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Land Degradation Neutrality for biodiversity conservation, food security and resilient livelihoods in the Peanut Basin and Eastern Senegal (Dékil Souf)

Part I: Project Information

GEF ID
10384

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
   CBIT **No**
   NGI **No**

Project Title
Land Degradation Neutrality for biodiversity conservation, food security and resilient livelihoods in the Peanut Basin and Eastern Senegal (Dékil Souf)

Countries
Senegal

Agency(ies)
FAO

Other Executing Partner(s)   **Executing Partner Type**

Ministère Agriculture et Equipement Rural (MAER): Institut National de Pédologie (INP)

Government

GEF Focal Area
Multi Focal Area

Taxonomy
Land Degradation, Focal Areas, Restoration and Rehabilitation of Degraded Lands, Sustainable Land Management, Sustainable Agriculture, Sustainable Livelihoods, Income Generating Activities, Improved Soil and Water Management Techniques, Land Degradation Neutrality, Land Productivity, Food Security, Transform policy and regulatory environments, Influencing models, Demonstrate innovative approache, Local Communities, Stakeholders, Private Sector, SMEs, Individuals/Entrepreneurs, Type of Engagement, Participation, Gender results areas, Gender Equality, Capacity Development, Participation and leadership, Access to benefits and services, Knowledge Generation and Exchange, Access and control over natural resources, Awareness Raising, Gender Mainstreaming, Sex-disaggregated indicators, Beneficiaries, Gender-sensitive indicators, Women groups, Peer-to-Peer, Knowledge Exchange, Capacity, Knowledge and Research, Training, Knowledge Generation, Biodiversity, Mainstreaming, Agriculture and agrobiodiversity

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 1

Climate Change Adaptation
Climate Change Adaptation 1

Duration
60 In Months

Agency Fee($)
549,677.00

Submission Date
3/22/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount($)	Co-Fin Amount($)
LD-1-1	GET	4,000,000.00	26,000,000.00
BD-1-1	GET	1,150,660.00	4,100,000.00
LD-2-5	GET	635,413.00	2,700,000.00
	Total Project Cost ($)	5,786,073.00	32,800,000.00

B. Indicative Project description summary

Project Objective

Demonstrate the LDN approach in the Peanut Basin and Eastern Senegal for biodiversity conservation and delivery of ecosystem services to achieving food security and livelihood resilience.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount($)	Co-Fin Amount($)
Enabling environment for large-scale SLM dissemination	Technical Assistance	1.1. Strengthened inclusive land governance for better biodiversity conservation and natural resources access through the application of LDN and VGGT principles Targets: (a) At least 80% of municipalities in target regions operationalize at least one good governance management tool 1.2. Enhanced capacity for the mobilization and sustainable management of financial resources by the municipalities and the coordination of	1.1.1. Review of strategic regulatory frameworks and territorial planning instruments to enhance local stakeholder participation and mainstreaming of LDN, biodiversity conservation and land tenure at national and sub-national levels 1.1.2. Land, biodiversity and natural resource governance and planning tools are stengthened in accordance with LDN principles (using FAO Land Resource Planning Toolbox, VGGT, etc.) 1.1.3. Governance of customary and formal natural resources management is strengthened with special focus on vulnerable groups 1.2.1. LDN principles are integrated into municipal investment and action plans 1.2.2. Capacity building program for multi-stakeholder policy dialogue on SLM in accordance with the guidelines	GET	1,300,000.00	5,900,000.00

SLM interventions in favor of LDN and biodiversity conservation

Targets:

(a) At least 25% of target communes increase the share of their budget by 5% intended to support SLM activities for the benefit of the LDN and biodiversity conservation

(b) LDN and biodiversity conservation principles integrated into key national frameworks

(c) 30 people (of which 50% are women) with enhanced capacity in LDN at national and sub-national levels

1.3 Accessibility of data and information on land degradation enhanced

of The National Strategic Investment Framework for SLM (CNIS-GDT)

1.2.3. Inter-sectoral coordination mechanisms at the national and the level of each intervention region are operational /strengthened

1.3.1. Developed and shared in a participatory manner, targeted multi-scale data and information on land degradation status and trends (such as Collect Earth, LADA, and others) and biodiversity status (such as B-Intact) and training material on LDN and LDN for biodiversity conservation developed for practitioners, feeding into the indicator-based LDN monitoring system

1.3.2. A national platform/information system (management tools and data dissemination) on degraded lands and vegetation cover is set up

		(a) At least an information system (management tools and data dissemination) on degraded lands and vegetation cover is available at national and local level				
Scaling up SLM and biodiversity conservation using a landscape approach in the Peanut Basin and Eastern Senegal	Investment	2.1. Increased technical and institutional capacities of agro-sylvo-pastoral communities on SLM technologies and approaches	2.1.1. Capacity building program on SLM technologies and approaches (using Farmer Field Schools approaches, Dimitra Clubs, e-advice, exposure visit, facilitation of farmers' cross learning visits, LADA, WOCAT, Community-Based Ecological Mangrove Restoration-CBEMR etc.) in order to sustainably intensify ecosystem productivity	GET	2,309,091.00	17,300,000.00
		Targets: (a) At least 20,000 producers (75% women and youth), have access to SLM practices in line with LDN principles	2.2.1. Participatory integrated land use plans developed in Peanut Basin and Eastern Senegal			
		(b) 10 Masters and 3 PhD on SLM / LDN of relevance to the project supported	2.2.2. Innovative SLM technologies and approaches applied and scaled out on agro-sylvo-pastoral landscapes to reduce land degradation, restore degraded land and contribute to biodiversity conservation (restoration of salinized lands, mangrove restoration and conservation, crop rotation, agroforestry/plantation of high value tree species e.g. Fadherbia albida, etc.)			
		(c) 3 technical guides on SLM/LDN produced and distributed				

