matrix, Côte d'Ivoire has one of the world's highest levels of climate change vulnerability, ranking 142nd out of 182 countries (2019)[3] and it is the 51st most susceptible and 31st least prepared country in the world. Changes in climate will differently impact the four agro-climatic/agroecological zones: Zone Nord, Zone Centre, Zone Sud-Intérieur, and Zone Littoral. In addition to great vulnerability, Cote d'Ivoire remains one of the world's countries with the greatest rates of gender inequality, ranking 157th out of 162 countries on the 2018 Gender Inequality Index (GII)[4].

[1] Climate Knowledge Portal, World Bank
[2] Climate Change National Strategy 2015 - 2020
[3] https://gain.nd.edu/our-work/country-index/rankings/
[4] HDI 2019 Analysis for Côte d´Ivoire, UNDP 2019

Project/Programme Objectives:

The main objective of the project is to strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices. More specifically, the project will:

- Sustain access to improved water management technologies to build resilience to climate change.
- Support farmers' activities diversification and climate-resilient rice farming system through rice-fish farming technology.
- Strengthen farmers' access to green finance for climate-resilient rice and vegetable farming enterprises development.
- Support knowledge sharing and policies/strategies development and the sustainability of the adaptation technologies adoption by farmers.

The project outcomes are aligned with the Adaptation Fund's Strategic Results Framework, particularly:

- Outcome 1: Reduced exposure to climate-related hazards and threats.
- Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets.
- Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress.
- Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.
- Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies.

Project/Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Sustainable access to improved water management technologies to build resilience to climate change	1.1 Extension agents' capacities to disseminate adaptations technologies to farmers enhanced	Capacities of rice and vegetables farmers communities to apply sustainable and improved water management technologies to build resilience to climate change developed	75,780
	1.2 Vegetable farmers capacities to adopt climate adaptation technologies on Solid Rain built		1,240,971
2. Rice- fish farming to support diversification and climate-resilient rice cultivation system	2.1 Capacities of rice and fish farmers are enhanced through adoption of rice-fish farming	Climate-resilient rice cultivation system developed, scaled-up and providing fish production	113,910
	2.2 Rural planners on rice-fish farming diversification management system trained		11,980
	2.3 Application sites of the rice-fish farming technique developed		1,325,350
3. Access to finance strengthened for climate resilient rice and vegetables farming enterprises development	3.1. An adaptation-oriented micro-finance scheme that supports the uptake of resilient rice and vegetable farming technologies and practices through partnership with local microfinance and	Credit schemes tailored to scale-up proven resilient rice and vegetable farming technologies	44,800

	local management committed		
	3.2. Existing cooperatives/professional organizations strengthened to improve climate resilient rice and vegetable farming practices with increased productivity and household income through microfinance facility.		324,000
	3.3. Comprehensive climate adaptation plans developed for each value chain with identified public and private sources of funding.		21,200
	3.4. Market access strategy developed to facilitate the commercialization of the products		50,000
4. Knowledge sharing and policies/strategies development	4.1. Capacity building and knowledge sharing system established based on strengthened extension services/Lead farmers program (ToT Model) with consolidated modules and training guidelines (MRV training…)	Enabling policies, strategies and legal frameworks are developed and adopted, and knowledge for the project sustainability shared.	130,000
	4.2. Policies/strategies and institutions gaps assessed and adapted to ensure and facilitate the participation of the private sector, including the creation of incentive mechanisms.		28,800
6. Project/Programme Execution cost (9.5%)			319,845
7. Total Project/Programme Cost			3,366,791
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (8.5%)			313,364
Amount of Financing Requested			**4,000,000**

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2024
Mid-term Review (if planned)	June 2025
Project/Programme Closing	December 2026
Terminal Evaluation	June 2027

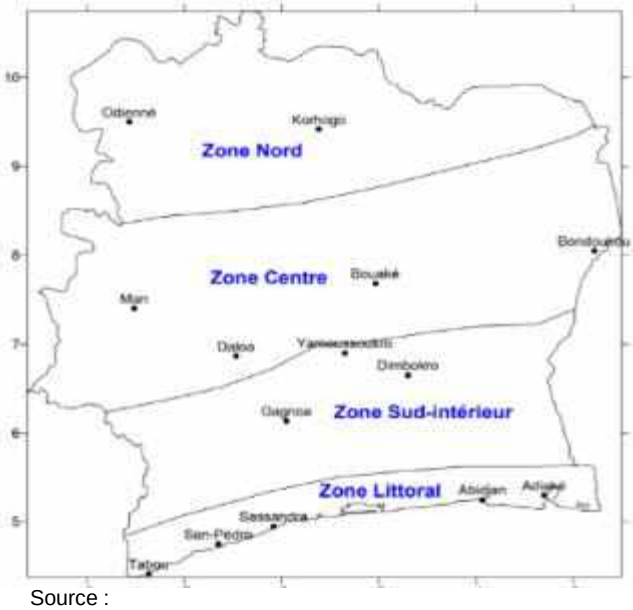
PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

General overview

Côte d'Ivoire is a country in West Africa that lies along the Gulf of Guinea. It has a total area of 322,462 square kilometers. Mali and Burkina Faso border the country to the north, the Atlantic Ocean to the south, Ghana to the east, and Guinea and Liberia to the west. Plains in the south, highlands in the center, and mountains in the north and west make up the generally uneven landscape, with Mount Nimba as the highest point (1,753 meters). The climate is generally hot and humid, ranging from equatorial in the south to tropical in the center of the country and semiarid in the north. Based on biophysical and socioeconomic characteristics, Côte d'Ivoire is split into four major agro-climatic/agroecological zones. Zone Nord, Zone Centre, Zone Sud-Intérieur, and Zone Littoral constitute all the zones. The Zone Nord region is characterized by a single rainy season that lasts between 1,000 and 1,400 mm per year and is focused between July and September. The Zone Centre shows a rainfall range of 1;000 to 1,600 mm, allowing for two agricultural cycles per year. Rainfall in the Zone Sud-Intérieur ranges from 1,200 to 1,600 mm, with two rainy seasons (the main one beginning in December and the minor one from August to October) and two dry seasons. Finally, the Zone Littoral has a rainfall of more than 1,600 mm, with two rainy and two dry seasons. Warm and dry (November to March), hot and dry (March to May), and hot and wet (June to October) are the three seasons in total; however, seasons are increasingly shifting due to climate change.

Figure 1. Agroecological zones in Côte d'Ivoire



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

Deforestation is a major problem in the country, with an estimated loss of 200,000 hectares yearly[5]. Côte d'Ivoire's forest cover has decreased from 16 million hectares to 2 million hectares since the early 1960s. Côte d'Ivoire is on track to lose its national forest by 2034 if deforestation trends continue. Forest exploitation for agricultural development, mining, timber and firewood energy (e.g., charcoal used by about 47 percent of the urban population)[6], as well as bushfires, are the main causes of deforestation. The administrative system in Côte d'Ivoire comprises 31 regions divided into 12 districts, and two autonomous districts, Abidjan and Yamoussoukro, the capital. Districts are decentralized territorial bodies tasked with leading large projects, superregional planning, and maximizing the economic potential of their respective regions. The following table lists the several districts and their respective territories.

[5] Zero hunger strategic review for Cote d'Ivoire (2018).

[6] BNETD. 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

Table 1. Districts and regions in Côte d'Ivoire

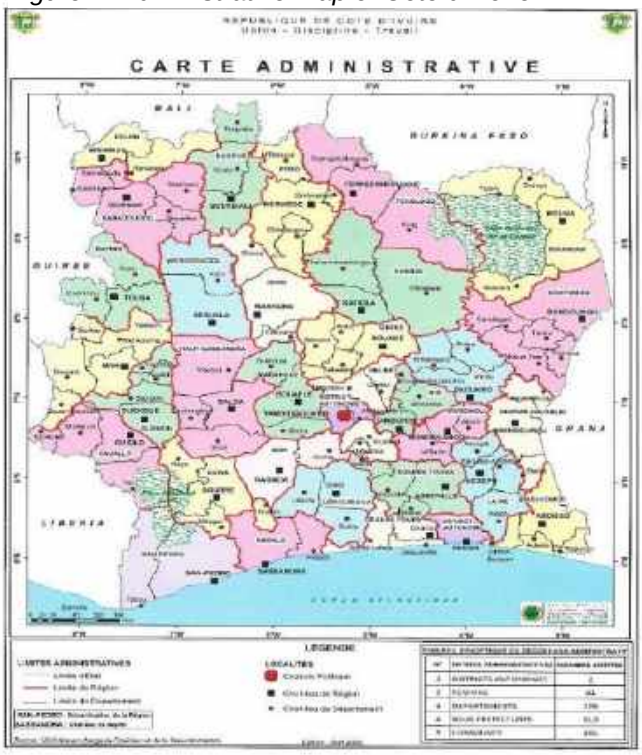
Districts	***Regions***
Lacs	Bélier, Iffou, N'zi, Moronou
Comoé	Indenie-Djuablin, Sud-Comoé
Denguélé	Folon, Kabadougou
Gôh-Djiboua	Gôh, Lôh-Djiboua
Lagunes	Agnéby-Tiassa, Mé, Grands ponts
Montagnes	Tonkpi, Cavally
Sassandra-Marahoué	Haut-Sassandra, Marahoué
Savanes	Poro, Tchologo, Bagoue
Bas-Sassandra	Nawa, San-Pedro, Gbôklè
Vallée du Bandaman	Hambol, Gbèkè
Woroba	Beré, Bafing, Worodougou
Zanzan	Bounkani
Abidjan	*Abidjan*
Yamoussoukro	*Yamoussoukro*

Source: Third National Communication to the UNFCCC, 2017

Socio-economic context

Côte d'Ivoire is a lower middle-income country with a Gross Domestic Product (GDP) per capita, PPP (current international $) of USD 17,109.451 in 2020. The country plays a key role in transit trade for neighboring, landlocked countries, and is the largest economy in the West African Economic and Monetary Union, constituting 40% of the monetary union's total GDP. The country is the world's largest exporter of cocoa beans, and the fourth-largest exporter of goods, in general, in sub-Saharan Africa (following South Africa, Nigeria, and Angola). With GDP growth estimated at 6.9% in 2019 (or 4.2% in per capita terms), Côte d'Ivoire continued to be one of the best performing economies in Sub-Saharan Africa, driven in particular by the expansion of the middle class, which supported demand in all sectors. Prior to the COVID-19 health situation, the outlook for 2020 remained favorable, with projected growth of about 7%. This figure has been revised downwards, following the slowdown in exports and the introduction of COVID-19 containment measures, which put a brake on economic activity in the first half of 2020. GDP growth is now expected to be around 1.8%. The agricultural sector is a major pillar of the Ivorian economy and accounted for 19.8% of the GDP and more than 75% of exports in 2019. In addition, agriculture is the main means of subsistence for 2/3 of households in Côte d'Ivoire and employs 65.8% of the active population[7]. Food crops, mainly rainfed, are the most common component throughout the country. It plays a dual role in food security, the fight against malnutrition and as a source of revenue for the population.

Figure 2. Administrative map of Côte d'Ivoire



Source : Third National Communication to the UNFCCC, 2017

[7] Plan National de Développement 2021-2025, Tome 1

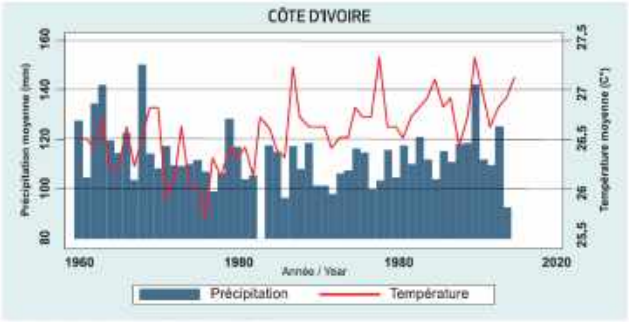
Despite its importance to the economy, however, the sector has only had a minor impact on rural income development and poverty reduction. Women account for about half of the population in Cote d'Ivoire. Despite recent attempts, Côte d'Ivoire remains one of the world's countries with the greatest rates of gender inequality, ranking 157th out of 162 countries on the 2018 Gender Inequality Index (GII)[8]. Women account for 90% of the active population in agriculture. Cassava, maize, bananas, and vegetables are commonly grown by women for self-sufficiency. Men who own enough property can grow commercial crops such as cocoa, coffee, palm oil, and rubber. Women do not own land or resources, and do not have the financial means to purchase agricultural processing equipment. Furthermore, because women have a lower literacy rate than men, they have trouble obtaining micro-credits or small loans.[9]. Agriculture, particularly primary commodities, is highly susceptible to swings in international pricing, which have a negative and variable influence on rural household revenues. Despite accounting for only 0.9 percent of GDP in 2014, fishing generated 100,000 jobs directly.

Environment context and projected climate changes

According to the ND-GAIN Matrix, Côte d'Ivoire has one of the world's highest levels of climate change vulnerability, ranking 142nd out of 182 countries (2019)[10] and it is the 51st most susceptible and 31st least prepared country in the world. A third of the population lives within 100 kilometers of the coast. Rising temperatures and sea levels, rainfall variability, increased duration and severity of dry seasons, and increased floods and coastal erosion are all signs of climate change in Côte d'Ivoire. Between 1979 and 2015, climate parameters in Côte d'Ivoire were recorded. Except for the far north, the majority of Côte d'Ivoire receives relatively moderate inter-annual rainfall fluctuation. In the Komoe Headwaters Region, long-term historical trends reveal only a modest increase in temperatures with statistical significance. Long-term rainfall trends have been minimal in the past. On the other hand, all regions exhibit a statistically significant drop in rainfall frequency but an increase in the frequency of extreme rainfall events[11].

According to historical data, temperatures in West Africa increased by 0.5-0.8°C between 1970 and 2000. The last two decades of this period have seen the most significant changes. Temperature observations from 1990 to 2000 show that temperatures in Côte d'Ivoire are rising. Over the previous 30 years, the average annual temperature of Côte d'Ivoire has grown by 0.1°C every decade, with 2016 being the second warmest year on record since 1961. According to NMD studies, the average temperature increased by 0.5°C between 2001 and 2010, compared to the average temperature in the 1980s. Between 1970 and 2000, rainfall in Cote d'Ivoire's northeastern, central, and southern regions decreased[12]. During the major rainy season of June-October from 1951 to 2000, station data from all throughout the country show decreasing trends in precipitation[13]. Despite the abundance of surface water resources in Côte d'Ivoire, there has been a significant decline in precipitation and increased variability during the last 80 years. Between 1951 and 1980, rainfall decreased by 6% across Ivorian territory, with more significant declines of 13% in Sassandra and 11% in Adiaké, both in the coastal zone to the Southwest and Southeast, respectively. Rainfall patterns

Figure 3. Evolution of annual temperature and rainfall



[8] HDI 2019 Analysis for Côte d´Ivoire, UNDP 2019
[9] Country Gender profile, JICA, 2013 and UNDP 2020
[10] https://gain.nd.edu/our-work/country-index/rankings/
[11] Côte d´Ivoire national climate change profile, AfDB, 2018
[12] Climate Change National Strategy 2015-2020
[13] Climate Knowledge Portal, World Bank 2020

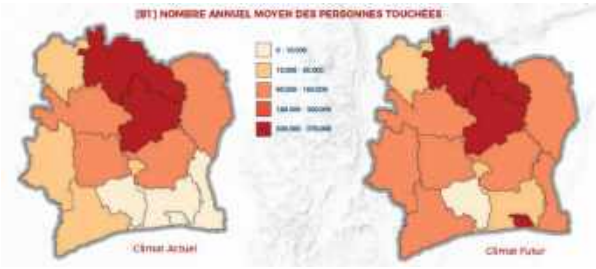
showed a distinct decline and fluctuation from the 1980s to the 1990s, as indicated in the national company of exploitation and development of an airport, aeronautics and meteorology (SODEXAM)'s data in Annex 1. According to the same study, the rainy season on the coast has been shortened by an average of 10 to 27 days, with a two-week start-up delay. The length of the season is reduced by 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 inside the national territory.

For Representative Concentration Pathway (RCP) 4.5 and RCP8.5 (Coupled Model Intercomparison Project, Phase 5/CMIP5 included in the Intergovernmental Panel on Climate Change (IPCC)'s Fifth Assessment Report), mean annual temperatures over West Africa are expected to rise by 3°C to 6°C by the end of the twenty-first century. In 2050, the average mean annual temperature in Côte d'Ivoire will rise by 1.9°C (RCP 8.5, High Emission)[14]. By 2030, the estimated rise in annual mean temperature is expected to range from +0.9 to +1.5°C, +1.3 to +2.3°C by 2050, and +1.5 to +4.1°C by 2085. By 2030, the range is expected to be +0.8 to +1.7°C, +1.0 to +2.8°C by 2050, and 1.0 to +5.2°C by 2085, with the biggest rises in the country's northern regions, where malnutrition rates are already high. These statistics have a medium level of confidence, but all scenarios predict a rise in temperature. The yearly mean temperature has changed in a medium-strong way[15]. Many CMIP5 models predict that mean precipitation in West Africa will increase during the rainy season by the end of the century, with a slight delay at the start of the rainy season. In 2050, mean annual precipitation in Côte d'Ivoire will decrease by -17.9 mm (RCP 8.5, High Emission), whereas the frequency of extreme rain events may remain steady or increase[16]. By 2100, the RCP 4.5 model (Low Emission) predicts an 8% reduction in daily precipitation between April and July rainy season[17].

Climate vulnerability and risks

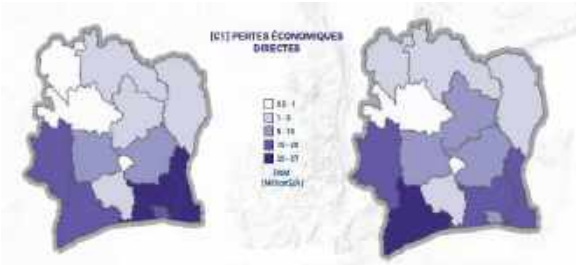
Climate change, through its effects on temperature and rainfall, contributes to increasing the vulnerability of agriculture in Côte d'Ivoire. Studies by SODEXAM show that the rainy season has shortened by an average of 10 to 27 days on the coast, with an average delay in the start-up of two weeks. In most parts of the country, the length of the season has been reduced by 10 to 20 days. In the north, the season length was reduced by 20 to 30 days and 10 to 28 days in the center part. Delays at the start of the season vary from one to two weeks depending on the locality.[18]. Extreme climate events such as floods, droughts, and bushfires have also resulted in crop losses due to the changes. Floods affect approximately 60,000 people yearly, or about 0.3% of the total population. Coastal zones are the hardest hit, with 80% of economic activity taking place there.

Figure 4: Average year number of people affected by droughts in present days (left) and projected (right)



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

Figure 5: Direct economic loss due to floods in present days (left) and projected (right)



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

[14] Climate Knowledge Portal, World Bank

[15] 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).

[16] Climate Knowledge Portal, World Bank

[17] Climate Change National Strategy 2015 - 2020

[18] 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.

The direct consequences on agriculture are a shortening of the average duration of vegetative growth periods (shifting of the beginning of the cropping season), weak growth of biomass and a reduction of the productive potential of ecosystems (reduction of arable land due to its degradation, increased exposure of plants to water stress and reduction of the volume of surface water in most regions). At the livestock level, it influences the availability of fodder and favors the appearance of pathogenic vectors for livestock. In addition, the production deficits observed and amplified by climatic changes jeopardize the food security of the populations who depend directly on their farms' production. The mismatch between weather calendars and crop seasons poses a real problem for agricultural production. In addition, there is the threat of famine, which is reflected in the extension of the hunger gap, the seasonal displacement of farmers in search of more hospitable areas, and the modification of farming habits. The impacts of these changes are also reflected in the loss of crops due to calamities such as floods, drought, and bushfires that are climatic in origin[19]. Drought affects 1.3 million people or 5.4% per year, especially in the country's northern region, where water infrastructure is already a problem. If population growth is considered, the percentage will rise to 7.9% or 2.4 million people.

The northern part of Côte d'Ivoire, which has only one rainy season, is extremely vulnerable to climate change's effects on natural resources and agricultural production systems. Climate change impacts can be seen in reduced rainfall, shorter rainy seasons, and changes in microclimates, increased temperature and heat winds, stream drying and groundwater volume reduction, the severity of dry seasons and a high-water deficit, soil degradation and loss of plant cover, and increased pest and disease incidence and alien species invasion. The Zone Centre is vulnerable to the same threats as the northern zone, but with a smaller fall in precipitation. Climate change effects in the Zone Sud-Intérieur include lower precipitation and shorter rainy seasons, reduced groundwater quantities and land degradation, loss of soil fertility, and loss of forest cover. Agricultural production in the southern half of the country is slightly less affected than in the northern section of the country. Finally, climate change impacts in Zone Littoral include shifting wet seasons, reduced river flow, heavy rains and floods, and coastline erosion. Even yet, agricultural production in this portion of the country is less damaged than in the north[20]. The table below summarizes information from Côte d'Ivoire's Third National Communication to the United Nations Framework Convention on Climate Change on actual climate change impacts in different agroecological zones.

[19] Document de Stratégie Nationale de Lutte contre les Changements Climatiques
[20] 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	• Decreased precipitation, 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	• High vulnerability of natural resources and agriculture production systems. • Loss of soil fertility and land productivity • Medium human vulnerability
Zone Centre	• Decreased precipitation, 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	• High vulnerability of natural resources and agriculture production systems. • Loss of soil fertility and land productivity • Medium to low human vulnerability
Zone Sud-Intérieur	• Decreased precipitation • Shortening of rainy seasons • Increase of temperatures and heat waves • Drying of water streams and reduction of volumes of groundwater • From high to medium water deficit • Degradation and loss of forest cover	• Medium vulnerability of natural resources and agriculture production systems. • Low human vulnerability
Zone Littoral Zone Littoral	• Decreased precipitations • Shortening of rainy seasons • Unpredictable rainfall during the year • Drying of water streams • Longer dry period • Low water deficit • Degradation and loss of forest cover • Floods • Sea level rise • Coastal erosion	• Medium to low vulnerability of natural resources and agriculture production systems. • Medium human vulnerability

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

Project scope and challenges

The agricultural sector in Côte d'Ivoire will continue to be affected by the consequences of climate change if there is no action to support the vulnerable populations, especially farmers' communities and build their resilience to adapt to future impacts. It has been stated that water availability is affected and will be impacted by future climate variations and changes. Furthermore, rapid urbanization in Côte d'Ivoire is accompanied by strong demand for food products, including rice, vegetables and aquaculture products. Unfortunately, the national production of most of these products is not sufficient to cover domestic demand, resulting in heavy dependence on imports. Like many countries, Côte d'Ivoire is subject to climate change with high variability in rainfall and thus greater risks for rainfed producers and generally a latent risk in terms of food security for the population. However, the current mode of development of the lowlands in Côte d'Ivoire is essentially monocultural, whereas their assets should make them real poles of economic activity (rice growing, vegetable production, fish farming, tree farming on the slopes and overlooking the lowlands). A paradigm shift in cultivation practices is therefore

needed to consider the new context of climate change. Thus, the project will focus on the following:

1. **Vegetable production**

The vegetable producers in the targeted areas are suffering the consequences of climate change, such as the

1) reduction of the production cycles;
2) unpredictable agricultural calendar that does not allow the producers to take advantage of the season;
3) disruption of the cultural calendar;
4) increase production costs (i.e., construction of deeper wells, increase of piping to obtain enough water to cover needs, acquisition of more energy to ensure the irrigation of plots);
5) flooding.

The water deficit also highly impacts the production of vegetables, which grow depending on a significant amount of water. Vegetable production areas revealed that rainfall is the main factor determining major climatic zones in Côte d'Ivoire.[21]

There is a decrease in annual heights and the number of annual rainy days from the coast to the South to the North, following a Southwest/Northeast gradient. In addition, the presence of preponderant reliefs in the West of the country creates a second axis of West-East decline. At equal latitudes, the mountainous and lowland regions of the West receive more rain (of the order of some 68-68 hundred millimeters) than those located in the East. The North is characterized by an average annual rainfall of less than or equal to 1200 mm, following a monomodal rhythm with two seasons. The current rainfall hazards (pocket of drought, delay, or on the contrary excess precipitation) can affect production. In the South, the rainfall regime is also favorable to diseases and leaf destruction in case of high intensity. Temperatures in Côte d'Ivoire follow a south-north gradient. The highest is observed in the North of Korhogo. The warmest months are February, March and April (monthly averages of 28.9°C, 29.3°C, and 28.7°C, respectively). The annual insolation is the longest in the North, up to 2700 hours in Odienné, compared to 2100 hours in Abidjan. The duration of sunstroke is maximum from January to April. Evapotranspiration values are highest in March (176 mm) and April (173 mm). The relative humidity of the air decreases from South to North. The annual average values vary from 90% in the South to 55% in the North. For vegetable crops, excessive humidity above 90% during the day disrupts the pollination of the tomato since the pollen becomes heavier and is no longer mobile enough to be moved on the pistil of the flower. High relative humidity also easily leads to the development of fungal or bacterial foliar diseases, especially as air temperatures are high. This is the case of onion for bulb production and tomato. In the Southeast, market gardeners were expecting two periods of rainfed production corresponding to the two rainy seasons. To this was added a third production cycle in the great dry season in the shallows and with irrigation. The short dry season of July facilitated ripening (tomato) and harvesting and especially the realization of nurseries for crops of the second cycle, the most important cycle in the volume of production. The consequences of this rainfall disruption on market gardening are well explained by producers such as 1) pockets of drought reduce the production by water stress of crops, which can go as far as the destruction of flowers and low fruit set (planting in deep soil, mulching and water-stress-tolerant varieties, if any, are the only adaptation strategies); 2) the slowing down of the rainfall regime can facilitate the proliferation of certain pests/insects 3) excessive rainfall, especially between September and October, leads to crop losses due to rotting or poor vegetative development due to soil waterlogging and crop asphyxiation. The destruction of the crop is also reported due to flooding in the plains and low-lying areas. Only cultivation on small ridges on glazes and large ridges in low-lying areas can limit the stress of excess water (but it

[21] KRA Kouakou Valentin (2019), *Maraîchage intra-urbain à Abidjan et Bouaké (côte d'ivoire): entre économie spéculative et dimension socio-culturelle des acteurs,* Université Alassane Ouattara, Bouaké (Côte d'Ivoire)

increases the sensitivity of crops to pockets of drought). 4) too heavy rains in a limited time and pockets of drought affect the filling of aquifers and the regular flow of watercourses over time, resources likely to ensure off-season irrigation (in Southeast). However, the cumulative rainfall varies greatly by 800 and 1,300 mm/year and the distribution of rainfall varies greatly from one year to the next in terms of both the start and end dates of the rainy season. The extreme variability of rainfall makes it difficult to characterize the seasons of this Central region. In addition, Côte d'Ivoire, vegetables production is a predominantly female or male activity, depending on the region. For instance, women represent 70% of producers in Bouaké, while men represent most of the producers in Abidjan[22].

2. Rice cultivation

The climate change impact threatens food security in Côte d'Ivoire. The food sector, particularly rice cultivation, is highly dependent on climatic factors. Climate change affects rice production through temperature, precipitation and humidity in the different regions of Côte d'Ivoire. The most significant impact on rice cultivation includes 1) the reduction of production cycles due to lack of irrigation water; 2) yield failures due to insufficient coverage of water needs; 3) the difficulty of programming production in relation to market needs; and 4) flooding. The crops are mainly rainfed and yields depend on the availability of rainwater and are prone to drought. Thus, the smallholders in Côte d'Ivoire are increasingly confronted with the uncertainty and variability of weather patterns resulting from climate change. Yields are low due to the limited capacity of rice farmers to implement appropriate agricultural practices, including climate-smart agriculture (CSA), that can help mitigate greenhouse gas emissions from the rice value chain.

Project areas

This project will be implemented in several locations based on agroecological zones and available conditions for the success of the chosen technologies. Particularly, the project areas have been selected, considering the level of vegetables and rice production in the area and the level of water scarcity engendered by climate change. Solid Rain will be used in vegetable production areas to improve water use efficiency throughout the growing season. The Solid Rain technology will be implemented in Korhogo (Poro region), Boundiali, Tengrela (Bagoue region), Ferkessédougou (tchologo region), Katiola, Dabakala (Hambol region), Odienné, Gbeleban, Madinani (Kabadougou region), Minignan, kaniasso (Folon region), Bondoukou (Gontougo region), Seguela (Worodougou region), Mankono (Béré region), Bouaké, Sakassou, Béoumi (Gbêkê region), Mbahiakro (Iffou region), Dimbokro, Bocanda (Nzi region), Touba (Bafing region) Tiébissou (Belier region), Bouaflé (Marahoué region) and Abengourou; Agnibilekro (Indénié Djuablin region). The rice-fish farming will be implemented in Korhogo (Poro region), Boundiali (Bagoue region), Katiola (Hambol region), Yamoussoukro, (Belier region), Abengourou (Indénié Djuablin region), Soubré (Nawa region), Gagnoa (Gôh region), Danané (Tonkpi); Duekoué (Guemon) and Daloa, Vavoua, Issia (Haut Sassandra region).

The regions chosen for Solid Rain technology are justified mainly by the fact that those are the vegetable production regions in the country, where farmers are facing a lack of water due to the reduction and variability of rainfall. Therefore, Solid Rain technology is an adequate solution to the management of water resources and sources. Regarding rice-fish farming, the reason linked to the selection of the cited regions lies in the promotion of food and nutritional security among rice farmers who do not have resources that can allow them to access protein. Hence, the diversification of the income sources and types of agricultural production is a solution to this issue. The financial component of the project will be implemented in all the projects covering the region and the development of policies and strategies will be national. The sites were selected

[22] FIRCA (2018), *Etude d'identification et d'analyse des contraintes à la production maraîchère selon les grandes zones agro-climatiques de la Côte d'Ivoire*, RAPPORT D'EXPERTISE.

after consultations with the stakeholders in all the selected regions for their demand for the extension of the pilot project to a larger scale for more impact. The following Table 3 and Figure 6 outline the project implementation zones.

Figure 6: Project implementation zones in the country

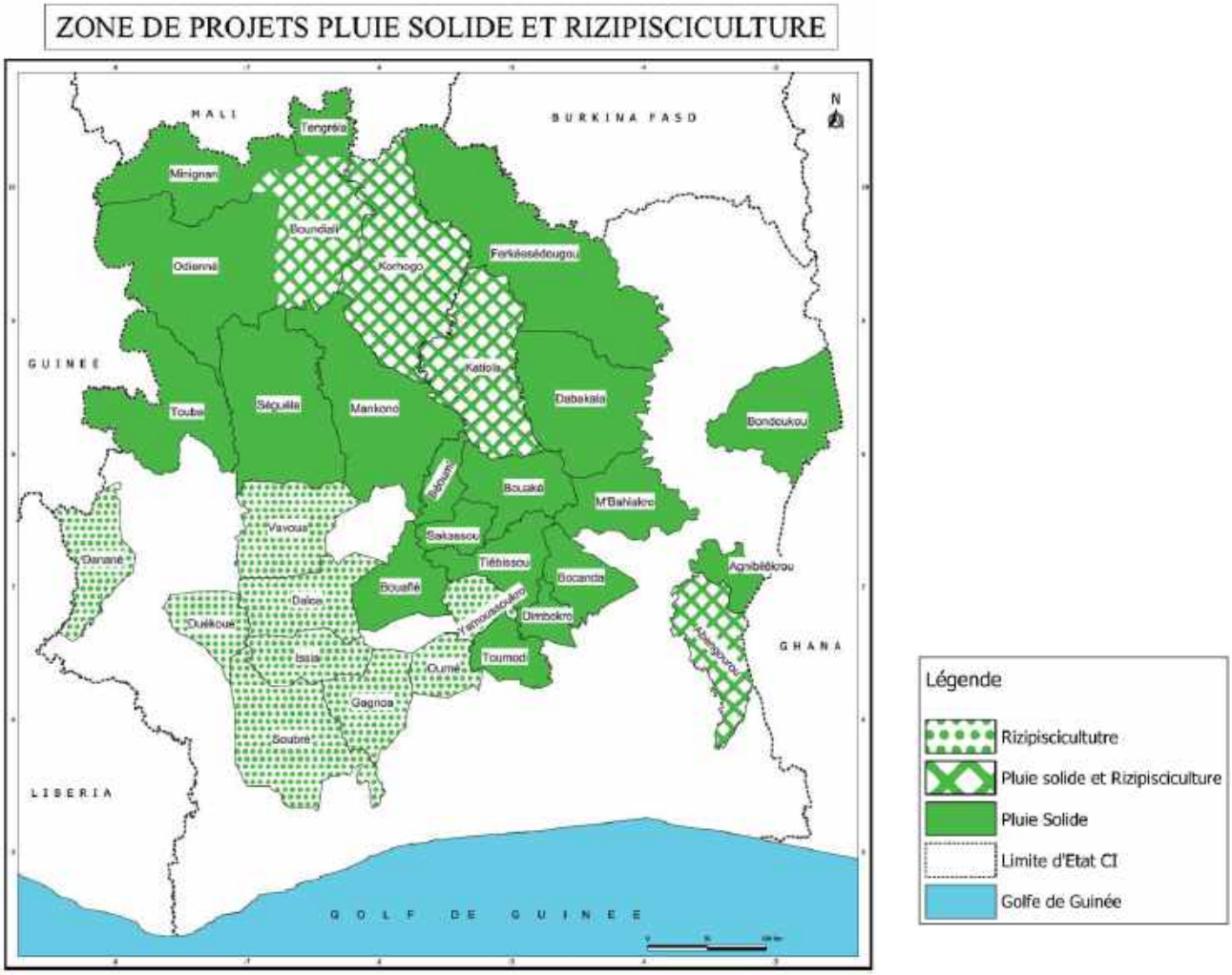


Table 3: Project implementation zones based on ANADER working zones

Region	ANADER Working Zones	Adaptation Technologies	
		Solid Rain	Rice-Fish Farming
KORHOGO	Katiola		
	Dabakala		
	Ferkessédougou		
	Korhogo		
	Boundiali		
	Tengrela		
	Odienné (+Madinani)		
	Minignan (+Kaniasso)		
Sub Total 1	**8**	**8**	**3**
BOUAKE	M'Bahiakro		
	Bocanda		
	Dimbokro		
	Tiébissou		
	Toumodi		
	Yamoussoukro		
	Bouaké		
	Béoumi		
	Sakassou		
	Mankono		
Sub Total 2	**10**	**9**	**1**
ABENGOUROU	Bondoukou		
	Abengourou		
	Agnibilékro		
Sub Total 3	**3**	**3**	**1**
DALOA	Issia		
	Vavoua		
	Daloa		
	Séguéla		
	Bouaflé		
Sub Total 4	**5**	**2**	**3**
MAN	Touba		
	Duékoué		
	Danané		
Sub Total 5	**3**	**1**	**2**
SAN PEDRO	Oumé		
	Gagnoa		
	Soubré		
Sub Total 6	**3**	**0**	**3**
TOTAL	**32**	**23**	**13**

Proposed solutions

Two innovative solutions related to "Solid Rain" and rice-fish farming were tested in the farming environment to provide sustainable solutions to the problem of water management in vegetable farming and rice cropping systems while improving crop productivity and producers' revenues. The tests were completed by selected farmers from the pilot project with the support of the executing entity (ANADER), and training was completed prior to the field experimentation.

