



GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title: Agricultural Value Chains Resilience Support Project (PARFA)			
Country(ies):	Senegal	GEF Project ID: ¹	9134
GEF Agency(ies):	IFAD UNIDO	GEF Agency Project ID:	UNIDO: 150071 IFAD: n/a
Other Executing Partner(s):	<ul style="list-style-type: none"> - Ministry of Agriculture and Rural Equipment - Institut de technologie alimentaire (ITA, Institute of Food Technology) - Le Commissariat à la sécurité alimentaire (CSA) - Agronomes et vétérinaires sans frontières (AVSF) - L'Institut national de pédologie (INP) - Innovation, environnement, développement (IED Afrique) - Le Centre de suivi écologique (CSE) - National Renewable Energy Agency (ANER) - The Office of the rural boreholes (Ofor) 	Submission Date:	27 June 2016
		Resubmission Date:	23 Nov 2016
GEF Focal Area (s):	Land Degradation (LD) Climate Change (CC) IAP-Set aside	Project Duration (Months)	48 months
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input checked="" type="checkbox"/> IAP-Food Security <input checked="" type="checkbox"/>	Corporate Program: SGP	<input type="checkbox"/>
Name of Parent Program	Fostering Sustainability and Resilience for Food Security in Sub-Saharan Africa (IAP – Food security)	Agency Fee (\$)	649,752

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
IAP-Food Security, LD-1, Program 1, (component 1 of the project which corresponds to component 2: Scaling up of integrated approaches)	GEFTF	2,165,835	8,700,838.5
IAP-Food Security, LD-1, Program 2 (component 1 of the project which corresponds to component 2: Scaling up of integrated approaches)	GEFTF	2,165,835	8,700,838.5
IAP-Food Security, LD-3, Program 4 (component 2 of the project which is contributing to 1, 2 and 3 of the IAP: scaling up, Institutional frameworks and monitoring and assessment)	GEFTF	1,443,890	5,571,078
IAP-Food Security, LD-4, Program 5 (component 2 of the project which is contributing to 1 and 2 of the IAP scaling up and Institutional frameworks)	GEFTF	721,945	2,785,539
IAP-Food Security, CCM-2, Program 4 (component 1 of the project which corresponds to component 2: Scaling up of integrated approaches)	GEFTF	721,945	2,785,839
Total Project* Cost		7,219,450	28,544,133

¹ Project ID number remains the same as the assigned PIF number.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#).

B. PROJECT DESCRIPTION SUMMARY

Project Objective: Increasing sustainability and resilience of agriculture and value chains for an enhanced food security in Senegal						
Project Components/ Programs	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co-financing
Component 1. Support to multi-stakeholder platforms	TA	Outcome 1. The multi-stakeholder platforms include issues of environmental degradation and climate variability in their activities	<p>1.1 Capacity building of actors at the national, regional and local levels (= 22 awareness workshops targeting 2,500 people; 14 training sessions for 800 beneficiaries)</p> <p>1.2 Promotion of mechanisms for coordinating and integrating best practices (= 1 resources mobilisation strategy for SLM; 400 participants in the works and exchange visits)</p>	GEFTF	720,000	7,961,880
Component 2. Upscaling of sustainable and resilient good practices	INV	Outcome 2. The resilience of the agricultural value chains is improved	<p>2.1 Sustainable water management (=10 000 m3 of water storage capacity yielded annually including 450 ha of land managed for water harvesting)</p> <p>2.2. Sustainable land management (= 300ha (6 valleys) of degraded lands recovered; 800 ha of exondated lands treated with soil and water conservation (SWC) and soil protection and restoration (SPR); 1,000 ha of mangrove restored; 4.5 t/ha/year of stored CO2-e)</p> <p>▪ 2.3. Sustainable energy and the increased value of agricultural and livestock products (= 20 solar pumping systems set up; 1,642 CO2-e reduction; 800 beneficiaries trained on utilisation of processing and preservation equipment; 20 pilot projects for increasing the value of agricultural and livestock products</p>	GEFTF	5,331,416	13,769,081

³ Financing type can be either investment or technical assistance.

			involving a total of around 100 production units)			
Component 3. Monitoring and evaluation of environmental impact and of project results	TA	Outcome 3. An effective mechanism for monitoring and evaluating environmental impact and food security is operational	3.1. Monitoring and evaluation of environmental impact (=1 monitoring and evaluation system on the environmental impact is operational) 3.2. Monitoring and evaluation of activities and of project results (=multidimensional tracking system developed; environmental monitoring system) 3.3. Knowledge management (= 3 strategic tools are based on the data of the environmental monitoring system)	GEFTF	825,000	4,382,058
Subtotal					6,876,416	26,113,019
Project Management Cost (PMC) ⁴				GEFTF	343,034	2,431,114
Total project costs					7,219,450	28,544,133

C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
GEF Agency	IFAD	Loans	26,130,000
GEF Agency	UNIDO	In-kind	319,700
GEF Agency	UNIDO	Grants	80,300
Recipient Government	Government of Senegal	In-kind	1,647,616
Beneficiaries	Beneficiaries	In-kind	366,517
Total Co-financing			28,544,133

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee ^{a)} (b) ²	Total (c)=a+b
IFAD	GEF TF	IAP - Food Security	Land Degradation	(select as applicable)	1,334,863	120,138	1,455,001
IFAD	GEF TF	IAP - Food Security	Climate Change	(select as applicable)	440,000	39,600	479,600
IFAD	GEF TF	IAP - Food	IAP Set Aside	(select as applicable)	1,834,862	165,138	2,000,000

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

		Security					
UNIDO	GEF TF	IAP - Food Security	Land Degradation	(select as applicable)	1,334,863	120,138	1,455,001
UNIDO	GEF TF	IAP - Food Security	Climate Change	(select as applicable)	440,000	39,600	479,600
UNIDO	GEF TF	IAP - Food Security	IAP Set Aside	(select as applicable)	1,834,862	165,138	2,000,000
Total Grant Resources					7,219,450	649,752	7,869,202

a) Refer to the Fee Policy for GEF Partner Agencies

E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁵

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	<i>0 ha of land</i>
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	<i>2250 ha</i>
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	<i>0 Number of freshwater basins</i>
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	<i>Percent of fisheries, by volume</i>
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO ₂ e mitigated (include both direct and indirect)	<i>From deployment of renewable energy systems (solar PV and biomethanation) - Direct: 1,642 t CO₂-e; Indirect: 6,500 - 5,175,000 t CO₂-e. Indirect mitigation from rehabilitation: Storage of 4.5 t/ha/year of CO₂-e (specifically in the 1,000 ha of mangrove forest that will be rehabilitated).</i>

⁵ Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the [GEF-6 Programming Directions](#), will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	<i>metric tons</i>
	Reduction of 1000 tons of Mercury	<i>metric tons</i>
	Phase-out of 303.44 tons of ODP (HCFC)	<i>ODP tons</i>
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	<i>Number of Countries:</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries:</i>

F. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? NO

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF Trust Fund) in Annex D.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF⁶

1. Component one in the child concept note for Senegal is now component two in the CEO Endorsement document and component two in the concept note is now component one in the CEO Endorsement document. This has been done for the purpose of alignment with the regional mother programme
2. Please note, the tracking tools, indicators and methods of calculation have not been conclusively determined yet, as they are being aligned with the regional ‘mother’ programme, for which the tracking tools, indicators and methods of calculations are still evolving.
3. For purposes of consistency with the project’s supporting documents, the acronym of the project’s French title (projet d'appui à la résilience des filières agricoles - PARFA) has been maintained throughout the CEO Endorsement document
4. PPG activities undertaken, to inform the formulation of the CEO Endorsement document, have include the following:
 - Baseline analysis of relevant sectors/technologies and ongoing initiatives
 - Formulation missions in the field
 - Technical coordination meetings
 - Financial and economic analysis of impacts

⁶ For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter “NA” after the respective question.

- Environmetnal and social assessments and management plans
- Gender assessment
- Multi-stakeholder consultations
- Establishing implementation/execution modalities
- Financial resource mobilization
- CEO Endorsement document and validation workshop

A.1 Project Description

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed

a. Context

5. Senegal covers 196,722 km² and has an estimated population of 14.54 million people, with a demographic growth rate of 2.9 % in 2014.⁷ The population is predominantly rural (64%), with a majority of women (52%), and relatively young (71.2% under the age of 19). With a gross domestic product (GDP) per capita of USD 14,957 2014 (World Bank), Senegal is among the poorest countries in the world. Its Human Development Index (HDI) value, estimated at 0.485 in 2013, ranks among countries with low human development (163 out of 187 countries).⁸ Poverty in Senegal fell only slightly over the last six years; from 48.3 % of households living below the poverty line in 2005 to 46.7 % in 2011 (see details in Annex 2 ‘Poverty, Targeting and Gender Aspects’, page 41 of the detailed Project Document Report (PDR)). Senegal has been facing a low rate of growth over the last decade; during the 2006-2014 period, the growth rate was only 3.4 % while that of the whole of Saharan Africa averaged 6 %.⁹ The weak economic performance of the country is due to the importance of the agricultural sector, an unfavourable climate for investment and business (weak governance and lack of infrastructure and human resources) and a loss of competitiveness. The services sector is still the most dynamic sector (+ 5.6%) and the secondary sector, driven by construction, began to recover after the 4.9 % fall recorded in 2013. The agricultural sector employs around 55 % of the active population (RGPHAE, 2013) and contributes up to 8 % of GDP. The growth rate of agricultural production, which was only 2.7 % from 1981 to 1995, is slightly less than the demographic growth rate (2.9%) and continues to decrease.

Agriculture and Livestock Farming and Rural Development Context

6. The Senegalese agricultural sector, which plays a leading role in the national economy and is characterized by the predominance of small family farms, has significant potential to contribute significantly to increasing household income and reducing the country's food insecurity. It has the potential to produce more because of the reserve of arable land and/or not yet exploited irrigable land and productivity gains that are still possible (see details in Annex 1 ‘National and Rural Development Context’, page 31 of the detailed PDR).

⁷ World Bank. World Development Indicators 2015.

⁸ Human Development Report 2014, UNDP.

⁹ World Bank. World Development Indicators 2015.

7. Despite its undeniable strengths, Senegalese agriculture faces several major constraints including: land degradation linked to population growth that increases pressure on the natural resources; stagnating yields related to land degradation and weak technological innovations; and difficult access to credit, quality inputs and farm equipment.
8. Livestock farming, the second economic activity pole of the primary sector (4.3% of GDP in 2011), practised by 350,000 families is characterized by an estimated 15.35 million heads in 2011, predominantly sheep (37.4%), followed by goats (31.9%) and cattle (21.9%). The livestock sector marked by traditional pastoral and agro-pastoral systems is facing two major challenges: the securing of pastoral livestock farming and the emergence of new type of farms that are well adapted to market realities. The concept of the pastoral unit (PU) popularized by projects such as the Agricultural Development Project in Matam (PRODAM), is a response for a rational natural resources management.
9. Inappropriate agricultural practices, overexploitation of forests, strong human pressure, climate variability and climate change impacts exert strong pressure on the natural resources, leading to ecosystem and land degradation, with the development of the phenomena of land salinization and acidification.
10. The Sudano-Sahelian type of climate is characterized by the alternation between the dry season, from November to May, and the rainy season from June to October. The analysis of climate data over the last ten years (2005-2014) in the project area shows: (i) a decline in rainfall, which varies from region to region from 0 to 9 mm /year; and (ii) a drop in temperature, which varies from 0.1 to 0.25°C over ten years. The temperature analysis over a longer 30 years period shows an increase, from about 0.1 to 0.5°C per decade in the PARFA area.
11. The climate projections indicate a positive gradient for temperature (warming) ranging from 0.8 to 1.1°C (sensitivity of 1.5°C) to 1.5-2.2°C (sensitivity to 3.5°C). Projections show two areas where the increase in temperature in the west will remain lower than that projected in the east. Regarding rainfall, the south will become drier than the north regardless of sensitivity. The effects of climate change will lead to increased salinization (especially in the groundnut basin), flooding of low-lying coastal areas (mangroves) and salinization of the groundwater. This will result in an acceleration of the tanne (salt flat) formation process, thus reducing the availability of arable land.¹⁰
12. The development strategy, the regulatory framework and the control of activities in the rural and agricultural sector are under the responsibility of different ministries: (i) Ministry of Agriculture and Rural Equipment (MAER); (ii) Ministry of Livestock and Animal Production (MEPA); (iii) Ministry of Environment and Sustainable Development (MEDD); (iv) Ministry of technical education and vocational training; (v) Ministry for Gender and Relations with African and Foreign Women Associations; (vi) the Ministry of the Family, Women's groups and early childhood; (vii) Ministry of Female Entrepreneurship and Microfinance; and (viii) Ministry of Ecovillages, Reservoirs, Artificial Lakes and Aquaculture. Overall, the country's institutions are provided with quality human resources whose operational capabilities are generally satisfactory, although sometimes limited by inadequate financial resources.
13. Decentralization is one of the major reforms of Senegal, which aims to: (i) ensure the economic and social development of each region; (ii) set up an administration close to users; and (iii) create dynamic regions in a unitary state. It must: (i) contribute to improve people's participation in local development planning and in the direct management of the transferred competences; and (ii) promote good governance through the participation of local communities in decision making. With decentralization, the competences of rural

¹⁰ *Rapport National sur le Développement Humain au Sénégal (2009) .*

communities have been extended to several areas: land management, natural resources, health and education. However, activities related to agriculture and water remains under the responsibility of the central government.

Agro-ecological Context

14. Senegal is located on the western tip of the African continent and has a desert zone in the north and a tropical zone in the south. Senegal is a flat country not rising above 130 m, except the southeastern foothills of the Fouta Djallon area that rises up to 581 m. Livelihoods depend mainly on natural resources.
15. In addition to the Atlantic Ocean to the west, Senegal's surface water resources consist of four rivers and their tributaries, plus some intermittent streams. The country is thus crossed by several basins that form two important ecosystems: the lower reaches of the Senegal River and the middle reaches of the Gambia River. The Saloum and Casamance rivers are two small coastal streams. Other rivers and valleys complement the hydrological regime.
16. A considerable reduction of the vegetation cover was recorded over the past four decades, due to the advance of agricultural fronts, whose effects have been strengthened by drought and wood use by households. Indeed, the household use of firewood and charcoal for cooking is 55.5% and 11% respectively. The management of natural resources faces additional challenges such as: (i) land pressure and massive settlements, often anarchic, hotel establishments and tourism; (ii) climatic deterioration; (iii) soil salinization, groundwater and surface water; (iv) the cutting of timber trees; (v) collection; and (vi) bush fires that jeopardize the regeneration of some species. This degradation of forests that provide habitat and food source for many species is causing direct negative impacts on wildlife and the fight against climate change.
17. The diagnosis of climatic and social factors of environmental issues, illustrated in Table 1 below shows that there are many existing threats to the proper management of Senegal's environment and natural resources.

Table 1 Agricultural Impacts, Causes and Threats

Threats and consequences	Causes
Conversion changes of habitats / ecosystems and land use	
Impacts of agricultural extension and pastures	
<ul style="list-style-type: none"> - Decrease of natural resources and sustainable exploitation of potential long-term - Loss of biodiversity - around the villages and adjacent parks and reserves - Loss of native vegetation and wildlife habitat - Reduction of ecosystem integrity / fragmentation of habitats, including protected areas - Accelerated erosion and loss of land due to the reduction of vegetation cover - Increase in greenhouse gas emissions and reducing the capacity of soils and forests to sequester carbon 	<ul style="list-style-type: none"> - Land use planning Absence for sustainable natural resource management (NRM) - Lack of regulation and enforcement of existing laws on access to natural resources - The rights to property and land management do not encourage property investment and long-term community land use and planning NRM - Lack of knowledge and understanding of the role and system values of producer organizations - Poverty and lack of alternatives - communities and individuals are required to register in a short perspective and face immediate needs resources

Threats and consequences	Causes
	- Demographic pressure and immigration
Impacts of deforestation	
<ul style="list-style-type: none"> - Reduction of mangrove forest areas - Loss of native vegetation and wildlife habitat; fragmentation of forest habitats - Erosion and soil degradation - Loss of biodiversity - Reduction of ecosystem integrity - Increased greenhouse gas emissions and reducing the capacity of soils and forests to sequester carbon 	<ul style="list-style-type: none"> - Energy requirements: dependence on traditional sources of energy ration and ineffectiveness - Short-term perspectives - communities cut down trees to meet their immediate needs without replanting for the future - Business incentives (timber as fuel and charcoal production) - Poverty and lack of alternatives - use of wood for domestic use and income generation - Demographic and immigration pressure
Impacts of bushfires	
<ul style="list-style-type: none"> - Destruction of woody vegetation - Loss of wildlife habitat and biodiversity - Loss of pasture for livestock and wildlife during the dry season - Destruction of crops and property - Increased greenhouse gas emissions and reducing the capacity of soils and forests to sequester carbon 	<ul style="list-style-type: none"> - Use of bush fires for clearing fields - accidental extension to larger areas of natural habitat - The villages surrounding habitat management Absence (e.g. clearing / planting and weeding firewalls to reduce the risk of fire) - Lack of coordination of fire management strategies - Natural causes - Lightning
Impacts of degradation of wetlands	
<ul style="list-style-type: none"> - Changing biotypes of wetlands - Loss of biodiversity and ecosystem functions - Reduction of water regimes for wildlife / the fore and for human needs - Erosion / sedimentation / increased salinity 	<ul style="list-style-type: none"> - Increased erosion due to bad agricultural practices, overgrazing, deforestation, desertification and climate change effects - Poor water resources management practices (dams, irrigation schemes, sewage) - Over-exploitation of groundwater causing water deficiency - Pollution
Overexploitation of natural resources	
- Impacts of overgrazing - The intensity of overgrazing and its impacts varies from one project site to another	
<ul style="list-style-type: none"> - Reduction of vegetation cover, especially around villages and water access points - Conflicts between wildlife, farmers / livestock farmers and grazers - Reducing the productivity of livestock and wildlife - Loss of biodiversity - Reduction of ecosystem integrity - Increased greenhouse gas emissions and reducing the capacity of soils and forests to sequester carbon 	<ul style="list-style-type: none"> - The laws should govern the access of transhumant are not fully implemented, or are not in force - The rights of access and use are not clearly defined and applied - Lack of land use management plans in grazing areas - Cultural practices - maintenance of large flocks for status and prestige
Impacts of unsustainable harvesting of trees and wood products	
<ul style="list-style-type: none"> - Loss of vegetation cover - Loss of biodiversity 	<ul style="list-style-type: none"> - Community needs, firewood and other wood products - Motivation of profit - selling coal and firewood

Threats and consequences	Causes
<ul style="list-style-type: none"> - Loss of diversity / genetic potential - Loss of shelter and important habitats; soil destruction - Decrease of ecosystem integrity - Loss of boreholes for wildlife and livestock - Potential effects on local climate - Increasing greenhouse gas emissions and reduce the ability of forests to sequester carbon 	<ul style="list-style-type: none"> - Lack of plans and commitment to the exploitation and sustainable use (reforestation, etc.) - Inefficient use of energy and lack of alternative energy sources - Lack of effective community ownership and poor regulation (e.g., illegal sale of coal) - Lack of income generation alternatives
Pollution	
Impacts of pollution	
<ul style="list-style-type: none"> - Drainage and soil salinization and freshwater layers (especially in the Niayes) - Decrease in the quantity and quality of water for people and wildlife - Loss of ecosystem function and biodiversity - Reduction of vegetable production 	<ul style="list-style-type: none"> - Irrigation for purposes of market gardening and domestic use leading to reduced levels of ground water (especially in dune ecosystems Niayes) - Titanium mining operation methods (creation of ponds for surface ore extraction) lead to lower levels of ground water (especially in the Niayes)
Climate change and drought	
Impacts of climate change - rising temperatures and evapotranspiration. Increase in extreme weather events	
<ul style="list-style-type: none"> - Increased frequency of droughts, exacerbated by generally warmer temperatures - Increase in extreme precipitation events causing flooding, erosion and siltation of wetlands - Reduction of arable land - Reduction of specific areas of human habitat and many plant and animal species - Loss of biodiversity and changing habitats - Limited of resilience / alternative options for community adaptation to climate change - Potential Increases in poverty and hardship if people cannot adapt 	<ul style="list-style-type: none"> - Global warming / effects of greenhouse gas emissions - non-sustainable human lifestyles - increases the use of sources of energy and carbon emissions - Over-exploitation of forests for energy production - Reduced ecosystem resilience due to overfishing and fragmentation
Impacts of increased frequency and severity of droughts	
<ul style="list-style-type: none"> - Increasing levels of competition and conflict between local farmers / grazers, transhumant herders and wildlife, for access to grazing and water areas - Increased pressure from communities for access to water and natural resources in the surrounding areas, including protected areas - Increased wind erosion and siltation of wetlands - Loss of biodiversity - species and habitats - Potential increase in poverty and population problems if they fail to adapt 	<ul style="list-style-type: none"> - Global Warming / Climate Change - Lack of resilience / alternative options for community adaptation to climate change

Source: PDR (Annex 12)

Climate Context

18. The Sudano-Sahelian type climate of the project area is characterized by alternating dry season, from November to May and a rainy season from June to October. The climate is subject to both geographic factors and atmospheric influences. On the one hand, the presence of a coastline of 700 km and the situation in the extreme west of the African continent cause climatic differences between coastal and inland regions; secondly, atmospheric circulation, facilitated by the absence of mountainous obstacles, places the territory under the influence of maritime trade winds, harmattan and monsoon. These air masses will determine two seasons, differentiated by very contrasting rainfall, which decreases progressively in duration and quantity from south to north and pass 1,293 mm of rain per year in the southern region (Ziguinchor) to 602 mm in the central region (Kaolack) and then to 211 mm in the north (Podor). The analysis of climate data over the last ten years (2005-2014) for the project area shows: (i) a decline in rainfall, which varies from one area to the other of 0-9 mm / year; (ii) a drop in temperature which varies from 0.1 to 0.25 ° C over 10 years. The temperature analysis over a longer 30 year period shows increase in temperature, from about 0.1 to 0.5 ° C per decade.
19. Studies on the climate for the UNFCCC have shown that water resources are the most vulnerable resources of the country. A temperature increase of 2 to 4 ° C is expected in this region and result in a decrease in precipitation of the order of 5 to 25%. The groundwater level, which has already fallen, will continue to suffer the negative consequences of climate change.
20. Three main rainfall zones, corresponding to three climate zones are well defined: a forest area in the south, savannah in the centre and a desert area in the north. The temperatures, generally high throughout the year, determine the seasons. Minimum temperatures usually occur in December and January and the maximum in the beginning and / or end of the rainy season. The thermal gradient varies from north to south with a very strong mitigating effect of the sea in coastal areas. On the coast, temperatures are moderate (16-30 ° C). Maximum temperatures rise above 40 ° C in the Ferlo zone (Linguère), Lower Valley (Podor) and the Middle Valley (Matam). However, the annual average temperature is from 28.6 ° C in Kaolack, 28.7 ° C in Linguere and Tambacounda and 29.6 ° C in Matam. Potential evapotranspiration varies on average between 1,720 mm per year in Dakar and 2,200 mm in Linguere. The evaporative demand exceeds rainfall, which is exacerbated by water deficit in the dry season (SNC 2010). The analysis of rainfall data from the last ten years (2005-2014), indicates a decrease, which varies from one zone to another, from 0 to 9 mm / year. This decrease is relatively higher in the southern area of the project, where production systems are characterized by soil salinization of the land. The analysis of data on the evolution of the temperature from 2004 to 2013 in the same area, showed a decline ranging from 0.1 to 0.25 ° C over 10 years. However, the temperature in the analysis of 30 years shows an increase from 0.1 to 0.5 ° C per decade for the project area.
21. The climatic classification risk rating of the project is moderate, in other words, climate change is predicted to have a moderate adverse impact in Senegal. Agricultural land would be exposed to quantitative water shortages, an increase in soil salinity and risks of vegetation and key ecosystem degradation such as mangroves. This will have effects on production like other links in the agricultural sector (market gardening and cereal crops in particular). Given these elements, the issue of salinization will be given special attention when targeting areas and identifying technical options.
22. The project implementation strategy recognizes that water resources are a key sector for the implementation of short and medium-term interventions in adaptation to climate change (SNC, 2010).