		2.2. Improved ecosystem services, habitat for biodiversity and resilience in target agroecosystems of Peanut Basin and Eastern Senegal in line with LDN principles	2.2.3. Seed/seedling production capacity improved to support restoration of degraded lands and biodiversity conservation			
		Targets:				
		(a) At least 12,000 ha are under reduced or reversed degradation thanks to SLM measures and are managed in a sustainable way to benefit biodiversity				
		(b) a plan for biodiversity conservation, sustainable land use and management is available for each commune				
Rural emloyement and livelihoods enhanced to sustain	Investme nt	3.1. Enhanced incentive mechanism framework for investment in family farms in local agro-	3.1.1. Innovative market-based incentives for financing LDN-oriented and biodiversity-friendly inclusive agriculture value chains are identified	GET	1,491,455.00	6,600,000.00

improved management of production land	sylvo-pastoral value chains for improved livelihoods	and strengthed (e.g. subsidies, tradable permits, Public-Private Partnerships, certification programs, penalties, etc.)
	Targets: (a) A functional framework for promoting sustainable local value chains (suppliers, producers, support-advice, financiers, traders)	3.1.2. An inclusive financial mechanism and training program are operational to strengthen the capacity of farmers and farmer organizations to engage in SLM 3.1.3. Development and implementation of a sustainable strategy/action plan to improve local value chains (millet, cowpeas, rice, NTFPs, oysters farming, mangrove beekeeping) and mainstream biodiversity into SLM
	(b) An innovative and sustainable financial mechanism for producers and their organizations are functional and operational	3.1.4. Community micro-projects (5 per commune) proposed for scaling-up SLM
	(c) 7,500 producers, (75% youth and women) supported in improved local value chains with increased income (from the baseline) of 25%	
	(d) 75 profitable micro-enterprises set up / strengthened for the benefit of 750 youth and women in agricultural value	

		chains (organic inputs, market development, valuation / enrichment defended) (e) 50 Integrated Community Agricultural Farms (ICAF) of 1 ha each set up, functional and generating decent jobs for 1000 young people (75% women)				
Learning, knowledge management and communication	Technical Assistance	4.1. Learning and political engagement for scaling up and sustainability of project achievements Targets: (a) Functional M&E systems and GEBs and co-benefits established	4.1.1. Project monitoring system is operational, providing systematic information on the project progress made and capture of lessons and knowledge 4.1.2. Mid-term and final evaluation conducted, project best practices and lessons learned developed and disseminated	GET	410,000.00	1,300,000.00
			Sub Total ($)		5,510,546.00	31,100,000.00

Project Management Cost (PMC)

				GET	275,527.00	1,700,000.00
			Sub Total($)		275,527.00	1,700,000.00

| Total Project Cost($) | 5,786,073.00 | 32,800,000.00 |

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Fonds National de Développement agrosylvopastoral	In-kind	Recurrent expenditures	1,200,000.00
Recipient Country Government	Ministry of Finances and Budget	Grant	Investment mobilized	1,500,000.00
Recipient Country Government	Ministry of Territorial Governance, Development and Regional Planning	Grant	Investment mobilized	11,200,000.00
Recipient Country Government	Ministry of Agriculture and Rural Equipment	Grant	Investment mobilized	3,700,000.00
Recipient Country Government	Ministry of Environment and Sustainable Development	Grant	Investment mobilized	700,000.00
Recipient Country Government	Centre de Suivi Ecologique	Grant	Investment mobilized	2,000,000.00
Civil Society Organization	BothEnds	Grant	Investment mobilized	1,000,000.00
Donor Agency	World Food Programme	Grant	Investment mobilized	3,000,000.00
Civil Society Organization	Wetlands International	Grant	Investment mobilized	1,500,000.00
GEF Agency	FAO	Grant	Investment mobilized	7,000,000.00
			Total Project Cost($)	32,800,000.00

Describe how any "Investment Mobilized" was identified

New and additional investments from development partners, executed in the same geography and during the same period of time, have been mapped and relevant projects and programmes capitalised and recognised as mobilised investment. This excludes all recurrent spending from national partners. Details on the investments have been provided in the relevant sections of the PIF. In sum: The Ministry of Finances and Budget's co-finance includes the following: the Senegal Cadastre and Land Tenure Improvement project (US$1M) and Support for improving land management project (US$500,000); The Ministry of Territorial Governance, Development and Regional Planning's contribution includes the PACASEN project (US$4,2M) and the Opening up Production Areas in Support of the National Local Development Programme (PDZP/PNDL) investment (US$7M); The Ministry of Agriculture and Rural Equipment's mobilized investment includes the PROVAL-CV (US$1,6M), PARIIS project (US$1,7M) and the Support to Agricultural Development and Rural Entrepreneurship Programme in Senegal (PADAER) Phase 2 programme (US$0,4M); The Ministry of Environment and Sustainable Development's investment refers to the Climate Change Resilience and Coastal Zone Management Project (CCGIZC) investment; The Centre de Suivi Ecologique (CSE) project Increase the resilience of ecosystems and communities by restoring the productive bases of salt lands contributes US$2M; BothEnds' project Communities Re-greening the Sahel: cultivating buffer zones to ensure food security, livelihoods and biodiversity project contributes $1M; Building the climate resilience of food insecure smallholder farmers through integrated management of climate risks (the R4 Rural Resilience Initiative) by the World Food Programme (WFP) contributes US$3M; Wetlands International has a US$1.5M contribution through the Mangrove Capital Africa and PAPBIO projects; and FAO's mobilised investments comprise a US$5M input from the Resilience and Intensive Reforestation Project for the Safeguarding of Territories and Ecosystems in Senegal (RIPOSTES) project and a US$2M contribution from the Global Transformation of Forests for People and Climate: a focus on West Africa project.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
FAO	GET	Senegal	Land Degradation	LD STAR Allocation	4,635,413	440,364	5,075,777.00
FAO	GET	Senegal	Biodiversity	BD STAR Allocation	1,150,660	109,313	1,259,973.00
				Total GEF Resources($)	5,786,073.00	549,677.00	6,335,750.00

E. Project Preparation Grant (PPG)

PPG Required   **true**

PPG Amount ($)	PPG Agency Fee ($)
150,000	14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
FAO	GET	Senegal	Land Degradation	LD STAR Allocation	100,000	9,500	**109,500.00**
FAO	GET	Senegal	Biodiversity	BD STAR Allocation	50,000	4,750	**54,750.00**
				Total Project Costs($)	**150,000.00**	**14,250.00**	**164,250.00**

Core Indicators

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
12000.00	0.00	0.00	0.00

Indicator 3.1 Area of degraded agricultural land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
9,000.00			

Indicator 3.2 Area of Forest and Forest Land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
1,500.00			

Indicator 3.3 Area of natural grass and shrublands restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
1,500.00			

Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
400000.00	0.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
60,000.00			

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
340,000.00			

Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	6818889	0	0	0
Expected metric tons of CO_2e (indirect)	13915692	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	6,818,889			

Expected metric tons of CO$_2$e (indirect)	13,915,692
Anticipated start year of accounting	2023
Duration of accounting	20

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO$_2$e (direct)				
Expected metric tons of CO$_2$e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)

Target Energy Saved (MJ)	