1. **The Solid Rain**: water retaining granules, bio-fractionable, non-toxic and able to absorb water and make it available to the root system of plants according to their needs ensures a stable growth of plants and a loosening of the soil. This technology is well adapted to market gardening, especially in the off-season when water is more limited.
2. **Rice-fish farming** is a technology that plays on the mutualism of rice and fishponds (the rice feeds the fish, and the fish feeds the rice). Depending on the type, it can produce 3-5 tons of fish/hectare of a pond with a low-grade rice flour feed and improve rice production by 25-50% without the use of pesticides, herbicides, or fertilizers.
3. **Endogenous adaptation solutions.** In order to cope with the adverse effects of climate change, the farmers will adopt adaptation practices that allow them to carry out their production activities while reducing the impact of climate change through the adoption of an itinerant cultivation system based on the regime of rivers (for instance, the communities in the N'ZI region will move their production plots to the riverbed, which close to the water source in the dry season), use of organic manure, preservation of trees in the fields, shifting sowing periods, crop association (with legumes), construction of shafts deeper, adoption of the rainfed production system (for rice and eggplants), reduction of cultivated areas (market gardening), early harvests and adoption of hydro-tolerant crops (resistant to water stress such as eggplant and okra).

Figure 7: Solid Rain technology used by vegetables farmers and rice-fish farming technology

Demonstrations of the Solid Rain and rice-fish farming technologies were carried out in the farming environment with results that were well appreciated by the farmers in the localities that hosted the pilot phase of the transfer of these technologies. The pilot project benefited 65 farmers for Solid Rain technology from January 29th, 2019, to June 2021, and 150 farmers for rice-fish farming technology from June 24th, 2019, to November 2021. It is therefore important to increase the dissemination of these technologies that are resilient to the effects of climate change in all the country's vegetable and rice production areas by strengthening the production capacities of farmers and sustaining the adoption of these technologies by creating a suitable financing system and strengthening national regulations for Climate Smart Agriculture (CSA) technologies dissemination.

The main challenges related to the proposed technologies lie in the lack of access to water management. This problem is accentuated by the scarcity of water due to the impact of climate change and rainfall variability. Access to finance can also prevent farmers from adopting the tested technologies, and communication between farmers can also bias the scaling up of successful practices. The proposed project is designed to address the above challenges. It is also a direct response to National Adaptation Plan (NAP) priorities. It targets rural populations and aims to improve and diversify the agriculture production system and thus making it more climate-resilient. The proposed intervention with AF funding has been designed by Government, with the support of the Global Green Growth Institute (GGGI), along four main components 1) sustain access to improved water management technologies to build resilience to climate change; 2) support farmers' activities diversification and climate-resilient rice farming

system through rice-fish farming technology; 3) strengthen farmers' access to green finance for climate-resilient rice and vegetables farming enterprises development and 4) support knowledge sharing and policies/strategies development and the sustainability of the adaptation 'technologies adoption by farmers.

Table 4: Summary of the technologies' benefits

Adaptation Technologies	Benefits
Solid Rain	• Produce with little irrigation water (improved irrigation water management) • Spend little time watering (reduction of working time). • Improve the efficiency of crop fertilization (uptake of nutrients dissolved in the water and then gradually release them with irrigation water from " Solid Rain" to plants).
Rice-Fish Farming	• Increase rice production cycles. • Improve soil structure in rice traps. • Improve water management (produce fish and rice with the same water). • Valorize production residues (irrigation water from the fishpond for the rice trap and rice bran for fish nutrition from the fishpond).

Project objectives

The main objective of the project is to strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices in a context of variability and irregularity of rainy seasons. More specifically, the project will:

- Sustain access to improved water management technologies to build resilience to climate change.
- Support farmers' activities diversification and climate-resilient rice farming system through rice-fish farming technology.
- Strengthen farmers' access to green finance for climate-resilient rice and vegetable farming enterprises development.
- Support knowledge sharing and policies/strategies development and the sustainability of the adaptation technologies adoption by farmers.

The project outcomes are aligned with the Adaptation Fund's Strategic Results Framework, particularly:

- Outcome 1: Reduced exposure to climate-related hazards and threats.
- Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets.
- Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress.
- Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.
- Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies.

Finally, the proposed project is consistent with national and international strategies and plans. It is in line with the National Development Plan 2021-2025 of the Government of Côte d'Ivoire, the National Strategy for Sustainable Development, the National Strategy for the Promotion of Green Jobs, the National Climate Change Program, the National Agricultural Investment Program Second Generation, the Climate Smart Agriculture Strategy, the Investment Plan in Climate-Smart Agriculture, the national document on climate change and gender, the Nationally Determined Contributions (NDC) document. In addition, issues directly related to SDG goals 1, 2, 6, 13, 14 and 15 are also considered.

Gender analysis

Gender mainstreaming will be included in all the project activities. The gender analysis conducted give us these results on the natural, physical, human and financial resource management, which will allow us to address these elements during the project life.

Natural resources

The natural resources used for vegetable production, rice and fish farming are land and water. These two resources are essentially controlled by men (heads of land, landowners, heads of families). Women and young people can access it at their request. Women have access to land by inheritance, by marriage, by the chief of land or the village. Women's organizations can request land access from the village community. Women benefit from only small portions of family land. They can also lease land or obtain community plots through village chiefs, land chiefs, politicians through projects usually free of charge for exploitation. This is the case of the eight (8) women of Youalla (0.5ha) and the COPROVICO group in the commune of Katiola.

In terms of vegetables, land rental is practiced for many years. Although there is no formal contract (mentioned in writing), the clauses are clear for each stakeholder. When the use of a plot is supported by a project, relocations can be made. It is therefore necessary for the project to anticipate these risks by requiring beneficiaries to provide a land use agreement document for at least five (5) years.

Regarding water management, access is conditioned by the capacity and means of dewatering. Small-scale farmers, mainly women, rely on rainwater and spring water that their physical capacities allow. Medium-level producers, especially those who have vegetables as their main source of income, invest in equipment such as motor pumps with adapted pipes to access water all year round. Through some projects, women have access to boreholes to water their crops. When these wells dry up or become too deep, they stop tapping in. In this case, they can access paid watering services from motor pumps by private individuals. But in general, they stop the activity to wait for the next rainy season.

Physical Resources

The physical resources used consist of equipment and infrastructure to access water (Wells; Motor pump; Pond) agricultural tools and equipment (Daba, watering cans, cans ...) agricultural inputs (fertilizers; Phytosanitary products; Herbicides...) and means of transport (tricycles, Kia trucks, etc.)

At the level of the rice ponds/traps, women have access to the resource but usually use it as a lessor of the perimeter, sister, wife or other relatives of the landowner. Sometimes husbands leave one or two fishponds to their wives (Wazi fish farm, Sayo,). It should be noted that the income from these activities accrues to them. This income is used to meet the needs of the daily life of their household (meals, health, schooling, clothing, ...). On non-individualized community plots, priority for the use of the resulting income is given to socio-community activities (birth, wedding, association party or end of year ...) and funerals (rental or purchase of tarpaulins, chairs, pots, mats ... for the support of a grieving member).

As far as small tools (daba, watering cans, jerry cans) are usually individual and controlled by both women and men. Agricultural machinery or mechanized tools and harnessed crop cattle are controlled by men. They use it for their own needs and turn it into paid services that are also used by women or their groups.

At the level of agricultural inputs (fertilizers, plant protection products, herbicides, seeds) access

and control depend on the financial resources available and on good technical knowledge of these inputs. Women have limited access.

Human resources

The analysis of human resources addressed the educational gap between men and women, their technical capacity and their health. In terms of technical capacities, women are represented on several links in the value chain of vegetable crops, rice and fish farming. While women make up the bulk of the workforce, illiteracy rates are higher among them than among men.

Financial Resources

The analysis of financial resources consisted of information on the sources of financing for activities, the availability of savings and the challenges and constraints involved. It emerged from the various exchanges that the activities are financed from their own funds and by input suppliers and some large customers. Some men's cooperatives set up a savings fund from levies on members' sales to finance activities. Women's equity is often taken from their tontine activities (VSCAs). There have been two reported cases of funding by a male microfinance institution (COOPEC).

A full gender analysis report has been designed and is in Annex 3.

To be able to effectively implement concrete adaptation actions that will benefit farmers and the country's food security and contribute to climate resilience, the project has been designed to be implemented under four key components:

Component 1: Sustainable access to improved water management technologies to build resilience to climate change.

The proper management of water resources is critical for the socio-economic development of Côte d'Ivoire's populations, particularly those who live in rural areas and rely on agriculture for a living. This component will help communities in water-stressed areas where climate change is exacerbating their vulnerability. Unreliable water sources impact their social well-being since they are unable to keep enough revenue to support their families. Many poor households are at risk of not having enough harvest to secure food due to erratic and irregular rains. The proposed technologies/practices will provide long-term access to enhanced water management technology to increase their climate change resilience. The expected outputs and activities under Component 1 are:

Output 1.1 Extension agents' capacities to disseminate adaptation technologies to farmers enhanced

The pilot projects were conducted to demonstrate proven Solid Rain and rice-fish farming technologies will cover 10 areas (5 areas to demonstrate Solid Rain technology and 5 areas to demonstrate rice-fish farming technology). During these pilot phases, 13 and 30 extension agents have strengthened their technical capacities to ensure the farmers' training on the technologies and monitoring of the application. With a view to extending the areas of application of the innovations, it is necessary to ensure capacity building for agents in the new intervention areas. Thus, 151 new agents will be trained to increase the number of trained agents for the technologies' dissemination; 138 agents will be trained in Solid Rain technology, while 13 agents will be trained in rice-fish farming. These capacity-building activities will be carried out through a series of training workshops jointly conducted by the executing entity trainers and experts from partner structures in technology dissemination. Practical field activities will be carried out during these workshops to enable them to quickly acquire the skills needed to follow up on-field activities. In addition, the Farmers' Field Days activities will be focused on the Training of Trainers (lead farmers).

To achieve Output 1.1, the project will deliver Activity 1.1.1 and 1.1.2 as follow:

Activity 1.1.1 Train extension agents on the use of Solid Rain

In total, the project will train 138 agents, including 23 Specialized Annual Crop Technicians (TSCAs), who will train 115 Rural Development Facilitators (ADRs) in their intervention areas on the use of Solid Rain, with assumption of 1 TSCA will provide training for 5 ADRs. The training for TSCAs will be conducted both theoretically (in a classroom) and practically (in the ANADER zone). In addition, a demonstration plot will be prepared at each beneficiary's farm to support the training for TSCAs, while another demonstration plot will be prepared at a beneficiary's farm for the remaining 22 zones to support the training for ADRs.

Activity 1.1.2 Train extension agents on rice-fish farming

The project will train 13 Specialized Livestock Technicians (TSE) on rice-fish technology. The TSEs will be grouped and trained both theoretically (in a classroom) and practically (on a plot of a rice-fish farming site already installed and functional).

Output 1.2 Vegetable farmers capacities to adopt climate adaptation technologies on Solid Rain built

In a context marked by frequent variations in rainfall and irrigation water management, the "Solid Rain", an innovative product developed by Sergio Rico, a Mexican chemist, offers a credible alternative for the sustainable production of food crops, especially market gardening. Indeed, acting as a sponge that restores 95% to 99% of the stored water, the "Solid Rain" is a water retainer in granular form, bio-fractionable, non-toxic and capable of absorbing water and making it available to the root system of plants according to their needs. It ensures stable plant growth and soil loosening while increasing agricultural productivity and reducing water losses despite disturbances. The promotion of this product among farmers producing vegetables will take the form of (i) the creation of sales outlets for the "Solid Rain" product, (ii) the setting up of demonstration plots for the training of farmers on the use of the product in vegetable crops, (iii) the training of farmers producing vegetables through the demonstration plots (iv) post-training follow-up of vegetable producers in the use of the product on their individual plots, (v) support for the structuring of producer groups and (vi) organization of exchange visits for the benefit of farmers who have not benefited from training on the demonstration plots. The implementation of all these activities will contribute to strengthening the technical and organizational capacities of producers and increase their resilience in the face of worsening climatic variability manifested by increasingly unfavorable pedoclimatic conditions such as the drastic decline in rainfall, poor distribution of rainfall, declining soil fertility, etc.

To achieve Output 1.2, the project will deliver Activity 1.2.1, 1.2.2, 1.2.3, 1.2.4 and 1.2.5 as follows:

Activity 1.2.1 Install demonstration plots for the training of vegetable producers (tomato and cabbage) on Solid Rain technology

Environmental and social screening of the sites planned for the demonstration and production plots will be carried out. Two demonstration plots of 50 m^2 per intervention area of each ADR will be installed. These plots will be used for the practical training of the 20 producers supervised by the ADRs. Two beneficiary sites per ADR will be selected to host these plots. The work will be carried out (at the level of the demonstration plots and the production plots of the beneficiaries) considering the environmental and social diligence resulting from the studies.

Activity 1.2.2 Train vegetable producers on the use of Solid Rain

The project will train 2,300 producers per year or a total of 6,900 vegetable (particularly tomatoes and cabbages) producers on the use of Solid Rain, with the assumption that 1 ADR will provide the training to 20 producers.

Activity 1.2.3 Provide equipment and input support to farmers for the application of solid rain technology

The project will provide equipment such as watering cans, sprayers, buckets, and input such as seeds and solid rain to support each producer in developing the demonstration plot of 500 m^2 of tomatoes and cabbages.

Activity 1.2.4 Provide technical assistance to cabbage and tomato producers in the application of Solid Rain technology

After the training on the demonstration plots, the ADRs will support each beneficiary with technical assistance during the application of the technology on their farms, under the supervision of the TSCAs. The technical assistance will include the use of Solid Rain and compliance with good agricultural practices. In addition, regular visits to the producers' application plots will be carried out by ADRs (1 visit per fortnight) and TSCAs (1 visit per month) over the production cycle of the crop. They will provide guidance and make necessary technical corrections. During these visits, they will collect data from each producer to determine and monitor the indicators.

Activity 1.2.5 Train agents on necessary tools to support the implementation

The project will train agents on necessary tools to support the implementation (i.e., diagnostic tools, vulnerability matrix, reporting canvas and the Gender Learning and Promotion Framework for Sustainable Development (CAPROGED). Through the introduction of CAPROGED, the project will increase the knowledge of the beneficiaries on gender equality and the importance of women participation in the project activities.

Component 2: Rice-fish farming to support diversification and climate-resilient rice cultivation system

Diversification is crucial for risk reduction, particularly for those living in rural areas and relying on agriculture. This component will build rice and fish farmers' capacities to adopt climate adaptation technologies in the rice-fish farming diversification system. Diversification would have a positive impact on farmers' social well-being and level of income. Many poor households are at risk of relying on only one speculation or agricultural activity. Thus, the proposed project will support the diversification by rice-fish farming technology and a climate-resilient rice-growing system. The concrete activities related to this technology lie in (i) the creation of one demonstration pond per locality (11 demonstration ponds), (ii) support for the maintenance of 55 water reservoirs of rice growing facilities, (iii) stocking of 165 fishponds with fingerlings, (iv) provision of fish feed, (v) providing rice-fish farmers with small equipment for the exploitation of ponds (nets, buckets, scales, etc.) and (vi) monitoring and support of rice-fish farmers. The expected outputs and activities under Component 2 are:

Output 2.1 Capacities of rice and fish farmers are enhanced through the adoption of rice-fish farming

Rice-fish farming is a technology that plays on the mutualism of rice and fishponds (the rice feeds the fish, and the fish feeds the rice). The rice-fish culture technique of juxtaposing fishponds and rice ponds allows to produce 3-5 tons of fish/hectare of a pond with a feed based on low-grade rice flour and improves rice production by 25-50% without the use of pesticides, herbicides or fertilizers. In a context marked, on the one hand, by the aggravation of climatic variability (manifested by the drastic regression of rainfall) and the increasing decrease in arable land for food crops (due to rapid and uncontrolled urbanization and the expansion of the area under perennial and export crops) and water reserves, on the other hand, rice-fish farming appears to be a very credible opportunity for the development of resilience on the part of the rice farmers. The pond water, which is rich in nutrients due to the deposition of farmed fish and the degradation of food scraps, is used to irrigate the rice fields, saving the rice farmer the expense of fertilizers, pesticides and herbicides.

Demonstrations on rice-fish farming using the technique of juxtaposing fishponds and rice pits were carried out through training units for rice farmers in Abengourou, Oumé, San Pedro, Soubré and Yamoussoukro, with an adoption rate of 60% by the beneficiaries. This performance could be improved if substantial support had been provided for developing water mobilization infrastructure and fishponds as proposed in this project. The capacity enhancement will primarily take place through applied training sessions. The training will be carried out through the Pedagogical Units. This training will be conducted both theoretically and practically. The trainings will offer attendees the possibility to acquire new knowledge to favor the sustainability of their farms. A total of nine (9) practical training sessions will be organized throughout the duration of the rice and fish production cycle specifically on i.e., the implementation of rice nursery, ploughing and planting of the rice paddy, tilapia production system in ponds, conditioning and transfer of fry, rice transplanting, irrigation with water from the fishpond, water management, biosecurity measures and maintenance of rice ponds, pathology, predator control, feeding and water management, rice harvesting, growth control fishing economic management of a rice-fish farm, marketing of marketable fish.

To achieve Output 2.1, the project will deliver Activity 2.1.1 and 2.1.2 as follow:

Activity 2.1.1 Create educational units for producer training

Nine (9) educational units on rice-fish farming will be set up with producers operating on irrigated rice schemes. The project team will carry out a mission to sites based on the criteria: (i) accessibility of the site, (ii) level of organization of the producer's activities on the irrigated perimeter and (iii) commitment of the producer to host the pedagogical unit to take part in the project activities. Each pedagogical unit will include a landscaped area, two (2) fishponds of 400 m² and a rice perimeter with a rice trap area of 1,200 m² set up by the project for theoretical and practical training sessions for beneficiaries. To facilitate the fieldwork, the project will provide each site with a kit of equipment consisting of 05 wheelbarrows, 10 machetes, 10 dabas, 5 hoes, 5 shovels, and 5 pickaxes. This kit will be used to develop ponds and rice traps with the involvement of the beneficiaries. A shelter, covered with straw, will be built on a 20 m² on each site. Benches based on local materials will be provided as seating for learners during theoretical training sessions. During the pilot phase, four (4) educational units have been installed for training. In the project implementation phase, an additional nine (9) educational units will be put in place to increase the capacity of the training center. To conduct these activities, a kit will be required and should include (i) 2 fishponds of 400 m² (ii) 1,200 tilapia fry; (iii) 800 kg of tilapia feed; (iv) 1 beach seine (mesh diameter 14 mm) of 30 meters; (v) 1 mesh net 6 mm; (vi) 1 mesh net 14 mm; (vii) 1 load with a maximum capacity of 10 kg; (viii) 1 load with a maximum capacity of 50 kg; (ix) 5 seals of 20 liters; (x) 2 basins of 50 liters; and (xi) 3 manual weeders. In addition, one (1) TSE will train 15 producers in per unit, or a total of 195 project beneficiaries.

Activity 2.1.2 Train rice farmers in rice farming technology

One hundred and ninety-five (195) rice farmers will be trained in rice-fish farming technology through the educational units. The training will be conducted both theoretically and practically between the pedagogical unit and the plot of production of the learner. The training sessions will be organized 2 times per month over a maximum period of six (6) months. The training beneficiaries will receive training kits. A total of nine (9) practical training sessions will be organized throughout the rice and fish production cycle on the following 12 topics i.e., the establishment of a rice nursery, ploughing of the plot and planning, impoundment and stocking of ponds, rice transplanting, irrigation with fishpond water, water management, biosecurity measures and maintenance of rice ponds, pathology, predator control, feeding and water management, rice harvesting, growth control fishery, economic management of a rice-fish farm, marketing of marketable fish, a technique for manufacturing food blocks and organization of group purchases of food and inputs. These training modules will provide the learners with the opportunity to acquire new knowledge to promote the sustainability of their farms. The training

will be facilitated and supervised jointly by qualified technicians specialized in fish farming (TSE) and rice cultivation (TSCA) and having had their technical capacities previously strengthened within the framework of the project.

Output 2.2 Rural planners on rice-fish farming diversification management system trained
Rural planners' capacity to develop and install the rice-fish farming system will be required for proper diversification operations. This will aid in the adoption of the proposed technology by the communities. The project's goal is to increase the human and technical ability to integrate adaptation concerns into planning processes, which is critical for long-term development. During the pilot phase, the challenges were mostly found in the implementation of the fish plot, thus, rural planners' training is needed to disseminate the technology effectively. The fishponds will be built by several experts who specialize in fishpond management. They will receive applied training from the management specialists on fishpond construction and rice and fishpond joint use. The training module for rural planners will cover the following sequences (i) prospecting the site for the fish farm structures, (ii) topographic survey of the site, (iii) elaboration of the development plan and evaluation of the costs of the works, (iv) preparation of the land, (v) construction of the ponds and (vi) the first impoundment of the structures. The trainings will cover the following modules i.e., topographic survey of fishpond sites, staking of fishpond sites, the layout of fishpond sites, digging of fishponds, location of pipes for the connection of fishponds with rice ponds and filling the fishponds with water. After the completion of the training, these rural managers are expected to be able to build fishponds next to the rice paddies for project beneficiaries. Furthermore, by the end of the project, they are expected to be able to solicit and disseminate this technology to wider beneficiaries.

To achieve Output 2.2, the project will deliver Activity 2.2.1 and 2.2.2 as follows:

Activity 2.2.1 Select rural managers to be trained
The project will provide training to 26 rural managers on waterline development techniques under Activity 2.2.2. The rural managers will be selected based on their experiences in making fishponds and/or rice traps, and at a minimum level of study (5th) and level of motivation.

Activity 2.2.2 Train rural planners on waterline development techniques
The project will provide training to 26 rural managers (2 rural managers per area) on the techniques of development of rice-fish farms perimeters. This training will be held in one of ANADER's specialized training centers. This training workshop for rural managers will take place between the validation period of the sites to host the educational units and the beginning of the development work of the fishponds on the said sites. This calibration will allow trained planners to be involved from the outset in the realization of developments on these sites and subsequently, actively participate alongside with ANADER technicians in the preselection of the beneficiaries' application sites. This will facilitate the promotion of the proposed technology to the target groups. The training modules for rural managers will deal with the topics on (i) prospecting the site where fish farms are located, (ii) surveying the site, (iii) developing the development plan and evaluating the costs of the work, (iv) preparing the land, (v) building ponds and (vi) impounding the structures for the first impoundment.

Output 2.3 Application sites of the rice-fish farming technique developed
The actions to reinforce the knowledge and scale up rice-fish culture will be reflected in (i) the installation of educational units for the training of rice-producing farmers in the new extension zones, (ii) the training of rice-producing farmers in the new extension zones, (iii) the training of rural planners on rice-fish culture management techniques, (iv) evaluation and support for the development of application sites for farmers in the pilot phase areas and those in the new extension areas, (v) post-training follow-up of farmers in the application of the rice-fish farming technique, (vi) organization of study tours, and (vii) support for structuring existing beneficiary

groups to strengthen them. The implementation of all these activities will strengthen the adaptive capacities of farmers by reducing the risks of rainfall variability and to improve productivity and earnings.

To achieve Output 2.3, the project will deliver Activity 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5 and 2.3.6 as follows:

Activity 2.3.1 Conduct design studies for fishponds and micro-dams
The project will conduct design studies for fishponds and micro-dams, which include technical studies (topography, design of the development plan, etc.) and environmental and social assessment, as well as the evaluation of the corresponding costs for each site.

Activity 2.3.2 Carry out fishpond development work
This work will focus on the adjustments to be made within the implementation deadlines of the project. The establishment (delimitation) of the ponds will be carried out by the project in accordance with the relevant standards. The project will rely on rural planners trained to conduct pond earthworks with the contribution of the beneficiaries. The work will be carried out considering the environmental and social diligences resulting from the studies. A total of 195 ponds, each of 400 m^2, will be developed by the project for fish production. To ensure the quality of the facilities, the project team will monitor and evaluate the work.

Activity 2.3.3 Carry out micro-dam construction work
For rice-farming sites that are not located on developed rice perimeters, the project provides for the construction of micro-dams useful for water sourcing. These micro-dams will thus constitute the essential source of water for the practice of technology. On all application sites, a total of 55 micro-dams will be installed. The work will be carried out considering the environmental and social diligences resulting from the studies.

Activity 2.3.4 Support the operation of developed rice-fish farms perimeters
The project will support for the development of rice-growing perimeters will result for each beneficiary in the supply of 1,200 tilapia fry to seed the 400^{m2} pond, 800 kilograms of fish feed, equipment in fishing and livestock equipment (1 seine, 2 landing nets, 2 seals of 20 liters, 2 basins of 50 liters and 1 weighing device), and equipment in maintenance equipment for rice traps (1 manual weeder). In addition, the project will support for the maintenance of 55 water reservoirs in rice facilities, stocking of 165 fishponds with fry, supply of fish feed, provision of small equipment to rice farmers for the operation of ponds (nets, buckets, scales, etc.) and monitoring and other technical support for the rice farmers.

Activity 2.3.5 Provide technical assistance to rice farmers
Each rice farmer will benefit from the technical assistance of a duo of Specialized Technicians (TSE and TSCA) during the project implementation. This support will focus on the producer's compliance with the technical practices of fish and rice production. The technicians will also support producer groups in producing organic fertilizers from rice straw, which can be used for rice traps as well as fishponds. In addition, the technicians will visit the application plot of each producer every fortnight for 18 months, which will cover three cycles of fish production in fishponds and at least three cycles of rice production. The specialized technicians will make the necessary corrections in accordance with the best practices. During these visits, they will collect data from each producer to measure the indicators.

Activity 2.3.6 Support the structuring of the existing beneficiary group
The project will provide assistance to producer groups (vegetables and rice farmers) for their structuring and/or revitalization and strengthening their management capacities.

Component 3: Access to finance strengthened for climate resilient rice and vegetables farming enterprises development

The sustainability of a technology dissemination project resides in the ability of the beneficiaries to effectively adopt the technology. This requires facilitation in the access of finance to support the purchasing of the inputs, tools and costs related to construction. This is critical for the people of Côte d'Ivoire's socio-economic development, particularly for those who live in rural areas and rely on agriculture for their livelihood. This component will assist communities in water-stressed areas whose vulnerability is being exacerbated by climate change. Reduced earnings have a significant impact on their social well-being since they are unable to maintain an adequate level of financing to support their families. Many impoverished households are at risk of being unable to apply climate adaptation technologies due to a lack of resources. The proposed project will strengthen access to finance for climate-resilient rice and vegetable farming enterprises. The expected outputs and activities under Component 3 are:

Output 3.1 An adaptation-oriented micro-finance scheme that supports the uptake of resilient rice and vegetable farming technologies through partnership with local microfinance and local management committed

This intervention aims at facilitating communities from the project areas to have access to finance to keep the opportunity of adopting the proposed technologies in a sustainable manner. This is a potential activity to sustain the generation of income and build resilience for poor households and women groups. Therefore, this project will provide some technical assistance to interested farmers' organizations and identify financial institutions to establish a loan facility or green credit line for farmers. Based on the previous pilots and the envisaged scaling up, USD 16,102,400 will be mobilized to meet the estimated demand for inputs and technologies application. The estimate was determined by calculating the mean additional cost that a farmer needs to adopt one or the other technology, the mean cost is around USD 435,2 per farmer. The country has around 37,000 farmers or more that can be positively impacted by this adaptation technology. The objective is to set up a mechanism in partnership with financial/microfinance institutions that have branches at the project sites. Farmers will be accompanied towards formalization and will be grouped into clusters. These groups will gather the financial resources of the different members and constitute an envelope that will be entrusted to the institution of the zone in the form of a term deposit while waiting for the financing of the next campaign. The term deposit will serve as a guaranteed line for the financing of the next campaign, especially for the additional cost related to the introduction of new technologies (if USD 50,000 is deposited, the institution will finance up to USD 50,000 and incremental cost at least). The percentage of the guaranteed coverage will be negotiated on a case-by-case basis according to the risk tolerance of each partner institution. In the long run, these financial institutions will develop a better understanding of the agricultural activity and a working relationship with the producer groups, which will facilitate the mobilization of additional financing.

To achieve Output 3.1, the project will deliver Activity 3.1.1 and 3.1.2 as follows:

Activity 3.1.1 Develop a concept note on the implementation of a Green Line of Credit

A study will be carried out for the formulation of proposals for analytical grids and financial products (interest rate for exit from credit, grace period, repayment period, insurance, loan implementation period, etc.) adapted to the value chains of the targeted crops in the project area.

Proposals for analysis grids and products will be validated with all partners (administrations in charge of the environment, the agricultural sector, social affairs; professional agricultural organizations, the financial sector, etc.).

On this basis, the project will identify with financial institutions, products suitable for the conceptualization of viable lines of credit and develop a concept note on the implementation of a green line of credit.

Activity 3.1.2 Formalize the partnership with financial institutions

In line with the guidance of the concept note on the implementation of green credit lines, the project will formalize the partnership between partner financial institutions and beneficiary producer groups through the signing of financing agreements.

As part of this partnership, the groups will share with financial institutions information on the technical nature of producers, their level of supervision and the profitability of the proposed production models.

Output 3.2 Existing cooperatives/professional organizations strengthened to improve climate resilient rice and vegetable farming practices with increased productivity and household income through microfinance facility

Risk management aids in the identification, assessment, and management of hazards to capital, earnings, and savings. Financial threats or hazards can originate from a variety of places, such as financial uncertainties, strategic management failures, legal liabilities, accidents, and natural disasters. The fear of taking the risk of not having a refund is one of the reasons for the traditional finance system to fund agricultural activities. In Côte d'Ivoire, the risk that is lied to a smallholder farmer taken alone cannot allow him to be financed by a financial institution to sustain his adoption of climate adaptation technologies. Improved access to finance lies with good organization and capacities of farmers' groups.

The project will support local cooperatives or professional organizations, beneficiaries of the project, by strengthening their organization, administrative, managerial, and financial skills to facilitate links with financial institutions. This capacity building will be done through training sessions and regular coaching throughout the project for leaders, members and staff of cooperatives and professional organizations in the vegetable, rice and fish value chains. The concrete activities that will be covered will be the implementation or strengthening of the village savings and loan association and village management committee. Farmers' groups will benefit from training that will allow them to operationalize and partner with microfinance institutions. This organization will help the availability of the technologies and the reorganization of the value chain through farmers' platforms to access the market. The project plans to implement more than 40 associations with a minimum amount of USD 6,000 for one association.

Activity 3.2.1 Implement the Farmer Business Management Advisory

Farmer business management advisors will provide support and guidance to producers and their groups to:

(i) Undertake a diagnostic to establish the baseline situation of the farm to be supported (internal and external environment of the farm, production activities, initial patrimonial situation as well as financial means)

(ii) Develop an action plan for each production activity of the farmer

(iii) Monitor the execution of activities by documenting them, in particular by recording in a management book the means (inputs, agricultural tools, labor, etc.) mobilized to conduct the activity and the related costs, and this, at the scale of the entire farm of the monitored agricultural actor

(iv) Measure the technical (self-consumed and marketed production) and economic results at the

end of the agricultural season
(v) Establish the financial statements
(vi) Analyze the technical and economic results obtained.
The submission of technical and economic data of the farm at the end of the analyses, allows the producer to make a decision that can lead to the continuation of the activity or to the improvement of his practices and ultimately of his income.

Activity 3.2.2 Support the formalization of VSCAs
The project will support existing and create associations in the designing of all the administration processes needed to be formalized to help them access MFI opportunities. The project will build upon existing socio-financial practices among farmer groups to lower transaction costs for their formalization and to increase trust levels with financial institutions for initial lending.