Climate shocks

23. The country suffers recurrent climatic shocks such as the droughts in 2006, 2007, and 2011 (causing the food crisis of 2012 with 800,000 food insecure people), as well as, floods in 2009 that affected nearly 475,000 people and floods in 2012 affecting about 300,000 people. These natural disasters have a negative impact on the region's growth and increase household vulnerability. Over the past five years, about a third of households in rural areas reported to being affected by shocks. Of these, 7% were affected by drought and 5% by floods.

b. Barriers that need to be addressed

24. Despite its undeniable strengths, Senegal's agricultural sector faces several major constraints, including: (i) climate variability, exacerbated by recurrent droughts, disrupting ecosystems and generating socio-economic and ecological concerns; (ii) land degradation linked to population growth, increasing pressures on natural resources and leading to the overexploitation of forests, ecosystem and land, leading to the salinization and acidification of arable land; (iii) the stagnation of yields related to land degradation and weak technological innovations, and (iv) difficult access to credit, quality inputs, agricultural equipment.

25. The challenges to agricultural production and food security in Sub-Saharan Africa (SSA) have been widely documented. Cereal yields average only around one ton per hectare and are notoriously low compared with other regions of the world that were part of the green revolution in the 1960s and 1970s, where yields are now at least three times higher than in SSA. Due to low resilience of agro-ecosystems to stressors and shocks, such as increased pressure on land and climate change impacts, yields are even declining in parts of Africa. The seriousness of the situation is exacerbated by the fact that land is the source of employment for 70% of the population and more than 80% of people live in extreme poverty. SSA also has the highest population growth in the world of around 2.1% per annum leading to the doubling of the population within 30-40 years, as well as a rapidly increasing proportion of the population residing in urban places including ever-growing slum communities. This poses unprecedented and as yet poorly understood challenges as well as opportunities for moving toward increased sustainability and resilience of food production systems.

26. SSA is characterized by a large variety of natural ecosystems which provide a wealth of natural, social, ecological and economical goods and services. The agricultural sector depends on this natural capital – land, soil, water, vegetation and genetic resources - for its productivity. *Agro-ecosystems* are ecosystems managed for production of food, fibre and/or fuel, whose boundaries include the ecological and human resources required for production, including natural systems that support production, and the infrastructure, institutions and people across the supply chain. However, in SSA, production landscapes and agro-ecosystems are often unprotected and freely exploited, leading to their degradation and loss of productive functions, a situation which is exacerbated by water scarcity in arid and semi-arid areas and acute land pressures especially in more fertile highland areas and urban fringes. Sustainable agricultural intensification in SSA has largely failed because it has not addressed the depletion of the natural capital important for sustaining productivity. Soil organic matter is being lost over large areas due to insufficient return of organic matter to the soils, which in turn causes low response to fertilizers and problems of nutrient depletion, including loss of soil carbon.

27. This situation has been coupled with loss of agro-biodiversity - genetic diversity and wild relatives of globally important domesticated species - leading to further loss of resilience - the ability of a system to maintain objectives or functions in the face of stressors and shocks - of agro-ecosystems, such as climate variability and change. Crop genetic resources is a major factor in sustaining agricultural production over

time, providing an important buffer and “insurance” against external factors like insects and other pests, plant diseases and climatic variability. Lack of genetic diversity leads to a reduction in biodiversity capability to adapt to biotic and abiotic stresses in the environment. This limits current and potential utilization in crops, forest and livestock taxa, which significantly impacts food and nutrition security. In many areas it is not the scarcity of calorie-rich foods that undermines the health and productivity of Africa’s poor, but rather a lack of micronutrients that are lost when agro-biodiversity resources are removed. Micronutrient deficiency is often called the “hidden hunger” because it can occur even when diets include an adequate amount of energy (calories).

28. Other obstacles to intensification include limited access to markets, credit and food value chains by the millions of smallholders that form the backbone of African agriculture, and poor links between science, policy and action –i.e. the latest knowledge on sustainable agricultural intensification is not being fed into the decision-making process. Regions that are prone to environmental crises leading to food insecurity include in particular the Sahel region of West Africa, the East African Highlands, the Horn of Africa, and Southern Africa. The common pattern across these geographies is a long record of concerns about food security and environmental sustainability associated with the environment-agriculture nexus and the prevailing smallholder extensive farming practices. However, these regions also present opportunities to scale up good practices from decades of research and investment in agricultural development and have well organized rural producer associations of various types *which can be important mechanisms for upscaling*.
29. The conventional model of high-input agriculture (mechanization, chemical fertilizers and pesticides, reliance on mono-cropping) is unsustainable and in any case beyond the reach of most smallholder farmers in the region. Many of the governments in this region have already been forced to abandon costly programs such as fertilizer subsidies, which in some cases had temporarily supported yield increases.
30. As most Sahelian countries, Senegal’s agriculture is characterized by a precarious and uncertain agro-pastoral and cereal – root crop mixed farming systems, combined with a poor rural community base facing high level of food insecurity. Amongst the challenges, these households are facing significant risks of droughts, high amount of post-harvest losses, water mismanagement and more. This project will target geographical areas and agricultural and livestock value chains which are needy of most investments to reduce their environmental risks.

The target value chains are considered as part of IFAD’s programme in Senegal and UNIDO’s planned investment in the field of agribusiness development. UNIDO and IFAD interventions will target water resource management, sustainable land degradation, capacity building and the provision of technologies and infrastructure to reduce post-harvest losses and increase value addition all along these value chains. Therefore GEF investment will be able to benefit from a greater impact in terms of outreach and inclusiveness.

The baseline scenario or any associated baseline projects

31. *The Government Development Plan (Plan Senegal Emergent - PSE)* was established following the revision of Senegal’s national development model and strategy, is the new strategic framework of reference for the development of Senegal, with the primary objective to make Senegal “*an emerging country in 2035 with social solidarity and the rule of law.*” This major goal requires a balanced development model resting upon economic, social and environmental pillars of development that can generate sustainable and inclusive growth. The PSE, based on three broad strategic pillars (structural economic transformation, the fight against poverty and inequalities, and improvement of security and

governance), focuses on the sustainability of economic growth and the impact on human development, and therefore represents the highest landmark of strategic guidance and leadership for Senegal's economic policy and industrial development in the short, medium and long term. The five-year *Plan d'Actions Prioritaires* (PAP) constitutes the reference document for the State's interventions in order to implement the PSE, as well as for the technical and financial partners, the public-private partnerships, and citizen participation. In order to implement and monitor the PSE, a Committee for Strategic Orientation, placed and operated under the authority of the President of the Republic, as well as a Steering Committee, chaired by the Prime Minister, and an Observation and Monitoring Office have been established in order to measure and evaluate the results of the PSE implementation. The PSE acknowledges the correlation of the agricultural sector with other branches of the economy, in particular with agro-industries, as well as its spill-over and leveraging effects on other sectors of activity (transport, trade, etc.). For that reason, the PSE highlights the role of "agro-poles" as the driving force of industrialization in Senegal through enhancement of agricultural added value; it provides for the creation and development of three integrated and competitive agro-poles focused on high-potential value chains (livestock, fruits and vegetables, fisheries and aquaculture). These agro-poles will serve as enterprise incubators providing facilities and services with the main objective of strengthening and supporting agro-industry value chains, and promoting commercial farming among local and regional producers through integrated training plans, capacity building and the establishment of appropriate PPP financial schemes. Senegal considers the establishment of agropoles as priority intervention foreseen in the next four years, with a planned investment around 20 Million for the first agropole. In this context, UNIDO's Partnership Country Programme for Senegal will contribute to the PSE's objective of establishing agropoles in close collaboration with Development and financial partners such as the World Bank, the EU, AfdB as well as private investors. The geographical location of the agropoles includes north region (covering Louga, Saint Louis), centre region (including Kaolack) and Casamance.

32. The main strategic frameworks concerning the rural sector and involving PARFA activities are as follows: (i) the Agrosilvopastoral Orientation Law (LOASP) adopted in 2004; (ii) the National Agricultural Investment Programme (PNIA), adapted for the development of livestock farming; (iii) the Accelerated Programme for Agriculture in Senegal (PRACAS); (iv) the Environment Sector and Sanitation Policy Letter (LPSE); and (v) the National Strategic Investment Framework for Sustainable Land Management (NSIF-SLM), which aims to ensure synergy in the interventions of all actors in order to reverse the land degradation trends and sustainably manage these lands in Senegal.
33. Sustainable land management poses a major challenge for Senegalese agriculture as between 36% and 40% of the agricultural land is already degraded. The NSIF-SLM aims to ensure synergy between the operation of all stakeholders in order to reverse land degradation trends and management the land sustainably in Senegal. By 2026 the strategic investment framework aims to create a favorable policy, legal, institutional, technical and financial scenario to sustainably reverse land degradation within all ecosystems to achieve sustainable productivity and wellbeing of the Senegalese people. The NSIF-SLM is to: (i) establish a coordination mechanism between the various actors; (ii) serve as a hub for technologies and best practices available and accessible to fight against land degradation; and (iii) to support the political dialogue framework between the state office and technical and financial partners. PARFA will include a component entirely dedicated to supporting the coordination and harmonization of efforts to promote a coherent multi-stakeholder approach on environmental resilience and sustainability related to food security within the agricultural value chains. It will play an active role in including these issues in sectoral policies and removing obstacles that may arise during the practical implementation of these policies.

Baseline projects

34. The Agricultural Value Chains Support Project – Extension (PAFA-E) is an IFAD-funded project which represents the baseline investment for the GEF. The overall goal of the PAFA-E project is to contribute to the sustainable improvement of livelihoods of family farms of the groundnut basin in the Centre and North and in the Western Silvopastoral Region. The specific objective of the project is to sustainably improve food security and incomes of smallholder farmers (crop and livestock farmers) and to create sustainable and remunerative employment for rural people, especially youth (of both sexes) and women.
35. PAFA-E is built on the success and achievements of PAFA projects and of previous projects, e.g. Promotion of Rural Entrepreneurship Project (PROMER), PRODAM II, Agricultural Services and Producer Organizations Project – Phase II (PSAOP II), Village Management and Development Project (PADV) and Village Organization and Management Project (POGV). PAFA-E intensifies the PAFA activities in the current area of its intervention in order to reach a larger number of beneficiaries. It consolidates and completes the PAFA interventions by: i) strengthening the institutional and organizational development of the Professional Agricultural Organisations (PAOs) and Professional Livestock farming Organisations (PLFOs), especially their umbrella organizations, so that they may provide more efficient services to their members; ii) intensifying employment-generating activities and revenues for youth through: the set-up of large-scale market garden areas for youth (male and female) according to the model of the Société d'intensification de la Production Agricole (SIPA) introduced by PRODAM-II in the Matam Region; and the set-up of rural micro- and small enterprises services provided by youth upstream and downstream of selected crop and livestock value chains by capitalizing on the achievements of PROMER.
36. Up to date, baseline investments have mainly focused on the promotion of access to inputs, mechanization, marketing, structuring actors of value chains and capacity building. Basic scenarios have not paid particular or significant attention to safeguarding the productive bases and the ecosystem services (land, water, forests, etc...) which enhance sustainability and improve resilience of the production systems and the value chains that depend on them. For example, baseline scenarios were not giving sufficient consideration to green growth options (use of renewable energies) and investment at watershed level to safeguard the value chains. Sustainable growth options would require further attention to be adequately addressed and integrated in more inclusive value chains.
37. Development interventions would need to further enable smallholders and rural communities to have adaptive responses to environmental degradation and climate variability by progressive diversification of their income, reducing post-harvest losses, enhancing their ability to cope and to adapt to harsh environmental conditions and climate change, with the ultimate goal of enhancing food security and increasing the resilience of communities and their livelihood systems. In this respect, Government planned and existing investments addressing food security are described below.
38. *The PAFA-E* covers: (i) the central and northern groundnut basin, encompassing the regions of Kaolack, Fatick, Kaffrine and Diourbel; and (ii) the Louga agropastoral region. The project zone represents 27 % of the country's land area and is home to 35 % of its population and will target beneficiary groups of which: a) smallholder farmers and herders who are members of farmers' and herders' organizations, within which it will ensure the incorporation of the most vulnerable households, the young, and women and their organizations, b) other economic actors: micro- and small rural enterprises (MSREs) providing services, for preference those run by young people, both upstream and downstream of the value chains in question, c) market operators, d) public and private structures providing the products and services needed for development of the targeted value chains.

39. The main outcomes that are expected (over a period of six years) from this baseline investment are: (i) an increase in production and an improvement in agricultural productivity; (ii) an increase in the value of the additional production thanks to contractual agreements between producers' organizations and market operators; and (iii) the empowerment of professional agricultural organizations through the provision of social and economic services to their members. The project will run for six years (2013 – 2019). The total project cost is US\$50.4 million and the main financiers of the project are the Senegalese Government, IFAD and the beneficiaries. IFAD will contribute an equivalent of US\$34.7 million in the form of a loan on highly concessional terms. The Government will contribute an equivalent of US\$12.7 million, of which US\$7.6 million will mostly be for investments in agricultural and livestock water supply schemes, while US\$5.1 million corresponds to duties and taxes, making a total Government contribution of 25.2 % of total costs. The beneficiaries' contribution is estimated at US\$3.0 million, or 6 % of the total project cost. The key results indicators are: (i) increased yields of selected crops; (ii) increased quantities of agricultural products sold through Farmer Organizations-Work Force contractual agreements; (iii) increased value of the additional production of the targeted smallholder livestock and crop farmers and entrepreneurs; (v) the number of direct beneficiaries of project services; and (iv) improved level of organizational autonomy of the professional crop and farmer organizations.
40. PAFA-E is organized in three components: (i) Component 1. Development and structuring of the value chains and professionalization of actors; (ii) Component 2. Agricultural diversification and access to market; and (iii) Component 3. Knowledge management, coordination, and monitoring and evaluation.
41. PAFA-E will also complement PAFA interventions in conservation, preservation and restoration of natural resources by using the pastoral unit (PU) model widely utilized by different projects, including PRODAM. In addition to the PAFA activities, PAFA-E supports the development of small ruminant farming (particularly sheep), which are activities traditionally carried out by women to enable them to diversify their sources of income and to improve the food security of their households.
42. The project targets six value chains (millet, sorghum, cowpea, sesame, horticulture and village aviculture) selected on the basis of a number of criteria, including the importance of the value chain for the poor and the most vulnerable (women and youth), the existence of a potential market, possible growth of the value chains in terms of increased productivity/yield and value added, and wealth creation for the poor populations. In addition to these value chains, PAFA-E is also engaged in the small ruminant value chain, considering its importance for income generation for women and the diversification of income sources.
43. *Other* ongoing programmes involving the target value chains and rural households of this project include Programme de Développement Inclusif et Durable de l'Agrobusiness au Sénégal (PEDIDAS), the Programme d'accélération de la cadence de l'agriculture sénégalaise (PRACAS), the Programme National de Développement de l'Élevage (PNDE) and the national adaptation plan of action (NAPA).
44. The proposed project activities, which focus on improved resilience of the agricultural sector, sustainable natural resources management and the institutionalization of experience sharing in these fields, are complementary to PAFA-E activities (See Table 2 on PAFA-E activities and PARFA's added value) and also to those of other projects in IFAD's portfolio, the Agricultural Development Project in Matam (PRODAM-II) and PADAER.
45. The proposed project complements the interventions of other partners involved in some of PARFA's intervention areas, in particular: (i) the Food Security Support Project in Louga, Matam and Kaffrine (PASA /LouMaKAF) funded by the African Development Bank (AfDB); (ii) the Project for Retention Basins and Boreholes Development (BARVAFOR), funded by Belgium; and (ii) the Project for Capacity

Building for the Restoration and the Promotion of Effective Use in the Areas of Soil Degradation (CODEVAL). All of these projects are engaged in the fight against land degradation as well as in sustainable natural resources management and food security (see Annex 5 'Project Institutional and Implementation Arrangements', page 75 of the detailed IFAD report)

46. The IFAD Country Programme aims to sustainably improve food security and incomes of smallholder farmers and create permanent jobs for the rural population, especially youth and women by improving: (i) access for smallholder farmers and their organizations to inputs and efficient production services, appropriate technologies and markets, as well as access for the rural population to entrepreneurial know-how. The ongoing projects are PAFA, the PAFA-E and Projet d'appui au développement agricole et à l'entrepreneuriat rural (PADAER, Support to Agricultural Development and Rural Entrepreneurship Programme) in the Kédougou, Kolda, Matam and Tambacounda Regions.
47. UNIDO supports Senegal as part of the Initiative for Inclusive and Sustainable Industrial Development (ISID) in order to contribute to the implementation of major projects of the PSE. This intervention is based on the new UNIDO partnership approach, which aims to mobilize external partners and additional resources in order to extend the impact of UNIDO's technical cooperation and accelerate ISID in Member States. The partnership approach calls for collective actions and catalyses local and international development partners to provide the necessary support, knowledge and financial resources needed for ISID. Aside from its technical cooperation activities, UNIDO's role is to bring the various actors together and coordinate partnership activities – under the leadership and ownership of the host government – to build a solid foundation for sustainable economic growth.
48. As part of this Programme for Country Partnership (PCP) for Senegal, UNIDO will assist the government in mobilizing development partners, UN agencies, development finance institutions (DFIs) and the private sector – under the leadership and ownership of the Senegalese Government – to advance ISID, within the framework of the PSE. The PCP will focus on three main areas: i) industrial policy development; ii) the establishment of Agro-poles for agricultural value chains; and iii) the operationalization of existing industrial parks and the development of new ones.
49. UNIDO will assist Senegal in operationalizing the first three competitive and integrated agropoles (Casamance, Saint Louis/Louga and Kaolack) to strengthen the added value of agricultural products. The "Agropoles" programme aims specifically at the integration of operations between and within the value chain from production to market in order to obtain maximum value added while ensuring the sustainability and resilience of production systems. To this end, the promotion and use of skills in the promotion of knowledge and clean technologies play a vital role. In this case, the use of renewable energy sources such as solar and biomass in supporting productive activities (production /development) in the agricultural sector is imperative. PARFA will particularly strengthen the links between and within value chains in order to reinforce "agricultural-livestock farming" complementarity and to capitalize on the synergies achieved through an integrated approach in managing agricultural and livestock products and by-products such as (animal feed and bio-fertilizers) in production areas by the target populations. Complementary activities of the PCP are provided as in-kind contributions to this project.

The proposed alternative scenario, GEF focal area¹¹ strategies, with a brief description of expected outcomes and components of the project

50. The Government of Senegal expressed its interest in participating in the Integrated Approach Pilot for Food Security (IAP-FS) regional programme of the Global Environment Facility (GEF). To this end, the country mobilized the GEF 6 funds (2014-2018) through IFAD, and UNIDO as GEF agencies, in order to carry out a new project under this framework.
51. Through the broader IAP program, the GEF is seeking to position the management of natural capital as a priority in the transformation of the agriculture sector for food security in Sub-Saharan Africa. The IAP is therefore focusing on these target geographies and their millions of smallholder farmers to catalyse the scaling up of the right mix of interventions to achieve sustainable intensification of agriculture and resilience for food security.
52. IAP-FS is based on the principles of sustainable value chains development. It will build on the existing initiatives at the national and regional level to overcome obstacles (political, institutional, knowledge-related, etc.) and to catalyse a shift towards more sustainable and resilient approaches. As a result of the new allocation of GEF financial resources for Senegal for the GEF 6 period (2014-2018) and the decision of the Senegalese Government to participate in the IAP-FS, the Government, IFAD and UNIDO initiated the design of this new project under this programme. PARFA focuses on national priorities and strategic axes of IAP-FS; it is aligned with the country programmes of IFAD and UNIDO in Senegal, and uses them as an operational base as well as for mobilizing co-financing. This additional financing will be planned through UNIDO's operations in Senegal and IFAD's PAFA-E project and will be based on investment.
53. The goal of the IAP-Food Security is to increase the sustainability and resilience of food production systems and to enhance food security in Sub-Saharan Africa and is designed to contribute to the GEF 2020 vision and long-term strategy (GEF/C.45/03) of achieving impact on the global environment by strategically investing in solutions that address the underlying drivers of global environmental degradation. In the IAP-Food Security an important driver is the rapid population growth in SSA and the need to reconcile this with sustainable intensification of agriculture to meet food security needs while conserving the environment. In order to deliver global environmental benefits at scale, critical points in the causal chain of environmental degradation where GEF support can achieve maximum impact have been identified: i) transforming policy and institutional frameworks at the agriculture-environment nexus; ii) convening of multi-stakeholder alliances that bring together stakeholders from the public and private sectors, donors, the scientific community, and civil society; iii) demonstrating innovative approaches in integrated natural resources management; and, promote their upscaling iv) strengthening institutional capacity in monitoring and assessment of global environmental benefits, food security and resilience in order to improve investment decision-making processes.
54. The PARFA will support Senegal in integrating priorities to safeguard and maintain ecosystem services into investments in improving smallholder agriculture and food value chains. With an ecosystem services approach, focusing on creating synergies between provisioning services, such as food and fibre production, with regulating and supporting services, such as carbon sequestration, pollination and regulation of water and genetic diversity, sustainable management and resilience of ecosystems could make a sustainable contribution to enhancing food security. An ecosystem service approach would also

¹¹ For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target\(s\)](#) the project will directly contribute to achieving..

safeguard the long-term productive potential of critical food systems and generate global environmental benefits related to reduction of emissions and carbon sequestration from improved land management, conservation and sustainable use of agricultural biodiversity.