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	65,625			
Male	21,875			
Total	87500	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Estimation of core indicators is based on the following assumptions: Indicator #3: The project will work in the LDN hierarchy of responses and be based on FAO position2 on "Ecosystem Restoration" of production ecosystems, in the context of the UN Decade of Ecosystem Restoration 2021-2030. The project will directly support implementation of measures on 12,000 ha of agriculture, grassland and forest land using "reduce" and "reverse" responses, 9,000, 1,500 and 1,500 ha, respectively. The targets are based on the costs estimates of SLM technologies (targeting decreased soil fertility, salinization/acidification, water-erosion, and desertification) from previous experiences in similar context in Senegal. Indicator #4: The project will work in the LDN hierarchy of responses. The 4 target landscapes cover the area of 877 000 ha. Integrated land management plans will be developed using "avoid" LDN response measure on at least 340,000 ha of land under sustainable land management in production systems (CI 4.3). The improved management of the production land that will directly benefit biodiversity conservation efforts in nearby KBAs of 60,000 ha (CI 4.1) represents the habitat for biodiversity of global significance. Indicator #6. National and local institutions, local communities, NGOs and small-scale farmers will help deliver carbon benefits through the implementation of field activities. Estimates have been calculated through the EX-Ante Carbon-balance Tool (EX-ACT v9.0). The direct carbon-benefit of this project amounts to 6,818,889 tCO2e for a total period of 20 years (5 years of implementation and 15 years of capitalization). The following assumptions were considered to complete the EX-ACT v. 9.0 calculation sheets: Project activity (Direct project targets (ha)) REDUCE the level of degradation of agricultural land Annual cropping systems (6,500) Flooded rice (500) Grassland (1,500) Tropical shrubland (1,500) REVERSE the degradation production land, converting degraded land into an integrated production land, identified as agro-forestry system (2,000) AVOID degradation of cropland, grassland and forest land through improved management, including: Annual cropping systems (280,000) Grassland systems (60,000) Tropical shrubland (60,000) Indirect carbon benefits have been based on the following assumptions and therefore amount to a total of 13,915,692 tCO2e. Project activity (Direct project targets (ha)) AVOID degradation of cropland, grassland and forest land through improved management, including: Annual cropping systems (613,000) Grassland systems (131,550) Tropical shrubland (131,550) Indicator #11: Total population in 4 regions is 533,600 (of which 54% are women). Number of direct beneficiaries of SLM technologies is estimated at 20,000. Number of direct beneficiaries of value chains interventions is estimated to be 7,500 people, and the number of beneficiaries from improved management is approximately 10% of the total population, i.e. 60,000. Summing this all up explains the figure of 87,500 direct beneficiaries of which 75% women and youth.

Part II. Project Justification

1a. Project Description

1a.   PROJECT DESCRIPTION

a.   The global environmental problems, root causes and barriers that need to be addressed

The global environmental problem statement.

After achieving its independence in 1960, Senegal has experienced two decades of steady economic growth, mostly based on land resources and agricultural productivity. After the initial leaps in productivity, the agriculture sector has been in decline since 1980s as characterized by reduced productivity and agricultural revenues. Senegal has a high population growth rate (3%) that will double by 2040, while 39% of the population live below the poverty line, 75% of families suffer from chronic poverty, and the number of severely food insecure people in 2017-19 was higher than recorded before[1]. Today, Senegal is aspiring to transform into an emerging economy by 2035, has a strategic coastal location and serves as a gateway for landlocked neighbouring countries. As articulated in the Emerging Senegal Plan (PSE), Senegal's environmental policy, in its design and implementation, aims, among other things, to integrate the principles of sustainable development into national economic and social development strategies to reverse the tendency to waste natural resources, biodiversity and the degradation of the living environment of the populations.

Although agriculture contributes to the economy less than on average in sub-Saharan Africa (17 vs. 24%, respectfully), the sector is a dominant thread in the socio-economic fabric of the country. Out of 15.7 million of the country's inhabitants, 53% live in rural areas. Seven out of ten working people in the country rely on agriculture as the primary means of livelihoods. The majority of production (95%) is carried out by small family farms holding less than 5 ha of land[2]. Although the soils are naturally low in soil organic carbon[3] and the rainfall is irregular, Senegal heavily relies on rain-fed agriculture (94-98%[4]). Senegalese farmers mainly grow groundnuts, sugarcane, and cotton as primary cash crops. The rest of the production is dominated by subsistence crops, especially cereals: rice, millet, sorghum and maize[5].

The country currently cannot meet its food security needs and thus relies on imports, mostly for rice, wheat, and dairy. Cereal import dependency ratio was on average 52% in 2015-2017, although increased intensive rice production in subsequent years was put in place towards rice self-sufficiency. Even with national production and imports, nutritional needs are not met, especially in poorer rural areas. Senegal ranked 67 out of 117 countries in the 2019 Global Hunger

Index[6].

Such socio-economic system[7] is bound by the ecosystems' carrying capacity locally and nationally, and "planetary boundaries" regionally and globally. The current socio-economic system presents an example of a "reinforcing feedback loop"[8], where the Senegalese communities, hard hit by the destabilization of production systems and the structural adjustment, have been concerned primarily with surviving on a daily basis. Populations in remote areas have limited options for managing land and accessing other benefits of economic development[9]. The structural food deficit is exacerbated by drought, climate change, and worsening soil fertility, putting an increased pressure on natural resources, destabilizing fragile production systems, and their eventual degradation, and subsequent conversion of nearby woodlands and forests (which are reported to be lost at a rate of 40,000 ha a year)[10]. As reported in the 2015 NBSAP of Senegal, agriculture and particularly poor management practices, is the first driver of degradation and fragmentation of ecosystems, habitats of globally significant animal and plant species. Man-made pressures deteriorating natural resources have increased due to shrinking farm sizes, accelerating land degradation trends, and thus reducing supporting, provisioning, and regulating ecosystem services and biodiversity.

Biodiversity loss and eroding ecosystem services due to land degradation have high social, economic, and environmental costs to the country. In 2010, 1.8 million people lived on degrading agricultural land - an increase of 38% in one decade - bringing the share of rural residents who inhabit degraded agricultural land up to 24% of the total rural population. The annual cost of land degradation in Senegal is estimated at US$996 million, or 9% of GDP (compared to the 4% of GDP average in Africa)[11]. Agriculture practices that exceed the carrying capacity of the ecosystem, will erode the land that support agriculture in the first place, thus positioning it as a proxy to an extractive activity. Thus, addressing land degradation requires urgent attention.