These practices currently include the habitual collection and management of a portion of the income of the producer groups formalized in associations. This will provide capital for an initial account for the group. This percentage of the income of the producer groups kept at banks/financial institutions will continue to be fixed-term deposits that can be considered a guarantee credit line.

Within the producer groups, a management council will be set up with members elected for a term to be determined in consultation with key stakeholders. The management council will report periodically to the various farmers and will be able to benefit from the support of ANADER technicians. Over the year and agricultural campaigns, the partner banks/financial institutions will develop a better knowledge of the agricultural activities financed, of the income that can be generated and therefore will also have a better appreciation of the risks to develop the appropriate mitigating measures. The lasting relationship and the track record will overall facilitate access to finance for farmers.

The process described here exists in portions of the country and is being implemented successfully. We will replicate its success to create more groups and support improved management practices for existing groups.

Activity 3.2.3 Support the formalization the partnership between VSCAs and partner financial institutions
After the formalization of the prioritized associations, the project will help them partner with MFIs where they will open account to guarantee access to credit and better management of resources coming from their harvest. The process will take at least one year after the project start for the formalized group to open an account and have a term deposit to build trust with the MFI and constitute a guarantee for the next seasonal production. It is important to note that this practice is becoming common and can be replicated and improved with training and technical assistance from the proposed project.

Activity 3.2.4 Provide advisory support to beneficiary groups
The project will ensure the success of the business model and the minimization of contractual risks with financial institutions.

Output 3.3 Comprehensive climate adaptation plans developed for each value chain with identified public and private sources of funding

Agriculture continues to be an important means of alleviating poverty, but a lack of funding can stifle its growth. Simultaneously, agriculture is growing into a global system that demands high-quality, competitive products and is organized in value chains that frequently exclude smallholders. Agriculture value chain financing provides a chance to broaden the scope of financing while lowering the cost and risk. It can also contribute to more inclusive value chains by

making resources accessible for smallholders to participate in higher-value market opportunities.

Activity 3.3.1 Develop models of contract farming schemes

The project will promote the development of value chain financing, which constitutes an opportunity for public and private sources of funding in this era of climate change. Indeed, adaptation to climate change requires the adoption of resilient technologies. Access to these technologies presents costs that value chain actors, mainly producers, cannot always meet on their own. To this end, the project's actions will develop financing strategies to promote access to credit for value chain actors, especially small producers. To this end, financing models based on contract farming schemes will be tested during the project. Feasibility studies will be carried out to identify attractive and bankable models according to the value chains involved (vegetables, rice and fish). The various relevant models identified will be implemented and improved as needed. Moreover, the financing of the technologies resilient to climate change will affect the availability of the technologies and the augmentation of productivity.

Activity 3.3.2 Test the funding models developed

The project will test the contract farming developed for a better follow up and improvement of the models developed.

Output 3.4 Market access strategy developed to facilitate the commercialization of the products

Reliable market access increases productivity and profits, thus enhancing food security. It is possible to alleviate poverty and hunger for producers' families and communities by taking appropriate measures to limit market risks and unequal market power. Many rural farmers have difficulty finding markets to sell their goods. Their remote location, high transportation costs, limited experience, lack of business skills and an organization that could give them the bargaining leverage they need to interact on an equal basis with other market intermediaries are all stumbling blocks. With better access to markets, small farmers can sell more products of better quality and at remunerative prices. Farmers are therefore more likely to invest in their farms, to increase the quantity, quality and types of products to market. Thus, through the activities of this component, it will be a question of allowing the productions resulting from the adoption of the technologies of adaptation promoted to be better sold and to generate a consequent surplus value able to support the additional cost induced by the investments made for their productions. To this end, it will be necessary to support the marketing of products by developing marketing strategies adapted to the value chains involved (vegetables, rice and fish). These strategies will be underpinned by the prior conduct of studies for a better knowledge of current and potential markets. Farmers will not only benefit from the capacity building but will be accompanied by formalization. They will receive training in management and governance. These groups will be organized and supported to establish collection and sales points. It will allow them to move towards harmonizing sales prices and to have more leverage during negotiations on setting prices per kilogram. These collection and sales points will facilitate market access for producers.

Activity 3.4.1 Develop a market access strategy adapted to the products of the different value chains involved (vegetables, rice and fish)

The project will develop a strategy that will help in the post-production of the value chain. After helping farmers cope with the challenges of climate change and enhance their production, it is important to support them with an access to the market by defining a clear strategy that will help the whole value chain. This strategy will analyze the structure of the market and propose a long-term solution for market access.

Activity 3.4.2 Provide support to groups for the establishment of collection and sales points

The project will support the development of sales points to help farmers have a good impact of the price of their product by the power of the group production.

Activity 3.4.3 Provide support to groups for the search for markets and the formalization of the relationship with identified customers

The project will help farmers in the search of market and in the formalization of the producers' groups and establish formal contracts with their clients.

Component 4: Knowledge sharing and policies/strategies development

The real project impact resides in the ability of the beneficiaries to share their experience and help in the extension of the technologies among their fellow farmers who did not participate in the project. This requires good planning of knowledge and experience sharing and the availability of regulations, policies and strategies to facilitate the dissemination and adoption of the proposed solutions among the farmers' communities. This component will help assist communities in water-stressed areas whose vulnerability is being exacerbated by climate change. The proposed project will help develop and organize farmers' communities to better react to the impact of the project. The expected outputs and activities under Component 4 are :

Output 4.1 Capacity building and knowledge sharing system established based on strengthened extension services/Lead farmers program (ToT Model) with consolidated modules and training guidelines

Positive effects will be enhanced, and climate resilience measures will be aided if activities are properly implemented. Communities and local government authorities shall be properly informed and involved in decision-making aimed at community responsibilities and benefits. The project's goal is to increase human and technical ability to integrate adaptation concerns into planning processes, which is critical for long-term development. Training materials and technical guides implemented in components 1 and 2 will be consolidated into image-based tools and videos in different dialects. Lessons learned and success stories will be documented and disseminated to share best practices, raise community awareness, and build capacity on climate resilience measures.

To achieve Output 4.1, the project will deliver Activity 4.1.1, 4.1.2 and 4.1.3 as follow:

Activity 4.1.1 Organize a capitalization workshop

From the monitoring and evaluation system setup, the data collected will be analyzed to monitor the progress of the project and identify the lessons learned at each stage (production cycle as well as training). This information will be shared during knowledge sharing workshops after each cycle.

Activity 4.1.2 Produce didactic films

The project will produce didactic films, which will show the project achievements and describe the different processes to facilitate dissemination beyond direct beneficiaries.

Activity 4.1.3 Develop training materials (guidelines on the conduct of rice-fish farming, Solid Rain) based on successes

Guidelines and fact sheets will also be developed based on qualitative data and information on the process. All these materials will help build the capacity of extension services and will be compiled in a window of FIRCA and ANADER websites for easier access to technical and financial partners, etc.

Activity 4.1.4: Organize exchange visits to each of the 23 zones involved in the project and study tours for farmers

During the vegetative development phase of crops, exchange visits will be organized each year on the Demonstration Plots for the benefit of producers who have not participated in the training sessions. They aim to give producers who have not participated in the training sessions the opportunity to exchange with the beneficiary producers and share their experiences in the practice of the technology. The visits will bring together an average of 30 participants from localities close to the training sites. These exchanges will also aim to stimulate interest on the part of invited producers in the application of the technology and thus ensure wide dissemination.

At the end of the validation of the selected sites by the project team for the rice-fish farming technology and before the start of the training on the teaching units, a study tour will be organized in Yamoussoukro to allow thirty (30) beneficiaries, three (03) per new project extension area and three (03) others from the host area, to visit the sites where the rice-fish farming association is practiced. It aims to give beneficiaries the opportunity to exchange with Yamoussoukro producers who have already adopted this cultivation practice and thus better prepare for future activities within the framework of the project. It will also give participants the opportunity to share their experiences and allow beneficiaries upon their return to support awareness around the project and especially innovation in their respective localities. A preparatory mission for the study tour will be organized two (2) weeks before by the project team.

Output 4.2 Policies/strategies and institutions gaps assessed and adapted to ensure and facilitate the participation of the private sector, including the creation of incentive mechanisms.

The policies and strategies establish the principles, objectives, and priorities of agricultural policy, as well as training and advisory services for farmers, biodiversity and protection of genetic resources, biosafety and biosecurity. According to the law, agricultural policies aim to ensure agricultural development, increase productivity, strengthen food security, protect, and improve natural and biological resources, develop producer organizations, strengthen agricultural markets and ensure rural development. This project aims to assess and adapt policy and strategy gaps to ensure and facilitate private sector participation in financial facilities for farmers.

As indicated in output 3.3, financing models based on contract farming schemes will be implemented during the project. This scheme involves a tripartite relationship between a financial institution, a technical operator (a processing company or other formally constituted and banked buyer) and the farmers' professional organization. These private actors (technical operators and financial institutions), through their intervention in this tripartite agreement, facilitate farmers' access to financing; this financing allows farmers to access climate change adaptation technologies. Furthermore, ensuring risk in small-scale agriculture faces problems that are not usually encountered by the broader insurance sector. An index insurance-based scheme will be promoted to ensure the sustainability of the projects after its end. An insurance-based index can help farmers keep the same level of income when the weather conditions are not favourable. Index-based Insurance guarantees an indemnity payable to the insured for production losses resulting from rainfall deficits during the rainy season. The same level of income gained by the farmers with the insurance-based index will allow the farmers to continue using the adaptation technologies and ensure the sustainability of the project.

There are several potential partner institutions identified to support the guaranteed lines of finance, which have worked with farmers and offered green finance, such as: ADVANS, BAOBAB, Banque Populaire (formerly CECP), COOPEC, ECOBANK and BNI (which is a national implementing entity of the IFAD-GCF funded project that creates green lines of credit for smallholder farmers through a project called Inclusive Green Finance). To benefit from the financial scheme, the VSCA must be formalized (a receipt of recognition by the prefecture) and have an account open for at least 3 to 6 months in a microfinance institution. Once the savings conditions are met, the VSCA can request a credit of 3 times the amount saved at an average monthly rate of 1.5% (i.e., 9% over 6 months). The credit obtained, whose amount is estimated

from the members' needs, is redistributed to the members on credit at a rate of 10% over a period not exceeding 6 months. With this internal rate of 10%, VSCA will have a margin of at least 1% which will be saved in the VSCA savings account and will be used as a guarantee for the loans of the following campaign or will be redistributed at the end of the year to the members. The decision is taken in a participative way with all the members of the General Assembly.

To achieve Output 4.2, the project will deliver Activity 4.2.1, 4.2.2 and 4.2.3 as follow:

Activity 4.2.1 Taking stock of private finance for smallholder farmers
The project will take stock or inventory, which aims to better identify gaps, constraints and barriers related to private finance for smallholder farmers.

Activity 4.2.2 Implement contract farming schemes according to value chains
The project will assist the government in implementing contract farming schemes, having evidence for the formulation of incentive measures/regulations for private sector involvement and market access.

Activity 4.2.3 Advocating for the implementation of an appropriate index-based insurance for producers
The project will identify an index-based agricultural insurance institution, create an awareness campaign to facilitate enrollments, and advocate for the implementation of an index-based insurance for producers.

Figure 8. Theory of Change Diagram

Impact	**Smallholder farmers' resilience to the effects of climate change through the adoption of proven innovative technologies and practices is strengthened**			
Components	1. Sustainable access to improved water management technologies to build resilience to climate change	2. Rice-fish farming to support diversification and a climate-resilient rice farming system	3. Strengthening access to finance for the development of climate-resilient rice and vegetable enterprises	4. Knowledge sharing and policy and strategy development
Hypotheses	The technologies are accessible The producers are open to innovation		The financial institutions are favorable to the financing of smallholder farmers	
Results/ Products	1.1 Capacity of extension workers to disseminate adaptation technologies to farmers is strengthened 1.2 Capacity of vegetable farmers to use Solid Rain is strengthened.	2.1 Capacity of rice and fish farmers strengthened through adoption of rice and fish farming 2.2 Rural planners are trained on the rice-fish diversification management system 2.3 The sites of application of the rice-fish farming technique are developed.	3.1 An adaptation-focused microfinance programme that supports the adoption of resilient rice and vegetable technologies and practices through partnership with local microfinance and engaged local management is developed 3.2 The capacities of existing cooperatives/business organizations are strengthened to improve climate-resilient rice and vegetable practices through increased productivity and household income through a microfinance facility. 3.3 Comprehensive climate adaptation plans are developed for each value chain with identified public and private sources of finance. 3.4 A market access strategy is developed to facilitate the commercialization of products.	4.1 A capacity building and knowledge sharing system based on strengthening extension services/lead farmers (Ff) programme model) with consolidated modules and training guidelines (MRV training) is set up 4.2 Policies/strategies and institutions are evaluated and adapted to ensure and facilitate private sector participation, including the creation of incentive mechanisms.

Activities	1.1.1 Train extension agents in the use of solid rain 1.1.2 Training extension agents on rice-fish farming 1.2.1 Install demonstration plots for the training of vegetable producers (tomato and cabbage) on Solid Rain technology 1.2.2 Train vegetable producers on the use of solid rain 1.2.3 Provide equipment and input support to farmers for the application of solid rain technology 1.2.4 Provide technical assistance to cabbage and tomato producers in the application of Solid Rain technology 1.2.5 Train agents on necessary tools to support the implementation	2.1.1 Create educational units for producer training 2.1.2 Training rice farmers in rice-fish farming technology 2.2.1 Select rural planners to be trained 2.2.2 Train rural planners on rice perimeter management techniques. 2.3.1 Conduct design studies for fishponds and micro-dams 2.3.2 Carry out fishpond development work 2.3.3 Carry out micro-dam construction work 2.3.4. Support the operation of managed rice-growing areas 2.3.5 Providing technical assistance to rice farmers 2.3.6 Support the structuring of existing beneficiary groups	3.1.1 Formalize the partnership with financial institutions 3.1.2 Develop a concept note on the establishment of green credit lines 3.2.1 Implement the farmer business management advisory 3.2.2 Support the formalization of VSCAs 3.2.3 Formalize the partnership between VSCAs and partner financial institutions. 3.2.4 Providing advisory support to beneficiary groups 3.3.1 Develop models of contract farming schemes 3.3.2 Test the funding models developed 3.4.1 Develop a market access strategy adapted to the products of the different value chains involved (vegetables, rice, fish) 3.4.2 Provide support to groups for the establishment of collection and sales points 3.4.3 Provide support to groups for the search for markets and the formalization of relationships with identified customers.	4.1.1 Organize a capitalization workshop 4.1.2 Produce didactic films and a review film 4.1.3 Develop materials (guides for rice-fish farming, solid rain, etc.) from the successes recorded 4.2.1 Taking stock of private financing for smallholder farmers 4.2.2 Implement contract farming schemes according to value chains 4.2.3 Make a plea for the implementation of index insurance for the productions concerned
Constraints/ Barriers	Crop and livestock losses due to drought and floods Decline in agricultural productivity High vulnerability of natural resources and agricultural production systems	High variability in precipitation and therefore increased risks for rainfed producers Increased vulnerability to climate change impacts Increased adaptation costs	Poor access to finance for smallholder farmers Failure to adopt climate-smart agricultural technologies Increased adaptation costs for flood and drought victims	Loss of lasting impact of the project Vulnerability of populations to the effects of climate change Weak integration of the private sector in financing mechanisms for smallholder farmers.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The project aims to strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices in the context of variability and irregularity of rainy seasons. The success of food crop production, mainly vegetables and rice, has become uncertain or has low productivity. This negatively impacts the income of producers and represents a serious problem for the country's food security. In summary, the project will strengthen climate resilience of the project beneficiaries and communities and minimize the climate-induced risks in the targeted areas at three levels: economic, social and environmental.

- **Economic benefits** through 1) improved livelihoods of vulnerable and affected people in targeted areas through higher yields, assets, incomes and investment as well as and diversification of smallholder income sources; 2) improved infrastructure and equipment/tools (e.g., demonstration plots, fish ponds, micro-dams, agricultural technologies, production materials and equipment); 3) improved financial system and strengthened access to finance (e.g., through capacity building, establishment of cooperative, Villages Savings and Credit Associations, management committees, partnership with financial institutions and operationalization of contract farming systems.
- **Social benefits** through 1) improved capacity and awareness of stakeholders through the capacity building activities throughout agricultural value chains; 2) Institutional capacity building including coordination, M&E, and the development as well as implementation of policies and strategies.
- **Environmental benefits** through a more sustainable practice which will reduce environmental degradation and climate-induced risks in the targeted areas.

Economic benefits

This project will contribute to improving the productivity of the beneficiaries' farms through all-season production and diversification of activities. The implementation of the project will provide daily and/or temporary jobs to direct farmer beneficiaries, local enterprises (Solid Rain distributors, rotative weeder manufacturers, etc.) and other residents qualified for the proposed work (clearing, soil preparation, setting up nurseries, transplanting, weeding, monitoring against birds, harvesting). In addition, the popularization of these technologies will contribute not only to the reduction of production costs (reduction of the costs of purchasing agricultural inputs and costs related to irrigation) but also to the increase in the production of vegetables and rice paddy in irrigated systems. Farmers in the project areas will thus be able to generate production surpluses, in addition to domestic consumption. This excess could be destined for markets and constitute a source of income (new or additional) for the farmer. The gender dividends generated at the project level will improve economic opportunities for women and men. These economic benefits can support at the community level, for instance, the repairs of village pumps, the various expenses caused by happy or unfortunate events in the village as well as the daily expenses of women at the household level (meals, children's health, family clothing) which have a considerable impact on women's income.

To initiate the sustainability and diversification of activities, as well as overcome the problem of access to inputs and resources, the project will initiate several revolving fund mechanisms with the beneficiaries of the project by granting grants. The principle is to help the beneficiaries to manage the funds or inputs received as a loan that they repay to themselves to continue the activity when the project stops. In each grouping, in a very participatory way, project

beneficiaries analyze and choose the mechanism that suits them.

- Scenario 1: funds are remitted to groups via accounts opened in their name in a bank structure partner to the project based on the needs identified within them. These groups distribute the funds among their members according to the amount of the respective projects. In the form of a mutual guarantee, the members agree to repay the loan within their group according to a schedule and terms consistent with the business plan of the project that has been identified. In this way, the groups are solely responsible vis-à-vis the banking structure. The members, on the other hand, are responsible to each other. Funds repaid at deadlines defined in advance by the business plan are returned to a dedicated repayment account opened in the partner bank. During repayment, savings are built up by the group on its own account, opened at the same time as the repayment account. After repayment, the accumulated savings are used to refinance activities. Groups can also apply for loans from the dedicated account to develop or diversify their activities.
- Scenario 2: the beneficiaries of the project constitute Savings and Credit Associations (VSCAs). Individual and group accounts are opened for them through mobile money and an agreement is signed between the VSCA network project and microfinance/or banking. The financial institution grants loans to their members with the joint and several guarantees of the members.

Environmental benefits

The degradation of hydro-agricultural infrastructures on rice-growing perimeters sometimes makes it difficult to operate them at certain times of the year due to the lack of irrigation water. The fishpond will provide a water reserve that will help to overcome the constraint of water shortage. The technique of juxtaposing the fishpond and the fish box will thus enhance the water resources of the irrigated rice production sites. One of the major advantages of IRCS is its eco-agronomic character, which places a premium on organic fertilization. Indeed, the use of rice-based compost will reduce mineral fertilizer inputs by saving NPK. The proportion of mineral fertilizer used by the farmers (vegetables and rice farmers) targeted by the project will be reduced at the end of the project. In addition, (i) the reduction of water wastage by infiltration or evaporation for plant irrigation, (ii) the valorization of rainwater stored and then mixed with "Solid Rain", (iii) the reduction of at least one-third of the percolation of nutrients into the soil are real opportunities to protect the environment from drought, erosion, desertification, and groundwater pollution. The use of the rotative weeder has a definite advantage in terms of the quality of weeding in the plots (impeccable weeding with a muddy surface around the plants) and favors the zero use of herbicides among rice farmers who would practice chemical weeding.

Social benefits

The project aims to promote improved livelihoods for smallholder farmers, including women farmers and marginalized communities, such as marginalized and vulnerable groups, as it links access to financial services, knowledge, technology, and other value chain inputs. The project will promote equal access for women to decent work and enjoy the same opportunities, rights and obligations in all spheres of their daily lives, have equal access to training, gain financial independence; share family responsibilities and be free from all forms of coercion, intimidation and violence; be able to make decisions that will have a positive impact on their health and safety and that of their family members. Generally, the project will contribute to:

- Improve the working conditions of the workers by reducing the drudgery of the work in general, but particularly the physical work for the irrigation of the vegetable plots.
- Create additional direct and indirect jobs engendered by scaling up the chosen technologies.
- Integrate three (3) technologies into the technical itineraries of vegetable and rice crops without modifying the cultivation habits and cropping itinerary.
- Have additional time to participate in socio-cultural and family activities.

- Increase the farmers' revenue to reduce their vulnerability.
- In addition, the exchange visits will provide opportunities to establish and/or strengthen relationships between local and national partners in the horticultural and rice sectors.

Specifically for the Solid Rain, 75% of the beneficiaries are women and youth groups, while for the rice-fish farming technology, 15% of the beneficiaries are women and youth groups. Specifically, the project will help women and youth groups to:

- **Increase women and youth groups' income through diversification.** The project will allow women and youth to engage in other production activities, thus they can generate higher income through diversification in the value chain.
- **Provide access to finance.** The Village Savings and Credit Associations (VSCAs) will allow all women beneficiaries to access loans, to finance their micro-businesses.
- **Improve skills and knowledge.** Women and youth will be trained for both technical/field and management training.
- **Improve the working conditions.** The Solid Rain technology will reduce the watering time by 50% and therefore, will reduce the workload, improve their health and allow them to give more attention to their families or communities.
- **Promote a more equitable household workload.** The project will use the household methodology, which will involve men and women as a couple with equal participation in the activities to achieve control of the project's resources by considering the specific needs of each gender. This will also help gender relations, mutual trust, and ensure effective participation of women in decision making.
- **Significantly reduce youth unemployment through innovative solutions.** The livelihood activities supported by the project will have a multiplier effect and the benefits are expected to trickle down to the most vulnerable. By documenting the lessons learned, youth are expected to take up the innovations by seeing the economic benefits derived from the implementation of climate-smart agricultural practices, IRCS and rice-fish farming systems.

At this stage, a gender analysis was conducted, which allowed the project to characterize the gender profile of the various project intervention zones. The analysis consisted of establishing the current situation of the beneficiaries and local communities regarding gender. Using gender diagnostic tools, we learned about the situation of men and women in their communities (positions held, working conditions, etc.). Then, to collect data on the identification and selection of beneficiaries, training and activities carried out, and finally, to highlight gender inequalities. The analysis results showed that the targeted crops in the project areas, such as vegetables, are highly dominated by young people and women (about 80%), and rice-fish farming is highly dominated by men (about 90%). Women control a large part of the value chain, from production to commercialization of vegetable products and rice and fish. The men control the production of rice and fish in the context of rice-fish farming. However, they are confronted with a need for human and technical capacity building, which is reflected in a lack of skilled labor and of tools adapted to their activities. This need is reinforced by the context of climate change, which increases vulnerability in the conduct of their agricultural and fish farming activities, particularly climatic variability (irregular rainfall), which results in long dry spells and wet spells that are sometimes poorly distributed. Most young people and women are confronted with a decrease in the productivity of their farms, due in large part to water scarcity. As a result, these actors feel the need for adaptation technology based on water control and management. The full gender analysis also showed the different needs, capabilities, roles, activities, available opportunities and challenges for both men and women. In addition, an in-depth assessment will be carried out at the stage of developing the full proposal to ensure that all aspects of equity, accountability and representation are fully integrated into the project.

To ensure that gender is considered for an equitable sharing of resources, the project focuses on women and youth groups from the formulation stage. All stakeholders (men and women in their multiple dimensions) will be involved in the identification, design, planning, implementation, monitoring and evaluation of project activities. This will have the advantage of considering the specific needs of the different actors and will facilitate the targeting of development sub-projects at the level of each actor. The project will ensure that vulnerable groups are involved in consultations to identify needs, difficulties and challenges. The marginalized and vulnerable groups will be identified through participatory diagnostics in each targeted area. The diagnoses will highlight the actors of the territory, their specific needs, as well as the constraints and difficulties of these actors. As part of the project, men and women will be organized based on the CAPROGED (Framework for Gender Learning and Promotion for Sustainable Development) tool results. In addition, an awareness session will be organized to capture the commitment, participation and ownership of local communities and beneficiary groups on the participation of at least 30% of women in the project in all its components. Furthermore, based on the actual results of the CAPROGED, the facilitator will lead the debates to identify the perceptions, opinions, representations, practices of the actors, divergences or contradictions, list the needs, expectations or proposed solutions on a specific subject for gender equality and the empowerment of women and vulnerable groups (e.g., changes on women's access to resources, assets and services, women's influence on decision-making, workload distribution within the household, women's health, skills, income and nutrition, gender relations within households, etc.). The needs and expectations will be prioritized and mapped based on different stakeholders in order to identify the vulnerable and marginalized groups and to better respond to their specific needs, in line with FIRCA's Gender Policy[23]. In addition, the results of the projects will be informed by sex-disaggregated and gender data analysis, intervention design and results-based management through comprehensive monitoring, evaluation, and learning system. The full gender report can be found in Annex III. Regarding the concept of indigenous peoples as stipulated in the United Nations Declaration on Indigenous Peoples, Côte d'Ivoire has no indigenous peoples on its territory.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

Under the business-as-usual scenario, water scarcity will increase the vulnerability of farmers, especially rice and vegetable farmers. Their sources of income will be significantly reduced, which will, in turn, affect the livelihoods of their communities. Although the economic worth of water and adaptation technologies is still unknown, their adoption and management can be a good place to start in the battle against climate change. As a result, if the project is not implemented, adaptation costs will be greatly increased by assisting these vulnerable communities who will be in distress, particularly during extreme weather occurrences. If the problem of water availability is not addressed, a lot of time will be spent looking for water instead of doing other household or business tasks that could create cash. These communities will be much less vulnerable as a result of the concrete adaptation efforts specified in this project. Training of extension agents is aimed at increasing the capacities of agents who will allow the technologies to be disseminated among farmers' communities for adoption. The number of skilled agents will allow the training of a large number of farmers for the project to cover as much cultivation cycle as possible in three years. The farmers will have the capacities and abilities to use and share the technologies among their peers for a cost-effective adaptation process. The diversification of sources of income will allow farmers to be less vulnerable to the effect of climate change by using the same amount of water for two different productions, rice and fish. This activity will help in the reduction of malnutrition, water wastage and food insecurity among the rice farmers' community.

[23] https://firca.ci/ressources/publications/textes-de-references/

The project will support 6,900 farmers (of whom approximately 75% of women and young people) with Solid Rain technology. The project will also support 195 farmers (of whom approximately 15% of women) with rice-fish farming technology, so that each farmer will benefit from one fish-farming application site for a total of 195 fish-farming application sites. The surface that will be covered for Solid Rain technology is 500m^2 per farmer for a total of 345 hectares, and for the rice-fish farming, it will be 400m^2 trap per farmer for a total of 7.8 hectares in total. In addition, 26 rural planners will be trained in the development of fish-farming application sites. The availability and management of water to scale up this technology will be provided by the furnishing of 55 micro dams which will be put in place during the project activities.

The sustainability of this project resides in the ability of farmers to effectively adopt the technologies after the project, and green finance facilitation will help in that way. The reshaped strategies and policies aiming to support the adoption of the proposed technologies after the project will also help in the sustainability of the outcome and the cost-effectiveness of the project. Financial sustainability will be initiated by several revolving fund mechanisms with the beneficiaries of grant-making projects. The principle is to help the beneficiaries to manage the funds or inputs received as a loan that they repay to themselves to continue the activity when the project ends. Through a very participatory approach, project beneficiaries analyze and choose the mechanism that suits them. For instance, the funds are given to the groups via accounts opened in their names in a banking structure that is a partner in the project based on the needs identified within them. These groups distribute the funds among their members according to the amount of the respective projects. In the form of a mutual guarantee, the members agree to repay the loan within their group according to a schedule and terms consistent with the project's business plan that has been identified. In this way, the groups are solely responsible for the banking structure. As for the members, they are responsible for each other. The funds repaid according to the schedule defined in advance by the business plan are transferred to an account dedicated to repayment and opened in the partner bank. During repayment, savings are built up by the group in its own account, opened at the same time as the repayment account. After repayment, the savings are used to refinance activities. The groups can also apply for loans from the dedicated account to develop or diversify their activities (see the report on the economic integration project for women victims of gender-based violence). For instance, the beneficiaries of the project create Villages Savings and Credit Associations (VSCA). Individual and group accounts are opened for them through mobile money and an agreement is signed between the project, the VSCA network and the microfinance or bank. The financial institution grants loans to its members with the joint guarantee of the members.

The added value of the increased production and reduced irrigation load induced using Solid Rain is USD 1,540/ha per cycle for tomatoes and USD 1,134 per ha per cycle for cabbage. As a result, the use of Solid Rain in vegetable crops is more profitable for the producer (see in annex 1, Economic elements of Solid Rain). This makes it possible to bear the additional cost of introducing Solid Rain. In addition, the time saved by reducing watering could be used by the farmers to carry out other activities. Regarding rice-fish farming, the combination of fish farming and rice farming gives the farmer a total additional gain of about USD 2,132, specifically USD 332 of additional gain per ha for rice cultivation and USD 1,800 generated over a cycle for a 400 m^2 fishpond.

Moreover, the data recorded during the pilot phase show that for an elementary plot of 1 hectare (ha), in vegetable farming, it takes 10 kg of Solid Rain at the cost of USD 50 per kg, or USD 500 per ha of tomatoes and 10 kg of Solid Rain at the cost of USD 50 per kg, or USD 500 per ha of cabbages. Per crop cycle in a manual irrigation system, the use of Solid Rain results in a 30% increase in average yield and a 50% reduction in watering time for tomatoes and a 30% increase in average yield and a 50% reduction in watering time for cabbage. The added value of the

increased production and reduced irrigation load induced using Solid Rain is USD 1,540/ha per cycle for tomatoes and USD 1134/ha per cycle for cabbages. As a result, the use of Solid Rain in vegetable crops is more profitable for the producer. (See Annex 1. This makes it possible to bear the additional cost of introducing Solid Rain. In addition, the time saved by reducing watering could be used by the farmers to carry out other activities.

The alternative to the proposed technologies would have been to promote the use of groundwater through wells or boreholes. These types of solar-powered water sources could provide supplemental irrigation during the rainy season, or full irrigation during the dry season while avoiding CO2 emissions. But this irrigation system can only be applied to the vegetable production system, not the rice system. For the rice system, surface water is required. In addition, this proposed alternative solution must be closely monitored and managed by government hydrological institutions to avoid exacerbated water depletion during recurrent dry periods. A local assessment of groundwater availability and replenishment ability must be undertaken before implementing this alternative, which requires a high initial cost that farmers cannot afford without adequate technical assistance and financial support. Indeed, this type of installation is suitable for relatively large common production plots, considering the high investment cost (feasibility studies, drilling, submersible pump, solar panels and related equipment), in addition to the maintenance cost. In the case of our project, the beneficiaries are small farmers installed on small and fragmented plots. This alternative is therefore not adapted to our target, unless they are grouped together on common production plots, which is not feasible, as this would create land problems to be solved.

Table 5: Project cost effectiveness

Project Components	Project Cost (USD)	Concrete Adaptation Benefits	Avoided Losses	Trade-offs
Component 1: Sustainable access to improved water management technologies to build resilience to climate change	1,316,751	• Increased food availability due to improved agricultural practices • Water availability for crops and livestock production • Reduced time spent by women and children in watering farms • Increased household income • Increased knowledge of water resources management • Increased resilience to climate change impacts	• Crop and livestock loss due to drought and flooding • Food insecurity • Malnutrition • Loss of time to water farms	• Dependence on food aid because households cannot produce sufficient food for families • Reduced productivity due to loss of suitable land for crop production • Increased vulnerability to climate change impacts • Lack of reliable and sufficient source of water which increases government spending • Increase government spending of humanitarian food supplies for communities that have been affected by loss of water and food
Component 2: Rice-fish farming to support diversification and climate-resilient rice cultivation system	1,451,240	• Reduction of risk in production • Diversification of source of income • Water management knowledge increased • Increased farmers income	• Food insecurity • Malnutrition • Wastewater	• Dependence on food aid because households cannot produce sufficient food for families • Increased vulnerability to climate change impacts • Reduced adaptive capacity of communities • Increased adaptation cost
Component 3: Access to finance strengthened for climate resilient rice and vegetables farming enterprises development	440,000	• Access to green finance • Adoption of climate resilient agriculture technologies	• Vulnerability to climate change issue • Loss of project sustainable impact • Lack of capacity to adopt climate smart agriculture technologies	• Increased cost of adaptation for flood and drought victims • Increased cost of providing food for hunger victims
Component 4: Knowledge sharing and policies/strategies development	158,800	• Adaptation technologies knowledge shared • Policies and strategies that promote climate adaptation technologies adopted • Increased coordination of climate actions at local level • Increased resilience to climate change impacts • Improved ability to explain project outcomes and important takeaways	• Vulnerability to climate change issue • Loss of project sustainable impact • Incapacity to adopt climate smart agriculture technologies • Loss of livelihoods • Food insecurity	• Increased victims of climate impact impacts due to poor planning and unpreparedness of the government • Increased adaptation cost • Unsustainable climate change adaptation interventions

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The proposed project is consistent with both national and international strategies and plans. It is consistent with the Government of Côte d'Ivoire National Development Plan 2021-2025, the National Sustainable Development Strategy, the National Strategy to Promote Green Jobs, The Climate Change National Program, the National Program of Agricultural Investment, the Climate Smart Agriculture Strategy, the Climate Smart Agriculture Investment Plan, the Climate Change and Gender national document Ivorian Nationally Determined Contributions (NDC).