55. Building on the existing baseline, the barriers to bringing about transformational change and an alternative scenario to agricultural development and increased food production in SSA will be addressed using a three-pronged approach that: (i) engages all stakeholders through strengthening of institutional frameworks for sustainability and resilience; (ii) acts to scale up, diversify and adapt practices that will
56. achieve large-scale transformation of agro-ecosystems in SSA; and (iii) tracks impacts on ecosystem services, resilience and food security in agro-ecosystems in target geographies, including beyond the effects of the specific child projects themselves.
57. To achieve the development objective, three outcomes corresponding to three technical components of the project, are expected (see details in the logical framework). The project will respond to the three-pronged approach of the IAP program in the following way:

1. Engage – Institutional framework for influencing sustainability and resilience

58. Component 1. Support to multi-stakeholder platforms will help strengthening platforms bringing together all of the key actors at the appropriate levels, with the aim of creating a common space to act in synergy and enhance food security by preserving the environmental heritage. Accordingly, the project aims to support existing cross-cutting coordination and harmonization efforts, and will rely on existing mechanisms to promote a coherent multi-stakeholder approach to resilience and environmental sustainability of the agricultural value chains. NSIF-SLM provides a unifying set-up of platforms to promote the objectives of Component 1 of PARFA. NSIF-SLM is the preferred choice by the Government, which wishes to: (i) build on what exists and avoid duplication between projects; (ii) optimize the achievements of the existing framework, which it approves; and (iii) ensure continuity and the dynamics that are already in place. This will also rapidly operationalize the collaboration framework. Planned activities will be supported through two outputs: (i) building the capacity of actors at the national, regional and local levels; and (ii) promoting mechanisms for the coordination and the integration of best practices.

2. Act – Scaling up practices for sustainability and resilience

59. Component 2. Upscaling of sustainable and resilient good practices, on physical investment and capacity building, will be implemented in the PAFA-E intervention area. The selected activities were chosen for their strong complementarity and added value in terms of the environment and food security that they would bring to the activities and investments already carried out or planned by PAFA-E and other stakeholders in the area. Accordingly, activities that would be duplicates with respect to interventions underway or planned were excluded. All activities will include three levels of intervention: (i) physical investments and structures; (ii) technical and investment management training; and (iii) assistance to beneficiaries in the form of advisory support and exchange visits. These activities will be carried out in the same target areas in order to ensure integration and complementarity between the various outputs.

3. Track - Monitoring and assessment of ecosystem services, global environmental benefits and resilience

60. Component 3. Monitoring and evaluation of environment impact and of project results constitutes a specific component of the project and thus emphasizes the importance that PARFA and IAP give to the

collection and evaluation of results with respect to food security and resilience to cope with environmental degradation and climate variability. The implementation cost for the entire Component 3 will be shared between IFAD and UNIDO.

61. The PARFA is in line with the GEF-6 Focal Areas addressed by the IAP-Food Security (LD-1, Program 1, Program 2 priorities; LD-3, Program 4; LD-4, Programme 5, and CCM-2, Program 4).

Component 1. Support to multi-stakeholder platforms

Outcome 1. The multi-stakeholder platforms include issues of environmental degradation and climate variability in their activities

Output 1.1. Capacity building of actors at the national, regional and local levels

62. The objective of this output is to engage a significant number of beneficiaries at all levels with respect to knowledge and good practices towards more sustainable and more resilient agricultural value chains. Accordingly, the project is investing heavily in awareness-raising of actors and in technical and organizational training to mobilize and involve all stakeholders. It will also strengthen their capacity in order to remove the institutional and technical barriers that prevent the development of policies and strategies that apply a sustainable/resilient approach and that monitor its implementation. The training and awareness needs have been identified with respect to the project strategy and its three complementary components. Therefore, awareness raising and training will target actions that will be supported by the IAP project (e.g. specific technical training, awareness raising on good practices and their importance to the sustainability of agricultural value chains, as well as information systems and their importance in making informed decisions, etc.).
63. Awareness workshops will be held at the national and regional levels, which will bring together key actors (policy makers, development actors, including civil society and representatives of beneficiaries). The aim is to raise awareness among participants on integrated and sustainable approaches for developing resilient smallholder farming and achieving food security objectives. These workshops provide a collaborate framework to further operationalize the NSIF-SLM and harmonize the approaches adopted by all the sectors (crop and livestock farming, water and forestry, energy, food security, the private sector, etc.). With funds administered by IFAD and coordinated by the Institut national de pédologie (INP, National Soil Science Institute), two national workshops and 16 regional workshops will be held for a total of 1,300 participants. With funds administered by UNIDO, four general awareness regional workshops will be held, organized by the Institut de technologie alimentaire (ITA, Institute of Food Technology) for 1,200 participants.
64. Communication activities will be carried out in close consultation and collaboration between INP and the Commissariat à la sécurité alimentaire (CFS, Commissariat for Food Security) in order to disseminate information on integrated approaches to the development of a resilient, sustainable agriculture in Senegal. The activities will focus on: (i) the implementation of a communication plan on the IAP in Senegal; (ii) the production of effective communication tools (newsletters, websites, social media, posters etc.); and (iii) participation in national events to better disseminate the integrated approach (NSIF-SLM principles and IAP).
65. The training of actors at the national, regional and local levels will be guided and will focus on integrated approaches to rural agriculture (incorporating environmental sustainability, resilience, agro-ecology

principles, organic production, diversification, agro-biodiversity conservation, water conservation, recycling, integration of livestock farming, etc.). INP will organize training sessions under IFAD, which will include: (i) four national training sessions involving a total of 100 participants; (ii) the training of ten trainers at PARFA intervention areas; and (iii) five regional training sessions for the beneficiaries per year, i.e. 500 people trained. UNIDO will assign ITA with providing four regional training sessions for the Professional Organizations (POs), i.e. one per year for training a total of 200 people.

Output 1.2. Promotion of mechanisms for coordinating and integrating good practices

66. This output will focus on promoting mechanisms for upscaling good practices within the NSIF-SLM value chains platforms. It will contribute towards removing bottlenecks in the sustainability and resilience of agricultural value chains.
67. The activities under IFAD will focus on: (i) financial aspects by supporting the establishment of an SLM/resilience window at the National Fund for Agro-silvo-pastoral Development (FNDASP) and partnership with the private sector; (ii) legal aspects, particularly the implementation of PUs; and (iii) institutional aspects, through the promotion of integrated approaches to natural resources management.
68. A specific study will be conducted to identify mechanisms that would promote financing for sustainable smallholder farming. INP and FNDASP will jointly develop a fund-raising strategy to promote SLM and integrated approaches for rural agriculture. IFAD has committed a grant of USD 500 000 to FNDASP to provide knowledge and know-how in the form of successful innovations and best practices as public goods in order to strengthen the livelihoods of the rural poor in a systematic and sustainable manner. This grant complements the objectives of the GEF project and builds synergies for the dissemination and promotion of good practices. It will provide a technical and financial contribution to scaling-up mechanisms sought by the IAP programme. Thus, the INP will collaborate closely with FNDASP to forge synergies for: (i) a large-scale dissemination of successful innovations and good practices; (ii) the organization of workshops to present, discuss and validate best practices; (iii) the drafting of a list of best practices in agricultural and rural development projects in Senegal; and (iv) the creation of a virtual platform on the FNDASP site for sharing knowledge on agricultural and rural development projects. The GEF will complement these efforts with a resources mobilization aspect.
69. Regarding the legal aspects related to the management of the PUs, a study analysing the current situation will be carried out and possible solutions identified. Two stakeholders workshops will be held in Dakar and four at the local level will be organized by INP with different actors in order to yield a set of technical recommendations that will inform decision making, political dialogue on the implementation and management of PUs, and the sustainability of interventions.
70. INP will continue its efforts to implement the NSIF-SLM as a coordination tool by improving it to include resilience and food security. Activities will consist of updating the NSIF-SLM and holding collaboration workshops to develop a coherent vision and a road map for the promotion of integrated approaches. In liaison particularly with the Commissariats à la sécurité alimentaire (CSAs, Food Security Commissariat), the Centre de suivi écologique (CSE, Ecological Monitoring Centre) and the Système d'Information sur les Approches et Technique de Gestion Durable des Terres (SENCAT, Information System on the SLM Approach and Technologies), INP will strengthen and update a comprehensive database on integrated investment approaches and good practices.
71. Under UNIDO's activities, ITA will organize two discussion workshops and exchange visits on themes related to post-harvest activities and the fight against climate change and land degradation. Four regional

exchange and dissemination platforms will be set up to ensure the integration of sustainable energy systems through the validated analysis of targeted value chains. On the basis of lessons learned, a guide on the integration of sustainable energy technologies in the value chain will be drafted as well as policy recommendations on the greening of agro value chains

Summary of expected outcome and outputs under component 1

Results hierarchy	Description	Responsible agent
Outcome 1: The multi-stakeholder platforms include issues of environmental degradation and climate variability in their activities.	2 mechanisms for the coordination and integration of good practices are promoted – National Strategic Investment Framework for Sustainable Land Management (NSIF-SLM) and National Agro-sylvo-pastoral Development Fund (FNDASP)	<i>Government / Institut national de pédologie (INP)</i>
Output 1.1. Capacity building of actors at the national, regional and local levels	<ul style="list-style-type: none"> ▪ 22 awareness workshops involving 2,500 people (disaggregated by sex and age) ▪ 14 training sessions for 800 beneficiaries (disaggregated by sex and age) 	<i>INP and national actors / UNIDO (ITA)</i>
Output 1.2. Promotion of mechanisms for coordinating and integrating best practices	<ul style="list-style-type: none"> ▪ One resources mobilization strategy for sustainable land management (NSIF and FNDASP) ▪ At least 400 participants in the works and exchange visits (disaggregated by sex and age) 	

Component 2. Upscaling of sustainable and resilient good practices

Outcome 2. The resilience of the agricultural value chains is improved

Output 2.1. Sustainable water management

72. *Activity 2.1.1 Mobilization of surface water.* The construction of control and catchment works for runoff water (water-harvesting bunds or water-spreading weirs) in the valleys located in Kaolack, Fatick and Kaffrine Regions, and the creation of pastoral ponds in the silvo-pastoral areas will allow sustainable water resources management to cope with strong climatic hazards and increased productivity of family farms and livestock systems.

73. Valley works (dikes, control weirs, plot development) can present different alternatives, taking into account the physical characteristics and topography of the sites. They will be secured against exceptional floods so that only those that occur every hundred years would risk severely damaging them; each of these works will be equipped with water regulating valves. These works will be built within the framework of the implementation of the commune's local development plans (LDPs) through a delegated project management agreement between the commune and PARFA. The construction of the work will be assigned to an independent operator, selected through a national tender on a competitive basis, issued by the commune. Under the project, 300 ha of new works and 150 ha rehabilitation works will be completed, or 450 ha in total.

74. Rehabilitation/creation of pastoral water points. To reduce the pressure on land and plant cover in silvo-pastoral areas and to improve access to water, the project proposes to restore the water points in a structured layout, thus strengthening cattle dispersion in order to maintain water storage late into the dry

season (April-May). The project will rehabilitate/create five ponds and water points, which will mobilize a total of 10,000 m³ of drinking water for five months for a total of 3,335 tropical bovine units (TBUs).

75. *Activity 2.1.2. Combating salinization.* One of the manifestations of climate change is the acceleration of the process of sea water encroachment of the valley lands, resulting in the reduction of agricultural surface area and water and land salinization. PARFA will construct or rehabilitate anti-salt dikes, equipped with control valves, in the valleys traditionally farmed in the Fatick and Kaffrine Regions. Considering a valley size of 50 ha, PARFA could build three new works and rehabilitate three existing works in a total of six valleys, i.e. for a total of 300 ha protected.

Output 2.2. Sustainable land management

76. According to the NSIF-SLM report, land degradation in Senegal remains one of the major blocks to achieving the development goals, above all, those concerning improving agricultural productivity and reducing the vulnerability of the populations. Land degradation also contributes to social tensions while threatening biodiversity and favouring the release of carbon through deforestation. The project will support works of: (i) water and soil conservation/soil protection and restoration (WSC/SPR); and (ii) mangrove rehabilitation and exploitation.

77. *Activity 2.2.1. Soil protection and restoration/soil and water conservation works.* The rice valleys in the Kaolack, Kaffrine and Fatick Regions are often subject to the pronounced silting phenomena when plateau lands, which are cultivated with millet, sorghum, maize and cowpea, are subject to degradation by water erosion. Water management is one of the concepts of SLM. PARFA will carry out soil conservation works (stone barriers, bunds, ditches, gully control, etc.) on the upper parts of the watersheds, the areas where the erosion phenomenon starts. It will also promote planting of soil-fixation species, agroforestry techniques and live hedges, etc. The implementation of these activities will be assigned to an experienced NGO. About 800 ha of flood lands will benefit from the soil and water conservation works.

78. *Activity 2.2.2. Mangrove rehabilitation and exploitation.* The mangrove of Saloum Delta covers an area of 58,300 ha. It is a very rich but fragile ecosystem, which serves as a barrier between the sea and inhabited areas, thus reducing the impact of floods and salinization. Mangroves play an important role in the preservation of fish and terrestrial biodiversity and coastal plain lands. PARFA will support communities that wish to rehabilitate a mangrove site through: (i) the preparation of a management plan; (ii) technical and financial support to set up plantations; and (iii) the promotion of the IGAs around these sites (oyster production, fishing, beekeeping, processing of seashells, wood, etc.). These activities will be supervised by a specialized NGO and aim to restore and conserve the mangrove as well as to sustainably use the resources through direct control over a surface area of around 1,000 ha.

79. The project will set up targeting mechanisms based on those of PAFA-E so that female or youth heads of households will be actively included as beneficiaries of various support to improve sustainable water and land development.

Output 2.3. Sustainable energys and the increased value of agricultural and livestock products

80. This output will be implemented in the PARFA intervention area with UNIDO's expertise and management based on an ecological approach to value chain development, allowing for integration between and within value chains. The selected activities were chosen for their high complementarity and additionality in terms of the environment and food security with interventions already undertaken or planned by the PAFA-E and other stakeholders in the area. The output will include two components: (i) the promotion of sustainable energy; and (ii) development of agricultural and livestock products.

81. *Activity 2.3.1. Promotion of sustainable energy.* The project will support the set-up of solar pumping systems at the market garden sites by financing the installation of 20 solar pumping systems, with a total solar power capacity of 56.32 kilowatts aimed to provide 162 000 m³ of water for irrigating market garden sites (20 ha) supported by PAFA-E.
82. PARFA will also ensure the promotion of biomethanation technology that could be used by rural households and groups mainly for cooking. This technology, already promoted by the National Biogas Programme and the NGO Agronomists and Veterinarians Without Borders (AVSF), is well adapted to the conditions of the project intervention area and to the needs of target groups in terms of heat energy. The use of biogas for pumping water for livestock watering and mechanization of some post-harvest processes should be analysed and validated by the feasibility studies. The project involves the installation of ten biomethanation systems with a total capacity of 50 kilowatts. Access to renewable energy must be provided to at least 40 percent of women among the beneficiaries.
83. The potential partners for the implementation of this component are the National Agency for Renewable Energy (ANER) and the Office of Rural Boreholes (OFOR) for photovoltaic solar technology, and AVSF for biomethanation. Solar pumping systems and biomethane will contribute to the reduction of 1,643 t CO₂-e and to the production of 9 and 10 tonnes of bio-fertilizers.
84. *Activity 2.3.2. Development of agricultural and livestock products.* Given the resources available and in order to avoid a dispersal of efforts, activities will focus on the cereal and livestock farming value chains, particularly the implementation of integrated and sustainable practices for the production, conservation/processing of cereal and livestock products by using renewable energy.
85. The project will support the implementation of 20 pilot projects (four per region) for a total of around 100 production units. Based on the need for a reduction of post-harvest losses, for appropriate processing/exploitation of the natural resources, and for an integration between value chains so as to capitalize on the complementarity of products and to use by-products and residues from crop farming for livestock farming, and conversely, the equipment will consist of: 20 lots for the processing and storage of livestock products; abundant plant products during the rainy season for the production of animal feed (silage, fodder, etc.) or bio-fertilizers (compost). In addition, by-products and agricultural residues will be used for the local production of cattle feed. Agriculture and livestock waste will be used as biomass for the production of energy. Environmentally friendly packaging will be promoted at the supported value chains, and renewable energy will be used. The 20 lots are comprised of: 20 simple silage pits; 20 boxes for compost; 20 simple crushers-mixers; 20 solar dryers; 20 milk conservation and improvement kits; 100 rainwater containers; 20 solar power production platforms; 20 gas production digesters; 20 containers for cooling and milk processing; and four types of packaging promoted in the 20 pilot centres.
86. UNIDO will be responsible for international procurements and as such will purchase the processing and preservation equipment. The suppliers will be responsible for setting and starting up the equipment. Through a sub-contract agreement with ITA, they will be responsible for the supervision, installation of equipment, training and for providing the technical guidance to beneficiaries.
87. At least 800 beneficiaries will be trained on the utilisation of processing and preservation equipment. The beneficiaries of the pilot projects must include at least 40 % women and 30 % youth. At least 6 training modules will be developed and will include: plant products silage and drying techniques and their use in animal feed; processing of waste and by-products of crops for the production of simple animal feed; technical recovery and conservation of small-scale milk; grain recovery and conservation techniques; the

simple techniques of treatment and recycling of farm waste; drying techniques of agricultural products and livestock; recovery techniques, storage and use of water; good hygiene practices and product quality.

88. The beneficiary groups will contribute up to 10 % for each pilot project, as applied under the PAFA-E.

Summary of expected outcome and outputs under component 2

Results hierarchy	Description	Responsible agent
Outcome 2: The resilience of the agricultural value chains is improved.	The development of four agricultural value chains integrates a resilient integrated approach	Government / <i>Institut national de pédologie</i> (INP)
Output 2.1. Sustainable water management	<ul style="list-style-type: none"> ▪ 10 000 m³ of water storage capacity yielded annually for 5 months of the year 	PAFA-E/UNIDO Service providers
Output 2.2. Sustainable land management	<ul style="list-style-type: none"> ▪ 300 ha (6 valleys) of degraded lands recovered ▪ 800 ha of exondated lands treated with soil and water conservation (SWC) and soil protection and restoration (SPR) ▪ 1,000 ha of mangrove restored 4.5 t/ha/year of stored CO₂-e 	PAFA-E/UNIDO Service providers
Output 2.3. Sustainable energy and the increased value of agricultural and livestock products	<ul style="list-style-type: none"> ▪ 20 solar pumping systems set up ▪ Reduction of 1,643 t CO₂-e (by solar pumping and biomethanation) ▪ At least 800 beneficiaries trained on utilisation of processing and preservation equipment ▪ 20 pilot projects (four per region) for increasing the value of agricultural and livestock products involving a total of around 100 production units 	PAFA-E/UNIDO Service providers PFA-E/CSE and national actors

Component 3. Monitoring and evaluation of environmental impact and of project results

Outcome 3. An effective mechanism for monitoring and evaluating environmental impact and food security is operational

Output 3.1. Monitoring and evaluation of environmental impact

89. The monitoring and evaluation of the environmental impact aims to provide sound and relevant information on the quality of the measures taken to improve the level of ecosystem resilience to various environmental shocks. The planned activities (nationally and locally) will focus on: (i) implementing an information system; (ii) building capacities of stakeholders of the information system; (iii) determining the baseline status of the indicators related to the level of carbon sequestration, biodiversity, SLM, quality of water, etc.; (iv) regular monitoring these indicators; and (v) integrating environmental monitoring in the information system of the grassroots organizations. The Centre de suivi écologique (CSE, Ecological Monitoring Centre) will execute the monitoring and evaluation of environmental impact of activities, under the guidance of the Direction de l'Environnement et des Etablissements Classés (DEEC) which is

responsible for overall environmental monitoring and the implementation of the environmental management plan. The RATA framework will be embedded in this intervention in order to serve the alignment of approaches and monitoring towards common objectives, contributing to integrated strategies and the pursuit of synergies in reporting between countries and international environmental conventions. An output of the RATA application will be a 'Summary Action Indicators', which will feed into the environmental monitoring and information system. The project will work closely with the GEF Medium Sized Project (MSP) / Normalized Difference Vegetation Index (NDVI) project to maximize the synergies and the efficiency in data collection and management. Higher resolution NDVI will help in project targeting and M&E.

Output 3.2. Monitoring and evaluation of activities and of project results

90. The monitoring and evaluation system of PARFA, which relies on PAFA-E's monitoring and evaluation system, will aim to provide information on the performance of the project implementation by comparing current activities with those planned. The data that will be collected will facilitate project management and the preparation of progress reports, and will enrich the lessons learned and the conclusions for a comparison between the "with project" and "without project" situations. A single logical framework and Monitoring and Evaluation Manual of the project will be developed. The Monitoring and Evaluation Unit of PAFA-E will be responsible for the implementation of the monitoring and evaluation. The Unit will be supported by a monitoring and evaluation assistant responsible for ensuring the organization of data collection, the setting of dashboards (level of implementation of activities) and project activity reports.