Land degradation is an unintended consequence of the dynamic system structure and its behaviour change, where system elements – such as, for example, hunger, poverty, economic instability, and environmental degradation - are integrated, inter-connected, and complex even in isolation. As the existing socio-economic system and declining land degradation status can no longer guarantee the provision of investment opportunities and ecosystem services, respectively, youth migrate to urban areas and outside the country seeking employment opportunities. This trend transfers the poverty, closing the vicious loop that reduces productivity and performance of the agriculture sector leading to a poverty trap and agriculture encroachment on primary forests. The project will strategically respond to root causes of degradation and habitat loss for globally significant biodiversity and utilize the best available global and local technical knowledge and build on key national baseline initiatives.

Drivers and pressures as root causes of the global environmental problem - Project Theory of Change Block 1.

Increased demand for food. One of the biggest food security challenges in Senegal is addressing the nation's high and growing dependence on food imports, even though important efforts are already being deployed to achieve rice self-sufficiency in the country. Imports account for approximately half of the total domestic cereal requirements. On average, the country imports about 2 million tonnes of cereals, including about 1.2 million tonnes of rice and 0.5 million tonnes of wheat. Despite the above-average 2019 cereal production, import requirements for the 2019/20 marketing year were expected to increase at

above-average levels due to the strong demand by local traders aiming at replenishing their stocks. To address food security and self-sufficiency, increased productivity is expected, where soils are increasingly depleted. Production land is therefore expected to extend into natural land, exacerbating fragmentation and degradation of ecosystems. The cropland area has increased by 175 % in 2009 from its level in 2001[12].

Poverty and weak social capital resulting in migration. Senegal is classified as a heavily indebted country and ranked 168 out of 189 in Human Development Index in 2020[13]. Although stable and democratic, Senegal is one of the world's least developed countries, ranking 67 out of 117 countries in the 2019 Global Hunger Index. Older World Bank estimates (2011) assessed poverty at 57% of the rural population[14]. Lack of employment and business opportunities in agriculture is a driver of migration, which leads to urbanization and emigration. Those left behind, especially women, children and the elderly, are particularly exposed to food insecurity and other risks. Gender disparities remain widespread in the country, especially in rural areas. Poverty and weak social capital translate into poor management practices of production land and limited productivity and profitability.

Weak LDN governance, including land tenure, and inter-institutional coordination. Despite several land laws that have been passed, land access and use is primarily regulated by customary law that generally tends to not focus on small-holders. Consequently, land disputes are increasingly common in Senegal. Additionally, open access rules and practices on public land lead to a situation in which everyone is entitled to use land without any consideration of the damages. Mechanisms for dispute resolution include formal and customary procedures as well as alternative systems, such as arbitration boards and municipal councils[15]. Inclusive land governance through greater involvement of local and regional authorities and effective coordination mechanisms are missing, but needed to facilitate private investments into land and land productivity. Senegal ranked 116th out of 187 countries in the Registering Property ranking of the World Bank Doing Business report (2020). In additon, Investment Climate Assessment[16] ranked the practices of the informal sector as the most severe constraint for formal companies to invest, closely followed by access to finance, electricity, and land. Further, poor cross-sector coordination and lack of accurate and timely information on land conditions and are among the main impediments to large-scale intervention through inclusive and integrated community planning and application of SLM technologies through landscape approaches to integrated ecosystem management.

Poorly structured value chains, weak infrastructure, limited access to finance and markets. The agriculture sector has been facing major challenges that have weakened its proper development. Access to inputs - such as electricity, mechanization, quality seeds, land, and water - is poor. Only 1.3 percent of agricultural land is equipped for irrigation, and vulnerability to climatic shocks, with high risks of drought and regular, severe flooding affecting urban areas are prominent. Agricultural micro-lending and insurance are sub-optimal. *The Plan Sénégal Emergent (PSE)* (2014) identified weak structure of value chains as a major constraint to agricultural development. Value chain competitiveness is often compromised by the lack of appropriate financing mechanisms along the various segments of the chain. Such segments have different financial needs, e.g. producers require finance for inputs and other productive investments, while distributors require it for bulk purchasing and onward marketing. Unfortunately, many available financial instruments are limited in their range, diversity, and sophistication vis-à-vis the requirements of the value chain actors. As the sector is principally made up of family smallholdings (about 90%), removal of the barriers that prevent family farmers from participating in important parts of the value chains is an important consideration, as it helps making the agricultural sector more profitable, and offers opportunity to develop decent jobs which are attractive to youngsters, where the average age of the farmer is increasing rapidly.

Reduced delivery of vital ecosystem services. A considerable share of the costs of land degradation (59%) is due to the decline in provisioning ecosystem services (e.g. food availability, wood production, etc.), which has a significant impact on the population of the country. The remaining share refers to the regulating ecosystem services (e.g. carbon sequestration, water regulation flows), which have an impact not only at the country level, but also at the regional and global levels due to the cross-border nature of these services that encourage international cooperation. In Senegal, the AFOLU sector is responsible for 64% of the total emissions of the country, with agriculture being the biggest contributor and raising consistently. Within the sector, enteric fermentation, manure left on pasture, and savannah burning are the biggest shares, 37, 29 and 26% of total, accordingly[17]. As the current population and agriculture production trends are projected[18] to grow, an increased cereal output of 1.5 ton/ha/year by 2035 without considering the ecosystem's carrying capacity, will further reduce the delivery of ecosystem services.

Drought. Drought observed during the rainy season (May to October) is characterized by highly variable dry spells that result in severe rainfall shortage or poor distribution of rainfall in space and in time. During the last decade, several parts of the country have experienced these phenomena. Drought events that took place in 2011 resulted in a decrease of 20% of the production of grain and 31% of groundnut production[19]. This led to an inflation of food prices and food insecurity for a population estimated at 800,000 people of which the majority depends mainly on agriculture.

Drought vulnerability assessments identified susceptibility at various levels: the agriculture sector (loss of revenue from groundnut and vegetable production, food insecurity due to failure of grain production, livestock loss due to lack of natural pasture), water supply sector (water shortages (lake Guiers, Drying of wells)), environment sector (disappearance of animal and vegetable species, soil cover degradation and soil erosion)[20]. In Casamance region, the rainfall deficit resulted in salinization of groundwater and soils. Early depletion of natural pastures in the north exposes livestock to severe diet. Herders are forced to an early transhumance towards the south, increasing the pressure on the vegetation of this area. This causes conflicts between farmers and herders, and is also the cause of major cattle raid in protected areas, posing a great difficulty in managing livestock-wildlife interface[21].