The National Climate Change Adaptation Plan (NAP): The National Climate Change Adaptation Plan (NAP) has set three strategic axes 1) promote the integration of climate change in sectoral policies and strategies, in development planning and strengthen the institutional and legal framework; 2) improve and disseminate national knowledge on climate change and build the capacity of actors; 3) promote measures to mitigate the effects of climate change in all sectors. Thus, it is clearly stated that "the government's approach to adaptation is to establish a NAP that reduces vulnerability to the impacts of climate change by building adaptive capacity and resilience of populations by building on existing development planning processes. Adaptation planning will focus in the first phase on the sectors identified as most vulnerable: agriculture, water access, land use, coastal zones, and health. ..." (excerpt For a National Adaptation Plan (NAP) Process that Addresses Gender Issues in Côte d'Ivoire, February 2019, Ministry of Environment and Sustainable Development, Republic of Côte d'Ivoire.)

National Development Plan (PND): The Plan National de Development (PND) 2021-2025, Cote d'Ivoire's five-year national development plan, is currently being finalized ahead of its launch later this year, this has understandably been delayed due to the onset of the pandemic. The PND will provide one suggested structuring for the suggested green growth indicators. The PND sets our four major objectives, GGGI welcomes the inclusion of the SDGs within the overarching objectives, setting a clear direction for Cote d'Ivoire and the PND to deliver on these strategic goals. "With a view to "Accelerate the march towards emergence through the industrialization of the economy and a better distribution of the fruits of growth", and in accordance with the prospective documents (CI 2040) and ten-year planning (CI 2030), the PND 2021-2025 is structured around the following five pillars 1) strengthening productive transformation, developing industrial clusters and digitizing the economy; 2) development of human capital and improvement of its productivity; 3) strengthening inclusion, national solidarity and social action; 4) regional development through the creation of competitive economic poles, the development of infrastructure to support growth, the preservation of the environment and the fight against climate change; 5) deepening governance in all its aspects and modernizing the state".

National Sustainable Development Strategy: The national sustainable development strategy is the backbone of government action in this area. Indeed, given the impossibility of addressing all the issues simultaneously, the strategy will make it possible to establish a priority between the axes of intervention and objectives to orient the actions of the departments and agencies in the field of sustainable development. It will bring added value to the governmental action in sustainable development, since it will allow to better coordinate,

harmonize and conciliate these actions. In sum, Côte d'Ivoire is developing the strategy to 1) demonstrate the Government's awareness of and commitment to promoting development that combines economic efficiency, social equity and environmental protection; 2) give itself visibility and organize its action in favor of sustainable development; 3) fulfill its responsibilities for the protection of the planet, in accordance with the principle of "common but differentiated responsibility".

Climate Change National Program: This strategy aims to 1) take stock of the climate at the global and national levels and of the sectors most vulnerable to climate change in Côte d'Ivoire; 2) present the major challenges of Côte d'Ivoire in the face of climate change; 3) propose the great strategic orientations and the governmental priorities according to the principal risks incurred by the various components of the society in front of the climate changes; 4) propose the overall plan of the governmental actions aiming at increasing the resilience of the Ivorian society towards climate change.

National Strategy to Promote Green Jobs: The main objective of this strategy is to provide Côte d'Ivoire with a national strategy and a reference system for the promotion of green jobs and professions. Specifically, the strategy is based on the following orientations 1) the presentation of the general situation of employment in Côte d'Ivoire; 2) the diagnosis of the framework for the promotion of green jobs in Côte d'Ivoire; 3) the definition of the vision and strategic axes of green job promotion in Côte d'Ivoire; and 4) the implementation mechanism and the budgeted action plan.

National Program of Agricultural Investment (NAIP): The second generation NAIP (NAIP II) aims at a sustainable and competitive Ivorian agriculture that creates of equitably shared wealth. This vision poses the dual challenge of a coordinated development of the agro-silvo-pastoral and fisheries sector, and the positive impact of this development on the environment and society. Specifically, the NAIP focuses on achieving three strategic objectives 1) the development of agro-silvo-pastoral and fisheries value added; 2) Strengthening environmentally friendly agro-silvo-pastoral and fisheries production systems; 3) inclusive growth, guaranteeing rural development and the well-being of the population.

National Strategy on Climate Smart Agriculture in Côte d'Ivoire: the overall objective of the strategy is to "develop a national smart agriculture to increase agricultural productivity, ensure food security and climate resilience of the sector". This objective contributes to the implementation of the nationally determined expected contributions (INDC) and the Biennial Update Report (BUR) for Côte d'Ivoire. Specifically, the strategy is based on the following orientations 1) strengthening the institutional and legal framework for the development of Climate Smart Agriculture (CSA); 2) supporting research and development and innovation in CSA; 3) strengthening national capacities in the field of CSA; 4) raising awareness, communicate and popularize CSA technologies and practices; 5) establishing a sustainable financing mechanism for the NACSA.

National Drought Plan: The National Drought Plan aims at providing Côte d'Ivoire with effective tools, both institutional and legal, to better cope with natural hazards to reduce the country's vulnerability to drought. It will allow the establishment of principles or modes of action for the management of drought and its consequences. Also, it will contribute to identifying the impacts of drought to determine the stakes, to determine the adaptation measures to be implemented by the actors to elaborate a relevant management strategy. The implementation of the plan will contribute to risk reduction by helping to better understand the hazards related to drought, to better understand the root causes of vulnerability and to better identify the mechanisms for societal resilience. Specifically, the National Drought Plan will help the country prepare for the onset of drought according to three key pillars 1) establishing drought

monitoring and early warning systems; 2) assessing the vulnerability and risks of drought in different climatic regions of the country and 3) implementing measures to limit the impacts of drought and better manage the consequences.

National plan to combat desertification and land degradation in Côte d'Ivoire: The national actions' plan, as a strategic framework for combating land degradation and deforestation for sustainable development, is articulated around the following main orientation or strategic axes: 1) improvement of the living conditions of vulnerable populations; 2) improvement of the state of degraded ecosystems; 3) consolidation of the global benefits of an effective implementation of the Convention to Combat Desertification; 4) mobilization of sustainable resources in favor of the fight against desertification.

Nationally Determined Contributions: the revision of Côte d'Ivoire's NDCs was an opportunity to update the priority sectors for adaptation (5 sectors retained: Agriculture/Livestock/Aquaculture, Forestry and Land Use, Water Resources, Health and Coastal Areas) and to maintain the 4 priority sectors for mitigation (Energy, Agriculture, Forestry, Waste). This revision of the NDCs also allowed for the integration of cross-cutting themes such as gender, local communities, and green jobs. Côte d'Ivoire's commitment through its NDC aims to reduce GHG emissions by 30.41% by 2030.

Sustainable Development Goals (SDGs): The proposed project will tackle the issues directly related to the SDGs such as Goal 1. End poverty in all its forms everywhere, Goal 2. End hunger achieve food security and improved nutrition and promote sustainable agriculture, Goal 6. Ensure availability and sustainable management of water and sanitation for all, Goal 13. Take urgent action to combat climate change and its impacts, Goal 14, Conserve and sustainably use and Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Apart from the national and international plans and strategies, the proposed project is aligned with the technical national and regional standards:

Regulation on the harmonization of rules governing quality control, certification and marketing of plant seeds and seedlings and the implementing texts for the ECOWAS and UEMOA areas: The purpose of the Regulation is to harmonize the rules governing the control of certification and marketing of vegetable seeds and seedlings in the Member States.in the Member States. This harmonization aims to guarantee the good quality and to determine the origin of varieties of plant species listed in the West African Catalogue of Plant Varieties and of Plant Species and Varieties as defined in Article 9 of this Regulation.

Agricultural orientation law of Côte d'Ivoire: This law aims to: specify actions for the optimal development of the country's agro-ecological potential and agricultural know-how; create an environment conducive to the development of a structured agricultural sector; create the conditions for the modernization of family farming and agricultural enterprises, in order to promote the emergence of a structured, competitive agro-industrial sector that is integrated into the subregional and international economy to develop an agricultural sector that contributes to food sovereignty, food and nutritional security, poverty reduction and job creation; to improve the environment and living conditions in rural areas; to contribute to the fight against forced labor and the worst forms of child labor; to restore or preserve biodiversity; to control, mobilize and manage surface and groundwater resources. The provisions of this law apply to the entire agricultural sector in general, including agriculture; forestry; agroforestry; aquaculture; livestock; and fishing.

Fisheries and Aquaculture Act: This law, composed of 121 articles divided into six (6) titles, governs fishing and aquaculture activities and applies to fishing in waters under Ivorian jurisdiction; fishing in continental waters; fishing in waters outside Ivorian jurisdiction for vessels flying the Ivorian flag; any natural person or legal entity practicing fishing or aquaculture in continental waters or in water under Ivorian jurisdiction; fishing units, establishments and aquaculture farms; related fishing and aquaculture operations. Specifically, this text aims to: establish the general principles of conservation and management of fishery resources and the exercise of fishing and aquaculture activities; improve the governance of fisheries and aquaculture through participatory management based on the training and supervision of stakeholders; combat IUU fishing; protect, conserve and manage fishery resources in a sustainable and rational manner as a national heritage, for present and future generations to affirm the principle of the participation of the actors of the fishery resources sector and of the local communities in the conservation and management of fishery resources; to put in place and improve the legal and institutional framework for the exercise of responsible fishing; to formulate and implement the appropriate measures; and to promote the protection of bio-aquatic resources and ecosystems.

Law no. 2015-532 of July 20, 2015, on the Labor Code: This law guides individual and collective relations in the field of work. In all establishments subject to this Code, except for agricultural establishments, the normal working hours of personnel, regardless of their sex or method of remuneration, are set at forty hours per week. This duration may be exceeded by applying the rules relating to equivalence, overtime, and the recovery of lost working hours, and to modulation. This law is very relevant to the project in that it serves as a guide for employer-employee relations during the implementation of the project.

Law no. 98-750 of December 23, 1998 modified by the law n°2004-412 of August 14, 2004 on rural land tenure: The legal framework for rural land tenure is constituted by the Ivorian Constitution, but also by Law n°98-750 of December 23, 1998 relating to rural land tenure, modified by Laws n° 2004-412 of August 14, 2004 amending the 1998 Law and n° 2013-655 of September 13, 2013, relating to the time limit for the establishment of customary rights on customary land and modifying Article 6 of Law n° 98-750 of December 23, 1998, relating to rural land tenure. This law establishes the foundations of the land policy relating to the rural land domain, notably the recognition of a customary rural domain and the validation of the existing management of this domain, the association of village authorities and rural communities in the management of the rural land domain and in the recording of customary rights and their transformation into real rights. Some project activities will require the acquisition of land in rural areas. This law will make it possible to identify the holders of these lands with a view to a developing contract.

Law no. 98-755 of 23 December 1998 on the Water Code: lays down the general principles applicable to the protection of the water domain in Côte d'Ivoire. It sets the objectives for the management of water resources, hydraulic works and facilities according to the following points 1) hydraulic developments and works subject to the authorization regime are subject to a prior environmental impact study (Title II, Chapter III, Article 29); 2) installations, developments, works and activities likely to hinder navigation, to present dangers for public health and safety, to harm the free flow of water, to degrade the quality and quantity of water resources, to increase, in particular, the risk of flooding, to seriously harm the quality or diversity of the aquatic environment (Title II, Chapter III, Article 31) are subject to a prior authorization before any implementation; 3) the installations, works, works and activities which, not being likely to present such dangers, must nevertheless respect the prescriptions enacted by the legislation in force (Title II, Chapter III, Article 31, second paragraph) are subjected to a preliminary declaration; 4) the protection of hydraulic installations and works (Title III, Chapter III, Article 54).

This text is relevant to the present project in that the implementation of the sub-projects could have a close relationship with the water resource, both in terms of withdrawal and in terms of achieving its physical and chemical quality. The project will have to comply with these requirements for the protection of water sources and reservoirs in its area of intervention to avoid their pollution and wastage:

Loi no. 2014-390 du 20 juin 2014 d'orientation sur le développement durable : This law constitutes a guide for the implementation of the project. It guides all development actions according to the principles of sustainable development. This law will be particularly emphasized within the framework of the citizen commitment which aims at the appropriation of the various activities of the project by the beneficiaries for a rational and sustainable management of the water resource and the hydraulic works which will be carried out for the current generations.

Decree no. 96-894 of November 8, 1996 determining the rules and procedures applicable to the impact of a project on the environment: This decree is of major importance within the framework of the project insofar as it frames, on the one hand, the environmental and social assessments and, on the other hand, makes it compulsory for the population to be consulted and participate in all procedures and decisions that could have an impact on their environment.

- ***Decree no. 71-74 of 16 February 1971: it is related to the procedures of domanial and landed property*****:** Decree no. 71-74 of 16 February 1971, grants de jure recognition (articles 1 and 2) with a limited legal scope in that customary rights are defined "as simple rights of use on state land, personal to those who exercise them". In practice, however, few people take this narrowing of their scope into account. Very often, customary rights are assimilated to property rights of Roman conception. Even modern courts come to forget modern land law and make this identification, even giving primacy to claims based on customary law over the public records of the land registration books.

The project is also consistent with the Decree on the creation, attribution, organization and functioning of the National Committee on Seeds and Plants, the Specific legal texts on pesticides in Côte d'Ivoire and OHADA Uniform Act on the Law of Cooperative Societies.

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The proposed project is aligned with the relevant national technical standards and meets requirements stipulated by the Environmental code and Environmental Impact Assessment (EIA) and Environmental Audit (EA) Regulations. The adaptation actions to be carried out within the framework of the application of the technologies will conform with the various codes in force, in particular the Environmental Code. The relevant regulatory text applicable to the current project is the Framework Law n° 96-766 of October 3, 1996, bearing the Environment Code. This Code sets the general framework of legal and institutional texts relating to the Environment. It aims to:

1. Protect the soils, subsoils, sites, landscapes and national monuments, plant formations, fauna and flora and particularly the classified domains, the national parks and existing reserves.
2. Establish the fundamental principles intended to manage, to protect the environment against all forms of degradation to develop the natural resources, to fight against all kinds of pollution and nuisances.

3. Improve the living conditions of the various types of population in respect of the balance with the surrounding environment.
4. Create the conditions for a rational and sustainable use of natural resources for present and future generations.
5. Guarantee to all citizens, an ecologically healthy and balanced living environment.
6. Ensure the restoration of damaged environments.

In its Article 22, it is stipulated that "The competent authority, under the terms of the regulations in force, may refuse the building permit if the constructions are of such a nature as to be detrimental to the character or integrity of the surrounding area.

- The identification of sites to be developed, considering the selection criteria defined in the guidelines.
- Conducting a site assessment of the selected lowland to:
    - Determine whether its development is consistent with existing policies.
    - Define the current and future uses.
    - Conduct economic and environmental analysis.
    - Evaluate land issues, development techniques and operating methods.
- The definition of the role of the different actors, both state (ministry and structures under its authority) and private, and possibly technical and financial partners.
- Strengthening the capacities of decision-makers, professionals, beneficiaries and scientific research the realization of monitoring and evaluation (technical, environmental and performance) to draw positive lessons to be disseminated/perpetuated.

According to Environmental Code (2016), this project does not require a full Environmental Impact Assessment, but rather an Environmental Report detailing potential impacts and mitigation measures. Regarding the Adaptation Fund AF categorization, the project can be categorized as Category B, meaning that it has potential adverse impacts, but in small number and scale, not widespread and easily mitigated through an ESMP. and the Environmental and Social Management Plan (ESMP) was developed as part of the project design phase, which includes more detailed information on the potential environmental and social impacts identified, their significance, measures and those responsible for ensuring that risks are monitored and mitigated as they arise. The environmental management framework is outlined in the following table:

Table 6: The environmental management framework

Adaptation Fund Environmental Principles	**Required assessment for compliance**	**Potential impact and risks and required assessment and management for compliance**
Principle 1: Compliance with the Law	No appreciable risk.	The project is fully compliant with the country's policies, standards and laws, as it was approved and validated by the Steering Committee chaired by the Ministry of Environment and Sustainable Development (MINEDD) in charge of aligning projects with Nationally Determined Contributions. According to the principles of the FA, the project is classified as "category B". The project ensures that all guarantees are in place to ensure that project activities do not have a significant impact on the environment.
Principle 2: Access and equity	Project beneficiaries include vulnerable populations who are often excluded from decision-making processes. There is therefore a risk of unequal distribution of resources that can ultimately generate conflicts among beneficiaries.	FIRCA Environmental and Social Policy approach to social screening will be applied to mitigate the risk associated with the unequal distribution of resources. In addition, awareness-raising campaigns for the beneficiary and non-beneficiary communities will be carried out to facilitate the community's acceptability of the priorities focused on the most vulnerable communities. A Complaint Management Mechanism incorporated into the ESMP has been developed to enable victims to bring cases of discrimination before the competent courts.
Principle 3: Marginalized and vulnerable groups	There is a risk of exclusion of vulnerable and marginalized groups during the implementation of work of project activities.	The target groups of the project are smallholder farmers who bear the brunt of the impacts of climate change. This situation increases their vulnerability because of their dependence on climatic factors, including rain. Thanks to the targeting approach of the FIRCA through categorical consultations (from the most vulnerable to the least vulnerable), this group of actors will be considered as well as the specific needs related to their situation.
Principle 4: Human Rights	All activities proposed under this project are in accordance with the Universal Declaration of Human Rights. In addition, the proposed project will promote the fundamental human rights of access to food, water and information.	The project will not engage in any activity that may result in a violation of human rights during its implementation.
Principle 5: Gender equality and women's empowerment	The proposed project targets smallholder farmers in three value chains (rice, market gardening and fish) where the gender gap can be significant. There is a risk that women in these value chains will not benefit equitably from adaptation interventions and capacity-building of the proposed project.	Although there are risks of social exclusion of women, limited access to land and low mobilization of women, the project set its objectives. Project activities are designed and will be implemented so that men and women have equal opportunities to participate in all stages of project implementation.
Principle 6: Core labour rights	No appreciable risk.	The project has no activities that pose a threat to farmers' rights. However, it will ensure that national labour standards are respected at production sites and that appropriate salaries are paid per assigned task; and there will be no children/under-age labour involved in the project.

Principle 7: Indigenous Peoples	No appreciable risk.	According to the FA's definition of indigenous peoples, no indigenous people have been listed in Côte d'Ivoire, but the project will endeavor to include minority groups in the project.
Principle 8: Involuntary resettlement	No appreciable risk	During consultations on the project, recipients confirmed that there is no risk of displacement in the areas of intervention of the project.
Principle 9: Protection of natural habitats	There is a low risk that the project would affect natural habitats (loss of natural habitats and species of ethnobotanical significance). During the exploitation phase, poor site management and waste management (obstruction of water beds and paths) as well as the use of uncontrolled pesticides and chemical fertilizers could lead to water and soil pollution with the following consequences 1) the disappearance of certain plant species of ethnobotanical and medicinal importance and certain fish species; 2)-the proliferation of invasive or harmful species; 3) loss of natural habitats.	The Project will not involve unwarranted conversion or degradation of critical natural habitats, including those that are (a) legally protected; (b) formally proposed for protection; (c) government-recognized national for their high conservation value, including as habitat essential; or (d) recognized as protected by traditional leaders and communities. All necessary assessments will be conducted by the project team.
Principle 10: Conservation of biological diversity	There is a risk of biodiversity loss caused by bushfires and slash-and-burn agriculture that could lead to loss of biological diversity.	Land clearing, rehabilitation and creation of ponds that could lead to biodiversity loss and deforestation through the physical removal of species will be avoided by this project. The intervention will take place at the beginning of the planning process by giving priority to the rehabilitation and development of old plots.
Principle 11: Climate change	There is a low risk of emissions (GHGs) from rice traps.	The project will not generate a significant increase and/or unjustified greenhouse gas emissions or any other cause of climate change.
Principle 12: Pollution Prevention and Resource Efficiency	Moderate risk. The poor management of solid and liquid waste from pesticide use can be a source of harm to the receiving environment and public health. The sound management of this waste is the responsibility of producers and local authorities.	The project will work to reduce waste generation and ensure that slash-and-burn cultivation or the release of pollutants into the environment is minimal.
Principle 13: Public health	Health and GBV and COVID risk. The implementation phase of the project could lead to GBV and the spread of COVID-19 if Information, Education and Communication arrangements are not permanent in the project area.	The project will promote national measures to prevent the spread of the disease.
Principle 14: Physical and cultural heritage	No appreciable risk.	No mitigation measures required.
Principle 15: Soil and land conservation	The risk identified is related to rehabilitation and land use.	The project will ensure that all environmental codes and standards are respected during the project implementation.

F. Describe if there is duplication of project/programme with other funding sources, if any.

Several previous works related to the rehabilitation and development of market gardening and rice growing sites have been carried out to use them for market gardening and irrigated rice development. Through the Competitive Fund for Innovation and Sustainable Agriculture, innovations have been demonstrated in the farming environment to provide solutions for improving the performance of farmers and adapting to the effects of climate change. The current project aims to amplify the results obtained during the demonstration phases by involving a larger number of beneficiaries and creating an enabling environment for sustainable access and uptake of proposed climate-resilient technologies. The project team will ensure there will be no duplication of actions and funding sources. During the conceptualization and designing of this project, consultations were made with all the concerned regions' authorities and relevant sector ministries, whereby it was clear that no similar interventions exist in such regions.

In addition, at the beginning of the project, the Project Management Unit team will create a framework for consultation with the coordination units of all the projects with which there is complementarity or is likely to have complementarity. This will make it possible to specify the scope of intervention of each project, as well as the targets of these interventions in order to avoid possible duplication or overlap. This initiative will allow the effective exchange of information between the coordination units of the different projects. These meetings, which can be virtual or face-to-face, will have an annual periodicity.

The following table shows several relevant climate adaptation projects in Côte d'Ivoire.

Table 7. Climate change related project/program in Côte d'Ivoire

Project/program	Objective	Synergy with the proposed project	Complementarity with the proposed project
Project for Adaptation to Climate Change and Stabilization (PACCS) of the population's livelihoods in southwest Côte d'Ivoire	The project aims to stabilize the livelihoods of vulnerable populations affected by the conflict in Moyen Cavally and Bas Sassandra, through improved food security and capacity building for sustainable adaptation to climate change.	No duplication. The proposed project does not target the region affected by conflict, but all the rice cultivation regions in the country.	No complementarity. The two projects are divergent in their objectives.
GCF-FAO project to reduce emissions by promoting deforestation-free cocoa production in Côte d'Ivoire.	The project aims to halt agriculture related deforestation, improve agricultural productivity, preserve biodiversity, restore forest cover and improve farmers' livelihoods.	No duplication. The project does not target cocoa farmer beneficiaries and deforestation in cocoa production.	No complementarity. The beneficiaries and the targeted crops are different.
West Africa Coastal Areas Program	The project aims to help countries harmonize their infrastructure and natural resources management to increase their resilience to climate change in general, and coastal erosion and flooding.	No duplication. Both project objectives are different.	No complementarity. The two projects are totally different and target different areas.
GCF Readiness grant	The project aims to strengthen Côte d'Ivoire's	No duplication. This GCF Readiness grant	No complimentary. The two projects are not

Project/program	Objective	Synergy with the proposed project	Complementarity with the proposed project
	capacity and ownership to access climate Finance for GCF Country Programme Implementation	focuses on strengthening the country's access to climate finance and does not target the agricultural sector.	targeting the same areas and the objectives are different.
The Agro-Industrial Pole Project in the Belier Region	The sectoral objective of the project is to contribute to increased food and nutritional security.	No duplication. This project can complement the objective of The Agro-Industrial Pole Project in the Belier Region by targeting the rice sector.	The two projects are complementary because the two projects aim to the increasing level of food and nutritional security and will contribute to country's objective to alleviate poverty. This will be studied in the project preparation phase. The project is still ongoing, but the current project could take the lessons learned from the development of rice and vegetable farming and adopt the adaptation technologies; this will enable the outcomes of The Agro-Industrial Pole Project to be leveraged.
The project to support agricultural infrastructure in the Indénié-Djuablin region (PAIA-ID)	The project will contribute to the improvement of food security and the reduction of poverty in rural areas.	No duplication. This project could complement the objective of PAIA-ID by targeting the rice sector.	There can be complementarity because this project can use the agricultural water infrastructure developed in the proposed project for a better result.
Project to support the development of the cassava and vegetables sectors in Côte d'Ivoire (PRO2M)	The project will contribute to food security and job creation through the promotion of quality, modern, sustainable, climate change resilient food production (other than rice) and through reliable and equitable marketing, allowing for regular market supply.	No duplication. The PRO2M does not focus on rice cultivation.	These two project themes are identical, but the technologies and sites are different. However, the social and environmental outcomes could be considered as learning points for this project and studied further as part of the project preparation. Also, the management board in the PRO2M can be leveraged in the current project for greater impact and exit strategy.
Scaling-up climate-resilient rice production in West Africa funded by Adaptation Fund	The global objective of the project is to improve climate resilience and increase the rice system productivity of smallholder rice farmers across West Africa using a climate-resilient rice production approach. The	The "Scaling up climate-resilient Rice Production in West Africa" project will use the IRCS technology, while this project will not use the IRCS technology.	The two projects are complementary, as the funded project will target climate resilient rice production specifically the Intensive Rice Cultivation System. The proposed project will capitalize on the

Project/program	Objective	Synergy with the proposed project	Complementarity with the proposed project
	project aims to reach around 153,000 rice growers and indirectly benefit around 1.5 million people.	Depending on the region, some IRCS beneficiaries from the regional projects will be selected to benefit from the rice-fish farming technology, which uses the IRCS for its application. There will be no duplication between the two projects, however, this project will explore the synergy in the rice-fish farming between the two projects in some regions and identify the collaboration framework (if any).	result of this activity to diversify the types of income of farmers by adding fish farming to rice farming, where the two farms will have a positive impact on each other.
Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin funded by Adaptation Fund	The main objective of the project is to assist the six countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo) in the implementation of coordinated and joint measures to improve their existing management plans at regional, national and local levels and to build on the lessons learned from the past and current projects related to disaster risk reduction and climate adaptation.	No duplication. The two projects target different goals.	The two projects are complementary, because the beneficiaries of the current project can use the early warning system from the AF project to guide their activities.
GEF project "Food Systems, Land Use and Restoration (FOLUR) Impact Program	Seeking to transform food and land use systems, the program consists of a global knowledge platform and 27 country projects.	No duplication. The two projects are not targeting the same goals.	The two projects are complementary, because the current project's beneficiaries use the restored land from this project to develop their agricultural activities.
AfDB-Funded Northern Region Agribusiness Cluster Project	The sectoral objective of the project is to contribute to increase food and nutrition security.	No duplication. This project can complement the objective of this regional project by targeting the rice sector, vegetable sectors.	The two projects are complementary, which both projects aim to increase the level of food and nutrition security and will contribute to the country's goal of reducing poverty. This project is in the start-up phase.
Agricultural Value Chain Development Support Programme PADFA _ IFAD	The project aims to promote the development of Agricultural (rice mango and vegetable) value chains.	No duplication. The project is targeting only the post-production side of the value chain while our project is targeting the	There can be complementarity between these two projects because the current on is targeting the last parts of the value chains that are

Project/program	Objective	Synergy with the proposed project	Complementarity with the proposed project
		production side.	the commercialization, storage and the transformation. These steps are important for the beneficiaries of the project.
Integrated Program for Development and Adaptation to Climate Change in the Niger Basin (PIDACC / BN) Côte d'Ivoire component - AFDB	The main objective of this project is building the resilience of communities and ecosystems through sustainable natural resources.	No duplication. The two projects are not targeting the same goals.	There can be complementarity between these two projects because the beneficiaries of the current project can use the restored land from this project to develop their agricultural activities
Project for the Revival of Continental Fish Farming in Côte d'Ivoire Phase 2 (PREPICO 2) funded by JICA	The objective of the project is development of the fish value chain.	No duplication. The project intervenes in different regions except the region of Indenie Djuablin.	The two projects are complementary as PREPICO intervenes upstream and downstream of production and our project intervenes in production with the provision of ponds through rice-fish farming and all production equipment. The PREPICO will be able to provide fry, feed and promote the marketing of fish from rice.
Government Social Programme Support Project (PA PSGouv) financed by the AfDB	The project will contribute to household food security through state support through the provision of means of agricultural production.	No duplication.	There may be complementarity to the extent that the government provides households with the means for vegetable production, processing and marketing. The adaptation technologies proposed by the project can be used by the beneficiaries of this PA-PSGouv project.
Food Value Chain Development Project (PDC2V) financed by the World Bank	The project aims to support the development of inclusive, resilient and competitive food value chains.	No duplication.	There can be complementarity to the extent that the government stimulates the transformation of value chains and accelerates private investment in agribusiness. It also strengthens institutions for service delivery. he beneficiaries of the PDC2V project can also adopt this project's adaptation technologies.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

This project has been designed based on the lessons learned from the pilot projects and adaptation needs assessment arising from stakeholders. The project's learning and knowledge component is captured for all activities under Components 1, 2, and 4. The implementation of the project is accompanied by a communication strategy whose objective is to valorize the achievements by capitalizing on them and disseminating them to rural actors and authorities in charge of rural community development. The knowledge and lessons learned will be managed and disseminated through:

- **Workshops to capitalize on the project's achievements.** These are designed to inform and discuss with stakeholders (producers, their professional organizations, authorities, etc.) the opportunities offered by innovations in the quest for better use of market gardening and rice growing sites. In addition, these workshops are planned to share the results and raise awareness among opinion leaders on the advantages and opportunities of the innovations in the area. During these workshops, the testimonies of the beneficiaries will help to better appreciate the socioeconomic benefits of the technologies in the rural environment.
- **Training of producers.** The training aims to provide knowledge of the three (3) technologies to producers in the market gardening and rice growing areas to arouse their interest in their practice and then their gradual adoption in the environment as and when satisfactory results are achieved. The participation of the executing entity technicians other than those from the project areas will offer the possibility of a better understanding of the project's results. In addition, the participation of executing entity technicians other than those from the project areas offers the opportunity to disseminate the technologies in other localities than those of the project.
- **Exchange visits and study tours.** In addition to the training and workshops, these are designed to allow beneficiaries to share the experiences of producers in localities where the technologies have been implemented. These exchanges could generate interest in the innovations to be disseminated.
- The project's achievements and lessons learned will also be disseminated to stakeholders via **local communication channels**, such as local radio station and **technical-economic data sheets, educational films and other electronic extension guidelines of the technologies** (image-based tools, films etc.) will be provided on the executing entity website in several local languages, thus reaching a large number of producers.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The project beneficiaries, key actors and stakeholders were consulted at three stages: 1) consultations as part of the pilot project phase, (2) consultations during the development of the concept note, (3) consultation as part of the development of the fully developed proposal.

1. **Consultations in the framework of the pilot project phase**
   During the various supervision missions of the Coordination Unit of the Sustainable Agricultural Sectors Program, the beneficiaries always expressed their wish to see the program's support extended to the development of production infrastructures and support for equipment in terms of agricultural inputs and materials, given the resources they would need to mobilize to adapt technologies (especially for rice-fish

farming ponds). Also, agreements were received from more than two hundred (200) producer groups (the Agreement will be shared at the fully developed proposal stage), including seventy (70) women from the departments covered by the executing entity zones of Séguéla, Sinfra, Zuénoula, Bouaflé, Daloa, Vavoua, Boundiali, Dabakala, Ferkessedougou, Katiola, Korhogo, Minignan, Odienné, Tingrela, Bangolo, Man, Toulepleu, Biankouma, Duékoué, Kouibly and Danané. These agreements were moral support and verbal agreements for the entity to spread the proposed technologies. Two Focus Group Discussions were conducted in 2019 and attended by the local government and communities including marginalized/minority groups who represent various groups/organizations e.g., prefects, customary chiefs, land chiefs, local representatives of the Ministries of Agriculture and Animal Production, producer groups (vegetable farmers, rice farmers, fish farmers), youth and women's associations, and media (local radio stations). During the Focus Group Discussions, we visited the target areas: Tiassalé (South), Yamoussoukro (Center), Korhogo (North), Touba (North-west), Agnibilékro (East), Abengourou (East), Oumé (Center-west), San Pédro (South-west), Soubré (South-west), to understand the threats and challenges on the ground.

Figure 9. Images of consultations carried out in 2019

2. Consultations during the development of the concept note

During the development of the concept note, a national stakeholder consultation workshop attended by 53 participants, including 13 women, was held to gather their views and contributions on 14 December 2021. The national workshop was attended by representatives from various Ministries, development agencies, university, local authorities, the private sectors, CSOs, financial institutions and local communities including vulnerable groups. The discussion was mainly about the project idea, including (i) the context of the project, (ii) the definition of the technologies and the location of the project, (iii) the objectives of the project, (iv) the components and expected results, and (v) the implementation schedule.