Output 3.3. Knowledge management

91. PARFA, in synergy with the knowledge management activities of PAFA-E, will strengthen the collection and dissemination of information that is useful to local, regional and national value chain actors, and will make best use of activities and methods implemented by IFAD and UNIDO projects and by other projects that carry out activities similar to those of PARFA. The different communication channels used are: training manuals, good practice guides, data sheets, posters, videos, radio programmes and the dissemination and regular updating of information on the IFAD website. Implementation of the activities of the Knowledge management output will be assigned under a service contract to the NGO Innovation, environnement, développement Afrique (IED Afrique). The project will develop a knowledge management strategy with the provider. The results of this component will be actively used to better inform policy dialogue (Component 1) and to strengthen the enabling environment of sustainability and resilience through a learning process. This same process will be used for upscaling good practices. To this end, output 1.2 will be based on the results of these activities and on PARFA's knowledge management at all levels. The agreement between INP and PARFA should include and clarify the elements and mechanisms that would ensure this exchange between the activities of 1.2 and 3.3.

Summary of expected outcome and outputs under component 3

Results hierarchy	Description	Responsible agent
Outcome 3: An effective mechanism for monitoring and evaluating environmental impact and food security is operational.	<ul style="list-style-type: none"> ▪ 1 monitoring and evaluation system on the environmental impact is operational 	<i>Centre de suivi écologique</i> (CSE, Ecological Monitoring Centre) with INP
Output 3.1. Monitoring and assessment of environmental impact	<ul style="list-style-type: none"> ▪ multidimensional tracking system developed and TORs ▪ environmental monitoring system undertaken 	PAFA-E/UNIDO Service providers
Output 3.2. Monitoring and evaluation of activities and of project results	<ul style="list-style-type: none"> ▪ 400 users of the system for monitoring and evaluating environmental impact (number of annual visits) 	PFA-E/CSE and national actors
Output 3.3. Knowledge management	<ul style="list-style-type: none"> ▪ At least three strategic tools are based on the data of the environmental monitoring system 	

Lessons drawn from other projects

92. There will be complementarity with IFAD's and UNIDO's portfolio projects in Senegal. The main lessons learned from previous projects and that will be taken into account in the design of this new project are as follows:

- The process of professionalization and empowerment of POs is a sustainability factor. The objective is to have empowered POs, capable of networking with work forces, and to obtain credit from financial institutions.
- The value chain approach is an option suitable for forging a strong linkage of family farms to the market and for creating job opportunities for rural youth through entrepreneurship services within promising value chains.
- Due to the capitalization and dissemination of knowledge (knowledge management approach), precious time will be saved for the upscaling of best practices and the achievement of a critical mass of the target group.
- The pastoral units (PUs) allow for rational natural resources management and better management of conflicts between crop and livestock farmers, and serve as a basis for the development of livestock farming.
- The application of the principles of inclusion in the targeting of project beneficiaries (inclusion of women, youth, poor households and disabled persons) contributes to the reduction of rural poverty.
- IFAD's Country Programme Review Workshop (Results-based Country Strategic Opportunities Programme, or COSOP), held in November 2014, emphasized the need to: (i) systematically internalize climate change, adaptation and resilience in the projects; (ii) further highlight the information on climate change; and (iii) take into account biodiversity and the regeneration of natural resources.

- The mid-term review of the GEF component of PAFA, conducted in May 2015, and the interviews with the PAFA-E team emphasized the need to better define the number of activities under the GEF project as well as the number of implementing partners in order to reduce red tape and delays in the implementation of activities that negatively affect the results and the impact of the project.

93. PARFA's design took into consideration: lessons learned, particularly with respect to the value chain approach and capacity building of POs in order to ensure the sustainability of investments; and the concentration of activities on the intervention axes that have great potential for upscaling and for impacting on the fight against environmental degradation and the improvement of food security.

Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

94. PARFA's mission is based mainly on the importance of the land and natural resources degradation phenomena in the area and, at the same time, the presence of assets on which PARFA can build: (i) the positive results and significant achievements of PAFA and past projects that can be consolidated, replicated and scaled up; (ii) the availability of natural resources and productive potential; (iii) a dynamic associative organization of producers; and (iv) possibilities of promoting partnerships between farmers and other actors working in these value chains (private and public). PARFA therefore seeks to add value to PAFA-E activities by building on this and strengthening the environmental aspects.

95. The PARFA targets the geographical areas and value chains that are in need of the most investments to reduce their environmental risks and are considered as part of IFAD's programme in Senegal and UNIDO's planned investment in the field of agribusiness development. Therefore, the GEF investment will be able to benefit from a greater impact in terms of outreach and inclusiveness. The project covers the intervention zone of the project PAFA-E, i.e.: four regions (Kaolack, Fatick, Kaffrine and Diourbel) in the central and northern Groundnut Basin and one region (Louga) in the silvopastoral zone. Table 2 below presents the incremental activities to the baseline.

Table 2 PARFA’s added value to PAFA-E activities

PAFA-E activities	PARFA’s added value
Strengthening of management capacities of actors in the agricultural value chains, including political dialogue and formulation of policy recommendations	<p>Greater consideration of the environmental dimension in the different segments of the agricultural value chains.</p> <p>Awareness raising and training of actors on environmental issues.</p> <p>Improvement of multi-sectoral coordination for the sustainable management of the agricultural value chains.</p> <p>The set-up of an environmental monitoring system for better decision making on the sustainability of the value chains, their resilience and food security.</p>
Removal of economic constraints in the agricultural value chains	<p>Removal of environmental constraints and taking into consideration the risks linked to environmental degradation.</p> <p>Fund mobilization for the environmental sustainability of the agricultural value chains.</p>
Support to agricultural production in the selected agricultural value chains	<p>Improvement of the resilience of production systems faced with soil and environmental degradation and climate variability.</p> <p>Land protection against salinization.</p> <p>Promotion of a watershed approach (integrated approach for space management).</p>
Support for the processing of agricultural products	Development of integrated inter- and intra-value chain approaches, including the use of renewable energy and the reduction of greenhouse gas emissions.
Support for the marketing of agricultural products	<p>Support to packaging and storage appropriate to climatic conditions.</p> <p>Support to improving the packaging of products, particularly, biodegradable ones, using local raw material (improving environmental sustainability and food security).</p>
Increased value-added by the farmers in the supported agricultural value chains	<p>Strengthening of the sustainability of value-added by farmers in the supported agricultural value chains.</p> <p>Improved value, diversification and conservation of by-products in the agricultural value chains.</p>

Source: PDR (detailed design report)

Project financing

96. PARFA will be financed by: i) a GEF grant amounting to USD 7.2 million, of which USD 3.6 million will be managed by IFAD, (39% of total cost) and USD 3.6 million by UNIDO (39% of total costs); ii) a government contribution of USD 1.65 million (18% of total costs), which corresponds to the taxes and charges levied on the goods and services acquired by the project; iii) a contribution of beneficiaries estimated at USD 366,517 (4% of total costs), which follows the PAFA-E model for these types of co-financing; iv) co-financing is estimated at USD 28.54 million and will mainly be mobilized through complementarity with the PAFA-E operations, as indicated in Annex ‘GEF grant and co-financing budget breakdown’. Project management costs are 4.2 % of the baseline cost. Annex 9 of the main report (the PDR, page 109) provides detailed project cost and financing. The co-financing includes the contribution of the Government and the beneficiaries which will enable the execution of activities under all project components: component 1 (multi-stakeholder platforms), component 2 (upscaling) and component 3 (Monitoring and

evaluation). For example, the co-financing under component 2 captures the land provided by the beneficiaries (for the pilot projects) and the Government (for the SLM) as well as an estimation of their time, buildings etc.

Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

97. The project includes mitigation of impacts and adaptation to CC, including: i) the realization of different types of catchment water facilities appropriate to the physical and socio-economic contexts in order to allow for a better economy of surface water and shallow groundwater during the more random rainy seasons or very long dry periods; ii) the implementation of SLM practices at production plots; iii) the promotion of renewable energy; iv) improving storage techniques and enhancement of agricultural products; v) the realization of measures to raise awareness and education on environmental issues and climate risk reduction; vi) a contribution to the monitoring and operation of climate data in the project area, and vii) the capitalization and dissemination of the acquired experience in the field of resilience to CC.
98. Thus, the project will produce the following global environmental impacts: i) carbon storage and the reduction of emissions; ii) rehabilitation of plant cover; iii) rehabilitation of mangroves (carbon storage and conservation of biodiversity); iv) water resource conservation, and v) the fight against the damaging impacts of climate change (drought and rise of water levels, etc.) and improved resilience of the ecosystems.
99. *CO₂ mitigation.* It will reduce the production of greenhouse gases by promoting the use of renewable energy for pumping (solar pumping) and introducing biogas as an alternative for clean energy in rural areas (reducing emissions and pressure on the plant cover). Formulation estimates indicate that the project will contribute to a i) direct emission reduction potential of 164.3 t CO₂-e and indirectly, 6,500 – 5,174,694 t CO₂-e for solar pumping and biomethanation; and ii) storage of 4.5 t/ha/year of CO₂-e (specifically in the 1,000 ha of mangrove forest that will be rehabilitated).
100. *Sustainable land management.* The project targets vulnerable and overexploited/damaged ecosystems of regional and global significance such as mangroves. It aims at rehabilitating land and fighting against salinization through the promotion of sustainable water and soil management the rehabilitation and conservation of mangroves. Formulation estimates indicate that the project will contribute to i) 300 ha (6 valleys) of degraded lands recovered; ii) 800 ha of exondated lands treated with soil and water conservation (SWC) and soil protection and restoration (SPR); iii) 1,000 ha of mangrove restored.
101. *Surface and ground water conservation.* The project will rehabilitate/create five water points, which will mobilize a total of 10,000 m³ of drinking water for five months for a total of 3,335 tropical bovine units (TBUs).
102. After the completion of this project, investments are expected to be increased due to the long term outcomes of the project activities. awareness raising and capacity building activities will contribute to significant indirect CO₂ emissions reduction.
103. At this stage, the tracking tools, at the IAP-FS regional level, have not been confirmed yet. Therefore, some tools and indicators relevant to the regional objectives, are still evolving.
104. For further information on the method of calculation, see ‘Annex 10 Analyse économique et financière du Projet’ of the IFAD PDR.

Innovativeness, sustainability and potential for scaling up

105. *Innovativeness.* IAP Program. The overall IAP approach to Integrated Natural Resource Management is innovative, as it combines strengthening of policy and institutional frameworks with new mechanisms for scaling up on-the-ground that involves working with all stakeholders along the value chain to strengthen market access for smallholders. The Program will support greening of selected value chains and ensure that they are inclusive and benefit the poor, and women and men equally. The monitoring and assessment component of the Program will provide information to support policy and decision making processes for further up-scaling. Another innovative element is the systematic integration of resilience assessment into Program activities. Lessons and experiences of identifying pathways for agro-ecosystem resilience, adaptation or transformation to design well targeted interventions will be widely disseminated and shared through Program networks and knowledge partners. Regional multi-stakeholder platforms in SSA that will receive support from the Program will also provide vehicles for up-scaling and replication and to reach new countries that are not yet participating in the IAP.

Potential for scaling up

106. PARFA's mission is based mainly on the importance of the land and natural resources degradation phenomena in the area and, at the same time, the presence of assets on which PARFA can build: (i) the positive results and significant achievements of PAFA and past projects that can be consolidated, replicated and scaled up; (ii) the availability of natural resources and productive potential; (iii) a culture of associative organizations in the socio-productive field; and (iv) possibilities of promoting partnerships between farmers and other actors working in these value chains (private and public). PARFA therefore seeks to add value to PAFA-E activities in environmental matters.

107. The challenges identified to the scale-up of ecologically based sustainable management of production landscapes in SSA countries, include the: i) lack of appropriate policies at national and regional levels to support ecosystem and landscape based production strategies, and ii) poor development of the capacities needed to support wider adoption of the required approaches at all levels and in particular at the smallholder level in both the public and private sectors.

108. The IAP approach presents a clear opportunity to influence how food production and food value chains are managed so that the environment (including climate impacts) is more effectively accounted for and accommodated at multiple scales. Embedded within the 3-pronged approach the regional programme strategy (and mirrored in this country project for Senegal) are acts to scale up, diversify and adapt practices that will achieve large-scale transformation of agro-ecosystems in SSA. This is addressed through Component 2 on the scaling up of integrated approaches.

109. Under the IAP-FS there is an additional, non-country specific cross-cutting regional coordination child project that will ensure programmatic coherence, co-learning and knowledge sharing, and impact at scale within and across target geographies. This will not be achieved directly through the activities of the coordination/cross-cutting project; rather this project will support the country child projects (and beyond) to achieve:

1. Multi-benefit innovative practices promoted which generate or safeguard ecosystem services in the food value chains and food production systems via, in particular:
 - Targeted support provided to countries to implement environmentally and sustainable agricultural practices
 - Models for influencing food value chains to ensure food and nutritional security developed and institutionalized (e.g. incentive mechanisms such as Payment for Environmental Services, micro-

capital grants for sustainable agri-business supply chain development, Public-Private Producer Partnerships for smallholder farmers.

2. Wide-scale and enhanced uptake of INRM to foster sustainability and resilience in production landscapes and agroecosystems facilitated directly through support to other child projects as well as more broadly, ie:
 - Conservation agriculture practices adopted– providing technical guidance and identifying institutional and market incentives that help address challenges associated with minimum or zero tillage, and providing sustained cover to the soil through mulch or cover crops
 - Enhanced uptake of agroforestry interventions and management of natural regeneration of trees and shrubs in production landscapes
 - Wide-scale adoption of water management technologies and water captured more efficiently on farms – enhancing water productivity, especially that of rainfall or green water
 - Integration of crop, livestock, agroforestry and forestry and possibly aquatic diversity into the production system and tightening nutrient cycling of the farming system – with increased uptake of ISFM
 - Scaling up of storage facilities, reduce post-harvest losses, and enhance off-take
 - Improving formal and informal seed systems

110. In response to the IAP-FS, Component 2 the PARFA aims to upscale good practices in environmental and climate change risk management by: (i) supporting large-scale awareness raising and communication on these topics; (ii) stimulating debate and exchanges within the value chain platforms; (iii) setting up innovative activities in the field of soil recovery, environmental protection and the use of less polluting processing methods; and (iv) organizing exchange visits on the most outstanding achievements. Efforts in scaling up will be made by capitalizing on the demonstrative nature of the project (e.g. replicable models of renewable energy, integrated production systems). Efforts will also be made to promote the setting up of a financial window on sustainable land and environmental management (SLM)/resilience at the FNDASP. These efforts would support and help finance the scaling-up of best practices.

111. IFAD has committed a separate grant of USD 500 000 to FNDASP to provide knowledge and know-how in the form of successful innovations and best practices as public goods in order to strengthen the livelihoods of the rural poor in a systematic and sustainable manner. This grant complements the objectives of the GEF project and builds synergies for the dissemination and promotion of good practices. It will provide a technical and financial contribution to scaling-up mechanisms sought by the IAP programme. Thus, INP will collaborate closely with FNDASP to forge synergies for: (i) a large-scale dissemination of successful innovations and good practices; (ii) the organization of workshops to present, discuss and validate best practices; (iii) the drafting of a list of best practices in agricultural and rural development projects in Senegal; and (iv) the creation of a virtual platform on the FNDASP site for sharing knowledge on agricultural and rural development projects. The GEF will complement these efforts with a resources mobilization module. The project will share data, case studies and lessons learned with the regional project to serve other projects. At the same time, it will benefit from the results that will be provided by other participants in the cross-cutting project. This exchange will allow to learn and test innovations that will strengthen the implementation of the theory of change of this GEF financing in Senegal.

112. Output 1.1. capacity building of actors at the national regional and local levels will support the education of key actors (policy makers, development actors, including civil society and beneficiary representatives) among others, on issues pertaining to the wider adoption of the required approaches to strengthen the resilience and environmental sustainability in agricultural value chains, at all levels and in particular at the smallholder level in both the public and private sectors.
113. *Sustainability.* The goal of the IAP-Food Security is to increase the sustainability and resilience of food production systems and to enhance food security in SSA Africa which is why, through the 3 tiered approach (engage, act and track) the project will address existing barriers that prevent transformational change and an alternative scenario to agricultural development and increased food production.
114. The sustainability of PARFA interventions is acceptable with respect to the following elements, which were incorporated into the set-up of the project: i) the construction of simple works for the capture and exploitation of surface or shallow groundwater that can be easily managed and maintained by the beneficiaries, which will have a significant and visible impact for farmers in securing agricultural production and increasing yields; ii) promoting works on the plots that will reduce soil losses through erosion and salinization; iii) promoting renewable energies and the development of agricultural products that will result in improved farm incomes and ensured sustainable investments, and v) support for the establishment of the SLM/resilience window at the FNDASP.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact.

115. The IAP Program is delivered through the country child projects that address country specific priorities under the three Program components, and one cross-cutting regional coordination child project that will ensure programmatic coherence, co-learning and knowledge sharing, and impact at scale within and across target geographies.
116. PARFA's overall goal is to contribute to improving the economic situation and the ecological environment of rural communities. The development objective of the project is to improve the food security of smallholder farmers as well as their resilience to environmental degradation and climate change.
117. Since PARFA was integrated into the GEF's regional programme IAP-FS, its coordination will replicate that of the latter and include three components: (i) support to multi-stakeholder platforms; (ii) upscaling of sustainable and resilient good practices; and (iii) monitoring and evaluation of environmental impact and of project outcomes.
118. This project will establish strong ties with the regional, cross-cutting project, IAP-Food Security. These ties will mainly focus on three areas:
- a. *Exchange visits and training.* Coordination will be established with the regional project. Project actors and key institutions in Senegal will benefit from training opportunities and sharing of data/information on resilience and food security.
 - b. *Exchanges and knowledge management.* Accordingly, the project will share data, case studies and lessons learned with the regional project to serve other projects. At the same time, it will benefit from the results that will be provided by other participants in the cross-cutting project. This

exchange will allow for the learning and testing of innovations that will strengthen the implementation of the theory of change of this GEF financing in Senegal.

c. these results and outcomes are shared and communicated.

119. Moreover, the project will establish operational links with the MSP/ NDVI, which will be developed in Senegal under this IAP-Food Security programme. The exchange interface will be through CSE in Dakar, which will control the monitoring work (GIS and remote sensing) for this project. The agreement that is to be established between PARFA and CSE will consider the elements that will be developed as part of these MSPs and will seek potential complementarities to avoid duplication. The CSE will identify synergies and complementarities with respect to the agreement.

120. During the start of PARFA, a hybrid work plan will be developed with the crosscutting regional project to integrate activities there where synergies will be possible. This work programme will be integrated in the AWPB of the project and included in the agreements planned by PARFA.

A.3. Stakeholders. Identify key stakeholders and elaborate on how the key stakeholders' engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes /no)? and indigenous peoples (yes /no)?¹²

121. The project will reach out to around 52,500 people (5,250 households), of which about 40% are women and youth amongst vulnerable communities in eco- geographical zones of the selected streams (millet, sorghum, maize, fonio, hibiscus, sesame, cowpeas, and family poultry, fishing continental, horticulture, beekeeping and forestry). The project will use participatory methods to engage the stakeholders in project design / preparation via a number of activities: i) Sensitization activities at community and institutional levels to reach the different groups of stakeholders (farmers associations and their household's members, Governmental institutions, Private sectors). Community sensitization will focus on the strategic assessment outcome, stressing the arising benefits; ii) Information sharing activities regarding project objectives which will contribute to mobilize the stakeholders, iii) participatory Assessments involving data gathering and hence direct contact with stakeholders.

122. For the implementation of field activities, the PCU and UNIDO will establish contract agreements / services with partners and implementing providers. Specialized agencies (CSA, CSE, FDI, INP, ITA, etc.), NGOs, apex POs and others, which have proven expertise and experience. They will be recruited on competitive basis of results-based contracts, to implement field activities. For further information on the roles of partners and implementation providers, kindly see section A6 Institutional Arrangements and Coordination.

¹² As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.

Table 2 Project Stakeholders and potential partners

Project Stakeholders	Description
Beneficiaries	i) Small and medium farmers who practice competitive and sustainable agriculture; (ii) active actors in the value chain; and (iii) SMEs and large operators benefiting from the infrastructure of primary irrigation, enabling them to expand their production. Other beneficiaries include members of smallholders’ households, value chain stakeholders, and wage workers engaged in new activities. The project will ensure that women and young people are actively involved in its implementation
Agricultural advice	The Agence nationale de conseil agricole et rural (ANCAR, National Agricultural and Rural Advisory Agency) is responsible for providing rural and agricultural advice throughout the national territory according to an approach based on farmers’ demand and in partnership with the POs and the main rural development actors (NGOs, projects, Regional Rural Development Agency [SRDR, etc.)
Rural finance	The National Agricultural Credit Fund of Senegal (CNCAS) remains the main actor in the rural finance sector. The interest subsidy, guarantee and disaster response fund, largely financed from budgetary resources, is managed by CNCAS, which allows it to provide more favourable loan terms than those of the rest of the banking sector and the microfinance institutions (MFIs). Around 700 MFIs, mainly organized in seven major networks, generally finance small trade and income-generating activities (IGAs) in agricultural production.
Professional Organizations (POs)	POs play a fundamental role in agricultural development although their capacities vary. Some professional agricultural or livestock farming organizations (PAOs / PLFOs) are characterized by a dynamic of empowerment and professionalism to better serve their members. Nationally, the platforms ¹³ of the agricultural organizations above all serve as representatives and advocates of the POs. Despite the significant progress made, many local organizations, however, continue to be inefficient in providing technical and economic services to their members. The LOASP provides for the set-up of a public assistance system for the PAOs.
The rural private sector and entrepreneurship	The private sector is not very active in the rural areas because of their isolation, the dispersal of opportunities, the lack of suitable credit and the lack of a regular supply of products. It is active mainly in the transportation of agricultural products.

¹³ These platforms include the National Rural Consultative and Cooperation Council (CNCR), the Senegalese Development Movement (MSD), the *Union nationale des paysans, pasteurs et pêcheurs* (UN3P, National Union of Rural Farmers, Pastoralists and Fishers), the National Rural Consultative and Cooperation

Council (CNDR) and the National Union of Farmers, Herders and Fishers of Senegal (SYNAEPS/JAPANDOO).