Climate change. Climate change effects are felt in rural areas both biophysically and socio-economically. Local consultations have shown that the manifestations and causes of climate change constitute a vicious circle in various forms felt by the populations: reduction of plant cover, wind, water and coastal erosion, soil salinization / acidification, physico-biological degradation. These problems are also exacerbated by anthropogenic factors such as urbanization, deforestation, overexploitation of wood and non-wood forest products, poor agricultural practices, overgrazing, bush fires, etc. Added to this is the degradation of wildlife habitats and a loss of biodiversity resulting mainly from the mismanagement of natural resources from the agricultural sectors, land use change and overgrazing, particularly in the buffer zones of protected areas.[22]

Climate projections indicate that the coming decades are shaping up to be warmer than current and past decades with important consequences for human health and the needs of communities. The study of precipitation indicates that the rains will decrease compared to the reference period of 1981-2010. This finding is shown in Figure 1: decreasing rainfall seen as a gradual southward displacement of isohyets. Strong inter-annual variability in rainfall is also expected. This aspect is all the more important as the activities of the communities, as well as their health, are based on access to water, as is the case, for example, of rain-fed agriculture, which is very much affected by reduced rainfall. This observation implies that Senegalese agriculture is today one of the most vulnerable sectors to the effects of climate change (more than 90% of crops are rainfed). The most notable consequence is a drop in yield and productivity

which will result in the reduction of plant cover following a significant water deficit and high evapotranspiration. The sector is already facing several factors that limit its development (low annual rainfall, infertile soils, and production factors such as access to degraded fertilizers and equipment, lack of water control). Climate change will therefore worsen already poor performance.
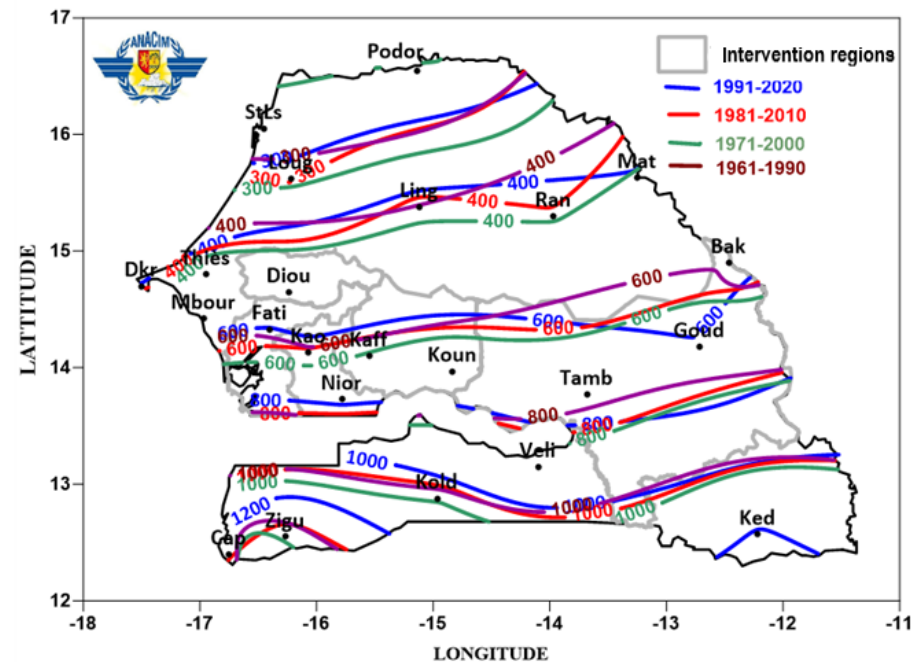

Figure 1. Evolution of isohyets from 1961 to 2020.

According to some analyses, if no adaptive measures are put in place, the reduction of agricultural land could reduce cereal production by 30% by 2025. The spatial and / or temporal variability of the climate also modifies the rainy season, in particular the dates of start and end, which could disrupt the cropping calendar and negatively influence harvests and the constitution of good quality seed capital. Indeed, with the reduction of the rainy season, the adaptation of the cycle lengths of varieties must be carried out when seeds are not always available in sufficient quantity, which makes agriculture particularly vulnerable.

According to the RPC4.5 GHG emission scenario, a climate warming trend is projected for 2035 in all localities, compared to the current level. This warming could be much more marked in the case of the RCP 8.5 scenario. Indeed, a concordance of the models to the RCP 4.5 scenario of climate change is observed. The CCma and IPSL models project an average increase of 1.5°C over the period 2021-2050 in the various localities of the target area. The temperature increases will be equal on average to 1.8°C in the case of the RCP 8.5 scenario according to the CCma and IPSL models against 2°C for the MOHC model.
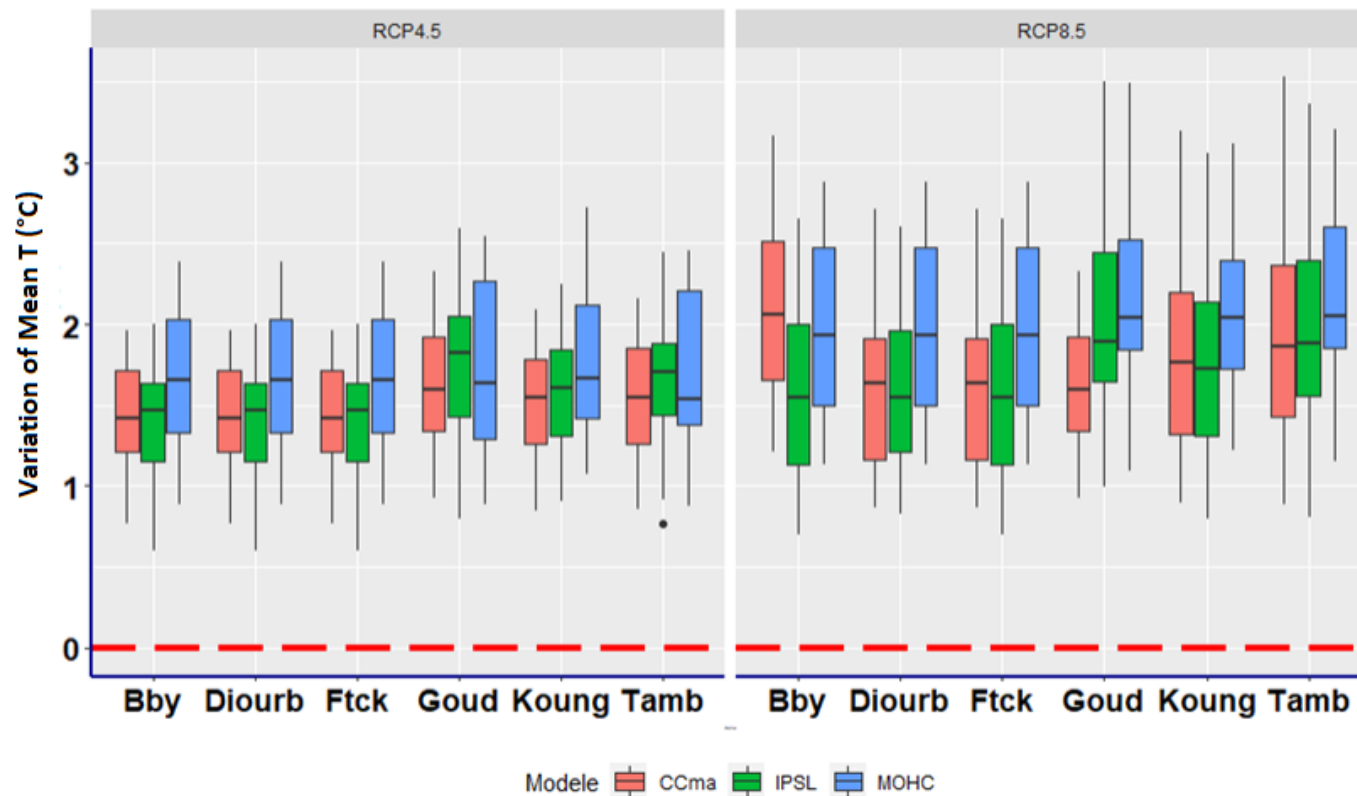
Figure 2. Annual mean temperature anomalies 2021-2050