The pilot project aimed at strengthening the resilience of small-scale agricultural producers to the effects of climate change, particularly those related to the scarcity of water resources, had as a targeting principle, the vulnerability of these actors to the availability of water resources for watering their crops. It should be remembered that the agricultural production system in Côte d'Ivoire is rainfed. This makes the sector de facto vulnerable to climate change. Consequently, the list of people consulted is made up of people identified by ANADER in the context of its traditional activities of

supervising small agricultural producers, and who were facing the problem of the scarcity of water resources.
In addition, ANADER applied for 2 innovative projects managed by FIRCA. The satisfactory results obtained by these 2 projects during the pilot phases were shared during the evaluation workshops and disseminated through the ANADER system. The technicians relayed the information to the producer groups that they supervise in their daily work. Thus, in response to the call for proposals launched by FIRCA to identify adaptation projects to be submitted to the Adaptation Fund, ANADER, through its field system informed and identified producer groups that agreed in principle (moral guarantors) to benefit from these two technologies that provide solutions to their major concerns in terms of water resource management in order to ensure the sustainability of their market garden crops, fish ponds and rice pits during dry periods of the year.

Marginalized and vulnerable groups will be identified through participatory diagnoses in the various localities targeted by the project. These diagnoses will highlight the stakeholders in the area, their specific needs, and the constraints and difficulties of these stakeholders. Needs will then be prioritized, and the various stakeholders mapped to identify vulnerable and marginalized targets and better respond to their specific needs, in accordance with FIRCA's gender policy. The PFG will help for these larger ground consultations. Regarding the notion of indigenous people as stipulated by the United Nations Declaration on Indigenous Peoples, Côte d'Ivoire does not have any indigenous peoples on its territory.

3. Consultations as part of the development of fully developed proposal

During the development of the full project proposal, a mission was organized from 10 to 18 October 2022 in the project areas to refine the information of the concept note with potential beneficiaries and administrative authorities. The regions visited by the mission were Goh, Worodougou, Haut Sassandra, Marahoue, Gbeke, Lacs, N'zI, Indenie Djuablin, Gontougo, Guemon, Tonkpi, Bafing, Folon, Kabadougou, Bagoue, Poro, Tchologo, Hambol. Technical meetings, site visits, and interviews were conducted with 1,028 actors, including 633 women (61%) of the relevant administrative entities, farmers and Professional Agricultural Organizations (OPAs), to gather their opinions and recommendations for better planning of actions, as well as to respond to the concerns raised.
At the end of the mission, it emerges from the reactions of the various stakeholders, who showed a real enthusiasm, a general approval of the project. Indeed, in the eyes of all the stakeholders visited, the project has major advantages, the most important of which are: the development of the resilience of beneficiaries to the effects of climate change, the reduction of the arduousness of work, the improvement of incomes and the creation of conditions for their financial inclusion. The mission also confirmed the number of beneficiaries as well as the sites approached to be developed as part of the project. Thus, the concerns, constraints and suggestions made to better guarantee the conditions for the success of the project in each region have been summarized in the tables below.

Figure 10. Images of the consultations carried out during the field mission in October 2022

4. Consultations in the development of the full project proposal

Following the elaboration of the proposal for a complete project document by a small team composed of technicians from ANADER, GGGI and FIRCA during a technical workshop that took place from 28 November to 2 December 2022 at Mantchan Hôtel de Grand-Bassam, a national stakeholder consultation workshop was organized to collect their opinions and contributions on 14 December 2022, at the FIRCA auditorium. The workshop was attended by fifty-five (55) people, including fifteen (15) women, representatives of technical ministries of agriculture and environment, implementing agencies, local authorities, the private sector, professional agricultural organizations, civil society organizations, university and research structures.

Figure 11. Images consultation workshop 14 December 2022

Table 8. Summary of the consultations

Period	Areas	Participants	Stakeholders	Subject/Topics
January 30 – February 22, 2019	Tiassalé (South) Yamoussoukro (Center) Korhogo (North) Touba (North-west) Agnibilékro (East)	125 (13% of women)	➢ Prefects ➢ Customary chiefs ➢ Land chiefs ➢ Local representatives of the Ministries of Agriculture and Animal Production ➢ Producer groups (vegetable farmers, rice farmers, fish farmers) ➢ Youth and women's associations ➢ Media (local radio stations)	Difficulty for women and young people in some regions to access land to grow food crops ➢ Soil impoverishment in rice cultivation ➢ Seasonality of water points (mainly in the north and center) ➢ Painfulness and cost of daily manual watering ➢ Difficulty in retaining rainwater for cultivation to cope with the seasonality of the rains and the irregularity of the rains
September 23 - October 3, 2019	Abengourou (East) Oumé (Center-west) San Pédro (South-west) Soubré (South-west) Yamoussoukro (Center)	298 (10% of women)		
December 14, 2021	Abidjan (National consultation workshop)	53 (25% of women)	➢ Ministry of Agriculture and Rural Development ➢ Ministry of Water and Forests ➢ Ministry of Environment and Sustainable Development ➢ Ministry of Women, Family and Children ➢ Ministry of the Interior (General Directorate of Decentralization and Local Development); ➢ Development Agency [Rice Development Agency (ADERIZ), FIRCA, ANADER, Société d'Exploitation et de Développement Aéroportuaire, Aéronautique et Météorologique (SODEXAM) ➢ Universities and research centers (Nangui Abrogoua University, University of Korhogo, Ivorian Center for Economic and Social Research, Swiss Center for Scientific Research, University of Daloa)	➢ Discussion of the project idea entitled "Strengthening smallholder farmers' resilience to climate change impacts through the adoption of proven technology and practices". The important point in the agenda dealt with the status of the concept note of the selected project. At this level, the focus was on (i) the context of the project, (ii) the definition of the technologies and the location of the project, (iii) the objectives of the project, (iv) the components and expected results, and (v) the implementation schedule. ➢ Discussions focused on the innovations proposed by the project, notably the technical and economic results, the targeting of beneficiaries and intervention areas, the stakeholders involved and their involvement at the regional level. ➢ During this meeting, the participants (association of vegetable farmers and breeders) were particularly concerned about adaptation issues related to the proposed innovations. Farmers and fish farmers were concerned about the accessibility of the proposed technologies and the impact on the qualitative and quantitative growth of fish from the rice-fish

			➢ Producers' organizations (Interprofession Oignon de Côte d'Ivoire, Association Nationale des Aquaculteurs de Côte d'Ivoire) ➢ Local authorities (Associations of Regions and Districts of Côte d'Ivoire (ARDCI), Union of Cities and Communes of Côte d'Ivoire (UVICOCI)); ➢ Primacy: National Observatory of Equity and Gender (ONEG) ➢ Private sectors (Terres chaudes, Chambre Nationale des Métiers de Côte d'Ivoire) ➢ Civil society [Observatoire Ivoirien pour la Gestion Durable des Ressources Naturelles (OI-REN); Federation of Energy, Environment and Sustainable Development Networks and Associations (FEREAD), Jeunes Volontaires pour l'Environnement (JVE)] ➢ Technical and Financial Partners [National Coordination of the Global Environment Facility, GGGI, Secretariat of the Debt Reduction and Development Contract (C2D) ➢ Media: FIRCA Communication Department	ponds. To these questions, the technology providers present at the consultations reassured the various stakeholders of the availability and accessibility of the technologies in quantity and quality. About the impact on qualitative and quantitative development, assurance was given that the taste and morphological qualities of the fish produced from these technologies would be maintained ➢ The various innovations and their benefits were explained, including issues related to water control for Solid Rain, and optimization of water resources and organic inputs for rice-fish farming. ➢ Emphasis was placed on the water holding capacity of plants for Solid Rain, water management of fishponds and rice pits, and reduction of chemical fertilizers using water enriched with fish excreta, decomposed organic matter, and farm feeds contained in the fishpond water.
December 14, 2022	Abidjan (National consultation workshop)	55 (27.27% of women)		➢ Validation of project components, activities, institutional arrangement for implementation and cost

Table 9: Summary of discussions with producers during the October 2022 mission

	Concerns expressed by stakeholders	Endogenous solutions practiced/proposed	Responses to concerns or discussions during consultations	Actions to be taken as a result of the project
Activities practiced Production of vegetables	- Difficulties to produce throughout the year due to the drying up of water sources in the dry season - Drying of wells up to 10 m deep - Water chore (between 11pm and 4am) during the dry period (February to April) - Difficult watering of sites for producers who do not have a motor pump (watering is done every day) - Watercourses away from plots, making manual watering painful - seasonal decline in the level of hydro agricultural dams (February to April) - Increased production cost and labor (Transport of water using tricycle in 20 liter cans during the dry period to ensure watering of plants) - High cost of watering for producers with motor pumps (on average 100 USD/cycle, for the purchase of fuel for the motor pump) - Existence of some watercourses exploited for market gardening, but the level decreases during dry periods (February March April) - High cost of inputs (fertilizers, phytosanitary products, etc.) - Family labor - Destruction of crops by animals in transhumance - No control of production costs and the market - Difficulties in transporting production (availability of means of transport, high cost of transport) - Land pressures (difficulties in allocating developed plots)	- Reduction of areas (especially for women) - Creation of wells by women and men - Irrigation of crops is done from wells dug on the plots which sometimes dry up in the prolonged dry season; - Irrigation of crops is done in some localities from rivers: with a low water in the dry season / Dam and wells: which dry up in the dry season / or rain - Motor pump rental for irrigation - Practice of other activities (food or livestock) of diversification among men - Practice of shifting agriculture to get closer to water sources (by men) - Search for business partners in major cities, especially Abidjan by men	- Produce crops requiring little water supply - Establish an irrigation system adapted to women's working conditions that can enable them to cultivate during dry seasons - Raise producers' awareness of the pooling of activities - Pool efforts for certain activities, such as marketing, transport of productions, purchase of inputs - Rationalize watering to avoid wasting water - Individual acquisition of irrigation systems in men - Human relocation of production sites near the dam - Manual watering from wells (especially for women) - Awareness of good pesticide management practices - Secure the plots with the means at their disposal (to fight	- Provide support to producers for the marketing of their products - Subsidize the acquisition of production inputs - Train producers on good production practices for vegetable crops (cabbage, tomato) - Provide producers with innovative technologies to adapt to the effects of climate change

	Concerns expressed by stakeholders	Endogenous solutions practiced/proposed	Responses to concerns or discussions during consultations	Actions to be taken as a result of the project
	- - Difficulties for the marketing of the harvest (market, road)		against the destruction of animals) - Build fences for the protection of sites	
Activities practiced Rizipisciculture	- High input costs (fry, fry) - High costs for the construction of fish ponds - Unmet demands for freshwater fish by existing fish farmers - Drying up of certain watercourses that feed fish ponds already built by some producers	- Have a hatchery close to producers (in the region) - Provide support to producers in the construction of fish ponds and micro-dams - Reduction of irrigated rice cycles from 2 to 1 - 1 cycle of fish farming carried out instead of 2 per year	- Diligently analyze hatchery need for reconciliation of fry supply points - Training of producers on the management of fish farming associated with rice cultivation	- Provide support to rice farmers for the creation of fish ponds and micro-dams - Strengthen the development at the level of certain perimeters to allow the deployment of rice technology: - Realization of fish farms juxtaposed with rice traps to ensure effective water management - Train producers on good rice production practices - Provide producers with innovative technologies to adapt to the effects of climate change
Land tenure status of sites	- Producers are mostly not landowners - The sites operated are rented - No written land lease documents, only verbal agreements for leasing plots - High land pressure due to population growth and crop expansion.	- Rental based on verbal agreements or according to the traditional management system (for non-native women and men)	- Establish written agreements for leasing land	- Raise awareness and support landowners in obtaining land certificates for the protection of their farms when possible - Sensitize producers for the acquisition of written agreements with landowners
Training received as part of the activity	- No training received on the management of market gardening plots, fish farming and rice cultivation - Knowledge of Solid Rain technology by some growers - Producers interested in Solid Rain technology	- Practice of culture learned on the job (by men and women) - Relationship with structures selling fish products for consulting support - Consulting support from ANADER	- Demonstration of the use of solid rain	- Train and support producers of vegetable products on the use of Solid Rain; - Train fish farmers in fish production techniques and rice-fish farming; - Train rice farmers on good rice practices and rice farming - Strengthen the capacities of groups/cooperatives in associative management;

	Concerns expressed by stakeholders	Endogenous solutions practiced/proposed	Responses to concerns or discussions during consultations	Actions to be taken as a result of the project
				- Train producers on market search techniques; - Train producers on income management.
Type of association	- Existence of informal groupings - Existence of cooperative associations - Producers in association but exploit individual plots of the order of 0.5 to 1.5 ha on average - No community plots - Individual producers	- Strengthening of group cohesion through the existence of funds to finance certain activities (observed among both women and men) - Pooling of certain activities through the creation of self-help groups (especially among women and young people)	Encouraging communities to form formal groups	Sensitize communities to form viable and formal economic entities - Raising awareness of the cooperative spirit among groups - Training groups in cooperative management
Sources of funding for activities	- Activities financed from own funds, but resources are insufficient - Activities financed from own funds, but resources are insufficient - Limited financial resources	- Seeks the support of the government - Informal contributions - Common fund fed by producers - Mutual assistance in carrying out activities	- Opening of accounts in financial structures to benefit from small agricultural loans - Opening of accounts in financial structures to benefit from small agricultural loans - Organization of producers in groups or cooperative societies - Open bank accounts	- Support for the formalization of producer groups - Training of producers in the creation of VSCAs - Support for account opening in financial structures - Facilitation for the establishment of credit lines at preferential rates - Developing the Management Board
Impact of climate change on resources / Major climatic events (drought or flood with the degree of intensity if possible, irregularity of rainfall, etc.)	- Pronounced drought (longer and longer period, increasingly dry soil, heat, ...) - Seasonal shift (late rainy season May instead of March) - the rainy seasons are getting shorter in recent years, - Late start of rainy seasons (in March instead of January in the past) - their end is getting earlier and earlier - increased heat	- Practice of less water-intensive crops (okra for example) by women - Shift in production cycles (due to rain irregularities) - Construction of shafts deeper and deeper very often presenting risks for producers, especially women and children	- Reduction of the number of production cycles - Adapt the type of crops according to the availability of water - Start of the implementation as soon as the first rains to be in the cultural calendar	

	Concerns expressed by stakeholders	Endogenous solutions practiced/proposed	Responses to concerns or discussions during consultations	Actions to be taken as a result of the project
	- increased geographical and temporary variability in precipitation - Drying up of water sources in the dry season - Flooding of some sites during the rainy season	- Adoption of rain-fed production systems especially among women - Acquisition of motor pumps and irrigation equipment observed in men - Reduced crop cycles	- Use of seeds (rice) that better adapt to drought	
	Bushfires, over-exploitation, crop expansion and overgrazing degrade the environment and reduce soil fertility	- Selective protection of several tree species in fields for fruit, shade, erosion control, organic manure and grazing. - The most used species are among others néré, cashew, shea, mango and baobab. - Cultural association (cereal-legume), groundnut and cowpea are the legumes primarily associated with cereals. - Practice of rotation and association of crops, use of organic manure to improve their yield.	- Pursue endogenous practices that are good solutions	- Training producers on the effects of climate change - Training producers in environmental preservation

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Funds requested from the Adaptation Fund will be used to strengthen the capacity of food crop producers to adapt to climate change through the dissemination of innovative and proven technologies in 24 regions of Côte d'Ivoire to produce tangible and sustainable impacts. Farmers of these regions will continue to be negatively affected by the impacts of climate change and fail to meet their livelihood needs should their practices not be enhanced by approaches developed by this project. As highlighted in the introductory section, the sites and communities identified are highly vulnerable to inconsistent rainfall patterns and water availability. Adopting the recommended strategies will enable enhanced resilience of farming practices to be anchored within community farming practices.

With the current practice (no AF scenario), communities will have no capacity to address the challenge of inadequate sustainable water supply for irrigation farming and domestic use in the project area. This means that farmers will continue to depend on rainfed agriculture, which may or may not result in harvesting reasonable crop yields since rains are unreliable. Most households will face food shortage and poor household income, thus leading to food insecurity and abject poverty. The most affected groups will be women and children, especially female-headed households that solely depend on farming for their livelihoods in some regions. Women are highly impacted compared to men due to their increased workload in farming activities for the household.

AF funding to disseminate rice cultivation technologies will enable adaptation technologies to spread throughout for rice farmers. By funding capacity building of the extension system, training of farmers on the tools in the field and post-training follow-up, support for the establishment of farmers' application sites, training and involvement of local actors in the value chains of the sectors concerned to ensure effective support for farmers, the AF will contribute to supporting Côte d'Ivoire to achieve Sustainable Development Goal 1. End poverty in all its forms everywhere, Goal 2. End hunger achieve food security and improved nutrition and promote sustainable agriculture, Goal 6. Ensure availability and sustainable management of water and sanitation for all, Goal 13. Take urgent action to combat climate change and its impacts, Goal 14, Conserve and sustainably use and Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Component 1, related to water management and the adoption of Solid Rain technology, is important for strengthening farmers' adaptation capabilities. The cost of adopting this technology is justified by the fact that it is sold by a third party to the farmers at a certain cost. The availability of the technology for farmer beneficiaries is costly and justified. For farmers, business as usual is that they must cope with the water scarcity issue, with usual expenses for their production. Solid Rain technology is considered an adaptation technology for water scarcity issues due to climate change. This technology has a cost for its adoption. The difference between the production cost in business as usual and the production cost with the Solid Rain technology can be considered as the cost of adaptation. The additional amount that has to be paid by the farmers to adopt the technology made available by the seller (third-party distributor of the technology) can be viewed as the cost of adaptation to Solid Rain.

Under current conditions, for a vegetable farm (cabbage or tomato) of 500m^2, there is 600m^3 of water to cover the production cycle under optimal conditions. Indeed, it takes 10 litres of water per m^2 of planting with a watering frequency of two waterings per day over 5 days or 10 waterings per week and for a period of 12 weeks for the cycle. This means that for 500m^2 of planting, it would take 600,000 litres or 600 m^3 of water to meet the needs of plants. This

watering mobilizes 60 days of work for the culture cycle for 84 days for the duration of the vegetative development of the crop (excluding nursery). With the use of Solid Rain technology, for the same 500m^2, it would take 120m^3 of water throughout the vegetative development cycle. It takes 10 litres of water per m^2 of planting with a frequency of watering 2 waterings per week and for a period of 12 weeks for the cycle. This means that for 500m2 of planting, it would take 1200,000 litres or 120 m^3 of water to meet the needs of the plants. This watering mobilizes 24 days of work for the culture cycle for 84 days for the duration of the vegetative development of the crop (excluding nursery). The use of Solid Rain technology therefore allows better water management with a saving of 480 m^3 of water for the operation of a market garden plot of 500m^2 over the cycle, i.e., a gain of 80% on the initial amount of water. In terms of working time, we have a gain of 36 days over the duration of the crop cycle which could be used to increase the cultivated area. This time may be spent on other social and/or economic activities for the well-being of the farmer.

For Component 2, the diversification of the activities of rice farmers is important in the project to reduce the chemical fertilizers used. The reduction will reduce the emissions from this crop at the country level. The cost of fish farming and water management for the mixed technology is justified by the impact that the project is targeting. The sustainability of the project after it ends is linked to components 3 and 4. Having access to finance to adopt the proposed technology and access to market will help the farmers increase their income and build resilience to climate change. The farmers' group strengthening, implementation of association savings and credit, and partnership with microfinance institutions and insurance companies are critical for the exit strategy and their cost is justified.

The problem identified in the framework of this activity concerns the control of water and chemical inputs. With this new technology, the water from the fishpond, enriched with nutrients (farm feed, fish excrement, decomposition of organic matter, etc.), is poured into the rice paddy at the end of the fish production cycle. This system allows the rice paddy to be fertilized with organic matter, reducing the use of chemical fertilizers while enhancing the efficiency of nutrients. Also, the same amount of water used to produce fish is optimized to irrigate the rice in the rice paddy, which is juxtaposed to the fishpond, thus providing efficient management of available water resources. This has the advantage of allowing the producer to continue his activity in any season and reduce his dependence on chemical inputs. The project is therefore more "climate-smart" than traditional methods and more sensitive to water pollution issues and supporting the adaptive capacity of the water system for both agricultural and household usage.

Financing the AF, in addition to optimizing water management, allows the diversification of rice farmers' incomes from water resources and during the same production cycle. This technology also improves the yield of rice production by at least 25% without the use of chemical fertilizers representing a decrease in production cost. In addition, diversification with fish production generates additional income. Thus, for a rice farmer with a plot of 1200 m2 associated with a fish pond of 400m2, he generates a gross marginal gain of 717.82 USD including 77.82 USD of additional gain on rice production compared to his usual practice and 640 USD generated by the sale of fish. (Annex 1.) With the Solid Rain technology, the water retention capacity generated by the plant following its application allows the producer to reduce the frequency of watering by half. This can reduce the workload and allow the plants to resist water stress due to irregular rainfall.

J. Describe how the sustainability of the project/programme outcomes has been considered when designing the project/programme.

The sustainability aspect was taken into consideration by involving key stakeholders from the design stage. This is demonstrated by involving administrative authorities, which have a legal mandate to oversee development activities in the project sites in addition to beneficiaries. The project intends to achieve its objectives by improving the knowledge of the actors, strengthening partnerships with local and national actors of the value chains of the commodities concerned. The progressive transfer of technologies to the community and the establishment of a financial vehicle during the project facilitates the sustainability of actions once the project is over. The development of partnerships with development structures and the involvement of local organizations of beneficiaries, through the participation of their representatives in the monitoring and integration of project activities after its completion will ensure the sustainability of the results.

The option envisaged by the project is to work with producer group members. It will be a matter of improving the capacities of these groups in terms of governance (Farmer business management advisory, management of the supply of inputs, management of marketing, credit committees, mechanisms of functioning of these committees, training of the members of these committees in the execution of their tasks, etc.). The implementation of the project is accompanied by a communication strategy aimed at enhancing the value of the achievements by capitalizing on them and disseminating them to rural actors and authorities in charge of rural community development.

Finally, at the environmental level, the reduction in the use of chemical fertilizers and the use of compost for vegetables and rice will preserve the quality of water and soils for sustainable production of the cultivated areas. Some partnerships will be necessary to design the sustainability of the project. Partners like banks, insurance companies and governments counterparts are important. A strategy and policy on an index-based insurance scheme will help in the financial aspect after the project ends. It will support the de-risking of the use of the proposed technologies in case of extreme weather conditions.

The model that underpins the design of this project and the different outputs is the success of the pilot project, which has demonstrated productivity gains and therefore improved the financial conditions of farmers through the introduction of these technologies. The capacity-building activities, the support towards formalization and the establishment of farmer business management advisory will be the means to ensure the sustainability of this project. In addition, the mechanism that will be put in place with the banks/financial institutions will guarantee access to the necessary financing to carry out the campaigns and ensure the continuity of the activities. The following scheme provides information on how the financial sustainability of the adoption of the proposed technologies will help beneficiaries access green finance after the project ends and how green finance can help maintain its sustainability.

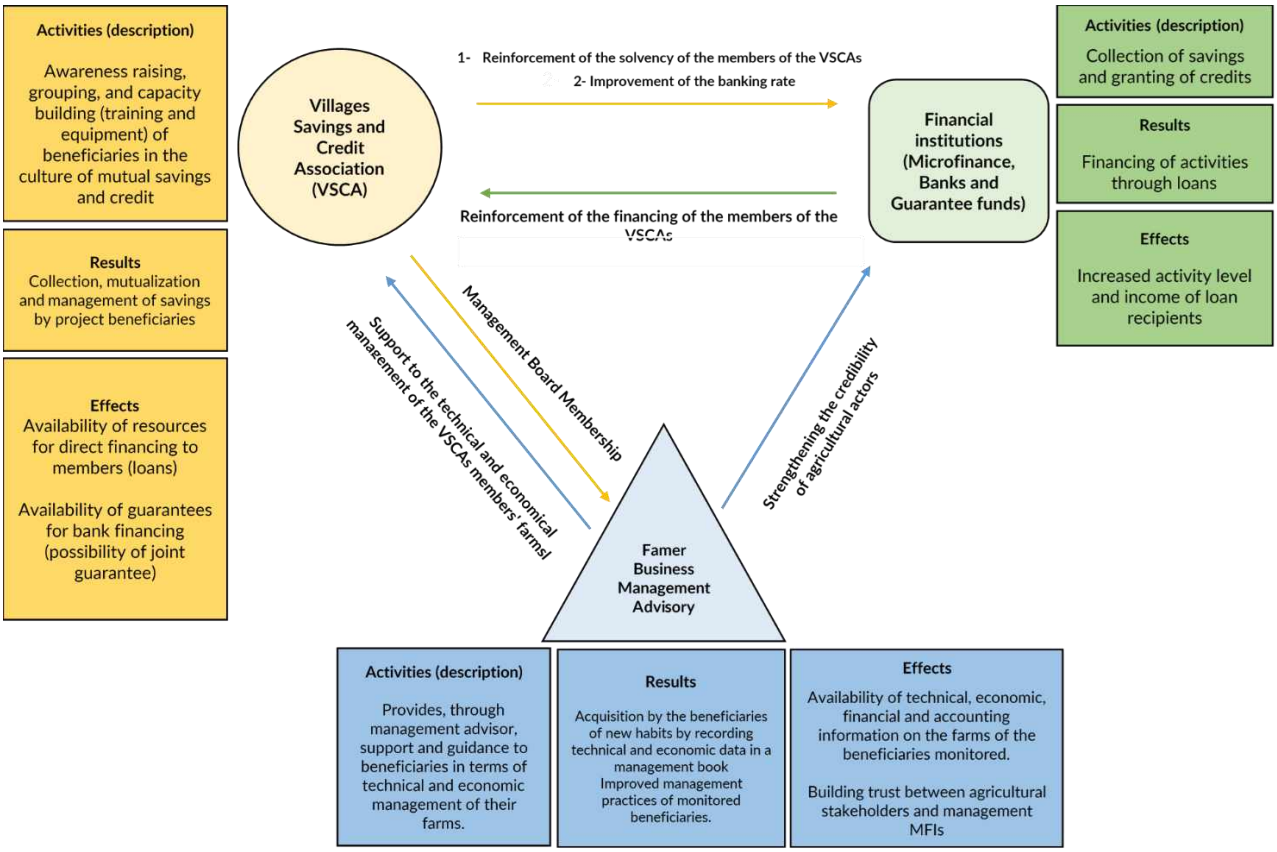
A study will be carried out for the formulation of proposals for analytical grids and financial products (interest rate for exit from credit, grace period, repayment period, insurance, loan implementation period, etc.) adapted to the value chains of the targeted crops in the project area.

On this basis, the project will identify with financial institutions, products suitable for the conceptualization of viable lines of credit and develop a concept note on the implementation of a green line of credit.

As part of the partnership, the groups will share with financial institutions information on the technical nature of producers, their level of supervision and the profitability of the proposed production models.

These partnerships will strengthen the relationship between VSCAs and financial institutions. Indeed, groups carrying VSCAs, will domiciliate their savings in the partner financial institutions with which they will sign the agreements. The savings of the VSCA will thus constitute, for the partner financial institution, a guarantee for the granting of credit. This will allow the members of the VSCA having preferential access to the credit lines and financial products contained in the agreements to sustain their adaptation activities.

Figure 12. Sustainable Access to Finance Scheme



K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

Identification and analysis of potential risks that would emanate from the implementation of project activities will be carried out in detail to ensure that proper adaptation and mitigation measures are in place for the observed negative impacts, and an Environmental and Social Management Plan (ESMP) prepared, in accordance with the requirements of Environmental and Social Standards for FIRCA and ANADER and the AF. The project can be categorized in category B for its possible impact on the environment.

Table 10. Environmental and social impact and risks

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	✓	Risk: Incompliance with all applicable domestic and international laws and regulations. Likelihood: Low Potential impact: High Measures: The IE will ensure that the project will comply with applicable domestic and international law, as well as a description of the legal and regulatory framework for any project activity that may require prior permission.
Access and Equity	✓	Risk: Inability to ensure and monitor fair and equitable access to all community members. Likelihood: Low Potential impact: Low Measures: The IE will ensure that the project should provide fair and equitable access to project benefits by all community members that are inclusive, and will be designed and implemented in a way that will not impede access of any group to the essential services and rights mentioned in the principle by: 1) conducting stakeholder mapping to identify the potential beneficiaries, rivals, disputants, marginalized, or vulnerable people. 2) using a risk analysis to identify and assess the risk of impeding access to essential rights and services, and of exacerbating existing inequalities
Marginalized and Vulnerable Groups	✓	Risk: Impose any disproportionate adverse impacts on marginalized and vulnerable groups. Likelihood: Low Potential impact: Moderate/High Measures: The marginalized and vulnerable groups were identified through an initial stakeholder mapping and also consulted through 2 Focus Group Discussions in 2019 and a national workshop in 2021. The list of participants that were consulted, a report on the outcomes and concerns raised during the consultation workshops will be shared at the fully developed proposal stage. In addition to the initial stakeholder mapping and consultations that were conducted in 2019 and 2021, more in-depth analysis on the stakeholder mapping and intensive consultations will be done during full proposal development, including 1) identify and quantify the marginalized, minority and vulnerable groups; 2) describe the key findings and characteristics of the marginalized, minority and vulnerable groups 3) identify adverse impacts that each marginalized, minority and vulnerable group are likely to experience, and 4) identify the monitoring mechanism that may be needed during the project implementation.
Human Rights	✓	Risk: Occurrence of human rights violations Likelihood: Low Potential impact: Moderate/High Measures: The project will adhere to national and international human rights standards, policies, rules and regulations, including UDHR. IE will ensure that human rights issues will be part of consultations with stakeholders during the identification and/or formulation of the project, provide an overview of the relevant human rights issues (if any) and monitor the implementation.
Gender Equality and Women's	✓	Risk: Unequal access for men and women Likelihood: Moderate Potential impact: Moderate/High

Empowerment		Measures: Gender will be mainstreamed in all project components. An initial gender analysis was provided, and an in-depth analysis will be completed at the full proposal development stage.IE will assess current situation, potential risks and legal and regulatory context and will pro-actively take measures to promote gender equality to ensure equal access to benefits and that there are no disproportionate adverse effects.
Core Labour Rights	✓	Risk: The project activities do not meet the core labour standards due to limited knowledge of labour rights standards. Likelihood: Low Potential impact: High Measures: The project will adhere to core labour rights and incorporate ILO standards in the design and implementation, as well as create awareness of how the standards may apply.
Indigenous Peoples	No risk observed but a full risk assessment will be undertaken at the fully developed proposal stage	Following the UNDRIP guideline on the definition of indigenous people, we confirm that there is no indigenous population in the targeted project areas. A full risk assessment will be undertaken at the fully developed proposal stage.
Involuntary Resettlement	No risk observed but a full risk assessment will be undertaken at the fully developed proposal stage	There is no risk of involuntary resettlement because the land that will be used in the project is the property of the selected farmers that are already in use for agricultural production. The project will only bring the technologies to the already used land. Thus, there is no risk of involuntary resettlement. A full risk assessment will be undertaken at the fully developed proposal stage.
Protection of Natural Habitats	No risk observed but a full risk assessment will be undertaken at the fully developed proposal stage	The land and spaces that will be used for the project are already used in agricultural production. Apart from the fishponds that will be dug in already used lands, which are close to the rice farm, and thus there is no risk of destruction of any natural habitat. A full risk assessment will be undertaken at the fully developed proposal stage.
Conservation of Biological Diversity	✓	Risk: Loss of biological diversity Likelihood: Low Potential impact: High Measures: Project activities related to restoration of ecological balance aim to enhance biodiversity conservation. IE will identify: 1) the presence in or near the project area of important biological diversity; 2) potential of a significant or unjustified reduction or loss of biological diversity and 3) describe the measures to be taken to minimize impacts.
Climate Change	✓	Risk: Increase in greenhouse gas emissions Likelihood: Low Potential Impact: High Measures: The project will contribute to climate change adaptation measures. No GHG emissions anticipated. The project will demonstrate compliance by carrying out a qualitative risk assessment for each of the mentioned drivers of climate change, plus any impact by the project on carbon capture and sequestration capacity.
Pollution Prevention and Resource Efficiency	✓	Risk: Increase pollution and resources inefficiency Likelihood: Low Potential impact: High Measures: The project will adhere to established national and international pollution standards, as well as minimize all sources and forms of energy, water, and other resources in a reasonable and cost-effective way, as well as the production of waste and the release of pollutants.

Public Health	✓	Risk: Negative impact on public health Likelihood: Low Potential impact: High Measures: The project design will ensure that public health is not adversely affected by performing health impact screening and assessment in compliance with the relevant WHO recommended practices.
Physical and Cultural Heritage	No risk observed	
Lands and Soil Conservation	✓	Risk: Degradation or conversion of productive lands that provides ecosystem services Likelihood: Low Potential impact: Moderate/High Measures: The project will promote conservation of soil and land resources as the soil conservation will be incorporated in project design and implementation. The IE will identify the presence of fragile soils and potential soil loss activities, as well as measures that will be taken to minimize productive land degradation or ecosystem service impacts.