The Inter-sectoral Steering Committee of the NSIF-SLM	This is the decision-making framework of the NSIF-SLM. It is under the authority of the ministry responsible for agriculture and brings together the ministries, institutions, and representatives of civil society and the private sector involved in sustainable land management issues.
Partners and Implementation Providers	
Ministry of Agriculture and Rural Equipment (MAER)	The national platform for science-policy dialogue on adaptation of agriculture and for the adaptation of agriculture and food security to climate change, " CCASA platform " is under the MAER. Indeed , Senegal, like the five West African countries that have benefitted from the support of the CCASA program (CCAFA in English: Climate Change, Agriculture and Food Security), to establish a national platform for exchanges between researchers and decision makers on the adaptation of agriculture and food security to climate change. This is a network of actors to undertake regular exchanges of information and knowledge on the adaptation to climate change and its integration into national plans and food security policies for the promotion of smart agriculture in the context of climate change.
Le Commissariat à la sécurité alimentaire (CSA)	The CSA was established in 1984 under the supervision of the office of the President of the Republic. In the framework of regulation of the local grain market, Its mission is to study the cereal market in conjunction with other services involved with the objective to: (i) observe changes in demand and the marketing of cereal; (ii) monitoring and interpretation of prices on the markets; (iii) the identification and monitoring of groups and areas of food risks in urban and rural areas; (iv) monitoring commercial structures operating on the cereal market; (V) ensure the management of food aid from foreign countries, international organizations, governmental or non-governmental. The CSA is responsible for: managing the national food security stock; (ii) monitoring food security including the management of a market information system (MIS) and dissemination of data; (iii) assistance to vulnerable groups.
Innovation, environnement, développement (IED Afrique)	Founded on 1 September 2005, IED Afrique took over the Sahel Programme of the International Institute for Environment and Development (IIED), established in 1993. It is an independent, non-profit organisation, based in Senegal which benefits from fifteen years of experience in francophone West Africa. It has set itself the task of contributing to the achievement of an equitable and sustainable development through the promotion of policies and practices of inclusive decentralization, environmental governance and agriculture. It has a good experience in terms of capitalization and dissemination of acquired information and on rural development issues.

L'Institut national de pédologie (INP)	IPN is a public, scientific and technological institution, created in June 2004 under the supervision of the Ministry of Agriculture. The role of the INP is to expand the institutional framework of the Rural Development piloting in order to: raise land productivity, enhance the technical level of rural producers, control land use and finally improve the quality of agricultural products. INP is responsible of identifying degraded soils, to proceed with their diagnosis and finally, to provide remedies as an amendment or promoting good technical practices in productive and sustainable management of soil. Three areas of intervention guide its actions: (i) soil characteristics; (ii) Improved soil fertility potential; (iii) Promotion of SLM practices
Le Centre de suivi écologique (CSE)	CSE was established in 1986 by the Senegalese authorities to respond to the significant crisis affecting pastoral ecosystems in Senegal. After a decade of existence as a project, the CSE has gradually become a public and semi-autonomous institution of public utility, under the technical supervision of the Ministry for the Environment and Nature Protection. It specializes in the production and dissemination of data and information on the environment and natural resources. Apart its public duties, CES also provides services in various fields on the basis of agreements and protocols with partners such as the private sector, local communities, grassroots organizations, international organizations, state departments . These services cover: (i) assessment of land degradation and desertification; (ii) climate change; (iii) risk management; (iv) management of natural resources and wetlands; (v) the environmental assessment, the environmental and social management plans, Pastoral Units management plans and land use (RSP); and (vi) the development of information systems.
L'Institut de technologie alimentaire (ITA)	ITA is a research and development centre, specialised in in agribusiness, founded in 1963 under the Ministry of Trade, Industry and Crafts. The Institute has about 84 people are 20 specialists in food technology and scientific experts. The services offered by the ITA include: (i) scientific research targeting issues related to the valorisation of food,(ii) technical assistance to agri-food MSME, (iii) technical training technicians, women's groups, private sector and technical leadership related to the food sector,(iv) analysis for monitoring qualities of food products (chemical analysis, microbiological etc.). The ITA has proven experience in the implementation of food pilot units (6 units already in place covering several sectors), quality control laboratory, technical training. ITA worked in collaboration with various national partners, regional and international partners (for example, Walloon Industrial Biology Center, University of Carolina, etc.).

Agronomes et vétérinaires sans frontières (AVSF)	In the 90's, AVSF has supported the creation of the first private and community based dairy operation in Haute Casamance to enhance the local farmer milk production. In the Ferlo, AVSF supports agropastoral production through the establishment of pastoral units and agricultural food production and the establishment of fairer market chains, fair trade or organic, for products such as sesame or walnut cashew. Given the impact of climate change on smallholder farming, AVSF supports farmers to adapt to riskier hazards (reforestation , access to water , ..) and leads since 2012 experimental activities and establishments of digesters for biogas production from manure , thus facilitating the access of rural households to energy, while contributing to reduce methane and CO2 emissions.
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A.4. Gender Equality and Women's Empowerment.

123. Senegal's population is illustrated by the number of women (52.3%) of which 55 % are under 20 years of age. At the national level, the number of households is estimated at approximately 1,296,200 of which nearly 20% headed by women live mostly in cities. Only 11.6% of rural households are officially headed by women against 29.5% in Dakar and 28.5 % in other cities. The incidence of poverty is 37.7 % among those living in households headed by women against 50.6% among people living in households headed by men. This is explained by a difference in the composition of households in both categories and the importance of favourable transfers to households headed by women.
124. The female illiteracy rate is still high in rural areas (75% against 55% for men) despite efforts through literacy programs. The low level of education and training of women, their limited access to strategic economic information, inputs, agricultural services and remunerative markets limit their economic power and their presence in decision-making bodies of the PO compared to their number. The difficulty of some of the household tasks like farming, tools and rudimentary farming equipment they have are also constraints to the development of their economic activities and increase their income.
125. As far as land ownership is concerned, the land-use rights favour men who exploit the land with family labour made up by women and young people even if the legislation does not discriminate. Women's access is much more grounded in groups and as individuals. However, initiatives such as those developed by the PAFA through equitable access to inputs (seeds and fertilizers) to men and women have restored parity in the allocation of areas to be exploited (1250 m² for men and 1250 m² for women against 2500 m² for men and 1250 m² for women) .
126. The IAP on Food Security is consistent with the GEF Policy on Gender Mainstreaming (PL/SD/02. May 1, 2012) and is fully aligned with the gender policies/strategies of the participating GEF agencies, in particular with that of IFAD, the lead agency for the IAP. IFAD's Gender Equality and Women's Empowerment Policy of 2012 builds on the premise that agricultural growth is enhanced if both women and men are enabled to actively engage in economic activities. Its goal is to enable poor rural women and men to improve their food security and nutrition, raise their incomes and strengthen their resilience.
127. In 2009, UNIDO adopted a policy on Gender Equality and the Empowerment of Women which outlines the Organization's commitment and contribution towards gender equality and the empowerment of women. UNIDO's approach will support Senegal to systematically and comprehensively address the gender-specific impacts of climate change as they affect sustainable industrial development. Measures to address issues of women's equality and empowerment have been integrated into through clear analyses

and identification of gender needs, engagement with local stakeholders, vulnerability assessments and capacity development.

128. The IAP will mainstream the following gender concerns into its child projects; indicators have been selected depending on the nature of the project:

- a. *Promote economic empowerment of rural women and men:* i) Proportion of women accessing agricultural advisory, savings and borrowing services, ii) Proportion of women that are members of groups related to economic activities (crop/livestock production, savings and credit, and marketing), iii) Rural woman's incomes/expenditures as compared to men's
- b. *Increase rural women's decision-making power and representation:* i) Proportion of women in the membership of non-economic groups (natural resources management, community and social infrastructure), ii) Proportion of women in leadership positions in economic groups in IAP-supported projects, iii) Proportion of women leaders in apex organizations associated with the IAP.
- c. *Achieve an equitable workload balance.* Score on workload reduction and balance

129. The gender strategy and inclusion of vulnerable persons ongoing in PAFA-E will continue during the execution of the PARFA. The PO specialist and Gender Specialist of the PAFA-E will cover such aspects for the PARFA. Besides taking into account the gender dimension in cross-cutting manner through project activities, the PARFA envisions specific support actions and coaching to increase economic empowerment and leadership of women in mixed POs and their umbrella. Further information can be found in

130. The project will implement an inclusive approach to the poorest producers individually or grouped in organizations. To do so, it must support outreach awareness and information activities that will be conducted by teams in the field relying on community-based organizations, in order to reach all the villagers and facilitate access to the activities supported by the project, in favour of the greatest number of beneficiaries, including the most vulnerable,

131. To do this, criteria including vulnerable groups, young girls (15-25 years) and young men (18-30 years), and assessing the opportunities and constraints for their insertion will serve as baseline and will enable to identify: (i) a detailed targeting strategy by component, specifying the expected results and indicators and offering collection and analysis device for monitoring and evaluation of the evolution of the situation; and (ii) a training program for project staff and institutional partners, based on specific communication media and the participatory approach.

132. In general, the project will facilitate the integration of women and girls in the production but also in processing and marketing, and promote their representation in the governing bodies of PO supported by the project and in regional and national consultation frameworks. Young men from 18 years also will be subject to specific advocacy to help them develop activities in the processing or in trade, despite the limits to the possibilities of access to land.

133. More specifically, awareness raising and information dissemination will be organized for women in the same way as the PAFA-E, from the project launch, so that all the opportunities are captured, in particular with the introduction of small ruminants and the development of rural poultry which offer women great opportunities for the improvement of food security and diversify their sources of income. Information sharing will continue and will be maintained throughout the progress of the project.

134. Training activities will be developed and strengthened around new courses introduced, including the modernization of small livestock and poultry and their market orientation. In addition to technical training activities like those undergone by the PAFA, women's groups will benefit from training in entrepreneurship development, contracting and farm management in order to improve the economic and financial performance.
135. The project staff will follow an online course for training in gender equality. This training is available on a platform called Campus e- learning UN Women Training Centre. This is open to all who wish to train and learn to promote gender equality and empowerment and women's rights.
136. The project will ensure that at least 40 % of beneficiaries are women. For further information see Annex I of the CEO Endorsement submission package for the detailed gender assessment study undertaken jointly by UNIDO and IFAD during the PPG phase, and also Annex 2 of the detailed PDR on 'Poverty, Targeting and Gender Aspects', which forms the basis for the roll-out of the gender specific activities in this project.

A.5 Risk.

Environmental and Social Risk.

137. The Social and Environmental Assessment of the project determined that the project will have limited impact on the environment and rather, positive long term improvements, under various mitigation actions, such as (i) restoring soil fertility; (ii) various irrigation schemes that will allow for the good use of both surface and groundwater; (iii) increasing agricultural productivity through the rational use of fertilizers and improved seeds. The expected increase in productivity and production will result in a revenue increase, among other things, reducing the area needed under cultivation expansion.
138. All project activities aim to introduce more respectful practices for the environment and enable the population to cope with the effects of climate change. The project should therefore have positive impacts on environmental and social matters. In view of the positive impact anticipated and the preliminary analysis of environmental and social risks, the project was allocated a moderate classification Category B, in relation to these risks.
139. The project is expected to have little or no adverse effects, as it utilizes inputs with no negative effects on the environment and the planned infrastructures will not disrupt the flow of surface water. Environmental issues are integrated into all activities and at all stages of the project cycle, particularly in the specification of works and arrangements which will include an environmental review and mitigation of negative effects. The management committees of hydro-agricultural and pastoral facilities will be involved in managing the implementation of the identified measures. The increase in agricultural production will increase yields through better farming practices and better water management. The program will fund training that will focus on the rational use of fertilizers, plant protection products and compliance with environmental management standards.
140. One of the manifestations of climate change is speeding up the process of flooding and salt intrusion. This results in the reduction of agricultural land and further salinization of water and land. This is a major constraint to sustainably increase agricultural production and thus food security. To remedy this, the PARFA will achieve or rehabilitate anti-salt dams in valleys traditionally operated in Fatick and Kaffrine regions. Through proper water management, these dikes will be equipped with control valves and will allow a gradual leaching of soils to enhance their productivity.

141. For sites that already have anti-salt structures, rapid diagnostic analysis of development will be conducted to determine the best solution for improvement, rehabilitation or lastly, reconstruction if necessary
142. Given the configuration of valleys and investment costs, the project will target valleys with the objective of protecting about 300 ha of land that could thus be restored and protected by anti-salt dikes. Considering a valley size of 50 ha, the project will build three new facilities and rehabilitate existing structures 3 in a total of six valleys, is 300 ha protected in total. Studies, control and supervision of the work will be outsourced to private providers hired by the project in support of the DBRLA. The realization will be done by an experienced company works on behalf of municipalities in which interventions will be made which will then be endorsed by the project's investment plan.
143. The project includes measures for mitigating climate impacts and for climate change adaptation, including: (i) constructing different types of catchment water works that are adapted to the physical and socio-economic contexts in order to improve savings of surface water and shallow groundwater during the increasingly erratic rainy season or very long dry periods; (ii) implementing SLM practices at the production plots; (iii) promoting renewable energy; (iv) improving techniques for the storage and development of agricultural products; (v) raising awareness and informing on issues regarding the environment and climate risk reduction; (vi) contributing to the monitoring and use of climate data in the project area; and (vii) capitalizing and disseminating lessons learned on climate change resilience.
144. The project will ensure the establishment of a perimeters protection system, built by reforestation, the installation of erosion control strips and protection perimeters against runoff.
145. The project will further provide technical training of at least 800 direct beneficiaries with at least 40% women and young people on the use of equipment and good practice. At least 6 training modules will be developed and will include: plant products silage and drying techniques and their use in animal feed; processing of waste and by-products of crops for the production of simple animal feed; technical recovery and conservation of small-scale milk; grain recovery and conservation techniques; the simple techniques of treatment and recycling of farm waste; drying techniques of agricultural products and livestock; recovery techniques, storage and use of water; good hygiene practices and product quality.
146. For further information on UNIDO's environmental and social management plan kindly see 'Annex J UNIDO Environmental and Social Management Plan'.

Project Implementation Risk

147. A certain number of risks will be taken into consideration during the implementation of the project. They have been identified and are presented with the risk mitigation measures in Table 3 below.

Table 3 Summary of risks and mitigation measures

Risk	Qualification of mitigated risk	Mitigation measures
Skills and availability of executing partners could be proven insufficient	Average	Using and expanding the list of PAFA-E service providers and drafting a short list of service providers in partnership with other projects on the basis of confirmed experience; as regards the works, this consists in creating large lots to attract the enterprises with proven experience; support to training/capacity building of some key providers.
Climate risks	Average	The adaptation measures must aim at, in the short and medium term, adopting crops or varieties that are more resistant or better adapted to these changes.
Exclusion of women or the weakening of their control over lands after their development	Limited	The project will ensure that the Rural Communities, in agreement with the professional organizations (POs), will allocate some of the developed lands to the women's' groups
Elite-capture	Limited	The Programme will ensure that the information will reach all of the categories of actors, and a smooth flow of information, is promoted and applied.
Land: – Conflicts over land use between crop and livestock farmers (caused by access to water and crop damage) – The Rural Communities (RC) allocate the lands	Limited	Clarification of land status and granting the right of use by the RCs before the development. Under PARFA, the grassroots professional agricultural organizations (PAOs) and professional livestock farming organizations (PLFOs) will be the ones to request the allocation of lands; their umbrella organizations could be responsible, with respect to the project, to carry out the information and awareness campaigns to encourage these grassroots POs to follow the necessary procedures so that the RCs may allocate them the lands to be developed. The deliberations by the RCs on the granting of land use rights sets off the process of allocating and developing the lands.
Sustainability and maintenance of equipment	Limited	The issue of maintaining and renewing equipment is taken into account upstream of the construction of the infrastructures through the creation, from the start, of equipment maintenance and renewal fund, the set-up of management committees and ASUFOR for the PUs, and the building of the capacities of the management of these associations.

A.6. Institutional Arrangement and Coordination.

148. The project will be directly and jointly implemented by IFAD (Dakar office) and UNIDO, with the participation of senior officers of the Ministry of Economy, Finance and Planning (MEFP), MAER, MEPL, MEPFs (at least one supervision mission per year). For efficiency, PARFA supervisions will be jointly carried out with these of PAFA-E. Supervision missions will focus on the qualitative and

quantitative monitoring of implementation, the achievement of outcomes, outputs and impacts, and the effectiveness of institutional and technical aspects that will be consolidated and scaled up. Monitoring missions will be carried out regularly, according to needs expressed by the Dakar office.

149. The project implementation strategy will not differ from the strategy used by PAFA-E, and will mainly be based on: (i) a targeting of activities and beneficiaries, taking into account the interventions of PAFA-E and other projects; (ii) a coordination of activities based on practical, results-based approaches; and (iii) an alignment of the policies, initiatives and support measures for the sustainable conservation of environment resources and sustainable land management in the selected value chains. Concretely, this consists of the following:

- Targeting – concentrating activities in the areas and on the value chains supported by PAFA-E following the guideline of seeking environmental additionality and food security. The activities will be coordinated and harmonized with PAFA-E, UNIDO and other stakeholders, avoiding duplication, but promoting complementarity, clarifying responsibilities and avoiding negative interference. This will involve: (i) promoting a discussion in existing multi-stakeholder platforms at all levels on the resilience of the actors facing natural resources degradation and climate variability; and (ii) promoting low-emission developments/physical investments. The project will adopt the PAFA-E's strategy "Gender and inclusion of vulnerable segments of society" which allows women and youth heads of households to be included in the project support.
- Coordination – adopting an approach focused on the dissemination, replication and strengthening of relevant experiences developed in the project intervention area or in similar contexts, particularly in the following areas: (i) methods of water and soil management and conservation; (ii) methods of processing, conserving and developing low-emission crop and livestock products; and (iii) the monitoring and evaluation of environmental impacts and outcomes of the project. To render these actions operational, the project will sign protocols or agreements with the implementing partners and/or service providers for technical monitoring and control activities, capacity building, and impact monitoring and evaluation, and will hire service providers for the physical developments and investments.
- Convergence – with the policies and initiatives on sustainable environmental resources management and sustainable land management, the project will be strongly anchored in development strategies implemented by the Government and partners to achieve the objectives in the PSE, based on the Sustainable Development Goals (SDGs), which bring together a number of different initiatives focused on strengthening growth and green governance. Moreover, to empower local stakeholders with regard to climate variability, the project will support the inclusion of climate change hazards in local planning tools. From a sectoral perspective, the project objectives are part of the strategic axes of the agrosilvo-pastoral law and the energy environmental and water resources policies.

150. The activities under UNIDO management will be implemented in a centralised manner and executed in the field through national institutions as part of outsourcing contracts. Contracts for outsourcing and related payments will be managed directly by UNIDO from its headquarters in Vienna. All procurement will be done in accordance with UNIDO established regulation. Any amendments to the project will be done in accordance with the GEF policy C.39.09 and UNIDO rules and regulations.

151. *Organizational framework.* Kindly see Figure 1 for an overview of project's organizational and management structure.

152. The execution of the project is based on the following institutions:
- a. The Ministry of Agriculture and Rural Equipment (MAER) is the project's executing agency
 - b. The Project Steering Committee (PSC)
 - c. The Project Coordination Unit (PCU)
 - d. Experts and service providers, recruited based on their competitive advantages and project-related contracts by clearly focusing on results.
153. The MAER will be responsible for the execution of the project by providing administrative and technical supervision and support for the project;
154. The *Project Steering Committee (PSC)* will be the same as that of PAFA-E but will also include GEF's Operational Focal Point, the ministry responsible for energy, the ministry responsible for industry and UNIDO. The Presidency of the PSC will be provided by MAER. It will meet twice a year, in June and October, to validate the AWPBs and procurement plans, and to evaluate the progress of activities. Any changes to the work plan will be carried out according to the project document approved by the GEF and GEF reference documents C.39.Inf.03. As with PAFA-E, the PSC is assisted by the Technical Committee, whose role is to carry out an in-depth analysis of the technical files by the PSC submitted for consideration.
155. The *Project Coordination Unit (PCU)* to be based in Kaolack, will be responsible for the implementation of the project and will be that of PAFA-E, but strengthened to include relevant administrative and technical staff. Regional representations of PAFA-E will be responsible for the coordination and monitoring of field activities in their respective areas;
156. Activities funded by the GEF-IFAD will be managed by the PCU of PAFA-E, which has the autonomy of administrative and financial management according to the procedures in force for projects financed by IFAD in Senegal, in particular those of PAFA-E. The PAFA-E will open a separate bank account for the activities of PARFA.
157. The PCU will be strengthened in personnel and equipment to properly manage the implementation of this additional GEF funding. The additional staff will include: (i) a Rural and Environmental Engineering Specialist; (ii) a monitoring and evaluation assistant; (iii) an accounting assistant; and (iv) a driver. PARFA will also pay compensation for overtime to the Coordinator and the Administrative and Financial Manager (AFM) of PAFA-E
158. UNIDO will expand the PCU, housed within the the PAFA-E, through hiring expert(s) to perform daily project and monitoring activities to allow for close coordination of all activities funded by UNIDO and linking with the activities managed by the PAFA-E.
159. *Execution of activities.* For the execution of field activities, the PCU and UNIDO will establish sub-contract agreements with executing partners and providers. Specialized agencies – CSA, CSE, IED Afrique, INP, ITA, etc. – as well as NGOs, umbrella POs and other stakeholders with proven expertise and experience will be responsible for the implementation of activities on the institutional, organizational and technical development of the POs (structuring, capacity building, support and leadership) and support for productive investment.