NB : Bby = Bambey, Diourb = Diourbel, Ftck = Fatick , Goud = Goudiry, Koung = Koungheul, Tamb = Tambacounda)

Covid-19 impacts in Senegal. The Covid-19 pandemic is taking a heavy toll on Senegal's economy with real GDP growth projected by the IMF in September to contract by 0.7 percent this year, reflecting the larger-than-anticipated disruptions in economic activity stemming from the pandemic and strict containment measures[23]. Lower external demand, a sudden stop of travel and tourism, declining remittances and the effects of domestic containment measures are

weighing on activity. Despite mitigation measures put in place by the Government, rising Covid-19 cases are deteriorating food insecurity levels and the economy[24]. Prior to the Covid-19 outbreak, the number of food insecure people was projected to peak at about 766,000 during the lean season between June and August 2020, well above the 341,000 food insecure that were estimated in the same period of 2019[25].

The impacts of the pandemic have been found to vary significantly across regions[26]. The availability of and access to basic cereals (rice, millet, maize) and other basic necessities (oil, sugar, fish, meat, milk) has mostly been disrupted for rural households in areas where the movement of goods and people is usually very dense, notably the central-western part of the Peanut basin (between Thiès and Touba) and the eastern part of the country (around Tambacounda and Kédougou). In addition, significant negative effects of Covid-19 on food consumption patterns have been identified, with the majority of rural households being affected in both the quantity (62%) and quality (70%) of their food consumptions patterns.

Senegal has responded with containment measures and a comprehensive economic stimulus plan (PRES) to protect lives and livelihoods. However, limited fiscal buffers and safety nets, a vulnerable healthcare system, and a large informal sector pose challenges[27]. The IMF projects a gradual recovery in 2021 with the economic output to rebound back to above 5 percent, boosted in part by favourable prospects for agriculture.

Land degradation status and trends - Project Theory of Change Block 2.

The Government of Senegal has conducted several local and regional land degradation assessments in the past and a nationwide inventory of soil conservation practices, many of which are documented in the WOCAT SLM database. These assessments associated land degradation with socio-economic characteristics and soil and vegetation trends. Assessments on the "hot spots" focused on types, causes, impacts of land degradation. Study of the "bright spots" considered the existing and potential land degradation control measures and identified major constraints for their scale out. Observation of the state of Senegal's natural resources shows a critical situation resulting from land degradation in general which affects 65% of the country's surface area.

Land degradation is a particularly serious problem for rural communities and farmers who depend on land for their livelihoods. Areas that have recorded the highest agricultural performance in the past, such as **the Southern Peanut Basin and Eastern Senegal**, are now experiencing high population densities, resulting in over-exploitation of agricultural land leading to rapid depletion, with the result that yields and agriculture income are falling steadily. This degradation of production ecologies is all the more penalizing since the natural regeneration possibilities of fallow land are practically non-existent today.

The soils in Senegal are naturally fragile and low in organic matter. Unsustainable land management resulted in compaction and its reduced fertility leading to reduced vegetative cover (in particular in grasslands). Shifting cultivation and abandonment of fallow land led to expansion of agricultural areas and resulted in steady and increased **encroachment of cultivation onto savannah and woodlands** in the central and southern parts of the country (CSE, 2010). In addition, high demand for wood and non-timber forest products added pressure resulting in massive **deforestation and canopy degradation**. Analysis of the satellite imagery (LADA) of land cover change between 1990 and 2005 showed that agriculture areas have increased by over 500,000 ha (nearly 50%) converting

natural vegetation (herbaceous, shrubs, and trees)[28]. **Terrestrial carbon stock rates** have been in drastic decline (1965-2000), especially in savannah, forests, and shrub and grasslands[29]. **Salinization** is also one of the main factors of ecosystem degradation, in particular the regions located in the lower and middle valley of the Senegal River, Sine Saloum, and Casamance. The magnitude of this phenomenon is due to the large rainfall deficits observed in recent decades. The land affected by the salinization phenomenon is 996,950 ha.

Biodiversity status and trends resulting from increased land degradation

Senegal is subdivided into six eco-geographic zones which shelter a relatively high ecosystem diversity with the presence of forest ecosystems (steppes, savannas, forests with galleries, palm groves, bamboo groves, halophyte formations, forest plantations, agroforestry parks, etc.), agroforestry ecosystems, fluvio-lacustrine ecosystems with in particular the Senegal, Saloum, Gambia, Casamance and Kayanga rivers and the lakes of Guiers, Tanma and Retba (Lac Rose) and finally coastal ecosystems thanks to the existence of a coast of more than 700 km.

Furthermore, Senegal is home to a number of terrestrial, fluvial and marine Key Biodiversity Areas, i.e. nationally identified sites that contribute significantly to the global persistence of biodiversity. Large part of these KBAs are protected areas, managed as national parks, wildlife reserves, Biosphere Reserves or other, in order to conserve globally significant biodiversity. A number of these KBAs (Delta du Saloum and Niokolo-Koba) are developed below, as they are part of or buffer the suggested project landscapes and are believed to directly benefit from project interventions.