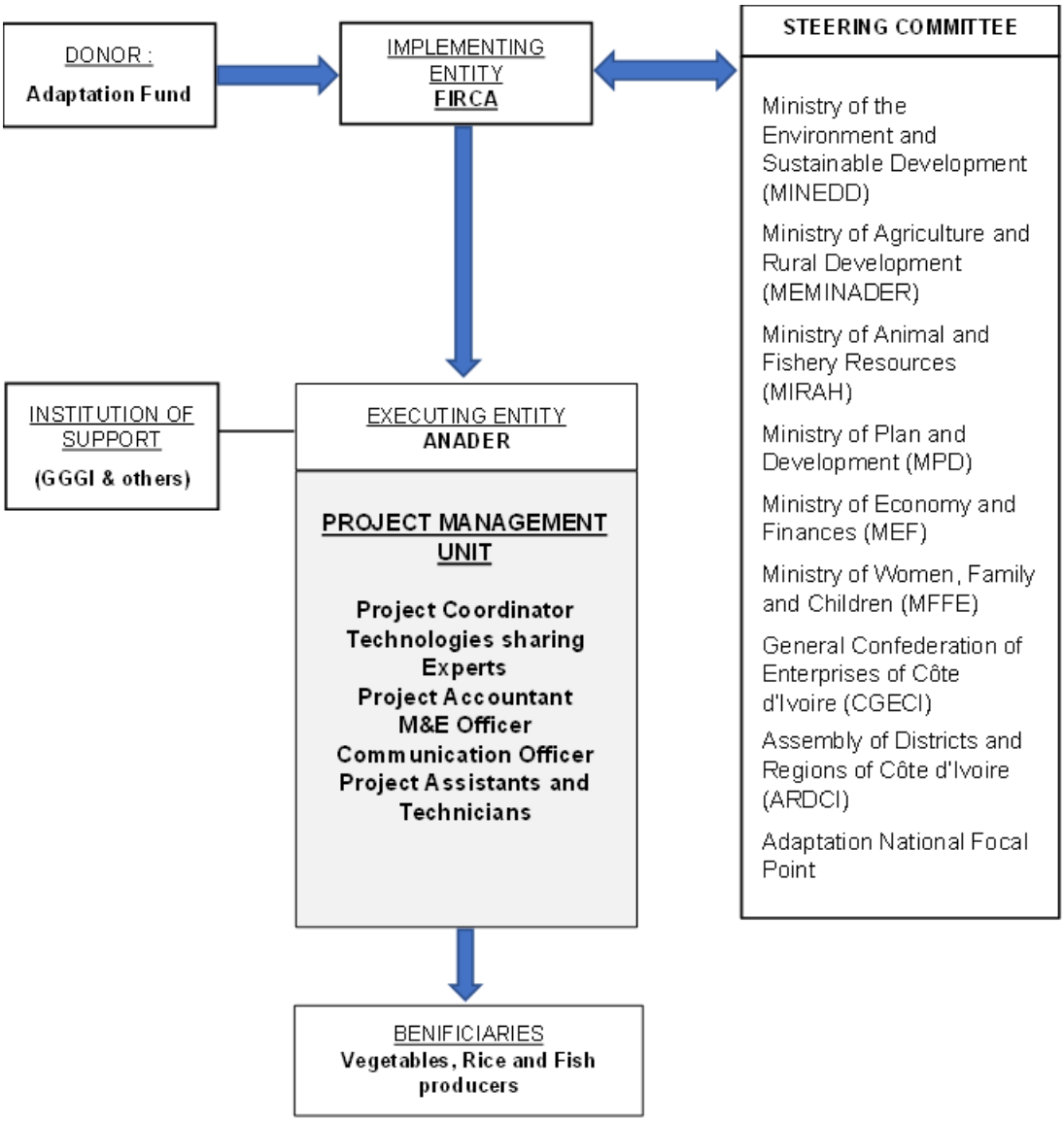
PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project/programme implementation.

The National Designated Authority (NDA) for UNFCCC and all climate change projects in Côte d'Ivoire is the Ministry of Environment and Sustainable Development Office. The NDA oversees all actions and interventions related to climate change and communicates with UNFCCC and its associated Boards or Committees. The project will be implemented by the AF-accredited NIE (FIRCA) and will be executed by the National Agency for Rural Development Support (ANADER), which its mission is "to contribute to the improvement of living conditions in rural areas through the professionalization of farmers and professional agricultural organizations by designing and implementing appropriate tools and approaches, and programs adapted to ensure sustainable and controlled development". ANADER will work closely with all the regions where the project will be implemented. Depending on the needs, ANADER will be supported by technical partners including the Global Green Growth Institute (GGGI), for the implementation of Components 3 and 4 of the project.

A broad principle of subsidiarity will be applied throughout the project's approaches, actions, organizational structures, and methods of implementation, encouraging decision-making processes to be as close as possible to the action at various levels: (i) geographical; (ii) institutional; (iii) project management (delegate project implementation to direct users when possible, support of national government entities when needed, and technical execution support of GGGI); (iv) knowledge management, by enhancing local capacities and knowledge sharing, and cross-sectored collaboration. The institutions participating in the project implementation include steering, consultation, coordination, execution, and monitoring organizations in addition to administrative structures at the government and local levels. The Ministry of Environment and Sustainable Development (MINEDD) will oversee the project's implementation in coordination with other departments and technical organizations, including the Ministries of Agriculture and Rural Development (MINADER), Animal Resources and Fisheries (MIRAH).

Figure 13: Project implementation arrangement diagram



The Interprofessional Fund for Agricultural Research and Advisory (FIRCA) will channel funds from the Adaptation Fund (AF) to the Republic of Côte d'Ivoire. The Republic of Côte d'Ivoire will serve as the project's executing entity through National Agency for Rural Development Support (ANADER) in collaboration with MINEDD, MINADER and MIRAH, and FIRCA will serve as both the implementing entity authorized by the AF Board to receive direct financial transfers from the Fund and the entity in charge of monitoring and supervising the project's execution by the executing entity. To ensure that the project is in line with sectoral plans and priorities, the National Steering Committee (NSC) will determine the orientations for the operational steering of the project. To maximize its interventions and the influence it has on the beneficiaries; it will integrate the project's action in the agricultural sector with that of development partners. During its monitoring missions in the field, the NSC will monitor implementation and provide recommendations in addition to approving the project's annual work plan and budgets and activity reports. The NSC will be composed by the Ministry of the Environment and Sustainable Development (MINEDD); Ministry of Agriculture and Rural Development (MEMINADER); Ministry

of Animal and Fishery Resources (MIRAH); Ministry of Plan and Development (MPD); Ministry of Economy and Finance (MEF); Ministry of Women, Family and Children (MFFE); General Confederation of Enterprises of Côte d'Ivoire (CGECI); Assembly of Districts and Regions of Côte d'Ivoire (ARDCI) and the Adaptation National Focal Point.

The Project Management Unit (PMU) will be comprised of Project Coordinator, Technologies Sharing Experts, Project Accountant, M&E Officer, Communication Officer, Project Assistants and Technicians. The PMU will be guided by the National Implementing Entity (FIRCA). The environmental and gender specialists of the PMU will be responsible for coordinating ESMP activities. The M&E Officer will be responsible for documenting and disseminating the project results and lessons learnt to fulfill the knowledge management aspect.

B. Describe the measures for financial and project/programme risk management.

Table 11. Project risk management

Risk	**Evaluation Risk Initial (H = high, M = moderate, L = low)**	**Proposed mitigation measures**	**Final risk assessment**
Timely disbursement of funds	**L**	Funding requests and project status reports will be prepared, communicated and submitted in a timely manner to the Adaptation Fund and other relevant stakeholders to ensure that adequate feedback is provided to expedite the disbursement of the Fund. The project team will follow the required standards and templates provided by the Adaptation Fund to ensure proper reporting and avoid unnecessary delays.	**L**
Financial Control Risk	**L**	Three (3) levels of security ensure transparency and control of operations and also mitigate the risks of distortion and malfunction related to management: (i) The fact that a single person cannot conduct an operation in its entirety (from start to finish, from execution to final control); (ii) the implementation of accounting self-audits; (iii) Implementation of proximity monitoring carried out by FIRCA in addition to an annual audit of the accounts.	**L**
Project Performance Project Governance	**L**	The project team will be carefully assembled based on the skills and capacity to manage the climate change response project as well as appropriate monitoring tools to facilitate the implementation of this project. The project team will develop annual budgeted work plans that will be approved by stakeholders.	**L**
Stakeholder participation	**L**	Project initiation workshops will be held in the different project implementation areas. These workshops, which will bring together all stakeholders, will serve as a framework for presenting the project and raising awareness among them for better support. In addition, stakeholders have been involved since the early stages of project design and will be involved in all phases of implementation, monitoring and evaluation. The involvement of key stakeholders at the community level and the inclusion of communities and groups vulnerable to climate change adaptation such as youth, women, local leaders, community beneficiaries and farmers' associations as well as line ministries will facilitate the	**L**

		mitigation of risks related to stakeholder participation.	
Technologies are accessible	**L**	There is an operator in CI who markets the product. In the pilot phase, this operator asked ANADER to implement the project in the field. To guarantee producers' access to Solid Rain, the project will promote the creation of points of sale. The project will facilitate the supply of forest managers by training 26 new rural planners in techniques for developing rice-growing perimeters. In addition, 13 ANADER TSEs will be trained in rice farming. All these technicians (planners and TSE) will supervise producers for the establishment and operation of rice sites.	**L**
Producers are open to innovation	**M**	The project will install technology demonstration plots and organize exchange visits to each of the project areas. These activities will allow direct and indirect beneficiaries to discover these technologies and their benefits.	**L**
Financial institutions support financing for small producers	**M**	The project will accompany the beneficiaries in the creation of VSCAs and the implementation of the Famer Business Management advisory in the project areas. This will facilitate the access of communities in project areas to funding to maintain the possibility of adopting the proposed technologies in a sustainable manner.	**L**

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The following proposed project will be considered as Category B (because its potentially adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are low). The population and workers will be sensitized to health risks, mainly COVID-19 related risks. Individual project activities will be analyzed according to the ANADER, FIRCA and AFs' Environmental and Social Policy requirements to identify potential risks and appropriate mitigation measures.

All costs related to mitigation measures and monitoring of environmental and social parameters are included in the budget lines of Table 16: Detailed budget for project activities. The Environmental and Social Management Plan (ESMP) below is set according to the requirements. At the institutional level, the main implementing partners of the ESMP are: (i) ANADER, which implements and supervises the ESMP; (ii) FIRCA, which, in collaboration with MINEDD, monitors and follows up on the ESMP; (iii) The MINEDD, which monitors and follows up on the ESMP.

Table 12. Environmental and Social Management Plan

Environmental and Social Principles	Identified Risks/ Impact	Possible Measures to Avoid, Minimize or Mitigate Environmental and Social Risks	Monitoring Indicators	Assessment of Significance	Period	Oversight Officer	Cost
Principle 1: Compliance with the law	None	The project is fully compliant with policies, standards and laws of the country, because the Steering Committee chaired by the Ministry of Environment and Sustainable Development (MINEDD) in charge of aligning projects with Nationally Determined Contributions has approved and validated it. According to the principles of the FA, the project is classified as "category B". The project ensures that all guarantees are in place to ensure that project activities do not have a significant impact on the environment	Number of sites for which an environmental and social assessment was conducted in accordance with the 15 principles	No appreciable risk	Throughout the project life cycle	Supervision: FIRCA, ANADER, ANDE	Considered in the project
Principle 2: Access and equity	The unequal distribution of resources due to the level of vulnerability of some communities may be a major risk for the project	The categorical approach to identifying FIRCA beneficiaries (disaggregated by sex) mitigates this risk. This dimension is considered from the design stage and facilitates the orientation of activities by category of actor	Rate of application of equitability criteria for the selection of beneficiaries at different stages of the project Percentage of Vulnerable persons who received Training	Weak	During the selection of sites and beneficiaries	PMU under FIRCA supervision	Considered in the project
Principle 3: Marginalized and vulnerable groups	Exclusion of Groups marginalized in the implementation of the project	Thanks to the targeting approach of the FIRCA through categorical consultations (from the most vulnerable to the least vulnerable), this group of actors will be considered as well as the specific needs related to	Percentage of youth and women benefiting from the project	Weak	Biannual	PMU under FIRCA supervision	Considered in the project

		their situation.					
Principle 4: Human rights	Failure to respect fundamental human rights in the implementation of certain activities.	The project will ensure that no activity is or will be included in the project that does not comply with human rights in accordance with the Constitution of the Republic of Côte d'Ivoire and to all international conventions.	Number of complaints related to human rights violations	Weak	Throughout the project life cycle	PMU under FIRCA supervision	Considered in the project
Principle 5: Gender equality and women's empowerment	Representation unfair Women in the decision-making process; identification, planning and implementation of activities	An important focus of the project is to raise awareness among communities with a view to changing perceptions of women. A fair and equitable selection of beneficiaries will be carried out for strengthening the capacity along value chains selected. A list of all participants will be developed, and the gender ratio will be monitored by the PMU.	Percentage of Women in the decision process Number of complaints received	Weak	Throughout the project life cycle	PMU under FIRCA supervision	Considered in the project
Principle 6: Core labour rights	Non-existence of formal contract for employees (employment contracts, declaration to the NSIF) Non-compliance with salary grids Failure to meet the minimum age for work (child labour)	The project will ensure compliance with the Labour Code in all its components. An information campaign will be carried out for the beneficiaries of the project. Salaries will be determined according to the legal scales (SMIG and SMAG). The project will maintain records for labour payments and these will be audited in respect of payments in accordance with the rate schedule, the amount of work.	Number of sessions completed Number of complaints Frequency of record checks	Weak	Throughout the project life cycle	PMU, Social and gender specialist	Considered in the project
Principle 7: Indigenous peoples	No indigenous peoples in Côte d'Ivoire	N/A	N/A	N/A	N/A	N/A	N/A
Principle 8: Involuntary resettlement	No appreciable risk	The project will focus as much as possible on intervention areas that do not require population displacement.	Number of sites not relocated	Weak	During site selection	PMU	Considered in the project
Principle 9:	Potential for	The project will promote	Number of	Weak	During the	PMU and	Considered

Protection of natural habitats	degradation of natural habitats through agricultural practices	sustainable agricultural practices to limit the impact of natural resource degradation.	sustainable practices promoted		implementation of activities	implementing partners	in the project
Principle 10: Conservation of biological diversity	Introduction of new species or varieties into agricultural production systems Risk of biodiversity loss caused by bushfires and slash-and-burn agriculture that could lead to loss of biological diversity	The project will ensure that no new non-compliant varieties are introduced into production systems and will favour intensive agriculture at the expense of shifting slash-and-burn agriculture.	Number of provisions promoted	Weak	During the implementation of activities	PMU and implementing partners	Considered in the project
Principle 11: Climate change	Methane emissions from rice traps	The project will prioritize activities that emit low greenhouse gases through innovative technologies	Number of innovative technologies promoted	Weak	During site preparation	PMU and implementing partners	Considered in the project
Principle 12: Pollution prevention and resource efficiency	Pollution of environmental components linked to poor management of plant protection products	A capacity-building programme will be conducted throughout the duration of the project on the sound management of pesticides and waste.	Number of sessions organized Number of people trained	Moderate	During the implementation of activities	PMU and implementing partners	Considered in the project
Principle 13: Public health	Spread of STIs, COVID-19	Promote awareness campaigns and national guidelines on the prevention of COVID-19 STIs	Number of sessions held	Moderate	Throughout the project life cycle	PMU and implementing partners	Considered in the project
Principle 14: Physical and cultural heritage	No appreciable risk	The project will plan to preserve the integrity of these sites in the event of a discovery at project sites	Number of actions taken	Weak	Throughout the project life cycle	PMU and implementing partners	Considered in the project
Principle 15: Soil and land conservation	Poor agricultural practices leading to soil degradation	The project will ensure the promotion of good agricultural practices in the project intervention areas	Areas prepared considering good agricultural practice	Moderate	During the land preparation phase	PMU and implementing partners	Considered in the project

FIRCA Environmental and Social Policy (ESP), based on national laws on environmental preservation, will be used to ensure that all activities carried out comply with the principles of the Adaptation Fund. According to the guidelines of the FIRCA ESP, the project will update the Environmental and Social Management Framework Plan if necessary and will conduct the required environmental and social assessments at the end of the screenings. All these activities will be carried out by the Environmental and Social Safeguards Specialist in collaboration with the Monitoring and Evaluation Service under the supervision of the project coordinator.

As part of the development of the ESMP, FIRCA has developed a Complaint Management Mechanism to facilitate the resolution of complaints related to the implementation of the project. The project does not have significant impacts on restrictions on access to land requiring physical or economic displacement of populations, as well as the assignment of sites of historical, religious or cultural significance. However, from the analysis of the activities, it appears that the potential environmental and social risks of the project will be related to the activities of: i) plot preparation; ii) pond management; iii) vegetable and rice production; iv) fish farming.

The project is classified as a "Category B" project according to the Adaptation Fund's social, environmental assessment procedures, which means that no formal Environmental and Social Impact Assessment (ESIA) assessment will be required. Only Environmental and Social Impact Statements (ESIS) will be required if necessary. More in-depth analysis and environmental and social management will be integrated throughout the design and implementation of the project and will be largely covered by activities financed by the Adaptation Fund. No activities will take place in protected areas under this project.

Complaint Management System (CMS)

Conflict management in the **Strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices Project** intervention areas reveals that there are several complaint resolution systems. This analysis indicates that, regardless of the ethnic groups considered, complaint settlement systems have three components or levels: customary, prefectural and judicial. It is within this framework that FIRCA has established a complaints procedure to receive and facilitate the resolution of concerns and complaints regarding alleged non-compliance with its environmental and social policies in the context of funded projects. This procedure is available on its website. The CMS elaborated indicates the structures or organizations competent to receive a complaint and how to address it. In addition, the modus operandi of the CMS has made it possible to understand when a complaint is eligible and how it will be dealt with under this CMS. It also defines requirements for timing, reporting, reporting and access to information, training, awareness-raising and other issues relevant to the management of the CMS.
The link to access the complaint process document is like follow https://firca.ci/nos-actions/prise-en-compte-du-genre-et-de-lenvironnement/publications-climatiques.

Traditional and customary resolution bodies are the first step in receiving and handling complaints without any formal requirements. Appeals against decisions rendered at first instance are received and dealt with at second instance before the basic administrative settlement body that is the Sub-Prefectural Committee. To this end, when the sub-prefectural committee receives a complaint, it verifies that it has been dealt with beforehand at the customary level and it retains the right to refer the complainant to customary bodies. Reasons must be given for the complainant's refusal to bring someone’s case before the customary authorities. When sufficient reasons (e.g. conflict of interest) indicate that the case cannot be treated fairly at the customary level, the sub-prefectural body takes it up. The decisions of the Sub-Prefectural Committee may be appealed to the Departmental Committee when one party is not satisfied. Those rendered at

the departmental level may be challenged before the regional committee. Similarly, at all levels of the proceedings, the complainant retains the right to bring an action before the courts, the responsibility of FIRCA will be engaged.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.

The project's budgeted monitoring and evaluation plan includes monitoring of environmental parameters to meet ESMP requirements.
The monitoring and evaluation system will: (i) produce, organize and disseminate the information necessary for project management, (ii) document results and lessons learned for internal use and public dissemination on achievements, and (iii) meet the information needs of the Adaptation Fund, FIRCA and the government on project activities, immediate outcomes and impact. A monitoring and evaluation manual describing the system for collecting, processing, analyzing and disseminating data will be prepared in the first year of the project. A computerized database will be developed to enable the generation of dashboards. The system will be regularly fed with data collected in the field by ANADER agents (ADR, TS, Investigators, etc.) and the various studies carried out as part of the implementation of the project. This system will be coupled with a geolocated information system (GIS) that will allow mapping and spatial-temporal analysis. Training will be organized to strengthen the capacities of the various actors involved in the monitoring and evaluation system.~~:~~ To this end, the monitoring and evaluation activities of the project will be carried out in accordance with the provisions of the monitoring and evaluation plans contained in tables 13 and 14 below, and in line with the procedures established by FIRCA and the FA.

Table 13. Follow-up plan

Follow-up activity	Object	Frequency	Planned action	Responsible	Cost (USD)	Budget line
Operational Planning Activities	Develop and/or update the operational documents for the implementation of the project and procurement plan	Annual	- Develop the Annual Work Plan and Budget, Procurement Plan, Consolidated Dashboard for monitoring indicators - Organize the validation workshop of the operational documents of the project with stakeholders (FIRCA, MINEDD,...)	ANADER	3,000	Project Execution Costs/ANADER: ***Meetings and workshops***
Monitoring progress to the results	Collect and analyze data on the evolution of outcome indicators to determine the project's progress towards Agreed products	Quarterly or at the frequency required for each indicator	- Prepare activity reports (quarterly, semi-annual, annual) - Set up and feed a database - Fill in the Dashboard of Follow-up of indicators ; - Prepare thematic analysis reports from the database; - Intervene in case of slower than expected progress	ANADER	85,000	Project Execution Costs t/ANADER: ***Travel*** *(Travel expenses of the Project Team for monitoring activities)*
Monitoring and management of Risks	The project identifies risks and takes measures to manage these risks while ensuring that the registry is kept up to date risks for follow up on identified risks and actions taken.	Annual	- Identify specific risks that may threaten the achievement of expected results. - Identify and monitor risk management measures by means of a risk register (this register will include the measures and follow-up plans that may have been required according to FIRCA social and environmental safeguards). - Conduct audits in accordance with FIRCA audit procedures to manage financial risks.	ANADER (technical risk management) FIRCA (Financial Risk Management)	18,000 (ANADER) 30,000 (FIRCA)	Project Execution Costs /ANADER: ***Audit*** *(Project Audit)* NIE Project Cycle Management Fee (FIRCA): ***Audits*** *(Annual and final audit engagements)*

Follow-up activity	Object	Frequency	Planned action	Responsible	Cost (USD)	Budget line
Knowledge Management	The project team identifies and considers appropriate lessons to inform management decisions.	Annual, from the 2nd year of implementation of the project	- Develop training materials based on successful achievements - Organize capitalization workshops - Produce didactic films - Organize study tours for the benefit of farmers	ANADER	130,000	Costs of Operating Components: ***Component 4/ Outcome 4.1***
Project review	The steering committee will examine any concerns related to the quality of the delivered activities and delays in the progress of the project and take management measures to address the issues identified. The committee will ensure, from the beginning of the project, to create and maintain the conditions of synergy with the projects in progress. The Committee will also ensure compliance with Côte d'Ivoire's guidance on the priority areas for adaptation to be addressed by the project.	Annual	- Oversee the implementation of project activities - Create and animate a consultation framework with the coordination units of all projects with which there is complementarity or it is likely to have complementarity - Manage and control the quality of deliverables	MINEDD / FIRCA / ANADER	60,000	NIE Project Cycle Management Fee (FIRCA): ***Project performance management and budget oversight by the FIRCA team***

Table 14. **Evaluation Plan**

Evaluation label	Expected period	Key stakeholders in the evaluation	Cost (USD)	Budget line
Initial participatory survey for the establishment of a panel of beneficiaries to observe the changes induced by the project	At the start of the project	Beneficiaries, ANADER, FIRCA	PM	Activity carried out during the beneficiary and site identification phase
Mid-term evaluation	End of year 2	ANADER, FIRCA, MINEDD	18,000	Project Execution Cost /ANADER: ***Evaluation***
Impact study on the participating community (follow-up of the panel set up)	Every quarter from the start of the project	Beneficiaries, ANADER, FIRCA	PM	Activities carried out during monitoring missions throughout the implementation of the project
Final evaluation	End of the project	ANADER, FIRCA, MINEDD	18,000	Project Execution Cost /ANADER: ***Evaluation***

E. Include a results framework for the project proposal, including milestones, targets and indicators, including one or more core outcome indicators of the Adaptation Fund Results Framework, and in compliance with the Gender Policy of the Adaptation Fund.

The results framework of the project defines success indicators for project implementation and the respective means of verification. A monitoring and evaluation system for the project will be established, based on the indicators and means of the means verification, will be confirmed during the launch event. Any changes to be made to the results framework will require approval by the Project Steering Committee. The inception workshop is crucial for enhancing understanding of the projects and its implementation, building ownership for project results and agreeing modalities of project execution, documenting mutual agreement for proposed execution arrangements amongst stake holders and beneficiaries.

Table 15: the results framework with indicators to output level, baseline, targets, sources of verification and assumptions

Project Component	Project Outcome (Product)	Performance Indicators	Definition	Unit	Data source	Initial value	Target value	Frequency of collection	Data collectors	Assumptions
Sustainable access to improved water management technologies to build resilience to climate change	Strengthen the capacity of rice and market gardening communities to apply sustainable and improved water management technologies to build resilience to climate change	Number of extension workers trained in "solid rain" technology	This is the number of TSCA and ADR trained in the popularization of "solid rain" technology.	TSCA trained	Training Report Project activity report	5 (W: 2; M: 3)	23 (W: 4; M: 19)	Quarterly	ANADER	Technologies are accessible Producers are open to innovation
				ADR trained		8 (W: 2; M: 6)	115 (W: 31; M: 84)			
		Number of extension workers trained in rice and fish technology	This is the number of TSE trained in the extension of "rice-farming" technology.	TSE trained	Training Report Activity report	20 (W: 4; M: 16)	13 (W: 5; M: 8)	Quarterly	ANADER	
		Number of vegetable growers trained in the use of Solid Rain technology	This is the number of tomato and cabbage producers trained on the demonstration plots in the technology of "solid rain".	Trained vegetable producers	Training Report Project Report	65 (W: 15 ; M: 50)	6,900 (75% of women and youth)	Quarterly	ANADER	
		Number of waterings per week per cabbage and tomato crop cycle	This is the count of the total number of waterings per producer per week during the cabbage and tomato crop cycle.	Watering per week	Activity report Evaluation Report Panel Survey Report Database	10 waterings per week	2 waterings per week	Quarterly	ANADER	
Rice and fish farming to support diversification and a climate-resilient rice system	A climate-resilient rice farming system has been developed, intensified and provided by fish	Number of farmers trained in rice and fish farming	This is the number of rice farmers trained on the educational units in rice technology.	Trained rice farmers	Training Report Project activity report	150 (W: 32 ; M: 118)	195 (15% of women)	Quarterly	ANADER	Technologies are accessible Producers are open to innovation
		Number of rural planners	This is the total number	Trained rural	Training Report	0	26	Quarterly	ANADER	

Project Component	Project Outcome (Product)	Performance Indicators	Definition	Unit	Data source	Initial value	Target value	Frequency of collection	Data collectors	Assumptions
	production	trained in perimeter development techniques for rice fish farming plot	of rural managers trained in the techniques of developing the perimeter of rice fish farming plot	planners	Activity report		(100% men)			
		Number of micro-dams developed for rice- fish farming	This is the total number of micro-dams built for rice-farming	Micro-dams built	Project activity report	0	55	Quarterly	ANADER	
		Number of fish ponds developed for rice and fish farming	This is the total number of fish ponds developed for rice-fish farming as part of the project.	Managed fish ponds	Project activity report Reports of monitoring missions	0	195	Quarterly	ANADER	
		Number of rice production cycles per year	This is the count of rice production cycles per year per producer monitored as part of the project.	Rice production cycles	Project activity report Reports of monitoring missions Panel Survey Report Database	1	2	Biannual	ANADER	
Strengthening access to finance for the development of climate-resilient rice and vegetable enterprises	Credit programs tailored to scale resilient rice and vegetable technologies	Number of cooperatives/ professional organisations strengthened	This is the count of cooperatives/ professional organizations supported by the project	Cooperatives/professional organizations supported	Project activity report Reports of monitoring missions	0	40	Biannual	ANADER	Financial institutions support financing for small producers
		Increasing the number of farm management advisors	This is the number of agricultural business management advisors	Management consultants involved	Project activity report Reports of monitoring missions	0	40 (W: 9; M: 32)	Biannual	ANADER	

Project Component	Project Outcome (Product)	Performance Indicators	Definition	Unit	Data source	Initial value	Target value	Frequency of collection	Data collectors	Assumptions
			involved in supporting cooperatives/ professional organizations							
		Number of comprehensive climate change adaptation plans developed for climate finance	Count of comprehensive climate change adaptation plans developed for climate finance	Comprehensive adaptation plans developed	Comprehensive adaptation plans Project activity report Reports of monitoring missions	0	3	Biannual	ANADER	
		Number of market access strategies developed	Identification of defined market access strategies	Defined market access strategies	Project activity report Reports of monitoring missions	0	3	Biannual	ANADER	
		Number of formalized VSCA	Count of TSA formalized as part of the project	VSCA formalized	Project activity report Reports of monitoring missions	0	40	Biannual	ANADER	
Knowledge sharing and policy and strategy development	Enabling policies, strategies and legal frameworks are developed and adopted, and knowledge for project sustainability is shared.	Number of exchange and experience-sharing visits organised	Count of exchange and experience-sharing visits organised as part of the project	Visits for exchanges and sharing of experiences organized	Project activity report Reports of monitoring missions Reports of exchange visits/sharing of experience	0	45	Quarterly	ANADER	Financial institutions support financing for small producers
		Number of capacity-building	Count of capacity-building	Training sessions organized	Training Report	0	15	Quarterly	ANADER	

Project Component	Project Outcome (Product)	Performance Indicators	Definition	Unit	Data source	Initial value	Target value	Frequency of collection	Data collectors	Assumptions
		training sessions	training sessions organized under the project		Activity report					
		Number of policies/strategies and institutional gaps assessed and adapted	Identification of types of contract farming schemes that will be developed for agricultural value chains supported by the project	Type of contract farming scheme developed	Project activity report Follow-up mission report	0	3	Quarterly	ANADER	
		Number of capitalization workshops completed	This is the count of capitalization workshops organized as part of the project	Capitalization workshops organized	Report of the workshop Follow-up mission report	0	2	Annual	ANADER	

F. Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s)[1]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Impact: Productivity of vegetable and rice farms is significantly improved despite the effects of climate change and farmers revenue has increased				
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Sustainable access to improved water management technologies to build resilience to climate change	Number of extension agents trained on "solid rain" technology Number of extension agents trained on rice-fish farming technology	Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	1,316,751
Rice-fish farming to support diversification and climate-resilient rice cultivation system	Number of farmers trained in rice-fish farming Number of rural planners trained in rice-fish farming management techniques Number of micro dams developed for the application of rice-fish farming Number of sites developed for the application of rice-fish farming	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.2.1. Type of income sources for households generated under climate change scenario	1,451,240
Access to finance strengthened for climate resilient rice and vegetables farming enterprises development	Number of cooperatives/professional organizations strengthened Number of local management committees created and strengthen Number of comprehensive climate adaptation plans developed for climate finance Number of Market access strategy developed	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1 Percentage of households and communities having more secure access to livelihood assets	440,000
Knowledge sharing and policies/strategies development	Number of exchange and sharing experience visits organized Number of capacities building training session Number of Policies/strategies and institutions gaps assessed and adapted	Outcome 7: Improved policies and regulations that promote and enforce resilience measures	7.2. No. of targeted development strategies with incorporated climate change priorities enforced	158,000

[1] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 16: Detailed budget per year of disbursement

Expected Outputs	Output budget	Inputs	Year 1	Year 2	Year 3	TOTAL
Component 1: Sustainable access to improved water management technologies to build resilience to climate change						
Expected outcome: Capacities of rice and vegetables farmers communities to apply sustainable and improved water management technologies to build resilience to climate change developed						
Extension agents' capacities to disseminate adaptations technologies to farmers enhanced	75,780	➢ Agents' capacities building session ➢ Consultancy services	75,780			75,780
Vegetable farmers capacities to adopt climate adaptation technologies on Solid Rain built	1,240,971	➢ Farmers' training ➢ Farmers' training kits ➢ Farmers' installation kits ➢ Farmers' coaching and follow-ups session	429,088	408,372	403,511	1,240,971
Component 2: Rice-fish farming to support diversification and climate-resilient rice cultivation system						
Expected outcome: Climate-resilient rice cultivation system developed, scaled-up and providing fish production						
Capacities of rice and fish farmers to adopt climate change adaptation technologies under the diversification system with combined rice and fish farming are enhanced.	113,910	➢ Farmers' training ➢ Farmers' training kits ➢ Farmers' installation kits ➢ Farmers' coaching and follow-ups session	83,040	23,580	7,290	113,910
Rural planners on rice-fish farming diversification management system trained	11,980	➢ Training of rural planners trained to developed rice-fish application site	11,980			11,980
Application sites of the rice-fish farming technique developed	1,325,350	➢ Development of micro dams ➢ Development of ponds	473,823	705,437	146,090	1,325,350
Component 3: Access to finance strengthened for climate resilient rice and vegetables farming enterprises development						
Expected outcome: Credit schemes tailored to scale-up proven resilient rice and vegetable farming technologies						
An adaptation-oriented micro-finance scheme that supports the uptake of resilient rice and vegetable farming technologies through partnership with local microfinance and local	44,800	➢ Partnership with financial institution ➢ Concept note development ➢ Consultancy services		44,800		44,800

management committed						
Existing cooperatives/professional organizations strengthened to improve climate resilient rice and vegetable farming practices with increased productivity and household income through microfinance facility.	324,000	➢ Consultation ➢ Workshops ➢ Partnership establishment ➢ Consultancy services	84,000	192,000	48,000	324,000
Comprehensive climate adaptation plans developed for each value chain with identified public and private sources of funding.	21,200	➢ Consultation ➢ Workshops ➢ Partnership establishment ➢ Consultancy services ➢ Concept note development	14,000	7,200		21,200
Market access strategy developed to facilitate the commercialization of the products	50,000	➢ Consultation ➢ Workshops ➢ Partnership establishment ➢ Consultancy services		50,000		50,000
Component 4: Knowledge sharing and policies/strategies development						
Expected outcome: Enabling policies, strategies and legal frameworks are developed and adopted, and knowledge for the project sustainability shared.						
Capacity building and knowledge sharing system established based on strengthened extension services/Lead farmers program (ToT Model) with consolidated modules and training guidelines (MRV training…)	130,000	➢ Consultation ➢ Workshops ➢ Training sessions ➢ Consultancy services ➢ Concept note development		77,000	53,000	130,000
Policies/strategies and institutions gaps assessed and adapted to ensure and facilitate the participation of the private sector, including the creation of incentive mechanisms.	28,800	➢ Consultation ➢ Workshops ➢ Consultancy services		19,200	9,600	28,800
Project Management cost (9.5%)						
Project Execution Costs	319,845	Project staff salaries	41,000	41,000	41,000	123,000
		Communication	8,000	4,000	4,000	16,000
		Equipment	17,000			17,000
		Office supply	1,000	1,845	2,000	4,845