160. UNIDO-supervised activities will be managed in a centralised way, according to the administrative and financial procedures in force at UNIDO and executed in the field through national institutions under sub-contracts directly managed by UNIDO from its headquarters in Vienna. UNIDO will also be responsible for international procurements according to UNIDO procurement guidelines. UNIDO will consult with PAFA-E and follow PAFA-E's approach in terms of working arrangements with the beneficiaries (see Annex 4, Section 135) to avoid duplication or inconsistencies in the implementation.
161. The PARFA will have a single and unique AWPB on all activities annually whether managed by IFAD or UNIDO. The AWPB will be validated by the PSC and joint non-objection of IFAD and UNIDO will be necessary. Any changes to the work plan will be carried out according to the project document approved by the GEF and the GEF C.39.Inf.04 reference documents. The overall execution of the AWPB is under the responsibility of the PAFA-E Coordinator.
162. For the execution of field activities, the PCU and UNIDO will establish collaboration agreements / services with partners and implementing service providers on the basis of purchasing procedures to IFAD and UNIDO. Specialized agencies (CSA, CSE, FDI, INP, ITA, ...), NGOs, apex POs and others, having proven expertise and experience, will be responsible for the execution of activities in institutional, organizational and technical POs (structuring, capacity building, support and animation) and support for productive investment. As far as the collaboration arrangements with the beneficiaries are concerned, UNIDO will consult with the PAFA-E and follow the contractual terms of PAFA-E to avoid duplication or overlaps in the implementation. All partnership agreements should clearly specify: the assigned missions, activities to be performed (quantity, timing), approaches and principles of implementation to respect the results to be achieved (quantitative and qualitative) and the reporting mechanisms to implement.
163. The PCU will carry out the following tasks:
- Manage the implementation schedule;
 - Monitor and review the progress and impact of the project;
 - Ensure the concrete link between the project and the interventions of other technical and financial partners (TFP) operating in the same regions;
 - Ensure regular liaison with decentralized government and other partners in the implementation;
 - Manage the financial, physical and human resources of the project;
 - Ensure the preparation of AWPB and procurement plans (PPM);
 - Coordinate with the MAER for the meetings of the PCU;
 - Submitting regular quarterly activity reports and financial information to the ministries concerned, the IFAD and UNIDO;
 - Oversee and supervise achievements in contracts and cooperation agreements signed with partners, operators or service providers;
 - Facilitate the organization of workshops to exchange experiences at national and regional level to enable stakeholders and beneficiary groups to share their practices and experiences, and also to gradually emerge.

164. The PARFA will also rely on the offices of the PAFA-E, in Kaffrine and Louga. The antennas will ensure: i) the implementation of activities in their areas and links with the PO, local authorities and decentralized administration; (ii) coordination, local procurement; (iii) the assessment of performance contracts with local service providers or operators, (iv) close monitoring of activities.
165. Execution of the activities will be conducted as follows:
166. Under component 1. Execution of activities will be conducted under the overall supervision of the SC of the CNIS - TDM (INP / FNDASP / Environment Directorate. INP and CSA for IFAD and ITA funding from UNIDO will be responsible for financing the implementation of awareness-raising workshops and at the component training sessions. Regarding the promotion of mechanisms and integration of best practices, INP and FNDASP jointly develop a fund raising strategy to promote SLM and integrated approaches in favour of smallholder farming.
167. The Institut de technologie alimentaire (ITA) will be particularly responsible for all technical activities regarding technical supervision and monitoring, identification and installation of equipment and materials, training and technical assistance to stakeholders for the use of equipment and materials, for the execution of integrated practices and technologies, contribution to seminars and sensitization workshops and training and various guides and other materials of good practice and dissemination. The tasks of the ITA and the expected results will be set as part of the ToR.
168. The execution of the activities under component 2 are geographically limited to the area of intervention of PAFA-E and will be conducted under the overall coordination of PAFA-E: For outputs 2.1 and 2.2, the completion of all implementation phases of the works (control thresholds, anti-salt dykes, improved ponds) will be entrusted to municipalities in which the sites or pastoral units for ponds have been identified. The animation, advisory support on sustainable water management practices will be entrusted to NGOs, with proven experience in the field and the intervention area (ex. Symbiosis, ADT GERT, etc.). The studies and monitoring work will be entrusted to a private operator (engineering firm), the implementation of the work to another provider. Retention ponds and artificial lakes Directorate (DBRLA) will be responsible for monitoring these operations. The restoration of mangroves will be conducted by the Ministry of Environment and Sustainable Development (Water and Forests and Soil Conservation). The execution of the activities on the ground could be entrusted to NGOs working in the area of mangroves (ex. OCEANIUM, ENDA, IUCN, Wetland, etc.).
169. As for output 2.3, the project will work with: (i) National Renewable Energy Agency (ANER) for each solar photovoltaic, to estimate the available solar energy based on satellite data; (ii) the Office of the rural boreholes (Ofor) to capitalize on the experiences of particular private companies contracts for the installation of rural water systems. Activities related to bio methane will be conducted in partnership with AVSF who has experience of many years in this area in the project intervention area. Technical supervision related to the implementation of pilot projects and training will be entrusted, excluding purchase of equipment and materials, to the ITA.
170. Under component 3, the implementation of all activities of the output 3.1 "Monitoring and evaluation of the environmental impact." will be entrusted to the Ecological Monitoring Centre (CSE) which will be linked to the project in a partnership agreement. This contract will include: (i) a framework agreement setting the terms and conditions of general execution of the partnership; (ii) annual contracts setting out exactly for the period, benefits, expected outcomes and outputs as well as the resources allocated to implement the activities. As for the output 3.2 on Monitoring and evaluation of the project", it will be implemented by the project team under the responsibility of the M&E assistant and the person responsible

of the M&E at the PAFA-E. The implementation of activities in the output 3.3 "Knowledge management" will be under the responsibility of the SE and the Responsible of the M&E at the PAFA-E and entrusted under a service contract with the NGO innovation, environment, development (IED Africa).

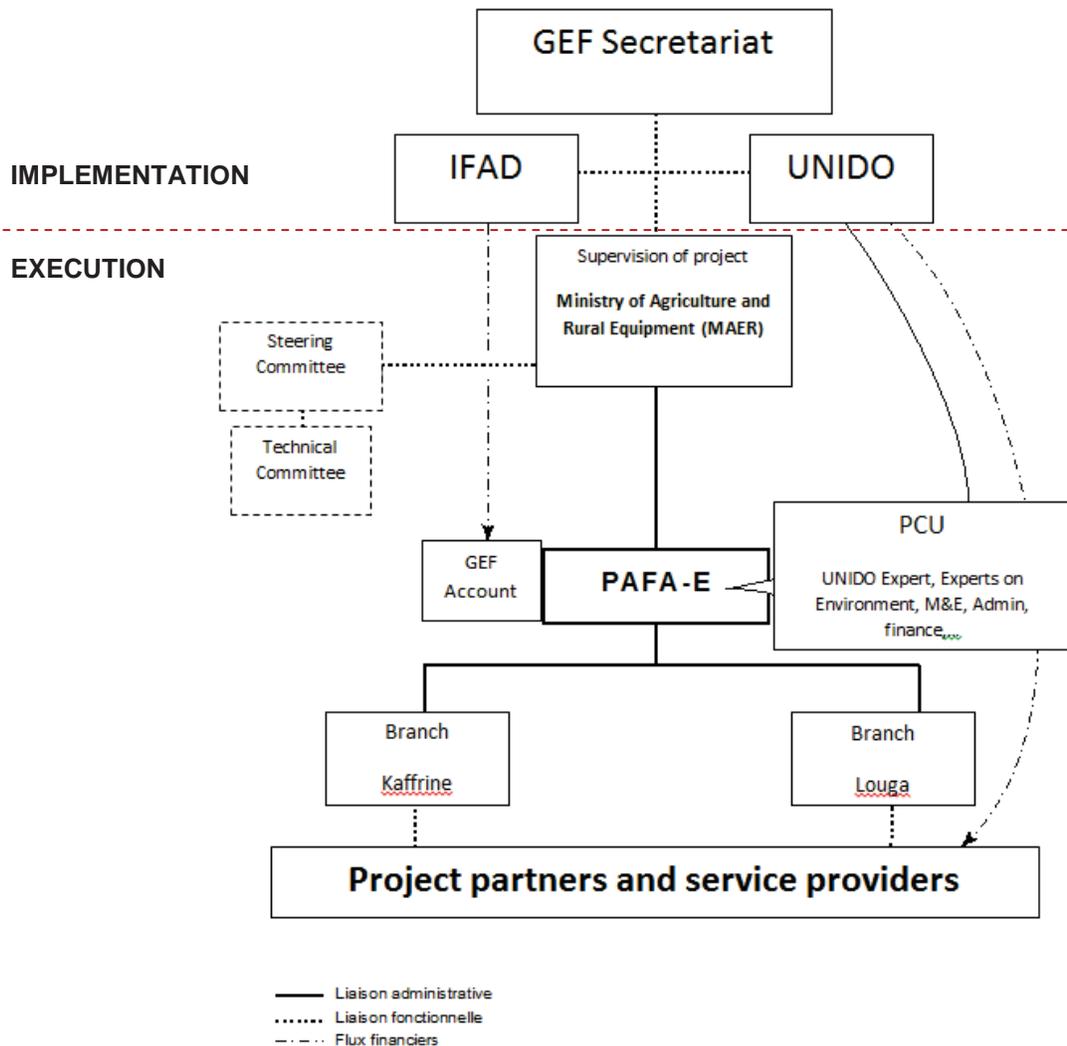


Figure 1 Overall Project Organization and Management

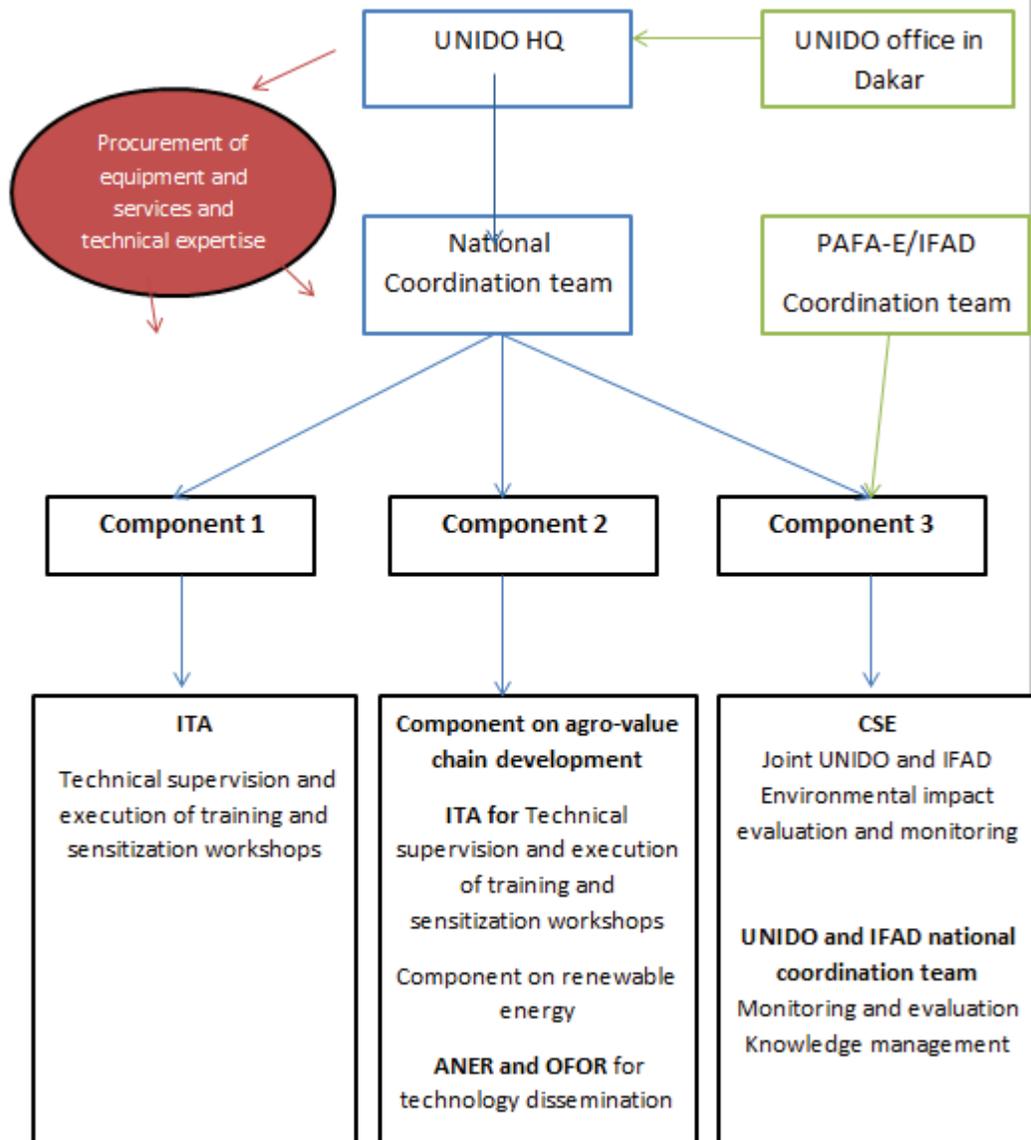


Figure 2 UNIDO's Project Organization and Management

A.7 Benefits.

171. The project will cover the PAFA-E intervention area, i.e. five regions extending over two major agro-ecological regions with high development potential: (i) Kaolack, Fatick, Kaffrine and Diourbel Regions, i.e. the groundnut basin in the Centre and North; and (ii) Louga Region, i.e. the silvo-pastoral region. These five regions extend over 16 departments and 170 rural communities. The project area covers 27 % of the national territory and benefits 35 % of the population, or around 5.1 million people, whose population structure has a high proportion of youth aged 15-25 and a predominance of women (52%); this is even more concentrated in areas such as Louga Region, where there is a high male and youth migration trend.
172. Within the POs involved in selected value chains, PARFA will mainly target: (i) small and medium-sized family crop and livestock farms; and (ii) rural micro and small enterprises (MSEs). Within these groups, PARFA will ensure the inclusion of the most vulnerable households, youth and women. The POs, Work Forces and value chain organizations will also benefit and be involved in the implementation of the project.
173. The project will directly benefit 5,250 households, i.e. 52,500 people in all of the targeted regions. The economic and financial benefits mainly derive from Component 2, "Implementation of integrated approaches on a large scale", which integrates the recovery and sustainable management of lowlands and watersheds; improved access and management of surface and groundwater; rehabilitation and exploitation of mangroves; as well as the promotion of renewable energy, and the set-up of mechanisms to improve the value of production. Additional benefits identified in the economic analysis are those that are easily quantifiable, which result from: (i) the increase in agricultural production (millet, sorghum, rice, market garden products) following the increase of rain-fed crop yields due to the use of selected seeds and associated inputs (fertilizers, phytosanitary products); (ii) rehabilitation and exploitation of mangroves; (iii) the reduction of post-harvest losses; and (iv) capacity building of the POs. The direct benefits related to some of the project activities could not be quantified, but will increase the level of the IRR as calculated in the context of this analysis. These are the economic benefits related to support to the livestock farmers' activities, the processing of agricultural products and the reduction of energy expenditures as a result of technological changes and the implementation of sustainable and resilient mechanisms.
174. Indirect and /or unquantifiable benefits. The project has an approach that is strongly linked to the promotion of sustainable land and water management practices and the use of renewable energies, which will generate positive environmental externalities for society (co-benefits of mitigating consequences due to climate change by reducing emissions and increasing carbon sequestration that will be partially quantified), beyond the "personal" benefits related to adaptation and resilience of beneficiaries to climate change.
175. The main institutional benefits will be: (i) the organization of the populations into associations and POs around some key activities to improve their resilience (maintenance and reasonable use of water catchment facilities, agricultural development, optimal use of storage and processing capacity, IGAs) and the professionalization of the POs; and (ii) strengthening of the value chain and trade platform regarding resilient natural resources management and the fight against the negative impacts of climate change.
176. The financial analysis aims to estimate the profitability for farmers and of farms of some business models over the medium and long term. The financial profitability of agricultural activities was assessed

on the basis of the budgets of the rain-fed crops (millet, sorghum), of lowland rice, market garden production, farming (honey, fish and oyster farming) in the mangroves (see details in Annex 10 'Economic and Financial Analysis of the Project' of the PDR).

A.8 Knowledge Management.

177. The knowledge management approach for the project is addressed under output 3.3. These modules will contribute to better environmental analysis and provide an indispensable tool for planning and decision-making to promote integrated approaches to the development of sustainable and resilient agriculture. These tools also help to better understand and characterize the links between environmental degradation and food insecurity.
178. In order to contribute to the sharing of experiences and especially the capitalization of knowledge, PARFA, with respect to PAFA-E's knowledge management approaches and activities, will strengthen the collection and dissemination of information that is useful to the value chain actors at the local, regional and national levels. This will be achieved by: (i) organizing regular participatory evaluation workshops for PAOs/ PLFOs; (ii) conducting ad hoc thematic studies; and (iii) producing and distributing different information tools. These tasks will be assigned to a specialized agency, IED Afrique. The project will develop an operational strategy for knowledge management with the support of the provider. Moreover, the capitalization and dissemination of knowledge on integrated approaches for the development of a resilient, sustainable rural agriculture will be a separate activity in Component 1 of the project, to be conducted by INP in collaboration with CSA. All of the activities concerning national harmonization, coordination and dissemination of environmental good practices carried out in Component 1 must be geared towards informing dialogue and better response to these issues in the national sub-sectoral and sectoral policies and strategies.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.

179. The proposed project is consistent with the Government's development priorities of Senegal and specifically responds to: i) The Plan Sénégal Emergent (PSE) ; ii) The Poverty Reduction Strategy Paper (national strategy for economic and social development, 2013-2017); iii) Programme de Développement Inclusif et Durable de l'Agrobusiness au Sénégal (PEDIDAS); iv) Cadre National d'Investissement Stratégique/GDT; v) Programme d'accélération de la cadence de l'agriculture sénégalaise (PRACAS); vi) Programme National de Développement de l'Élevage (PNDE) vii) Nouvelle Politique Forestière (NPF, 2005 – 2025) viii) Lettre de politique sectorielle de l'Environnement; ix) Lettre de Politique sectorielle de la Pêche, and x) Programme national d'action pour l'adaptation (PANA).
180. The project also addresses issues at the intersection of the UNCCD, CBD and the UNFCCC and their respective action programmes. For example, it supports the recognized need for a coordinated set of common indicators to support country reporting across the three conventions and, in particular, post 2015.
181. The project intervention strategy is consistent with IFAD policies, especially on aspects related to: (i) gender; (ii) access to land and security of tenure; (iii) climate change adaptation; (iv) private sector

development; (v) targeting; and (vi) the development of rural enterprises. It is aligned with the two strategic axes of the Country Strategic Opportunities Programme (COSOP) 2011-2015 and aims to strengthen environmental aspects and food security interventions of PAFA-E, and to contribute towards strengthening the IFAD country programme approach.

Further information on a number of the national priorities is provided below:

182. *Government Development Plan (Plan Senegal Emergent - PSE*. is the new strategic framework of reference for the development of Senegal, which envisions “*a truly emerged Senegal by 2035, with an inclusive society and the rule of law.*” With regard to the challenges facing Senegal’s agriculture, the PSE acknowledges the correlation of the agricultural sector with other branches of the economy, in particular with agro-industries, as well as its spill-over and leveraging effects on other sectors of activity (transport, trade, etc.). For that reason, the PSE highlights the role of “agro-poles” as the driving force of industrialization in Senegal through enhancement of agricultural added value; it provides for the creation and development of three integrated and competitive agro-poles focused on high-potential value chains (livestock, fruits and vegetables, fisheries and aquaculture). These agro-poles will serve as enterprise incubators providing facilities and services with the main objective of strengthening and supporting agro-industry value chains, and promoting commercial farming among local and regional producers through integrated training plans, capacity building and the establishment of appropriate PPP financial schemes¹⁴.