Because of the contribution of biodiversity in people's lives and livelihoods, and its contribution to the socio-economic development of the country, many efforts have been made by the Government of Senegal and its conservation partners. This includes the creation of protected areas as well as the adoption of policies and regulations, and a reintroduction of traditional conservation practices. Despite these efforts, the potential of the country's natural resources and biodiversity continues to be affected by various factors.

In Senegal, the major causes of biodiversity loss are attributed to various pressures (Table 1) such as the destruction and fragmentation of habitats (urbanization, construction of dams, bush fires, etc.), the overexploitation of resources and their illegal removal, invasive plants, pollution, coastal erosion, salinization and acidification, climate change, etc. To these are added social, political, legal and institutional factors such as poverty, the poor consideration of the conservation of biological diversity in certain sectoral policies, the insufficiency and lack of application of legal texts and regulations and the low level of synergy between institutions responsible for biodiversity conservation.

Table 1. Summary of the main pressures and threats on the various types of ecosystems in the country

	Forest ecosystems	Coastal ecosystems	River and lake ecosystems	Agricultural and pastoral ecosystems
Specific factors	Bush fires Extension of agricultural land Logging Overgrazing Transhumance Charcoal production Mining Conflict and insecurity	Coastal erosion Pollution Extraction of sea sand Conflicts Mining activities	Salinization Invasive species Hydro-agricultural developments, Siltation	Selection of varieties Poor cultivation practices and techniques Overgrazing Disintegration of the agro-pastoral system
Cross-cutting factors	Climate change Overexploitation of biological resources Poaching Urbanization Legal, institutional and scientific factors Poverty			

Source: CBD strategy and action plan-Senegal

In alignment with the vision of the Emerging Senegal Plan (PSE), a reference for all the country's public policies, Senegal embarked on an inclusive and participatory process to revise and update this important planning instrument in favour of biodiversity. It is within this framework that the National Strategy and its Action Plan for the conservation of biological diversity were developed with the vision that "*By 2030, biodiversity will be restored, conserved and enhanced to provide goods and services in a sustainable manner with an equitable sharing of benefits and advantages in order to contribute to economic and social development*". In order to make this vision operational, Senegal has defined four strategic axes:

(a): Improving knowledge on biodiversity and strengthening institutional and technical capacities for the implementation of the Strategy;

(b): Pressure reduction, restoration and conservation of biodiversity;

(c): Promotion of the inclusion of biodiversity in economic and social development policies;

(d): Promotion of the sustainable use of biodiversity and mechanisms for access to biological resources and for the fair and equitable sharing of the benefits arising from their exploitation.

The project interventions align to this new vision and will be geared towards **mainstreaming biodiversity conservation and sustainable use into production landscapes which** has been recognized as a part of the Convention on Biological Diversity's (CBD) Strategic Plan and the Aichi Biodiversity Targets.

Along the coast the project will undertake various land restoration activities in the buffer zone of the Delta du Saloum Biosphere Reserve (RBDS) which is located in west-central Senegal in the Sine Saloum natural region. It will also **strengthen coordination** of "The Saloum mangrove platform" which is a framework for consultation and harmonization of interventions put in place for reconciliation between the preservation of natural resources and their sustainable use, in accordance with the principles of the Sine Saloum Biosphere Reserve. RBDS ecosystems provide a wide variety of environmental, ecological, scientific, educational, social, cultural, spiritual and economic benefits. The Delta du Saloum Biosphere Reserve (KBA) is home to a significant portion of Senegal's wildlife and plant resources. There are 95 species of birds, 114 species of fish, 35 species of large and medium fauna as well as 186 species of woody vegetation, including rare, threatened or likely to be species, such as bay colobus (*Procolobus badius temmincki*), African manatee (*Trichechus senegalensis*) and Atlantic humpback dolphin (*Sousa Teuszii*).

The project intervention area also buffers the Niokolo-Koba National Park. This 913,000ha large area consists of gallery forests, savannah grass floodplains, ponds, dry forests, and barren Bowés. Thanks to its remarkable plant diversity, a rich fauna is present: the Derby Eland (the largest of African antelopes), chimpanzees, lions, leopards, elephants, and many species of birds, reptiles and amphibians. The Biosphere has an important socio-economic role for the local populations. However, an ever-growing population in the buffer zone is a challenge in terms of conservation, [30] and despite its PA status, the National Park has seen a decline due to poaching, fire within and outside the park, invasive species, illegal logging, livestock grazing and other mainly human pressures.

Target landscapes

Selection process. Selection of the target landscapes was carried out on the basis of a multi-criteria review jointly with the main stakeholders and in line with the national LDN objectives and global LDN guidelines and included the following considerations:

·   Existence of the multiple typical problems regarding natural resource management, such as land degradation due to natural conditions (wind or water erosion) and unsustainable use, complexity of terrain and geographic features, soil conditions, patterns of the local agricultural activities and lack of regulatory mechanisms leading to land degradation;

·   The importance of the agricultural sector to the region (GDP share and share of the population employed);

·   Land degradation severity and hot spots from the UNCCD indicator assessments;

·   Complementarities with other relevant on-going projects;

·   Contribution to the national LDN targets;

·   Existence of SLM practices (bright spots);

·   Diversity of land tenure governance;

·   Degree of impacts in particular vulnerable groups;

·   Possibility of multiple benefits (other SDG targets leverage);

·   Landscape and social resilience potential;

·   Demonstrated community capacity for adaptive learning;

·   Diversity among beneficiary diversity groups;

·   Potential for replication in other regions.

In order to understand the landscape one needs to uncover the detailed patterns of production and degradation at play, the changes over time, the drivers, or levers that control the changes. It also requires identifying the key remaining natural values that have managed to persist despite pressures from food production and other factors. In the present case, these consist of a relatively resilient, natural processes that have managed to persist, albeit typically at a diminished level of performance.