		Meetings and workshop	10,000		10,000	20,000
		Travel	59,000	13,000	13,000	85,000
	Monitoring and Evaluation	Mid-Term Evaluation		18,000		18,000
		Terminal Evaluation			18,000	18,000
	Audit	Project audit			18,000	18,000
SUB-TOTAL						**319,845**
Project Cycle Management Fee Charged by the Implementing Entity (8.5%)						
						313,364
TOTAL						
						4,000,000

Table 17: Detailed activities budget

Expected Results / Activities	**Budget notes**	**Unit**	**Unit cost**	**Quantity**	**Amount**
Component 1: Sustainable access to improved water management technologies to build resilience to climate change					**1 316 751**
Output: 1.1. Capacity of extension agents to disseminate adaptation technologies to farmers is strengthened					**75 780**
Activity: 1.1.1 Train extension agents in the use of Solid Rain					***66 200***
Training TSCA	Support for the training of the 23 TSCA	Support Fee/Agent	500	23	11 500
	TSCA consultancy/training session fees (Honoraria, Mission Expenses, Travel Expenses Team of Trainers)	Trainers/Session Fees	4 100	1	4 100
Training ADRs	Support for the training of the 115 ADRs	Support Fee/Agent	440	115	50 600
	ADR consultancy/training session fees (TSCA training)	Toll	-	1	-
Activity: 1.1.2 Train extension agents on rice farming					***9 580***
Training TSEs	Support for the training of the 13 TSEs	Support Fee/Agent	500	13	6 500
	Support fees for the Trainers (Planning Expert, Fish Expert, Topographer Expert of the Project Team) for 7 days	Expenses Mission team of 3 Training Experts/Day	440	7	3 080
Output: 1.2 Vegetable farmers' capacities to use Solid Rain are strengthened					**1 240 971**
Activity 1.2.1 Install demonstration plots for the training of vegetable producers (tomato and cabbage) on Solid Rain technology					***131 100***
Select the sites	Select 6900 producers	Selection/producer fees	11	6 900	75 900
Develop demonstration plots	Kit of small equipment and input to provide training on the 690 demonstration plots (at the rate of 10 plots to be developed per locality per year, for 23 localities and this over 3 years) The development is carried out with the support of the learners	Cost Small Equipment Kit / Demonstration Plot	80	690	55 200
Activity 1.2.2 Train vegetable producers on the use of Solid Rain					***345 000***
Producer Training	ADR Training	Toll	-	-	-
	Support for Learners	Fees / Learner	50	6 900	345 000
Activity 1.2.3 Provide equipment and input support to farmers for the application of Solid Rain technology					***414 000***
Installation kit for 6900 vegetable producers	Kit consisting of small agricultural equipment and inputs	Kit/ Learners	60	6 900	414 000
Activity 1.2.4 Provide technical assistance to cabbage and tomato producers in the application of Solid Rain technology					***310 500***

Support-accompaniment of producers	Support costs for 6900 Producers	Fresh/Producer	45	6 900	310 500
Activity 1.2.5 Organize exchange visits to each of the 23 Zones involved in the project	***Activity carried out in the Knowledge Sharing Component (4.1.4)***	***FOR MEMORY***			**-**
Activity 1.2.6 Implementation of Gender activities					***40 371***
Training agents on implementation tools (diagnostic tools, vulnerability matrix, reporting canvas)	Classroom training for 42 ANADER Gender Focal Points (32 from the Zones and 10 from the RDs) for 3 days by 2 Project Experts	Pick-up Fees/Focal Point	500	42	21 000
	Training of the 115 ADRs by the ANADER Gender Focal Points in the ANADER zones. The trainings will be done during the training activities to master the technical itineraries	FOR MEMORY			
Sensitization of beneficiaries for the commitment to gender equality and women's participation in project activities	Develop awareness-raising materials	Awareness kit	2 116	1	2 116
	Organize meetings in some localities of the project with the participation of the Gender Experts of the Project Team (10 days of mission for 2 Project Experts)	Per diem Mission Team /Day	240	10	2 400
Implementation of the Gender Learning and Promotion Framework for Sustainable Development (CAPROGED)	Training of beneficiaries on demonstration plots (training provided by ADRs)	Training Kit / ADR	53	115	6 095
	Training of beneficiaries at the level of the Pedagogical Units (Training provided by the focal points)	Training Kit/ Focal Point	60	42	2 520
Evaluation of CAPROGED data	Mission to verify the mapping of vulnerable groups	Per diem Mission Team /day	240	10	2 400
Annual Assessment of Progress in Gender Mainstreaming	Annual assessment missions (mission carried out by 2 experts) for 8 days	Per diem Mission Team /day	240	16	3 840
Component 2: Rice-fish farming to support diversification and a climate-resilient rice farming system					**1 451 240**
Output 2.1 The capacity of rice and fish farmers is strengthened by the adoption of rice and fish farming					**113 910**
Activity 2.1.1 Create educational units for producer training					***84 750***
Select sites	Selection of all 195 sites including those to house the Teaching Units (Study and selection)	Selection/site fees	130	195	25 350
Layout of Teaching Units	Develop 2 ponds of 400m and 1200m ² of rice trap,	Kit Layout/Pedagogical Unit	4 600	9	41 400
	Setting up shelters for training	FOR MEMORY			
	Provide inputs and equipment for the operationalization of the Units (fry, feed, fishing equipment, maintenance	Other Supplies Kit/ Learning Unit	2 000	9	18 000

	equipment, etc.)				
Activity 2.1.2 Train rice farmers in rice technology					***29 160***
Training of rice farmers	Organize 9 training sessions of 30 people on each of the 9 Teaching Units	Training/session/teaching unit fees	360	81	29 160
Output 2.2 Training of rural planners on the rice-fish diversification management system					**11 980**
Activity 2.2.1 Select rural planners to be trained					***2 100***
Organize identification missions for rural planners	Identify the rural planners active in the different target localities of the project (Mission of the Planning Specialist for 15 days by traveling 5000 km)	Cost travel/km		-	-
		Per diem Specialist & driver/day	140	15	2 100
Selection of rural managers to be strengthened	Select 26 rural planners according to the defined criteria	FOR MEMORY			
Activity 2.2.2 Train rural planners on waterline management techniques					***9 880***
Organize the training of planners	Support for the training of Learners	Fees/learner	380	26	9 880
	Consultancy fees/training session (Training provided by the Expert Planner of the Project Team)	PM			
Activity 2.2.3 Organize study tours for farmers	***Knowledge sharing activity (4.1.4)***	***PM***			***-***
Output 2.3 Applications of rice-fish farming are developed					**325 350**
Activity 2.3.1 Conduct management studies for fish ponds and micro-dams					***78 060***
Carry out technical studies	Carry out topo surveys (Carry out missions composed of the Expert Planner, the Topographer, the Rural Manager and a driver) and rental of Topo equipment. The Team will spend 5 working days per locality to carry out studies on 15 producer sites, i.e., 7 calendar days per locality for a total of 13 localities to be covered. This mission will cover 5000km plus 500km of domestic travel per locality for the 5 working days; or 11 500 km (5000 km plus 6500 km)	Cost travel/km	-	-	-
		Per diem Mission Team Specialists & driver/day	280	91	25 480
		Equipment rental Topo /day	240	91	21 840
	Produce development plans. On each of the 195 rice-growing sites, 1 general management plan + 1 detailed plan of the fishpond, i.e., 390 plans, will be produced. For each of the 55 micro-dam sites, a detailed plan will be produced, i.e., 55 plans. A total of 445 plans will be produced.	Production cost/ plan	20	445	8 900
Carry out environmental and social studies	Carry out environmental and social screening missions: Each mission will be composed of an environmental expert, a Gender Expert and a driver. The Team will spend 5 working days per locality to carry out studies on 15	Cost travel/km	-	-	-
		Per diem Mission Team Specialists & driver /day	240	91	21 840

	producer sites, i.e., 7 calendar days per locality for a total of 13 localities to be covered. This mission will cover 5000km plus 500km of domestic travel per locality for the 5 working days; or 11 500 km (5000 km plus 6500 km)				
Activity 2.3.2 Carry out fish pond development work					***204 750***
Development of rice-growing plots	Develop 1 pond of 400m² and connect it to the rice trap of 1200m²; 195 Improvements are to be carried out	Development cost/per farm	1 050	195	204 750
Activity 2.3.3 Carry out micro-dam development work					***286 000***
Development of micro dams	Develop 55 micro dams	Cost of development/microdam	5 200	55	286 000
Activity 2.3.4 Support the operation of developed water dividing areas					***381 940***
Strengthening the operational capacity of rice farms	Carry out monitoring missions of the development work of the rizipiscole sites by the Experts of the Project Team (Expert Planner, Fish Expert, Environmental Expert) and a driver. The Team will spend 5 working days per Locality covering 15 producer sites, i.e., 7 calendar days per locality for a total of 13 localities to be covered. This mission will cover 5000km plus 500km of domestic travel per locality for the 5 working days; or 11 500 km (5000 km plus 6500 km)	Cost travel/km	-	-	-
		Per diem Mission Team Experts & driver /day	340	91	30 940
	Provide inputs and equipment for the operationalization of the Units (fry, feed, fishing equipment, maintenance equipment, etc.)	Kit supplies/Operation	1 800	195	351 000
Activity 2.3.5 Providing technical assistance to rice farmers					***134 600***
Carrying out the Agricultural Council	Follow-up and accompaniment of rice farmers: Supervision costs (Mission expenses and travel expenses of TSE and TSCA technicians and other related charges) per farmer per year	Cost accompaniment/ operator/year	180	390	70 200
	Data collection support for the 36 TS (13 TSE +23 TSCA)	Cost/TS	900	36	32 400
Support for the implementation of the recommendations of environmental and social screening reports	Provision for the implementation of the recommendations of environmental and social screening reports. The implementation of the actions will extend over 2 years	Package/plan	16 000	2	32 000
Activity 2.3.6 Support the structuring of existing beneficiary groups					***240 000***
Strengthen the organizational capacity of beneficiaries' groups	Follow-up and accompaniment of 40 vegetable and rizipiscole producer organizations (Mission expenses and travel expenses of TSOPA specialized technicians and other related expenses) by organization	Cost of accompaniment / organization	6 000	40	240 000
Component 3: Strengthening access to finance for the development of climate-resilient rice and vegetable enterprises					**440 000**
Output 3.1. An adaptation-focused microfinance programme that supports the adoption of resilient rice and vegetable technologies and practices through partnership with local microfinance and committed local management					**44 800**

Activity 3.1.1 Develop a concept note on the establishment of green credit lines					***44 800***
Develop proposals for analysis grids and financial products (interest rate for exit from credit, grace period, repayment period, insurance, loan implementation period, etc.) adapted to agricultural speculation in the project area	1 consultant recruited over a period of 50 hours / day to lead advocacy with banks and financial institutions to develop the concept note on the establishment of green credit lines.	Consultant fees (M/D)	500	50	25 000
	Field mission in the localities of the project to meet the OPAs, MFIs, etc. for 20 days. Meetings with partners at their headquarters and umbrella organizations	Per diem Mission Team/day	340	20	6 800
		Cost of travel/km	-	-	-
Validate proposals for analysis grids and products with all partners (administrations in charge of the environment, the agricultural sector, social affairs; professional agricultural organizations, the financial sector, etc.)	One-day workshop for the validation of the concept note containing the analysis grids and green products developed	Workshop Package	13 000	1	13 000
Activity 3.1.2 Formalize the partnership with financial institutions					**-**
Establish partnerships for the implementation of adapted financial products Developed	The Consultant recruited for Advocacy will have 10 Man /day out of the 50 Man /day to support the establishment of MoU, Conventions and Contracts for investment and exploitation support for the benefit of producers through the 40 professional organizations and cooperative financing tools (VSCAs) supported as part of the project	PM	PM	PM	PM
Output 3.2. Strengthening existing cooperatives/business organizations to improve climate-resilient rice and vegetable practices through increased productivity and household income through a microfinance facility					**324 000**
Activity 3.2.1 Implement the Farmer Business Management Advisory					***324 000***
Deploy a pilot Farmer Business Management Advisory service to farmers and Agricultural Professional Organizations	Capacity building of Technician specialized in the support to Agricultural Professional Organizations to deploy the Farmer Business Management Advisory (2 sessions over a period of 12 months)	Reinforcement fees / TS APO	900	40	36 000
	A pilot Farmer Business Management Advisory service will be deployed to each of the 40 Agricultural Professional Organizations (APO) supported by the Project. 1 Farmer	Coverage of travel expenses and work materials for Advisor /month	400	720	288 000

	Business Management Advisor will be deployed by APO and will support the APO +30 Farmers during 18 months (i.e., 40 APO + 1200 Farmers during these 18 months of support)				
Activity 3.2.2 Support the formalization of VSCAs	***Activity carried out concurrently with activity 2.3.6***	***FOR MEMORY***			
Activity 3.2.3 Formalize the partnership between VSCAs and partner financial institutions	***Assistance provided by Management Advisors***	***FOR MEMORY***			
Activity 3.2.4 Provide advisory support to beneficiary groups	***Assistance provided by Management Advisors***	***FOR MEMORY***			
Output 3.3. Comprehensive climate adaptation plans for each value chain with identified public and private sources of finance are developed					**21 200**
Activity 3.3.1 Develop models of contract farming schemes					***14 000***
Develop tripartite partnership models (Farmer - Buyer of Agricultural Products - Financial Institution) attached to the value chains supported by the project in the vegetable and rice sectors)	Consultant Service to develop the different models envisaged (20 Man /day). The service includes the Consultant's fees and travel and other miscellaneous expenses	Consultancy service (Man/day)	700	20	14 000
Activity 3.3.2 Test the funding models developed					***7 200***
Provide support to Farmers through their professional organizations that have arrived at VSCAs to formalize contract farming schemes	Provide assistance to the establishment of contracts to operationalize 3 Schemes of Agriculture Under Contract (Technical and legal assistance)	Cost Support/Takeover bid	2 400	3	7 200
Output 3.4. A market access strategy to facilitate the commercialization of products is developed					**50 000**
Activity 3.4.1 Develop a market access strategy adapted to the products of the different value chains involved (vegetables, rice and fish)					**-**

Structure in partnership with each beneficiary Operator of the Project and each takeover bid supported, a marketing scheme for their productions	Support-accompaniment delivered by Management Advisors in partnership with TS and ADR	FOR MEMORY			
Activity 3.4.2 Provide support to groups for the establishment of collection and sales points					***50 000***
Support for the creation and equipment of collection and sales points	Organize, through the TS APO and Management Advisors and the contribution of the beneficiaries, the meeting space for the exchange of products of the members and users of the APOs and the customers and	FOR MEMORY			
	Provide each supported takeover bid with a scale and crates	Endowment/takeover package	1 250	40	50 000
Activity 3.4.3 Provide support to groups in the search for markets and the formalization of commercial relations with identified customers	***Assistance provided by Management Advisors***	***FOR MEMORY***			***-***
Component 4: Knowledge sharing and policy and strategy development					**158 800**
Output 4.1. Establishment of a capacity building and knowledge sharing system based on strengthening extension services/Lead Farmer Programme (ToF)Model) with consolidated modules and training guidelines (MRV training...)					**130 000**
Activity 4.1.1 Develop training materials (guide to the conduct of rice, Solid Rain) based on the successes recorded					***24 000***
Establish Guide Development Committees	Constitute a Technology Committee (bringing together Project Experts and Technicians, Beneficiaries' Representatives and other resource persons)	FOR MEMORY			
Develop guides by technology and strategies deployed	Hold meetings for the development and validation of the Guides	Guide Development Fees by Technology	6 000	4	24 000
Activity 4.1.2 Organize capitalization workshops					***50 000***
Organize capacity building and exchange workshops	Organize one Capitalization Workshop per year from the 2nd year (i.e., 2 workshops over the duration of the project) These workshops will also be the framework for the validation of the good practice guides developed by the ad hoc committees set up	Capitalization Workshop	25 000	2	50 000
Activity 4.1.3 Produce didactic films					***24 000***
Make didactic films on climate change adaptation techniques	Filmmaking by theme	Film Production/ Technology	6 000	2	12 000

based on technologies promoted by the project					
Make a testimonial film on the successful sustainable green financing strategies deployed by the project		Production Film on green finance	6 000	1	6 000
Make a testimonial film on marketing techniques to ensure better value to the products developed		Production cost Film production on marketing strategy	6 000	1	6 000
Activity 4.1.4 Organize study tours for farmers					***32 000***
Exchange visit with rice farmers	Costs of care for rice farmers during exchange visits	Fee per participant/ Visit	200	45	9 000
Exchange visits with vegetable producers	Costs of taking charge of producers during exchange visits	Fees/Visit	1 000	23	23 000
Output 4.2. Assessment and adaptation of policies/strategies and institutions to ensure and facilitate private sector participation, including the creation of incentive mechanisms					**28 800**
Activity 4.2.1 Taking stock of private financing for smallholder farmers	***Assessment of the strategies deployed***	***PM***			***-***
Activity 4.2.2 Implement contract farming schemes according to value chains	***Implement 12 contract farming schemes in the relevant sectors***	***Cost /Scheme***			***28 800***
Activity 4.2.3 Make a plea for the establishment of index-based insurance for the productions concerned	***Product of the reflections of the annual knowledge-sharing workshops***	***PM***			***-***
COSTS OF OPERATING COMPONENTS (A)					**3 366 791**
PROJECT EXECUTION COST - ANADER (B) = (A) x 9.5%					**319 845**
Personal allowances	Allowances of the ANADER Project Team and Technicians mobilized in the field for the support-accompaniment of beneficiaries	Allowances Personal / year	41 000	3	123 000

Communication	Web page, social media and print media	Communication costs/3	5 333	3	16 000
Office Equipment and Equipment	Computer and Office Equipment	Equipment Cost	17 000	1	17 000
	Office supplies	Staffing / year	1 615	3	4 845
Meetings and workshops	Organization of meetings and workshops	Number	10 000	2	20 000
Travels	Travel expenses of the Project Team to monitor activities	Allocation for Travel/year	28 333	3	85 000
Evaluation	Mid-term evaluation	Assessment mission	18 000	1	18 000
	Terminal Assessment	Assessment mission	18 000	1	18 000
Audit	Project Audit	Audit engagement	18 000	1	18 000
TOTAL PROJECT COST (C) = (A)+ (B)					**3 686 636**
PROJECT CYCLE MANAGEMENT FEE PER NIE (D)= (C) x 8.5%					**313 364**
Project Performance Management and Budget Oversight by the FIRCA Team	General supervision and oversight, quality management and control, field visits, workshops, seminars and trips	FIRCA Management Indemnity /year	95 788	3	287 364
Information and Communications	Maintenance of information management systems and specific project management databases to monitor and control project implementation. Web page, social media and print media	Cost Communication & Information/year	8 667	2	26 000
			8 666	1	
TOTAL GRAND COST (E) = (D) + (C)					**4,000,000**

A. Include a disbursement schedule with time-bound milestones.

	Year 1	Year 2	Year 3	Total
Scheduled date	January 2024	January 2025	January 2026	
Project funds	1,171,711	1,527,589	667,491	3,366,791
Execution costs	136,000	77,845	106,000	319,845
Implementing entity fee	104,455	104,455	104,454	313,364
TOTAL	**1,412,166**	**1,709,889**	**877,945**	**4,000,000**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[2]

Mrs LIADE Dissahonon Marie Sylvie Adaptation Fund National Designated Authority Environmental Technics Engineer Technical Assistant Climate Resource Mobilization Officer Ministry of Environment and Sustainable Development	Date: December 23, 2022

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (National Climate Change Strategy, National Development Plan, National Agricultural Investment Plan, Climate Smart Agriculture National Investment Plan) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

ATSIN Yao Léon Implementing Entity Coordinator	
Date: *December 23, 2022*	Tel. and email: +225 2722 528 181 atsiny@firca.ci
Project Contact Person: AYEMOU Djatin Edmond	
Tel. And Email: +225 0707 880 380 ayemou@firca.ci	

[6.] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

GENERAL COORDINATION OF PROGRAMS AND PROJECTS

NATIONAL CLIMATE CHANGE PROGRAM

N000002 /MINEDD/CAB/CGPP/PNCC/Id

REPUBLIQUE DE COTE D'IVOIRE
Union - Discipline – Travail

Abidjan, le 23 DEC. 2022

ADAPTATION FUND

Letter of Endorsement by Government

To: **Adaptation Fund Board**
c/o Adaptation Fund Board Secretariat
Email : Secretariat@Adaptation-Fund.org
Fax : 202 522 3240/5

Subject: Endorsement of the full project proposal **"Strengthen the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices"**.

In my capacity as the designated authority for the Adaptation Fund in the Republic of Cote d'Ivoire, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Côte d'Ivoire.

Accordingly, following validation of the project proposal by all key national stakeholders, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Fonds Interprofessionnel pour la Recherche et le Conseil Agricoles (FIRCA) and executed by Agence Nationale d'Appui au Développement Rural (ANADER) in the supervision of Ministry of Environment and Sustainable Development.

Ministère de l'Environnement et du Développement Durable
Autorité Nationale Désignée du Fonds d'Adaptation (FA)
Le Point Focal

Sincerely

LIADE Dissahonon Marie Sylvie

Adaptation Fund National Designated Authority

Environmental Engineer, Technical Assistant in charge of Climate Resource Mobilization

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Email : dissahononliade@gmail.com

ANNEX 1

A. Economic elements of SOLID RAIN

To measure the economic profitability related to the use of the hydro-retainer in vegetable crops, the expenses considered will be the cost of the product and those related to the irrigation of the crops. The other expenses will be considered as fixed.

1- Frequency and irrigation time

The frequency of watering of vegetable crops (cabbage and tomato) varies from 5 to 6 days of watering in week for 1 watering can of 10 liters per m² in general. The duration of watering for these crops is 3 months of intense watering in the conditions of the farmer with 5 days of watering in the week. Watering frequencies are reduced by 50% with hydro-retention irrigation (Solid Rain), i.e., 2.5 days of watering per week.

Watering	**cycle length**	**frequency**	**total number**
without hydro-retainer	3 months	5 days/week	60 days
with hydro-retainer	3 months	2,5 days/week	30 days
Margin hydro-retainer	0	**2,5 days/week**	**30 days**

60 days of watering are observed for the irrigation of tomato and cabbage plots without hydro-retention against 30 days of watering for the irrigation with hydro-retention.

2- Yield

Hydro-retention irrigation allows an increase of 30% in the yield of vegetable crops for cabbage and tomato. The reference yield in the farming environment is 11 T/ha for tomato and 15 T/ha for cabbage.

Yield (T/ha)	**Tomato**	**Cabbage**
without hydro-retainer	11	15
with hydro-retainer	14.3	19.5
Margin hydro-retainer	3.3	4.5

3- Cost effectiveness

The purchase cost of the hydro-retainer is 25 000 Fr / kg, for 1 Hectare of cabbage or tomato crop, 10 kg of solid Rain is needed.
The costs of watering are evaluated in man/day, and it takes 8 men per to irrigate 1 hectare of tomato or cabbage plot with watering cans. The cost of the irrigation day is fixed at 1000 Fr CFA on average. The selling prices of tomato and cabbage vary on the market according to the periods. The minimum price of USD 0.35/kg for cabbage and USD 0.6/kg for tomato will be retained.

The margin linked to the increase in production and the reduction of the irrigation load induced using solid rain is clearly superior to the purchase cost of the product.
The time saved by reducing watering is spent on other activities that could bring income to the household

4- Management of water sources

Reducing watering frequencies leads to a decrease in the amount of water used for watering, and thus to a more sustainable management of the available water sources.

B. COST-EFFECTIVENESS RICE AND FISH FARMING

1. Profitability on 1000 m² of ICRS

LABEL	MINERAL FERTILIZATION			FERTILIZATION WITH COMPOST		
ENTRIES	**Designation**	**Quantity**	**Price**	**Designation**	**Quantity**	**Price**
	NPK	20 kg	20	Wood powder		
	Urea	10 kg	10	Ash		
	Herbicide	0.5 l	5,5	Animal droppings		
				Charcoal powder		
	Seeds	4 kg	4,8	Seeds (Seeds	1 kg	1.2
TOTAL COST OF INPUTS			**40.3**			1.2
COSTS						
	Ploughing	2.5 trap	10	Ploughing	2.5 trap	10
	Nursery	1 board	2	Nursery	1 board	2
	Transplanting	2.5 trap	7.5	Transplanting	2.5 trap	10
	Weeding	2.5 trap	2	Weeding	2.5 trap	7.5
TOTAL			21.5			29.5
PRODUCTION (kg)			450			562.5
SALE PRICE (USD/KG)			0.3			0.3
PRODUCTS (USD)			135			168.75
PROFITS GENERATED WITHOUT HARVESTING COSTS			**73.2**			**138.05**
DIFFERENCE IN MARGIN RELATED TO RICE CULTIVATION						**64.85**

Comment:
The gross margin of 64.85 USD was calculated on an area of 1000 m². For an area of 1200 m2 we will have a margin of 77.82 USD

2. Fish farming profitability

- The production of fish in a 400m² trap is 400Kg per cycle on average.
- Average selling price: 3.6 USD/KG

Product: 400 Kg x USD 3.6: USD **1440**

Charges: USD 2x 400 kg: USD 800

MARGINS: 400*1800 – 1000*400 = 320,000 F

Total marginal gain: 77.82 + 640 = 717.82 USD

Link to a video on rice and fish farming **https://youtu.be/qsLOWlToZ_c**

ANNEX 2

GENDER ANALYSIS REPORT

INTRODUCTION

As part of the development of the full project document "Strengthening the resilience of smallholder farmers to the effects of climate change through the adoption of proven innovative technologies and practices" to be submitted to the Adaptation Fund, the Interprofessional Fund for Agricultural Research and Advisory (FIRCA) initiated in collaboration with the implementing partner, the National Agency for Rural Development Support (ANADER), a preparatory mission in the project areas. The purpose of this mission was to collect information necessary for the elaboration of the said document. Thus, as part of this mission, a participatory gender analysis was conducted on gender relations in the communities interested in the project, particularly in relation to the following points:

- Division of labour between women and men;
- Control and access of women and men to productive resources;
- Perception of climate variability and adaptation measures of women and men;
- Main constraints and needs expressed by women and men.

The results of the project include "an equitable redistribution of benefits between the women and men involved in the implementation", so gender analysis was necessary to create the conditions for the participation of women and men to strengthen the effectiveness of the intervention.

II- REMINDERS OF THE OBJECTIVES AND EXPECTED RESULTS OF THE MISSION

2.1- Objectives

The objective of this mission is to collect all gender-disaggregated information on activities, cropping systems, access to productive resources and climate and environmental vulnerability of the agro-ecological zones targeted by the project to:

1) Identify the beneficiaries of the project;
2) Know the gender-differentiated activities carried out by women and men;
3) Understand the system of cultures of men and women;
4) Understand the gender-differentiated constraints related to different cropping systems;
5) Capture the current levels of participation of women and men in decision-making, training and technology;
6) Understand peasant perception by gender of climate variability and change;
7) Identify the impacts of climate change on women and men;
8) Know the endogenous solutions differentiated by Gender related to constraints;
9) Identify gender/socio-economic category of support needs;
10) Make an inventory of the sites proposed for the project (solid rainfall and Rizipisciculture technologies).

2.2- Expected Results

III- METHODOLOGY

The mission consisted of interviews and site visits to potential beneficiaries.
Thus, for each of the 32 localities concerned, the mission took place according to the following stages:

- Technical scoping meeting with the ANADER delegation;
- Interviews with the competent administrative entities;
- Site visits;
- Interviews with farmers and Professional Agricultural Organizations (OPAs).

For an effective action aimed at enforcing the schedule constraints and covering all 32 localities targeted in 22 administrative regions for the implementation of the project, the mission is divided into three circuits: Circuit 1 covering the North of the country, Circuit 2, the Center and East of the country, and Circuit 3, the West of the country.
In correspondence with the defined circuits, three (3) teams were formed and having the following profiles:

- A technology specialist;
- An environmental specialist;
- a gender specialist;
- A specialist in planning and financing.

The analysis adopted a participatory approach aimed at better engaging the women and men participating in the study, to facilitate their participation as much as possible, the free expression of their ideas and priorities, as well as to stimulate interaction and debate around the topics discussed. This is done with the aim of gathering first-hand information. Thus, collective discussions with men and women were organized in some places and focus groups made up solely of women or men were organized. The tools used to conduct the interviews are detailed below:

Details of the tools used:
The interview guide for this study was developed based on the Harvard and Moser **frameworks, i.e.:**

- the division of labor tool between men and women in the context of their activities;
- The Resource Access and Control tool
- the needs according to gender tool;
- the tool influences the factors;
- The SWOT matrix was used to assess the strengths, opportunities, threats that could hinder the project.

The team leading the activity was composed of 4 people: 1 woman and one man working with groups of women or men or mixed group and if necessary, with an interpreter in the village, and 2 men working on the sites selected for the project with groups of men or women or mixed groups. The data collected was then developed from the notes taken.

VI RESULTS AND ANALYSIS

The Gender analysis focuses on the population encountered, which consists of potential project beneficiaries invited to participate in discussions and focus group interviews organized in each project locality. A total of 1551 people including 774 Men (49%) and 777 Women (51%).
The following table 1 shows the details by circuit and by speculation.

Table 1: Situation of the population surveyed

CIRCUIT	Maraicher				Rice growing				Fish farming				Rizipisciculture				Total
	H	F	T	% F	H	F	T	% F	H	F	T	% F	H	F	T	% F	
Circuit 1	60	346	**406**	**85%**	8	3	**11**	**27%**	8	3	**11**	**27%**	16	1	**17**	**5%**	**445**
Circuit 2	295	169	**464**	**36%**									56	9	**65**	**14%**	**529**
Circuit 3	139	238	**377**	**63%**	62	3	**65**	**5%**	32	3	**35**	**9%**	98	2	**100**	**2%**	**577**
TOTAL	**494**	**753**	**1247**	**60%**	**70**	**6**	**76**	**8%**	**40**	**6**	**46**	**13%**	**170**	**12**	**182**	**7%**	**1551**

Source: Mission gathering information for the development of the AM project document, October 2022

Figure 1: Population situation encountered

4.1. ACTIVITY PROFILE

4.1.1 Speculation by the men and women met

The speculations practiced by the people met are mainly irrigated rice, fish farming and rice-growing vegetable crops (tomatoes, cabbage, lettuce, onion, okra, zucchini, green beans, eggplant, chili, leafy vegetables (spinach, parsley, etc.).

Table 2 Breakdown of speculation by sex

Speculation	Man	Woman
Rizipisiculture	**93%**	**7%**
Rice growing	**92%**	**8%**
Fish farming	**87%**	**13%**
Maraicher	**40%**	**60%**
Tomatoes	**xxxx**	**Xx**
Cabbage	**Xxx**	**Xxx**
Lettuce	**xxxx**	**xxxx**
Onion	**Xx**	**xxxxx**
Okra	**x**	**xxxxx**
Courgette	**Xxx**	**xxxx**
French bean	**Xxx**	**xxxx**
Eggplant	**Xxx**	**xxxx**
Chili pepper	**Xx**	**xxxx**
Leafy vegetables (spinach, parsley, etc.)	**x**	**xxxxx**

Source: Information-gathering mission

Legend: X very little; practiced; XX little practiced; XXX practiced; XXXX widely practiced;

XXXX Mainly practiced.

Comments:

Both women and men are involved in agricultural production. However, depending on the locality and the speculation practiced, the number of producers varies considerably. In general, women are more present in crop production with a predominance in vegetable crops 60% women against 40% of men met. In the analysis of Table 1, apart from the two speculations retained by the project (tomato and cabbage) where women are moderately present compared to men, women are more dominant in the cultivation of vegetables such as leaves (spinach, lettuce, parsley), and vegetables less demanding in water (okra, pepper, eggplant ...) as well as carrots, green beans, zucchini, etc. Unlike market gardeners, rice cultivation and rice-fish farming are practiced by men respectively 87% and 93% of the farmers met against 13% and 7% of women who work most often on undeveloped perimeters (rice perimeter of "Toumbokaha, S/P Timbé" where 68 ha of developed property belong to men while women are relegated to the lowlands located on the undeveloped part (40 ha). Women are generally employed as labour, mainly for the collection, winnowing and marketing of rice crops. They practice these crops in pure or in combination or rotation. This is the case of the women of KANI who often drive rice when there is enough rainwater.