183. *World Bank Poverty Reduction Strategy Paper*¹⁵. The sectoral approaches detailed in the law bear on the creation of an attractive rural environment providing incentives to (i) transform family farming by effecting a transition from extensive production systems to intensive, diversified, sustainable systems that are respectful of natural resources; (ii) promote the emergence of agricultural and rural entrepreneurship. To achieve these objectives, investments will be made and measures implemented to undertake water control projects, the basis of secure, intensified and modernized agriculture, designed to boost the ratio of irrigated acreage to total crop acreage from 4 percent in 2005 to 10 percent before 2010 and 20 percent by 2015. To accomplish this, the state will undertake at least 15,000 ha on average of irrigation projects yearly in various parts of the country. Improved performance in the area of product quality (processing, preserving, marketing conditions) will take the form of increased volumes of fruit and vegetable exports, from 13,000 tons in 2005 to 30,000 tons in 2010,¹⁸ with a target for annual growth of 3,000 to 4,000 tons. More specifically, the strategies implemented will increase agricultural gross domestic product by removing obstacles that the small farmers encounter, and also by enhancing the economic security of the poorest agricultural works, namely small farmers. To this end, priority measures and actions will be implemented respecting the following four areas:

- Improved food security
- Sustainable management of land and land rehabilitation
- Management of product quality and integration of crop types into markets
- Promoting a supportive environment to the development of agricultural product lines

¹⁴ PCP Senegal Project Document

¹⁵ Poverty Reduction Strategy Paper, 2006 available at [http://siteresources.worldbank.org/INTPRS1/Resources/Senegal-PRSP\(Sept2007\).pdf](http://siteresources.worldbank.org/INTPRS1/Resources/Senegal-PRSP(Sept2007).pdf)

184. *African Development Bank Country Strategic Paper*¹⁶. The Bank's operations during the 2010-2015 period hinged on the following two pillars: Pillar 1: Improve the business climate and the support framework for economic diversification. The general objective is to continuously improve the business climate, making it attractive to favour private investment and economic diversification. At the same time, the structural constraints underlying the weakness of private investments and the low competitiveness of the whole economy will be lifted. These constraints concern, among other issues, economic governance and the quality of public services (level of complexity of administrative procedures, credibility of judicial institutions, accessibility to land, flexibility of social legislation, etc.). Also included therein as sub-pillars are: (i) economic governance and public finance management; (ii) the investment climate; and (iii) economic diversification and 16 investment opportunities in the private sector; and Pillar 2: Contribute to strengthen national and regional infrastructure. The main objective is to increase the country's infrastructure in order to broaden access to quality services in the transports, energy and telecommunications sectors. Greater efficiency will be induced in these sectors through gradual liberalization policies (BOT, PPP, etc.) in as much as efficient infrastructure help to open up the country, support production, improve trade flow efficiency and reduce transaction costs. The sub-pillars are: (i) basic infrastructure (urban water and sanitation, rural engineering, etc.); and (ii) economic infrastructure (energy, transport and ICTs).
185. The main strategic frameworks concerning the rural sector and involving PARFA activities are as follows: (i) the Agrosilvopastoral Orientation Law (LOASP) adopted in 2004; (ii) the National Agricultural Investment Programme (PNIA), adapted for the development of livestock farming; (iii) the Accelerated Programme for Agriculture in Senegal (PRACAS); (iv) the Environment Sector and Sanitation Policy Letter (LPSE); and (v) the National Strategic Investment Framework for Sustainable Land Management (NSIF-SLM), which aims to ensure synergy in the interventions of all actors in order to reverse the land degradation trends and sustainably manage these lands in Senegal. At a larger scale, the project is also in line with the Sustainable Development Goals (SDGs). The most relevant goals to which it will meet are SDGs 1, 2, 5, 7, 8, 9, 12, 13 and 15.
186. PARFA will include a component entirely dedicated to supporting the coordination and harmonization of efforts to promote a coherent multi-stakeholder approach on environmental resilience and sustainability related to food security within the agricultural value chains. It will play an active role in including these issues in sectoral policies and removing obstacles that may arise during the practical implementation of these policies.
187. *Senegal's Intended Nationally Determined Contributions (INDC)*¹⁷. Senegal INDC on the mitigation side is implementing specific activities having an impact on the reduction of GHG emissions. These activities cover three gases: carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Activities that generate GHG emission reductions will be carried out in the following sub-sectors: (1) energy, through the production of electricity, energy efficiency and transport, (2) the Agriculture Forestry and other land uses through the management of manure, rice cultivation, agricultural soils, organic fertilizers, forest land and plantations, (3) industry and (4) the management of waste through the solid waste treatment industrial, domestic and commercial wastewater. The measures identified in the agricultural sector are:

¹⁶ Country Strategy Paper 2010-2015 available at http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/SENEGAL_-_2010-2015_CSP.pdf

¹⁷ Contribution Prévue Déterminée au Niveau National (CPDN), 2015 available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Senegal/1/CPDN%20-%20S%C3%A9n%C3%A9gal.pdf>

- Program renewal and Acceleration of the pace of Agriculture Senegalese PRACAS
- System of rice intensive (SRI): Economy of more than 40% in water from flooded traditional rice
- Sustainable land management
- Application of good agroforestry practices, of assisted natural Regeneration (RNA) and use of organic manure on half of the areas sown to the year 2035
- Combination of trees, conventional crops and/or animals in the form of arrangement
- Recovery of effluents from the installed biodigesters spatial or temporal

188. The project is further consistent with ongoing national initiatives listed in Table 5 below.

Table 4 List of additional projects or initiatives

Title of the project	Done	Duration	Intervention area	Objective
Projet d'appui à la sécurité alimentaire (PASA LOUMAKAF)	AfDB	2015 - 2018	Louga, Matam, Kafferine	Improve food security and rural incomes, targeting three vulnerable regions of Senegal that are highly exposed to climate hazards; while improving access for small producers, women and their organizations to diversified agricultural and pastoral infrastructure, particularly for water control, storage and access, as well as technologies services and suitable training.
Projet d'appui aux filières agricoles-extension (PAFA-E)	FIDA	2010 à 2016	Kaolack, Kaffrine, Diourbel, Kaffrine, Louga	Contribute to the sustainable improvement of livelihoods of family farmers through: (i) sustainable improvement of food security and the incomes of small producers (farmers and ranchers); and (ii) the creation of sustainable and gainful employment for rural people, especially young people (of both sexes) and women.
Bassins de rétention et de valorisation de forages (BARVAFOR)	Belgique	2010 - 2015	Kaolack, Fatick, Diourbel Thiès	To strengthen agro-sylvo pastoral production in rural areas of Diourbel, Fatick, Kaffrine, Kaolack and Thies, through sustainable access to productive water.
Projet de renforcement des capacités pour le contrôle de la dégradation des terres et la promotion de leur valorisation dans les zones de sols dégradés	JICA	1 ^{ère} phase: March 2011 – March 2016	Fatick et Kaolack	To control land degradation and promote their value added

Title of the project	Done	Duration	Intervention area	Objective
(CODEVAL)				
Agence nationale des éco-villages (ANEV)	Sénégal, PNUD /FEM, JICA		Kaolack, Fatick, Diourbel, Thiès, Louga, Matam	To ensure food security and sustainable energy while contributing to the fight against climate change and preserving the environment both locally and globally, and providing a better quality of life for the benefit of half-villages centers in Senegal.
Arbres locaux pour un monde meilleur (ARLOMOM)	PNUD/FEM	2012-2014	Kaolack, Fatick	To promote revegetation as contribution to carbon sequestration and the improvement of living conditions of rural populations through the payment of ecosystem services from the regenerated trees.
Programme d'aménagement et de développement économique des Niayes (PADEN)	Canada	2010-2015	Thiès, Louga	To contribute towards the 50 % reduction of incidence of poverty of Senegalese households by the year 2015, which is inspired by Objective 1 of the MDGs.
Agence grande muraille verte (GMV)			Louga, Matam, Tambacounda	To contribute to the development of natural resources of Sahelo-Saharan areas in the subregional context of the fight against desertification and poverty.
Projet d'appui au développement économique de la Casamance (PADEC)	Canada: 7 936 457 200 FCFA Sénégal 634 916 400 FCFA	April 2010 - March 2015	Kolda, Ziguinchor, Sédhiou	To help reduce the incidence of household poverty in Casamance by 2015.
Projet d'appui au développement agricole et à l'entreprenariat rural (PADAER)	FIDA, Fonds fiduciaire espagnol (FFE), Sénégal	6 years	Kédougou, Kolda, Matam, Tambacounda	To Contribute to the reduction of rural poverty and stimulate economic growth in its area of intervention while sustainably improving food security and incomes of small farmers and ranchers to create sustainable jobs for rural youth and the women.
Projet d'appui à la petite irrigation locale (PAPIL)	AfDB	2010 - 2015	Tambacounda, Kolda, Fatick	To promote small irrigation at the local level through rural communities and producer groups who will be directly involved in operations, and

Title of the project	Done	Duration	Intervention area	Objective
				that will be supported in the implementation of the execution.

C. DESCRIBE THE BUDGETED M & E PLAN:

189. The monitoring and evaluation (M & E) of the project is defined by Output 3.2 Monitoring and evaluation of activities and project results, and the concrete activities for monitoring and evaluation that are specified and budgeted in the monitoring and evaluation plan. A detailed monitoring plan for tracking and reporting on project time-bound milestones and accomplishments will be prepared by IFAD and UNIDO in collaboration with the PMU and project partners at the beginning of project implementation and then periodically updated.
190. The overall objective of the M & E process is to ensure successful and quality implementation of the project by: i) Tracking and reviewing project activities execution and actual accomplishments; ii) Leading the project processes so that the implementation team can take early corrective action if performance deviates significantly from original plans; iii) Adjust and update project strategy and implementation plan to reflect possible changes on the ground, results achieved and corrective actions taken, and iv) Ensure linkages and harmonisation of project activities with that of other related projects at national, regional and global levels.
191. IFAD and UNIDO will be responsible for oversight and tracking overall project milestones and progress towards the attainment of the set project outputs. IFAD and UNIDO will be responsible for narrative reporting to the GEF. The IFAD and UNIDO project managers will be responsible for the preparation of Annual Project Implementation Reviews (PIR) and mid-term evaluations, in cooperation with UNIDO's Quality Monitoring Division, as established in the M & E Plan. The project will apply the RATA framework which provides a valuable approach for monitoring and assessing the resilience of agro-ecosystems. It provides a scientific rationale for selecting resilience indicators, based on principles from natural and social sciences, to assess and monitor the resilience of social-ecological systems, and has the capacity to provide an aggregated assessment, applying meta-indicators on coverage and quality of the sub-assessments.
192. The M & E of the project will follow the principles, criteria and minimum requirements set out in the GEF Monitoring and Evaluation policy in its current version and the respective guidelines and procedures issued by the GEF Evaluation Office and/or the GEF Secretariat. At the same time, M&E will comply with the rules and regulations governing the M&E of IFAD and UNIDO projects, such as the UNIDO Evaluation Policy and the Guidelines for Technical Cooperation, both in their respective current versions.
193. According to the M & E policies of the GEF, IFAD and UNIDO, follow-up studies like Country portfolio evaluations and thematic evaluations may be initiated and conducted. IFAD and UNIDO will involve the GEF Operational Focal Point and project stakeholders at all stages of the project monitoring and evaluation activities in order to ensure the use of the evaluation results for further planning and implementation. All project partners and contractors are obliged to (i) make available studies, provide reports or other documentation related to the project and (ii) facilitate interviews with staff involved in the

project activities. As per standard statements on M&E the GEF M&E missions will have the right to visit project activities.

194. The M & E system will rely on PAFA-E's monitoring and evaluation system, and will therefore follow the methodology adopted by the latter. A monitoring and evaluation manual of the project, based on that of PAFA-E, will be drafted at the start-up of the project. It will be shared with all the actors and will describe the system, its organization and the implementation modalities of each function (procedures), the actors and their responsibilities in the implementation, and the different collection and dissemination tools that will be used.
195. The M & E system will rely on the indicators and target values in PARFA's logical framework (which details the means of verification), and the annual work plans. Monitoring and Evaluation will make use of the GEF Tracking Tool, which will be submitted to the GEF Secretariat three times during the duration of the project: at CEO Endorsement, at mid-term review, and at project closure.
196. The M & E system will include three levels of results: (i) the first level, which corresponds to the project activities and outputs; (ii) the second level, which relates to the project achievements; and (iii) the third level, which measures the overall impact of the intervention with respect to the baseline situation. The M & E will distinguish the three levels of indicators selected by IFAD and indicators of the system will be disaggregated by sex and age.
197. The PARFA will also encourage participatory M & E by the beneficiaries themselves. The POs and the management committees of the works will be supported in order to maintain, at their level, simple and reliable information, to encourage a true ownership of the achievements by the beneficiaries and the rural communities. The M & E will be carried out as follows:
198. *Internal monitoring:* The M & E assistant of the project will coordinate the collection and analysis of the basic data and will consolidate them in the trimestral, semestral and annual activities of the project. A simple and reliable system for collecting information will be set up for actors and service providers. The assistant will regularly submit the data to MAER to provide input for the project for the Support of Monitoring and Evaluation of IFAD's Country Programme (PASYME), to the Ministry of Environment and Sustainable Development (MEDD) and to MEPA.
199. *Participatory evaluation workshops* with the grassroots groups and PAOs/PLFOs will be organized. The National Project Manager will be responsible for day-to-day and local management of project activities execution, performance and the tracking of progress towards the achievement of milestones. However, monitoring and evaluation of the demonstration projects with respect to energy generation, technical performance, commercial viability and GHGs emission reduction will be integral part of the evaluation component of Project Component 3.
200. One mid-term review will be carried out and a final external terminal evaluation at least one month before the completion of the project. UNIDO will take lead on the Terminal Evaluation, in close cooperation with IFAD. The IFAD and UNIDO project managers will inform respective evaluation departments at least 6 months before project completion about the expected timing for the Terminal Evaluation (TE). The IFAD and UNIDO Evaluation Group will then manage the terminal evaluation in close consultation with the project manager.
201. All M & E documents, such as progress reports, final evaluation report, and thematic evaluations (such as capacity needs assessment), as well as publications reporting on the project, will include gender

dimensions wherever appropriate. Table 6 provides the tentative budget for the two evaluations, which has been included in Project Component 3.

Table 6 Project's Indicative Monitoring and Evaluation Work plan

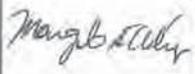
Type of M&E Activity	Responsible partners	GEF Grant (USD)**	UNIDO Co-financing	Timeframe
UNIDO periodic monitoring	UNIDO PM		80,300	Annually to coincide with the Annual Project Review and ad hoc when urgent and important decisions need to be made
Mid-term review including survey to measure progress against baseline for SMMEs and policy makers	PMU, external consultants, UNIDO and IFAD PM, UNIDO and IFAD Quality Assurance and Evaluation Units in advising on TOR and selection of evaluators, Steering Committee and M&E specialists as required	25,000		Mid project
Project Terminal Evaluation	IFAD and UNIDO Evaluation, PMU, PM UNIDO HQ and Project Steering Committee, independent external evaluators	50,000		Evaluation at least one month before the end of the project; report at the end of project implementation
TOTAL indicative cost		75,000	80,300	

202. *Legal Context.* The Government of the Republic of Senegal agrees to apply to UNIDO's allocation from the GEF grant under the the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 4 July 1987 and entered into force on 31 July 1991.

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies¹⁸ and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Margarita Astrálaga Director, Environment and Climate Division, Programme Management Department IFAD		11/22/2016	Bertrand Reysset Environment and Climate Division IFAD	+39 06 54 59 27 50	b.reysset@ifad.org
Philippe R. Scholtès, Managing Director Programme Development and Technical Cooperation (PTC), UNIDO GEF Focal Point		11/22/2016	Meryem SGHIR, Agri- Business Development Department UNIDO	+43 126 026 3743	m.sghir@unido.org

¹⁸ GEF policies encompass all managed trust funds, namely: GBFTE, LDCE, and SCCE
GEF/6 CEO Endorsement/Approval Template-Dec2015

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Results hierarchy	Indicators					Means of verification			Assumptions
	Description	Baseline	Year 1	Mid-term	Final Target	Source	Frequency	Responsible agent	
Overall goal: Contribute to the improvement of the economic situation and ecological environment of rural communities.	<ul style="list-style-type: none"> 52,500 beneficiaries improved their economic activities 	250,000 (PAFA-E area)	5 000	25,000	52 500 (at least 40% women)	Monitoring and Evaluation System Supervision reports Evaluations	Continuous	Government /PAFA-E	Socio-political stability and security
	<ul style="list-style-type: none"> The prevalence of chronic malnutrition of children under 5 is reduced by at least 5%* 	16.5% (national average) TBD	TBD	TBD	- 5 % (in the project area)				
Development objective: Contribute to improving food security of smallholder farmers as well as their resilience to environmental degradation and climate change.	<ul style="list-style-type: none"> 5,250 households, direct beneficiaries of the project activities* 	25 000 (PAFA-E Area)	600	2 500	5 250	Monitoring and Evaluation System Supervision reports Evaluations	Continuous	Government /PAFA-E	Good governance and the political will to undertake reforms and eliminate political, legal and institutional obstacles that impede the upscaling of resilient and sustainable production Good engagement by the populations

Component 1. Support to multi-stakeholder platforms

Results hierarchy	Indicators					Means of verification			Assumptions	
	Description	Baseline	Year 1	Mid-term	Final Target	Source	Frequency	Responsible agent		
Outcome 1: The multi-stakeholder platforms integrate issues on environmental degradation and climate variability in their activities.	<ul style="list-style-type: none"> ▪ 2 mechanisms for the coordination and integration of good practices are promoted – National Strategic Investment Framework for Sustainable Land Management (NSIF-SLM) and National Agro-sylvo-pastoral Development Fund (FNDASP) 	1	2	2	2	2	Monitoring and Evaluation System Supervision reports Evaluations	Continuous	Government / <i>Institut national de pédologie</i> (INP)	
		<ul style="list-style-type: none"> ▪ 22 awareness workshops involving 2,450 people (disaggregated by sex and age) ▪ 14 training sessions for 800 beneficiaries (disaggregated by sex and age) 	0	6	14	20	20	Supervision reports Evaluations Progress report (Agreement with PAFA-E) Documents produced	After each workshop	INP and national actors /UNIDO
Output 1.1. Building the capacities of actors at the national, regional and local levels	<ul style="list-style-type: none"> ▪ One resources mobilization strategy for sustainable land management (NSIF and FNDASP) ▪ At least 400 participants in the works and exchange visits (disaggregated by sex and age) 	0	1	1	1	1	400			
Output 1.2. Promotion of mechanisms for coordinating and integrating good practices										
Component 2:										
Upscaling of sustainable and resilient good practices										

Results hierarchy	Indicators					Means of verification			Assumptions	
	Description	Baseline	Year 1	Mid-term	Final Target	Source	Frequency	Responsible agent		
Outcome 2: The resilience of the agricultural value chains is improved.	<ul style="list-style-type: none"> The development of four agricultural value chains integrates a resilient integrated approach¹⁹ 	0	2	4	4	4	Monitoring and Evaluation System Supervision reports Evaluations	Continuous	Government / <i>Institut national de pédologie</i> (INP)	Effectively service providers Participatory implementation and the engagement of beneficiaries
Output 2.1. Sustainable water management	<ul style="list-style-type: none"> 10 000 m³ of water storage capacity yielded annually for 5 months of the year 	5 000 m ³	4 000 m ³	8 000 m ³	10 000 m ³	Supervision reports Evaluations Monitoring and Evaluation System of the project	Continuous	PAFA-E/UNIDO Service providers	The engagement of actors in providing information and rendering the system operational	
Output 2.2. Sustainable land management	<ul style="list-style-type: none"> 300 ha (6 valleys) of degraded lands recovered 800 ha of exondated lands treated with soil and water conservation (SWC) and soil protection and restoration (SPR) 1,000 ha of mangrove restored 4.5 t/ha/year of stored CO₂-e 	1,200 2,400 9,500 2.5 t CO ₂ -e /ha/year	50 200 100 0	200 500 400 0	300 800 1 000 2.5 t CO ₂ -e /ha/year				The system effectively assists in decision making	

¹⁹ The resilience approach: Value chains are based on an integrated approach when their development adopts the watershed approach, soil and water conservation (SWC), protection of key ecosystems and the promotion of renewable energy for production, processing and storage.

Results hierarchy	Indicators					Means of verification			Assumptions
	Description	Baseline	Year 1	Mid-term	Final Target	Source	Frequency	Responsible agent	
Output 2.3. Sustainable energies and increased value of crop and livestock products	<ul style="list-style-type: none"> ▪ 20 solar pumping systems set up ▪ Reduction of 130.42 t CO₂-e (by solar pumping and biomethanation) ▪ At least 800 beneficiaries trained on utilisation of processing and preservation equipment ▪ 20 pilot projects (four per region) for increasing the value of agricultural and livestock products involving a total of around 100 production units 	0	5	15	20	Supervision reports Evaluations Monitoring and Evaluation System of the project	Continuous	PAFA-E/UNIDO Service providers PFA-E/CSE and national actors	
Component 3: Monitoring and evaluation of environment impact and of project results									
Outcome 3: An effective mechanism for monitoring and assessments of environmental impact and food security is operational.	<ul style="list-style-type: none"> ▪ 1 monitoring and evaluation system on the environmental impact is operational 	0	1	1	1	Monitoring and Evaluation System Supervision Reports Evaluations	Continuous	<i>Centre de suivi écologique</i> (CSE, Ecological Monitoring Centre) with INP	The engagement of actors in informing and rendering the system operational The system effectively helps decision making

Results hierarchy	Indicators					Means of verification			Assumptions
	Description	Baseline	Year 1	Mid-term	Final Target	Source	Frequency	Responsible agent	
Output 3.1. Monitoring and assessment of environmental impact	<ul style="list-style-type: none"> ▪ multidimensional tracking system developed and TORs ▪ environmental monitoring system undertaken 			1	2	Supervision reports Evaluations Monitoring and Evaluations System of the project	Continuous	PAFA-E/UNIDO Service providers	Efficient service providers Participatory interventions and the engagement of beneficiaries
Output 3.2. Monitoring and evaluation of activities and of project results	<ul style="list-style-type: none"> ▪ 400 users of the system for monitoring and evaluating environmental impact (number of annual visits) 	0	50	250	400			PFA-E/CSE and national actors	Effectively service providers Participatory implementation and the engagement of beneficiaries
Output 3.3. Knowledge management	<ul style="list-style-type: none"> ▪ At least three strategic tools are based on the data of the environmental monitoring system 	1	1	2	3				The engagement of actors in providing information and rendering the system operational The system effectively assists in decision making

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

The project is aligned to the IAP-Food Security and to GEF policies and strategies. The document tried to address all comments at design. The components are now completely aligned to the three components of the IAP and more resources go to monitoring and assessment as well as all the institutional and policy support (under component 1).

Table 5 Responses to GEF Council Comments

Comments GEF Council	Agency response
GERMANY'S COMMENTS:	
<p>1. Land tenure issues are mentioned as major barriers for Integrated Natural Resources Management (INRM) in certain contexts but the programme does not address these. It is recommended to support ongoing land policy reform processes where possible, particularly through capacity development of local level institutions.</p>	<p>The PARFA is in line with the guidelines of the Country Strategic Opportunities Programme (COSOP) and the IFAD policy in terms of improving access to land and security of tenure. As such, the PARFA is not expected to be involved in the dialogue on the land policies. However, support regarding the land arrangements (pastoral units, small market gardens, shops, etc.) are explicitly subject to the provision of land by the competent authorities and satisfactory definition of tenure status (<i>On IFAD's policies kindly see Annex 12 of the IFAD project document in French, page 149</i>).</p> <p>However, Component 1, will play an active role in addressing the coordination and harmonization of environmental resilience issues in sectoral policies and removing obstacles that may arise during the practical implementation of these policies (<i>kindly see paragraph 185</i>).</p> <p>The PAFA-E (baseline project) dwells into land tenure issues to a larger extent than the PARFA and for its intervention area is subject to institutional criteria, highlighted in Annex 2, Appendix 3 of IFAD's project document:</p> <ul style="list-style-type: none"> • Clarification of tenure of any targeted area for development before working especially for the production of Pastoral Units and the Société d'intensification de la production agricole (SIPA) • Allocation and realization of the Professional Organizations' land-use by a deliberation of the Rural Council. • Commitment of the Rural Council on securing developed land allocated to farmers, including those assigned to women and youth. • Presence in the area or close to implementation operators (strategic partners and private service providers or NGOs) <p>Further, the PAFA-E intervention includes the promotion of Pastoral Units and the PARFA value-added includes the</p>

	<p>clarification of the legal status of the Pastoral Units (coordination and promotion of a framework that ensures sustainability) (See Table 2 PARFA's added value to PAFA-E activities)</p> <p>A land status incentive for investment (and compatible with sustainable farm management) has been identified among the constraints faced by the Senegalese Agricultural sector.</p> <p>Issues surrounding land (conflict over land use between farmers and breeders caused by access to water and crop damage, and the allocation of the land by rural communities) have been flagged as project risks. This risk will be mitigated through the clarification of land status and granting the right of use by the Rural Communities before the development. Under the PARFA, the grassroots professional agricultural organizations and professional livestock farming organizations will be the ones to request the allocation of lands; their umbrella organizations could be responsible, with respect to the project, to carry out the information and awareness campaigns to encourage these grassroots professional organizations to follow the necessary procedures so that the Rural Communities may allocate to them the lands to be developed. The deliberations by the Rural Communities on the granting of land use rights sets off the process of allocating and developing the lands (<i>kindly see risk table</i>)</p> <p>As far as land ownership is concerned, the land-use rights favour men who exploit the land with family labour made up by women and young people even if the legislation does not discriminate. Women's access is much more grounded in groups and as individuals. However, initiatives such as those developed by the PAFA through equitable access to inputs (seeds and fertilizers) to men and women have restored parity in the allocation of areas to be exploited (1250 m² for men and 1250 m² for women against 2500 m² for men and 1250 m² for women) (<i>kindly see paragraph 127</i>). Annex 1 National Context and Rural Development of IFAD's project document in French, provides further background information on land tenure in Senegal (<i>pages 31 and 36</i>)</p>
<p>2. Technical innovation needs to be fully adapted to physical and socio-economic conditions at target group level (critical example: Biogas in regions with extreme lack of biomass). Piloting exercises should as far as possible be redesigned in favour of broad application of simple technologies. Particular emphasis needs to be given to up-scaling of organic fertilization technologies and management of biomass.</p>	<p>This has been done.</p> <p>A baseline assessment of relevant sectors/technologies has been undertaken during the PPG phase and the selected pilot technologies are fully adaptable to the physical and socio-economic conditions of the target group and region (<i>Kindly see paragraph 4</i>)</p> <p>The project will promote sustainable land management measures such as (i) water conservation and soil and (ii) the distribution on a larger scale of the most profitable sustainable land management technology, as well as iii) the</p>

	<p>promotion of renewable energy, and the set-up of mechanisms to improve the value of production (already proven in the region) (<i>kindly see Annex 10 of IFAD's project document</i>)</p> <p>The sustainability and capacity for the maintenance of equipment has been flagged as a project risk. Nonetheless, the issue of maintaining and renewing equipment is taken into account upstream of the construction of the infrastructures through the creation, from the start, of an equipment maintenance and renewal fund, the set-up of management committees and the Association d'usagers de forage (ASUFOR) for the Pastoral Units, and the building of the capacities of the management of these associations (<i>kindly see risk table</i>)</p>
<p>3. Rain fed agriculture and upland parts of the landscapes need not to be neglected. Both, livelihood perspective and value chain approach can therefore be considered within the landscape framework</p>	<p>Additional benefits identified in the economic analysis (<i>kindly see Annex 10 of IFAD's project document</i>) includes, among others, the increase in agricultural production (millet, sorghum, rice, market garden products) following the increase of rain-fed crop yields due to the use of selected seeds and associated inputs (fertilizers, phytosanitary products).</p>
<p>4. Since the non-sustainable provision of wood energy is one important element of forest and landscape degradation and since wood energy plays a key role for food security, Germany suggests addressing this theme within strategies for food security. Existing good practices for sustainable wood energy production can be up-scaled within the project component “scaling up integrated approaches for sustainability and resilience”</p>	<p>PARFA will also ensure the promotion of biomethanation technology that could be used by rural households and groups mainly for cooking. This technology, already promoted by the National Biogas Programme and the NGO Agronomists and Veterinarians Without Borders (AVSF), is well adapted to the conditions of the project intervention area and to the needs of target groups in terms of heat energy (<i>paragraph 82</i>)</p>
<p>5. Within its special unit “<i>One World, No Hunger</i>” the German Ministry of Economic Cooperation and Development (BMZ) has launched regional programmes to which synergies and linkages could be established. These are in particular:</p> <ul style="list-style-type: none"> a. <i>Programme on soil protection and rehabilitation for food security</i> in Kenya, Ethiopia, Burkina Faso b. <i>Programme on Green Innovation Centres</i> in Burkina Faso, Ghana, Kenya, Nigeria, Malawi c. <i>Programme on food security and resilience</i> in Burkina Faso, Malawi, Kenya and Ethiopia 	<p>N/A</p>
<p>6. Strengthening evidence of the benefits of investment into SLM is a priority issue for monitoring and research and a key motivation for investing in SLM. This is the special focus of the Economics of Land Degradation Initiative (http://eld-initiative.org/) which is preparing also a regional approach in Sub-Saharan Africa. Links and synergies could be established.</p>	<p>The project is putting strong emphasis on M&A and will employ remote sensing technology to strengthen evidence of SLM investments. This will be undertaken with a national institution (Centre de suivi écologique) which has developed adequate tools for land and agricultural monitoring in the country. Further to the evidence-based M&A, the project focuses on learning and sharing and KM to disseminate the good practices and to highlight the importance of SLM as a priority area (this is also driven by the CSIF that this project will further specifically operationalize).</p>

<p>7. The monitoring system which will be established within the programme could be aligned with / made applicable for national monitoring systems, in order to establish / support long term monitoring of food security progress and resilience.</p>	<p>The M & E system will rely on PAFA-E's monitoring and evaluation system, and will therefore follow the methodology adopted by the latter. A monitoring and evaluation manual of the project, based on that of PAFA-E, will be drafted at the start-up of the project. It will be shared with all the actors and will describe the system, its organization and the implementation modalities of each function (procedures), the actors and their responsibilities in the implementation, and the different collection and dissemination tools that will be used. (<i>Paragraph 193</i>).</p> <p>The planned activities (nationally and locally) will focus on: (i) implementing an information system; (ii) building capacities of stakeholders of the information system; (iii) determining the baseline status of the indicators related to the level of carbon sequestration, biodiversity, SLM, quality of water, etc.; (iv) regular monitoring these indicators; and (v) integrating environmental monitoring in the information system of the grassroots organizations. The Centre de suivi écologique (CSE, Ecological Monitoring Centre) will be execute the monitoring and evaluation of environmental impact of activities, under the guidance of the Direction de l'Environnement et des Etablissements Classés (DEEC) which is responsible for overall environmental monitoring and the implementation of the environmental management plan. Furthermore, the project will closely work with the GEF Medium Sized Project (MSP) / Normalized Difference Vegetation Index (NDVI) project to maximize the synergies and the efficiency in data collection and management. Higher resolution NDVI will help in project targeting and M&E (<i>kindly see Paragraph 89</i>)</p>
<p>8. The planned budget of 35 to 120 Mio USD per child project is for the envisaged implementation period of 60 month quite high. Necessary ownership of land users for SLM needs to build up; capacities of implementing partners might not be sufficiently available and needs to build up. Were these aspects analysed and considered in planning? What are options to adapt budget planning if necessary (shifts between child projects, extension of project period)?</p>	<p>N/A</p>
<p>US COMMENTS</p>	
<p>1. How will the child projects proceed without impacting forest and key biodiversity areas that will be opened or face pressure as a result of increased agricultural production? Will there be a broader framework developed to address this important issue?</p>	<p>During the project formulation phase, potential environmental and social intervention risks were analyzed and consequently, an environmental and social management plan prepared, to mitigate these risks. <i>Kindly see Annex J</i></p>

<p>2. How will processes be used to create viable and inclusive multi-stakeholder groups at both national and local jurisdictions?</p>	<p>PARFA will include a component entirely dedicated to supporting the coordination and harmonization of efforts to promote a coherent multi-stakeholder approach [convening of multi-stakeholder alliances that bring together stakeholders from the public and private sectors, donors, the scientific community, and civil society] on environmental resilience and sustainability related to food security within the agricultural value chains. It will play an active role in including these issues in sectoral policies and removing obstacles that may arise during the practical implementation of these policies (<i>paragraph 33</i>)</p> <p>The project aims to support existing cross-cutting coordination and harmonization efforts, and will rely on existing mechanisms to promote a coherent multi-stakeholder approach to resilience and environmental sustainability of the agricultural value chains. NSIF-SLM provides a unifying set-up of platforms to promote the objectives of Component 1 of PARFA. NSIF-SLM is the preferred choice by the Government, which wishes to: (i) build on what exists and avoid duplication between projects; (ii) optimize the achievements of the existing framework, which it approves; and (iii) ensure continuity and the dynamics that are already in place. This will also rapidly operationalize the collaboration framework. Planned activities will be supported through two outputs: (i) building the capacity of actors at the national, regional and local levels; and (ii) promoting mechanisms for the coordination and the integration of best practices (<i>paragraph 58</i>)</p>
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Table 6 Responses to STAP Comments

STAP comments	Agency Response
<p>STAP recommends the use of the RATA framework as a tool that can inform and link the three program components and strengthen the project's theory of change to bring about global environmental benefits.</p>	<p>Noted. The RATA framework will be applied as the project's development objective is to improve the food security of small-scale farmers as well as their resilience to environmental degradation and climate change, the project is based on a methodology that integrates an ecosystem approach to sustainable development with the agricultural sector.</p>
<p>3. As previously stated, the three components are linked in important ways. To demonstrate these important linkages, STAP recommends for the project developers to detail further the following aspects:</p> <p>a. Describe the system. This includes addressing the following aspects:</p>	<p>Project Component 3 focuses on the monitoring and evaluation of environmental impact and of project results. To improve the resilience of populations to climate variability, the project will set up a participatory information system on the impact generated by land degradation and climate variability on production systems, under this component. The RATA framework will be embedded in this intervention in order to serve the alignment of approaches and monitoring towards common objectives, contribution to integrated</p>

<p>i. define the boundaries of the agro-ecosystem, including the biophysical and social factors;</p> <p>ii. describe the values that communities expect to get from the system (e.g. crops), and the drivers that affect, or might influence, these valued system properties (e.g. climate change);</p> <p>iii. define the governance levels (e.g. informal and formal arrangements); and,</p> <p>iv. describe how the agro-ecosystem functions (e.g. describe the livelihood strategies and variables that control the system's outputs they value, for example grass cover, healthy soils).</p> <p>Steps (i) through (iv) should be synthesized to arrive at a conceptual model that characterizes the agro-ecosystem, and that is based on a shared understanding between stakeholders. STAP wishes to emphasize the importance of undertaking this analysis during the early design of the projects in order to assess effectively the resilience of agro-ecosystems, and the appropriate interventions to improve resilience.</p>	<p>strategies and pursuit of synergies in reporting between countries and international environmental conventions.</p> <p>The project will cover the PAFA-E (baseline project) intervention area, i.e. five regions extending over two major agro-ecological regions with high development potential: (i) Kaolack, Fatick, Kaffrine and Diourbel Regions, i.e. the groundnut basin in the Centre and North; and (ii) Louga Region, i.e. the silvo-pastoral region (see paragraph 171)</p> <p>The communities in these regions are predominantly dependent on agriculture (precarious and uncertain agro-pastoral and cereal – root crop mixed farming systems) and livestock farming (traditional pastoral and agro-pastoral systems).</p> <p>The establishment of an information system to improve the level of ecosystem resilience to various environmental impacts is a key feature of the project. The modelling of the information system will commence with the implementation of the conceptual model, followed by a logical and physical model. These steps will allow for a final accurate representation of what will be the system data structure with objects and different well defined interrelations. The information system is supported by an IT platform that will address (from the conceptual model), all the data exchange and flow of information through various media (newsletter, posters, flyers, photos, activity reports, study materials, etc.).</p> <p>The environmental monitoring system will be supported by this information system, that will on the one hand, evaluate natural hazards (carrying capacity of pastures, floods, disease prevalence, bushfire, ...) and on the other, the dynamics of the ecosystem state (amount of CO2 sequestered, diversity of flora and fauna, soil fertility, ...). In addition, to improve the resilience of populations to climate variability, it will set up a participatory information system on the impact generated by land degradation and climate variability on production systems.</p> <p>The methodology to be used, in addition to the computerized operations system and automatic data processing, will be organized around the collection and analysis of information and align with the RATA framework. Kindly see pages 69 - 72 of Annex H IFAD project document, or Annex J UNIDO Environmental and Social Management Plan for further information on the information to be collected.</p>
<p>5. In its Assembly report, STAP encourages the GEF to consider targeted research to fulfill the desired outcomes of the program, which are multi-faceted and complex. Research issues that STAP believes need addressing through the program</p>	<p>Sustainable agricultural intensification in SSA has largely failed because it has not addressed the depletion of the natural capital important for sustaining productivity. Soil organic matter is being lost over large areas due to insufficient return of organic matter to the soils, which in turn causes low</p>

<p>include:</p> <p>a. Sustainable intensification to optimize efficiency in land use. Sustainable intensification could support increased resilience of ecosystem services while enhancing food production. Estimates indicate a 100-110% increase in crop demand between 2005 and 2050, and suggest the impacts on the environment will depend on how this demand is met. Meeting the demand through agricultural intensification could ensure that yields are improved substantially and inputs are more efficiently used. In the absence of sustainable intensification it is likely that 1 billion hectares of land will be cleared globally by 2050 releasing approximately 3 Gt greenhouse gas emissions CO₂-C-eq. per year.</p>	<p>response to fertilizers and problems of nutrient depletion, including loss of soil carbon (<i>paragraph 26</i>)</p> <p>Other obstacles to intensification include limited access to markets, credit and food value chains by the millions of smallholders that form the backbone of African agriculture, and poor links between science, policy and action –i.e. the latest knowledge on sustainable agricultural intensification is not being fed into the decision-making process. Regions that are prone to environmental crises leading to food insecurity include in particular the Sahel region of West Africa, the East African Highlands, the Horn of Africa, and Southern Africa. The common pattern across these geographies is a long record of concerns about food security and environmental sustainability associated with the environment-agriculture nexus and the prevailing smallholder extensive farming practices. However, these regions also present opportunities to scale up good practices from decades of research and investment in agricultural development and have well organized rural producer associations of various types <i>which can be important mechanisms for upscaling.</i> (<i>paragraph 28</i>)</p> <p>In the IAP-Food Security an important driver is the rapid population growth in SSA and the need to reconcile this with sustainable intensification of agriculture to meet food security needs while conserving the environment. In order to deliver global environmental benefits at scale, critical points in the causal chain of environmental degradation where GEF support can achieve maximum impact have been identified: i) transforming policy and institutional frameworks at the agriculture-environment nexus; ii) convening of multi-stakeholder alliances that bring together stakeholders from the public and private sectors, donors, the scientific community, and civil society; iii) demonstrating innovative approaches in integrated natural resources management; and, promote their upscaling iv) strengthening institutional capacity in monitoring and assessment of global environmental benefits, food security and resilience in order to improve investment decision-making processes (<i>paragraph 53</i>)</p> <p>The baseline project (PAFA-E) consolidates and completes the PAFA interventions by, among others, intensifying employment-generating activities and revenues for youth through: the set-up of large-scale market garden areas for youth (male and female) according to the model of the Société d'intensification de la Production Agricole (SIPA) introduced</p>
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	by PRODAM-II in the Matam Region (<i>paragraph 35</i>)
8. Under risks, STAP suggests adding the challenges of scaling up technologies and practices, and how the project intends to reduce this risk.	The sustainability and maintenance of equipment has been flagged as a risk. The issue of maintaining and renewing equipment is taken into account upstream of the construction of the infrastructures through the creation, from the start, of equipment maintenance and renewal fund, the set-up of management committees and ASUFOR for the Pastoral Units, and the building of the capacities of the management of these associations (<i>kindly see risk table</i>)

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS²⁰

A. Provide detailed funding amount of the PPG activities financing status in the table below:

UNIDO			
PPG Grant Approved at PIF: \$40,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Agrovalue chain development assessment	10 000	10 000	0
Energy assessment	7 000	7 000	0
Gender assessment	7 000	7 000	0
Validation Workshop	2000	2000	0
Inception activities including further data collection	14 000	0	14000
Total	40 000	26 000	14 000

IFAD				
PPG Grant Approved at PIF: \$80,000				
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF Amount (\$)</i>			
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>	<i>Amount Uncommitted</i>
Team Leader	35 000	27 238.93	-	7 761.07
Institutional Expert	6 500	4 012.47	-	2 487.53
Monitoring & Evaluation Expert	8 800	6 961.50	-	1 838.50
Environmental Expert	16 000	12 921.19	-	3 078.81
Economist	4 200	1 418.55	-	2 781.45
Translator	9 500	7 085.66	-	2 414.34
Total	80 000	59 638.30		20 361.70

²⁰ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

UNIDO PPG activities undertaken have been the following:

- Baseline analysis of relevant sectors/technologies and ongoing initiatives
- Environmental and Social Management Plan

IFAD PPG activities have been the following:

- Formulation missions in the field
- Technical coordination meetings
- Financial and economic analysis of impacts
- Environmental and social assessment

Joint IFAD-UNIDO PPG activities have been the following:

- Gender assessment
- National multi-stakeholder consultations
- Establishing implementation/execution modalities
- Financial resource mobilization (co-financing)
- Formulation of CEO Endorsement document
- Validation workshop

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF Trust Funds or to your Agency (and/or revolving fund that will be set up)

Not Applicable

ANNEX E: Indicative Work plan
Y E A R

IFAD				
UNIDO	1	2	3	4
Component 1. Support to multi-stakeholder platforms				
Output 1.1. Building the capacities of actors at the national, regional and local levels				
Four national training sessions involving a total of 100 participants organized by INP (incorporating environmental sustainability, resilience, agro-ecology principles, organic production, diversification, agro-biodiversity conservation, water conservation, recycling, integration of livestock farming, etc.				
Training of ten trainers at PARFA intervention areas				
Five regional training sessions for the beneficiaries per year, i.e. 500 people trained				
Prepare a methodology for conducting sensitising seminars on the issues of sustainable exploitation of plant and animal resources and their optimal valorisation (potential added value, intrinsic value, value of integrating inter-intra value chains etc.)				
Prepare a sensitisation programme and select beneficiaries in rural communities				
With ITA, conduct sensitisation seminars in favour of 1200 persons living in target community areas.				
Prepare training manuals tailored to good processing practices, marketing, and the utilisation of renewable energy, with a focus on simple practices on the utilisation of energy (training of trainers, disseminators, rural communities etc.).				
Prepare training kits for each target value chain				
Organise training in favour of a total of 200 beneficiaries on good practices				
Output 1.2. Promotion of mechanisms for coordinating and integrating good practices				
Conduct a study to identify mechanisms that would promote financing for sustainable rural agriculture.				
Develop a fund-raising strategy to promote SLM and integrated approaches for rural agriculture – Jointly INP and FNDASP				
dissemination of successful innovations and good practices				
organization of workshops to present, discuss and validate best practices				
drafting of a list of best practices in agricultural and rural development projects in Senegal				
creation of a virtual platform on the FNDASP site for sharing knowledge on agricultural and rural development projects				
a. Organization of technical workshop to inform decision making, political dialogue, on the implementation and management of Pus and b. provide a set of policy recommendations on greening agro-value chains				

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(UNIDO)				
organize workshops to mobilising actors and to conduct reflection on the thematic of postharvest activities and renewable energy including producers, traders, private operators				
Organise exchange visits in relation to the valorisation of natural resources in favour of 50 people				
Prepare reference manuals for dissemination purpose				
Conduct an analysis of the agro-sector from an energy perspective				
Train (100) resource persons on the required expertise to contribute to animation platforms and exchange of knowledge				
Prepare manual/guide on the integration of sustainable energy technologies of target value chain				
Component 2. Upscaling of sustainable and resilient good practices				
Output 2.1. Sustainable water management				
Mobilization of surface water VIA construction of control and catchment works for runoff water and the creation of pastoral pond				
Valley works (dikes, control weirs, plot development)				
Rehabilitation/creation of 5 pastoral ponds.				
Output 2.2. Sustainable land management				
Soil protection and restoration/soil and water conservation works				
Mangrove rehabilitation and exploitation				
Output 2.3. Sustainable energies and increased value of crop and livestock products				
Establish (20) solar pumping installations for irrigation of farms and feeding cattle in the target regions				
Establish (10) solar tanks for cooling dairy products.				
Establish (10) waste to energy based renewable energy systems of waste into energy within a local processing unit				
Identify pilot units which will serve for demonstration on best practices and integrated practices of clean production				
Prepare technical specifications for acquiring the equipment, integrating clean energy solutions for the valorisation of livestock and cereal products as well as their sub-products				
Based on the identification of the pilot units, acquire equipment which promote value addition of local production				
Conduct training of trainers				
Prepare training modules and conduct training of beneficiaries (800) on the utilisation of the equipment and				

waste/compost utilisation techniques				
Conduct an investigation to assess the absorption capacity of the beneficiaries on the techniques and technologies introduced , leading to an indication on its potential for dissemination				
Based on the above analysis, prepare a dissemination strategy to other regions and value chains				
Preparer communication material on the integrated solutions for the valorization of agro-value chain introduced				
Component 3. Monitoring and evaluation of environment impact and of project results				
Output 3.1. Monitoring and evaluation of environmental impact				
With the CSE, implement an information system				
determining the baseline status of the indicators related to the level of carbon sequestration, biodiversity, SLM, quality of water, etc.;				
regular monitoring these indicators				
integrating environmental monitoring in the information system of the grassroots organizations building capacities of stakeholders of the information system				
Output 3.2. Monitoring and evaluation of activities and of project results				
A single logical framework and Monitoring and Evaluation Manual of the project will be developed				
data that will be collected will facilitate project management and the preparation of progress reports,				
Prepare project activity reports.				
In cooperation with NGO Innovation, environnement, développement Afrique (IED Afrique), develop a knowledge management strategy with the provider				
the collection and dissemination of information that is useful to local, regional and national value chain actors, through appropriate communication channels				
Output 3.3. Knowledge management				
At least three strategic tools are based on the data of the environmental monitoring system				
For each product/value chain, prepare manuals on best practices (valorisation, hygiene of natural resources and marketing), on specific integration of sustainable renewable energy				
Prepare specific reference guides on business management in the context of agriculture				
Disseminate all manuals and guides prepared.				

ANNEX F: THEORY OF CHANGE

Senegal IAP Food Security: Theory of change |