4.1.2. Distribution of labour by sex (male and female)

According to the group discussions, it emerges that there is a sexual division of work:
The men oversee the tasks related to the preparation of the land and the soil (clearing / felling, making mounds / boards, ploughing) and the spreading of fertilizers and phytosanitary treatments as well as the cutting of stakes.
Women oversee weeding, transplanting, harvesting and post-harvest activities.
Seeding, nursery, planting and watering activities are mixed. They are practiced almost equally by women and men but under very different conditions. For example, men mainly water with motor pumps from low-draining water sources (lakes, rivers, dams) while the women interviewed reported watering with manual watering cans from boreholes (wells) whose water dries up before the end of the season, forcing them to travel longer distances or search for water in deeper and deeper wells. This particularly exacerbated hardship in women causes injuries to the hands. In the north (Katiola, Dabakala, Korhogo, Ferke Boundiali), women water their plots morning and evening. This watering time acts on the domestic workload, especially the kitchen which is lagging and is of lower quality (because practiced in haste). This situation causes discontent and disputes between couples, thus increasing GBV.
Some work such as staking tomato plants is carried out in a complementary way by men and women. The men cut the staking woods, while the women carry out the operations of attaching the plant to the guardian.
The following table shows an example of the distribution of spots on vegetable crops.

Table 3 : Distribution of labor between men and women in agricultural crops

Tasks performed	% by		Constraints encountered
	W	M	
Market gardeners			
Realization of the nursery	50%	50%	
Land clearing/felling	3%	97%	Very difficult work requiring more physical strength and financial means for women.
Ploughing	30%	70%	Difficult access to motorized equipment
Making boards / Billonnage	20%	80%	Strenuous activities
Transplanting / seeding	40%	60%	Absence of machinery
Watering	55%	45%	Absence of water, drying of water points and resources, purchase of water and transport by tricycle, distance from the watercourse
Fertilizer application	10%	100 %	Difficult access to fertilizers, training problems for women
Weeding	70%	30%	Aches
Phytosanitary treatment	3%	97%	PPE not available, lack of protection
Harvest	80%	20%	itching, low-paid services, Crop damage caused by cattle
Packaging/ Packaging	95%	5%	
Transport	40%	60%	Heavy loads
Marketing	70%	30%	
Debt collection	70%	30%	

Source: Information-gathering mission

NB: The proportions mentioned in this table are based on the estimates (perceptions) of the interviewees during the mission.

Feedback

The distribution of field work by sex may vary from one locality to another, depending on the resources available (water source, pre-financing capacity of input suppliers, kits provided by support structures, etc.), the means available to the individual or his group/cooperative, etc.

Some women's organizations do most of the work on their own. This is the case of KANI, NINAKIRI, Niamien-moh d'Attossè.

When the woman owns a plot, she has the tasks "considered masculine" carried out by service providers (often young men or youth organizations). Precedence is often given to men, for example, for access to watering services by motor pumps. Although paying the same rights to access the different performances, they are neglected in the programming (case of YOUALLA, Vavoua).

When men and women provide labour, women are paid less than men for the same working hours.

When the wife works with her husband in the same field, the distribution of resources from their joint activities is not equal between the two sexes. The proportion varies between 25 to 40% for women against 60 to 75% for men (example in Attossè). In general, the wife has the obligation to work in the field of the husband who takes precedence over his.

Ricefish farming

Tasks performed	% by		Constraints encountered
	W	M	
Fish farming			
Reclamation	**0%**	**100%**	
Picketing	**0%**	**100%**	
Pond digging	0%	95%	Very arduous, non-motorized and very expensive work; Lack of skilled labour.
Pipe fitting (supply and drainage network)	**0%**	**100%**	
Impoundment	**3%**	**97%**	
Stocking	**10%**	**90%**	
Feeding	10%	90%	The cost of food is extremely high. Remote supply point, cost of transportation difficult access to granular, grinder, mixer and fry;
Pond maintenance	**5%**	**95%**	
Control fisheries	10%	90%	Flights
Harvest	20%	80%	
Emptying ponds	**20%**	**80%**	
Transport	**80%**	**20%**	
Marketing and debt collection	90%	10%	
Rice growing			
Nursery	**50%**	**50%**	
Clearing	**10%**	**80%**	
Ploughing	**5%**	**95%**	
Planting	**5%**	**95%**	
Transplanting	**95%**	**5%**	
Water intake according to phenological stages	**30%**	**70%**	
Fertilizer application	**10%**	**90%**	
Weeding	**60%**	**40%**	
Maintenance of traps () and irrigation networks	**5%**	**95%**	
Phytosanitary treatment	**5%**	**95%**	
Harvesting	**30%**	**70%**	**Women do it with a knife while men use the sickle**
Hype	**30%**	**70%**	
Winnowing	**100%**	**0%**	**Sore arm and back**
Drying	**95%**	**5%**	
Packaging/ Packaging	**20%**	**80%**	
Transport	**0%**	**100%**	
Marketing	**50%**	**50%**	
Debt collection	**50%**	**50%**	

Comment

Rizipisciculture is an activity practiced by both men and women. In general, landscaping work requiring hard work and is dedicated to the husband or carried out using paid external labor. The woman does almost everything in rice-fish farming when she is responsible for the fish farming activity within the household, she participates in all fish farming activities, from the development of rice fields to the sale of fish. Also, when she is a wife, the woman is indispensable in rice-farming. Its activities concern transplanting, feeding, fertilization, sale, harvesting. However, it does not intervene in activities requiring technicality, such as laying for egg-laying, for example.

4.2. ACCESS AND CONTROL OF RESOURCES

Resources used	Access		Control (Who has the power to decide)
	Conditions of access	Who uses?	
Natural resources 1-Earth	Anyone can use the land under the following conditions: Marriage/rental/landowner/inheritance/maintenance contract of the plot of land chief (case of the group visited in Katiola)	Male and female	Men, chiefdoms, landowners and private owners. The chief of land,
2-Water:		Male and female	Men Communities
Physical Resources Well Pump Etang Tools: Daba, watering cans, cans Fertilizer Phyto products Herbicides Means of transport (Kia) ...	Well/motor pump owner Project beneficiary (case of the CARITAS project) Paid service Owner/ rental/ inheritance/ wedding/ Small tools are usually individualized and acquired. For machines, it is paid services Paid services	Male and female Men Women and men Women and men	Cooperatives / women and men Men Men Women and men Men
Human resources Formation	For the female workforce, it is necessary to be the husband of the woman Rental of labour	Men Women and men	Men Young men

Resources used	Access		Control (Who has the power to decide)
	Conditions of access	Who uses?	
Health	All children, with a slight priority given to young boys. - Health centres are more or less frequented.		Women and men
Financial Resources Equity Tontine Supplier credit MFI bank credit barter WITH ... Ready	Have own income from IGAs Post-harvest contribution/group member Member of cooperative or group / producer Fulfill the conditions of the loan	Men and women More women than men Men and women members / producer Member of cooperative or group / producer Mostly men	Men and women More women than men The cooperative or group/producer Financial institutions
Social Resources Services rendered by the Associations... Conflict management	Delivery of feed, fry, training,		Men with a proportion of women

<u>Feedback</u>

Natural resources

The natural resources used for market gardening, rice and fish farming are land and water. These two resources are essentially controlled by men (heads of land, landowners, heads of families). Women and young people can access it at their request. During the mission, people with formal title deeds were not encountered in either men or women. The woman receives her access to land by inheritance, by her husband (for those who are married) by the chief of land or the village for women's organizations who request it from the village community. Women benefit from only small portions of family land. They can also lease land or obtain community plots through village chiefs, land chiefs, politicians through projects usually free of charge for exploitation. This is the case of the eight (8) women of Youalla (0.5ha) and the COPROVICO group in the commune of Katiola.

In terms of market gardening, the mission encountered many cases of land rental practiced for many years. Although there is no formal contract (mentioned in writing), the clauses seem very clear to each stakeholder. When the exploitation of a plot is supported by a project, relocations can be made. It is therefore necessary for the project to anticipate these risks by requiring beneficiaries to provide a land use agreement document for at least five (5) years.

At the water level, access seems to be conditioned by the capacity and means of dewatering. Small-scale farmers, mainly women, rely on rainwater and spring water that their physical capacities allow.

Medium-level producers, especially those who have market gardening as their main source of income, invest in equipment such as motor pumps with adapted pipes to access water all year round. Through some projects, women have access to boreholes to water their crops. When these wells dry up or become too deep, they stop tapping in. In this case, they can access paid watering services from motor pumps by private individuals. But in general, they stop the activity to wait for the next rainy season.

Physical Resources

The physical resources used by the people met during the mission consist of equipment and infrastructure to access water (Wells; Motor pump; Pond) agricultural tools and equipment (Daba, watering cans, cans ...) agricultural inputs (fertilizers; Phytosanitary products; Herbicides...) and means of transport (tricycles, Kia truck; ...)

At the level of the rice ponds/traps, women have access to the resource but usually use it as a lessor of the perimeter, sister, wife or other relatives of the landowner. Sometimes husbands leave one or two fish ponds to their wives (Wazi fish farm, Sayo,). It should be noted that the income from these activities accrues to them. This income is used to meet the needs of the daily life of their household (meals, health, schooling, clothing, ...). On non-individualized community plots, priority for the use of the resulting income is given to socio-community activities (birth, wedding, association party or end of year ...) and funerals (rental or purchase of tarpaulins, chairs, pots, mats ... for the support of a grieving member).

As far as small tools (daba, watering cans, jerry cans) are usually individual and controlled by both women and men. Agricultural machinery or mechanized tools and harnessed crop cattle are controlled by men. They use it for their own needs and turn it into paid services that are also used by women or their groups.

At the level of agricultural inputs (fertilizers, plant protection products, herbicides, seeds) access and control depend on the financial resources available and also on good technical knowledge of these inputs. The women we met have limited access.

Human resources

The analysis of human resources concerned the educational level of men and women, their technical capacity and their health. Focus group estimates show that there is a gap between men and women. There are more illiterate women among women. In terms of technical capacities, women are represented on several links in the value chain of vegetable crops, rice and fish farming. They make up the bulk of the workforce.

Financial Resources

The analysis of financial resources consisted of information on the sources of financing for activities, the availability of savings and the challenges and constraints involved. It emerged from the various exchanges that the activities are financed from own funds and by input suppliers and some large customers. Some men's cooperatives set up a savings fund from levies on members' sales to finance activities. Women's equity is often taken from their tontine activities (VSCA). There have been two reported cases of funding by a male microfinance institution (COOPEC). The following table shows the sources of funding for Channel 2 of the Mission.

Groups/Beneficiaries met	Financial Resources
Agnibilékrou (DA KOUASSIKRO)	Equity
MOYEBLA Association of GBOFIA	Loans from parents Self-financing (savings on Orange Money)
Yamoussoukro (Petit Bouaké)	Establishment of a fund, at the level of the COOPERATIVE, for the financing of activities Financing obtained from COOPEC for rice-growing (bank loan)
Abengourou (Mrs ASSIE KOKO Jacqueline)	Equity
Group of vegetable growers	Equity Supplier loans COOPEC loan (1 case)
SCOOP PROVIMABO	**Equity**
EBO EKOUN (Community-Women Plot**)**	Membership fees Part of the revenue is shared and 40% in reserve
SAKASSOU	**Group fund (30**% of production costs) (20% of harvests are saved to finance activities and support for members) **Loans from suppliers** (70% of production costs)
Kongodekro (Bouaké)	**Equity** **Loans from customers** (market vendors)

Social Resources

The analysis of social resources focused on the level of organization and cohesion in groups, communication and conflict resolution systems, and reward systems.

No.	Locality	Denomination	Date of creation	Type of organization	Number of Members		
					M	W	Total
	Bondoukou	BAYA Group		Legal cooperative	17	3	20
		SAMA TANWO Group		Legal cooperative	7	6	13
		Young dynamics of Méré		Group In formation	10	0	10
		JPMB		Legal cooperative	43	7	50
	M'BAHIAKRO	BADEGNAN		Informal grouping	3	27	30
		DEMIN		Informal grouping	2	15	17
		SUTRA		Informal grouping	1	8	10
		BENGADI		Informal grouping	1	29	30
	BOCANDA	Association of Market Gardeners of Bocanda		Informal grouping	8	0	8
	Toumodi GBOFIA	MOYEBLA Association of GBOFIA		Association In constitution	51	9	60
	Yamoussoukro	AGRIHEALTHY		Cooperative	45	5	50

No.	Locality	Denomination	Date of creation	Type of organization	Number of Members		
					M	W	Total
	Petit Bouaké			Legal since 2018			
	Tiébissou						
	Beoumi	SCOOP PROVIMABO		Cooperative Accreditation 2022	13	9	22
		EBO EKOUN		Informal grouping In the process of being formalized	4	30	34
	Sakassou MAHONOU (N'ZUESSI 1:7 N'ZUESSI 2: 13 KOUAKRO: 7 KOKODJA 1:5 KOKODJA 2: 8)	SCOOPS LOME KPATIKPA		Informal grouping In the process of being formalized	27	10	37
	Bouaké KONGODEKRO	Espoir DJIGUI by KONGODEKRO		Legal Association 2019	51	33	84
1		SCOOPS WAZI FISH FARMING	2014	SCOOPS	33	3	35
2		SCOOPS EKWLEYO	2017	SCOOPS	98	2	100
3		Kani, Lanaya women's group of Bamanasso	1996	GI	0	100	100
4		Ninakiri (groupings 1 and 2)		GI	2	98	100
5		Atossè (the Emien-eni-edjou group)		GI	9	8	7
6		Atossè (The group and Niamien-Moh)		GI	1	10	11
7		COPROCVIKA		grouping			
8		CGA of NIANRA AND TOUMBOKAHA		grouping			
9		KOKOUWENI		grouping			
10		Niene- thama of logokaha		grouping			
11		Yrivongo de debegnanvogo		grouping			
12		Fougnigue		grouping			
13		Nahoton Gbogola		grouping			
14		Kahatana		grouping			
15		COOP –CA GNANDONA-LOTCHAN		Coop			

No.	Locality	Denomination	Date of creation	Type of organization	Number of Members		
					M	W	Total
16		Ste coop TELE		Ste coop			
17		Ste coop BFCT		Ste coop			
18		LANAN		Grouping			
19		Djadja/ Sinekeneya		Grouping			
20		Fish farmers' cooperative		Coop			

Comment

Thirty-five (35) organizations were met during the mission. The main finding is that women's organizations are essentially informal with social objectives. Most provide assistance services such as donations for childbirth, marriage, death, etc., to their members. Very few use these organizations to solve common problems related to economic activity such as input supply, more remunerative markets, approved prices, the arduousness of the work (watering, weeding ...) equipment in material, etc.

Cohesion and understanding in these organizations are considered good and were cited as strengths in the self-analysis by the SWOT matrix carried out with the people interviewed.
Participation in agricultural projects allows members of the organizations met (formal or informal) to access community plots and to benefit from donations of agricultural equipment from these projects. In terms of financing and refinancing their activities, members also benefit from loans from tontines or VSCAs organized within the groups. The cooperative societies visited provide other types of services in addition to their members (supply of fry, feed, search for partnerships and markets).

4.3. STRUCTURE OF DECISION-MAKING POWER

No.	**Type of decision**	**Who makes the decisions**		
		women only	**Men only**	**Men and women**
	Belong to a group	Xxx		
	Participate in the evening class: literacy			Xxx
	Harnessing an Earth Potion		Xxx	
	Share revenue			Xxx
	Decision within the home			Xxx
	Investments in agricultural tools and fertilizers		Xxx	
	Investments in climate information services	-	-	-
	What crops to plant and when to plant (cash crop)	Xxx	Xxx	
	What crops to plant and when to plant (subsistence food crops)			Xxx
	Harvest period	Xxx	Xxx	
	Sale of assets	Xxx	Xxx	
	Testing new farming techniques	Xxx	Xxx	The group
	Seed investments and saving	Xxx	Xxx	The group

No.	Type of decision	Who makes the decisions		
		women only	Men only	Men and women
	techniques			
	Selling price of the crop	Xxx	Xxx	The group
	Decision in the community		Xxx	

Feedback

In reality, no decision is taken unilaterally without the other party informing the others concerned. At the level of women in groups, it is within these groups that decisions are taken. There is a relative empowerment of women on the choice of speculations to cultivate and the management of income from these plots. At the level of family farms, the decision is mainly on the man, but he often takes the opinion of women.

4.4. PERCEPTION AND IMPACT OF CLIMATE CHANGE BY GENDER

Heading	Man	Woman
Perception	Drying up of water sources: over the period from February to March Increasingly dry season Increasingly warm climate Late rain start Beginning of the rainy season in March with low rainfall, or even stops at times Irregularity of rains but abundant when it rains Flooding of some sites during the rainy season Shorter rainy seasons; Extension of the dry season Long dry spell (September to April)	Drying up of water sources: over the period from February to March Flooding of some sites during the rainy season Rainy season - before (January-July, September-December) Increasingly dry season Increasingly warm climate Rainfall irregularity Beginning of the rainy season in March with low rainfall, or even stops at times
Impact	Drought Water scarcity	Reduced production due to climate change; More stress caused by water supply on the plot and for household needs Impacts on meal quality Increased arduousness of work Less availability (working time increases due to CC)
Endogenous adaptation strategies	Short-cycle crop management. Conducting several speculations Acquisition of irrigation systems (motor pump + piping) Fallow practice (Grows 1 year, lets stand for several years before returning to cultivate) Pond stocking programming Moves their fields according to the movement of water sources with risks of	Conducting several speculations in rotation or association Shift in production cycles (due to rain irregularities) Rainfed crops Fallow practice (Grows 1 year, lets rest for several years before returning to cultivate) Reduction of areas to be cultivated No production in the dry season Increased depth of wells to obtain small

Heading	Man	Woman
	crop damage by flooding in return for water Shifting production cycles (due to rain irregularities) by men and women Pond stocking programming	amounts of water Practice of less water-intensive crops (okra) in the dry season Practice of Rainfed Crops Shift in production cycles (due to rain irregularities) Reduction of the area to be cultivated

Feedback

Producers are adopting other crops, such as rice cultivation flooded during rising waters while waiting for the right time for market gardening, planting crops with short cycles. Sometimes, they stagger / shift the different implementations to give themselves more luck and lead others in association.

5- TRAINING AND LEVEL OF TECHNICALITY

Training and Technology Information

Steps	Groups/Beneficiaries met	Training topics received	Structure that provided the training	Level of expertise	Training needs	Knowledge of technology (solid rain or rice-growing)
Bondoukou	**BAYA Group**	No training received	N/A		Production techniques of market gardeners	Yes
	SAMA TANWO Group	Market garden production techniques (11 women and 12 men)	ADCVI		**-**	Yes
	Dynamic Youth	No training received	N/A		Production techniques of market gardeners	Yes
	JPMB	No training received	N/A		Production techniques of market gardeners	Yes
Agnibilékrou	**Producer of market gardeners of DA**	Production technique learned on the job	N/A		Production techniques of market	08 people who have

Steps	Groups/Beneficiaries met	Training topics received	Structure that provided the training	Level of expertise	Training needs	Knowledge of technology (solid rain or rice-growing)
	KOUASSIKRO				gardeners	heard of technology in the audience
Abengourou	**MR. TRAORE MOCTAR**	No training Learned on the job Receives consulting support from a structure specialized in fish farming (located in Abengourou)	N/A	Less than a year	Fish production technique	Yes, he heard about it from Agent ANADER
	Market gardeners	No training, learned on the job	N/A	More than 10 years	Production techniques of market gardeners	No
	Ms ASSIE KOKO Jacqueline	No training received	N/A	Less than 5 years	Training on rice-crop technology	Yes, she attended the pilot phase wrap-up meeting
Dimbokro	**Group of vegetable growers**	No training received Experience gained from father to son	N/A	More than 10 years of experience on average	Technique of production of market gardeners Solid rain technology Operations and Revenue Management	No, for the most part. A few producers have heard about it
Toumodi	**MOYEBLA Association of GBOFIA**	Training on production techniques (tomato, cassava eggplant, okra)	ANADER		**Commercialization** **Management of producers'** incomes,	

Steps	Groups/Beneficiaries met	Training topics received	Structure that provided the training	Level of expertise	Training needs	Knowledge of technology (solid rain or rice-growing)
					Management **of the irrigation system** (installation planned by ANADER)	
Yamoussoukro	**Petit Bouaké**	Training on fish farming techniques (in the classroom 1 day and practice over nearly a year)	ANADER		Fish feed production technique	Good knowledge of the technology as it benefited from ANADER training as part of the pilot phase
Béoumi	**SCOOP PROVIMABO** **EBO EKOUN**	Training on GAP (through FFS)	ANADER	More than 10 years	Aboveground production technique Pest (insect) management	Good knowledge of the technology by ANADER
Sakassou	**MAHONOU N'ZUESSI**	On-the-job training Training on GAP (tomato technical itineraries)	ANADER	More than 10 years of experience	Disease and pest management Innovation Maintenance of motor pumps	Good knowledge of solid rain technology
Bouaké	**KONGODEKRO**	The president (the only one who can read and write) receives training and trains the other members (men and women). They benefit from advisory support from	ANADER and other structures	Between 20 and 30 years of experience	**Production techniques** **Management of aggressors** (diseases and pests) **Revenue Management** **<u>Wives</u>** **Good agricultural practice**	The president had a knowledge of solid rain as having been trained on this technology

Steps	Groups/Beneficiaries met	Training topics received	Structure that provided the training	Level of expertise	Training needs	Knowledge of technology (solid rain or rice-growing)
		ANADER Women cannot move because they are married (2 women can read and write). For women, training will have to be done on sites			(technical itineraries) because they are new **Revenue Management**	

The women and men met during this mission generally have a long experience (more than 5 years, even up to 30 years) in the practice of vegetable crops. The first learnings were made on the job by observation and or practice with an elder or a resource person in the family. Training was subsequently provided by ANADER within the framework of projects as shown in the table below:

Training provided by ANADER

No.	Period of Formation	Training theme/topic	Training structure	Duration
	2020	Market gardening BPA	ANADER	1 year
	2018	SRI	ANADER	Three months
	2019-2020	Cassava	ANADER	1 month
	2020	RIZIPISCIULTURE	ANADER	6 months

Feedback

Farmers monitored by ANADER receive training in the case of projects.
Training by other structures has also been reported (ADCVI; CARETAS; ...) and input suppliers.
The people met, men or women, believe that they have good expertise in knowledge of cultural practices (they have given themselves scores above 6 on a scale of 10). But ANADER technicians report many shortcomings in cultivation practices, especially among small farmers (women). The general bad tendency at this level is to buy inputs all coming based on what is cheaper and available on the market and not according to the real needs of the speculation practiced. Crop densities are also not respected. The tendency is to put more than enough, hoping after the impact of climate variability to still have surviving plants.
The need for capacity building in good cultural practices is obvious. The people met are very open on this point, because although they consider themselves to have good expertise, ask to receive capacity building to improve their expertise and specially to adapt to environmental contexts marked by climate change and water scarcity.
Reluctance has been expressed by some men (notably in Bondoukou; Bouaké, etc.) about the participation of married women in training or meetings outside the women's site or place of residence.

The project must take these subtleties into account, by promoting in situ training for women and by informing and involving men (spouses of female beneficiaries) from the start of the project, on the activities of the project, to avoid possible conflicts.

5. THE MAIN CONSTRAINTS AND NEEDS OF MEN AND WOMEN

TOPICS	WOMEN	MEN	WOMEN / MEN
CONSTRAINTS	Reduction of arable land Travels distances in search of water / Can load in case of lack of water on the perimeter Lack of technical and organizational training Low income / production • Elderly women can't water their plots • The plots are small areas • Soreness following transplanting, watering activity • undeveloped perimeter • Small tools for work (ploughing with daba) • The workload has an impact on the quality of the meal / tension in couples • The dip degrades women's hands and causes various injuries • Failure of sowing/discouragement • Lack of manpower • High labour costs		Strenuous watering Animal damage High cost of transporting the crop Drought / lack of water / dry wells / reduction of areas to be set up
NEEDS	• Mill in the village to save time • Workforce • Protective mesh • Perimeter planning • Workforce • Drilling and permanent water source • Cash market • Marketing Support / Market • Support for the organization / • Support for the acquisition of modern equipment (tricycles Transplanting machine • Support for the financing of activities	Support for agricultural equipment (motor pump, piping harvester, tricycles, machetes) Water retention Drilling Barbed wire fence Support for digging ponds Support for obtaining machinery to make pelletized feed	Training on cultivation and marketing techniques Training for rice-fish farming

6. SWOT MATRIX

STRENGTHS	WEAKNESSES
Solidarity around events occurring in the lives of members Courage / Will to succeed / Cohesion in the group / Mutual respect Long experience in the activity / Good expertise in market gardening Autonomy in resource management Existence of a caisse to meet members' small financing needs Existence of a cooperative credit union Input lending in co-operatives Nursery Specialist Producers benefiting from ad hoc advisory support from ANADER Existence of self-help groups Maraichers organized in a cooperative Irrigation system and tricycle for some producers	High cost for the removal of goods from the fields to the village Lack of irrigation equipment (motor pumps, piping) Difficulties to reach the plantations in the dry season (more than 4 km from the village) Difficulties in transporting products (no tricycles for the grouping, insufficient rental tricycles) Irrigation system destroyed by flood this year Insufficient funding of activities (due to high input costs) Rudimentary means of irrigation Insufficient means of transport for the evacuation of products (resulting in post-harvest losses) High costs for the acquisition of inputs
OPPORTUNITIES	**THREATS**
Land availability Project Beneficiaries Marketing Network Existence of suppliers who trust producers and agree to accompany them	Expensive feed for fish feed (BIOMAR which is an imported feed) High cost to dig the ponds (400,000 FCFA for the creation of a 400 m2 pond)

7. LINES OF ACTION

Lines of action	Problems to be solved	Calendar
Update of diagnostic tools and gender matrix as part of the project	✓ Gender Transversality ✓ Commitment to gender equality ✓ Operational mechanism for gender mainstreaming ✓ Women's financial empowerment ✓ Leadership, representation and participation of women in decision-making bodies, ✓ Women's access to women's leadership and decision-making	1st quarter of the first year
Training of agents on all implementation tools Gender in workshop (32 Areas concerned)		1st quarter of the first year
Multiplication of training		1st quarter of the first year
Sensitization of beneficiaries for the commitment to gender equality / women's participation in the project		1st quarter of the first year
Installation of Gender Learning Frameworks (CAPROGED)		2nd semester of the first year
Realization of the reference situation of the beneficiaries (establish the vulnerability matrix / identify the vulnerable and marginalized targets / social screaming / description of gender inequalities)		2nd quarter of the first year
Mission to verify the identification data of vulnerable groups and		2nd quarter of the first year

Lines of action	Problems to be solved	Calendar
Dissemination of themes on gender, leadership, structuring and formalization of women's organizations in CAPROGED:	✓ Fighting inequalities / GBV ✓ Equitable access to productive resources ✓ Economic opportunities and access to resources, Capacity building.	During project implementation
Set up Gender Based on Positive Masculinity Committees		2nd quarter of the first year
Establishment and management of revolving funds		1st quarter of the second year
Implementation and management of VSCAs		1st quarter of the second year
Supervision of gender training (DR headquarters and Zones)		During project implementation
Mission to assess progress on gender equality		One mission every year
Preparation of the gender mainstreaming progress report		One report every year

ANNEX 3

List of stakeholders consulted

Region	District	Date	Stakeholders	Total	Females	Males
HAMBOL	Katiola (town)	October 11, 2022	Women food producers of the COPROVIKA cooperative	29	29	0
			Secretary General 1 of Katiola Prefecture	1	1	0
	Toumbokaha, S/P Timbé	October 11, 2022	Rice farmers in the rice-growing perimeter	15	0	15
	N gorla (Dabakala)	October 11, 2022	Food producers of the Kikouweni group	34	16	18
TCHOLOGO	CAP SIKAN Logokaha (Ferkessédougou)	October 12, 2022	Food producers	58	34	24
	Ferkessédougou	October 12, 2020	Secretary General of the Prefecture	1	0	1
			Chief of Staff Prefecture of Ferkessédougou	1	0	1
PORO	Takaly (Korhogo)	October 12, 2022	Women food producers of the group ..... by Takaly	32	22	10
BAGOUE	Nahoton (Tengrela)	October 13, 2022	Women food producers of the Nahoton group	28	28	0
	Kantara (Boundiali)	October 13, 2022	Women food producers of the Kahatana group	26	26	0
	Gbon (Boundiali)	October 13, 2022	Rice farmers' cooperative COOP – CA GNANDONA-LOTCHAN of Gbon	11	3	8
	Boundiali	October 13, 2022	Regional Director of Agriculture and Rural Development	1	0	1
KABADOUGOU	Madinani (town)	October 14, 2022	Women food producers of the TELE Cooperative of Madinani	121	117	04
	S/P Tiémé	October 14, 2022	Women food producers of the BFCT cooperative in Tiémé	26	24	02
	Madinani	October 14, 2022	Chief of Staff of the Madinani Prefecture	1	0	1
FOLON	Kaniasso (Minignan)	October 15, 2022	Women food producers of the LANAN group in Kaniasso	16	15	1
	Minignan	October 15, 2022	Women food producers of the Minignan group	18	18	0
BAFING	Touba	October 17, 2022	Women food producers of the Sinekeneya group in Mahanon	18	17	01
TONKPI	Danané	October 17, 2022	Société coopérative SCOOP CPD des pisciculteurs de Danané	11	3	8
	Danané	October 17, 2022	Secretary General Prefecture of Danané	1	0	1
GUEMON	Duékoué	October 18, 2022	Fish and rice farmers in the department of Duekoué	16	0	16
GONTOUGO	Bondoukou	October 11, 2022	Head of Cabinet of the Prefect of the Region, Sub-prefect,	18	0	18

Region	District	Date	Stakeholders	Total	Females	Males
			Regional Director of Agriculture Acting Area Manager and Collaborators Vegetable producer groups and associations			
INDENIE DJUABLIN	Agnibilekrou	October 11, 2022	Regional Director of Agriculture ANADER Zone Manager and collaborators	4	1	3
	DAKOISSIKRO	October 11, 2022	Vegetable growers	42	14	28
	Abengourou	October 12, 2022	Prefect of the Region, ANADER Zone Manager and collaborators Rice farmer	3	1	2
	Sankadio Kokakro	October 12, 2022	Vegetable growers Farmers Fish farmer	10	2	8
N'ZI	Dimbokro	October 12, 2022	ANADER Zone Manager and collaborators Vegetable grower groups	52	10	42
	M'Bahiakro	October 13, 2022	Prefect of the Region; ANADER Zone Manager and collaborators Vegetable Grower Groups	90	80	10
	Bocanda	October 13, 2022	Interim of the Head of Zone ANADER and collaborators Vegetable Growers Group	4	1	3
LACS	GBOFIA/ Toumodi	October 14, 2022	Head of Zone ANADER Leadership Vegetable Growers Group	25	8	17
	Yamoussoukro	October 14, 2022	Regional Director Agriculture Regional Director of the Ministry of Animal and Fisheries Resources Head of Zone ANADER Farmers	7	0	7
GBÊKÊ	Tiendiekro/ Tiébissou	October 15, 2022	ANADER Zone Manager and collaborators Vegetable Growers Group	12	4	8
	Béoumi/ Ancien BOUREBO	October 17, 2022	Sub-Prefect Acting ANADER Area Manager and Collaborators Vegetable Growers Group	38	19	19
	Sakassou/ Mahonou N'Zuessi	October 17, 2022	Secretary General of the prefecture; Acting ANADER Zone Manager and collaborator; Group of market gardeners	6	1	5
	Kongodekro/ Bouaké	October 18, 2022	Acting Head of Zone; Vegetable Growers Group	22	3	19
MARAHOUE	Bouaflé	October 10, 2022	Regional Directorate of Agriculture Head of Area ANDER	06	00	06
	ATOSSE		Maraichers producer groups	20	10	10

Region	District	Date	Stakeholders	Total	Females	Males
	30km from Bouaflé		GNAMIENMOH EMIAN EGNI EDJOU			
HAUT SASSANDRA	Daloa	October 11, 2022	Regional Directorate of Agriculture Head of Area ANDER of Daloa Head of zone ANADER of Vavoua ANADER Issia Area Prefect of Region	18	02	16
	GAKO Extension/Daloa		Rice producer groups: ***FOUGNIGUE***	07	00	07
	YUALA/ 20km from Vavoua		***CGA*** of the perimeter developed by ONDR	23	03	20
	GAZIBOUO /ISSIA	October 13, 2022	Rice and fish producers: ***SCOOP WAZI PISCICULTURE***	05	00	05
WORODOUGOU	SEGUELA	October 12, 2022	Regional Directorate of Agriculture Head of Zone ANDER of Séguela Head of ANADER zone of Mankono Prefect of Region	07	01	06
	KANI		Groups of women producers of market gardeners ***LANAYA***	76	76	00
	MINAKIRI /MANKOKO		Groups of women producers of market gardeners and rice ***CONFIDENCE & HOPE***	29	29	0
	POKOUTOU / MANKONO		Groups of women producers of market gardeners and rice ***PEACE***	10	10	0
GOH	GAGNOA	October 13, 2022	ANADER area of Gagnoa	06	0	06
	GAGNOA/ Barouhio		Rice and fish producers: ***AGRO SEKA 1***	05	00	05
NAWA	SOUBRE	October 14, 2022	Regional Directorate of Agriculture Head of zone ANADER of Soubré Prefect of Region	05	00	05
	SAYIO/ SOUBRE		Rizipisciculture applicators: ***SCOOP EKWLEYO***	10	04	06
GOH	OUME	October 15, 2022	ANADER area of Soubré	02	00	02
	TONLA/ OUME		Rizipisciculture applicators: G JODEN	05	00	05
TOTAL				**1028**	**632**	**396**