The project will cover 4 landscapes in the agro ecological zones of the **Peanut basin** (Fatick, Kaffrine, Diourbel, regions) and **East Senegal** (Tambacounda) as seen in Figure 3. The four adjacent regions stretch East to West and represent three out of four agro-ecological zones of Senegal (Southern Guinea Savannah, Semi-arid/Sudan Savannah, and Northern Guinea Savannah) and two out of three climate zones (tropical Savannah and warm semi-arid climate). A diversity of ecoregions represent a continuous mosaic of land uses dominated by rain-fed and fallow croplands, shrub and tree savannahs, forests, and marshes.
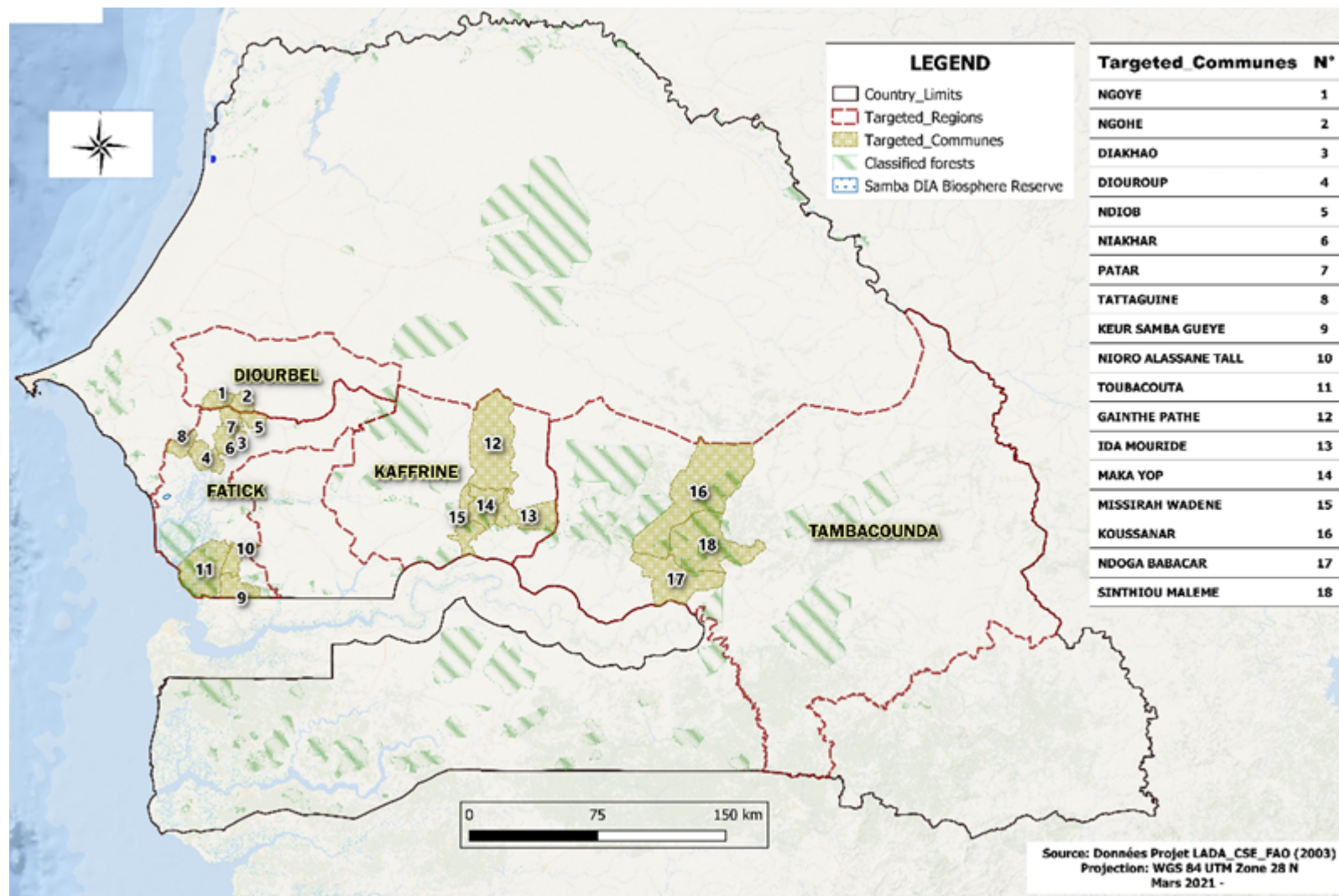
LEGEND

- ☐ Country_Limits
- ⬚ Targeted_Regions
- ▨ Targeted_Communes
- ◹ Classified forests
- ⬚ Samba DIA Biosphere Reserve

Targeted_Communes	N°
NGOYE	1
NGOHE	2
DIAKHAO	3
DIOUROUP	4
NDIOB	5
NIAKHAR	6
PATAR	7
TATTAGUINE	8
KEUR SAMBA GUEYE	9
NIORO ALASSANE TALL	10
TOUBACOUTA	11
GAINTHE PATHE	12
IDA MOURIDE	13
MAKA YOP	14
MISSIRAH WADENE	15
KOUSSANAR	16
NDOGA BABACAR	17
SINTHIOU MALEME	18

Source: Données Projet LADA_CSE_FAO (2003)
Projection: WGS 84 UTM Zone 28 N
Mars 2021 -

Figure 3. Project target communes and their linkages to KBAs and classified forests

Briefly, the individual landscapes are as follows:

1.   Fatick-Toubacouta Landscape. Located in the coastal area, the core area of the landscape covers an area of 114,286 ha. It includes three communes (Toubacouta, Nioro Alassane Tall, Keur Samba Gueye) with 114,637 inhabitants. The analysis of the pedological resources shows the existence of four types of soil: Dior soils (ferruginous-tropical), Deck-Dior soils (clayey- sandy), Deck soil (rich in mineral elements and organic matter, which gives them their grayish or even black color, thanks to their fine clay texture, they have a high water retention capacity; these soils suitable for market gardening and rice cultivation),

the tannes (acidic and hyper salty, and not suitable for agriculture). This landscape is distinguished by the importance of its natural resources and the remarkable biological diversity found there. Large part of this landscape is home to the KBA Delta du Saloum. Human uses within the park include nature conservation, tourism, and gathering of grasses and other plant products. Activities in areas around the site include livestock-rearing, agriculture (mainly growing of millet), fishing and hunting. The region has an important natural heritage: classified forests, marine protected areas, community reserves, national parks and biosphere reserves. Natural resources in this landscape are exposed to numerous chemical degradations (salinization of the land, reduced fertility, reduced organic matter content); biological degradation (reduced vegetation cover, adverse effects of fires, habitat loss, decline in species composition); physical degradation (soil compaction, sealing and encrustation); and water and wind erosion (erosion of banks, loss of topsoil by wind erosion, gullying). The climate-related changes observed in this area can be classified as follows: changes linked to the decrease in rainfall; changes related to sea level rise and coastal erosion.

2.   Fatick- Diourbel Landscape. This production landscape has an area of 112,977 ha and comprise 9 contiguous communes (Niakhar, Patar Sine, Ndiob, Diakhao, Diouroup, Tattaguine, Ngohé, Ngoye) with 259,896 inhabitants. The soils in the landscape are mainly of the "dior" type, poor in organic matter, nitrogen and phosphorus, but favorable to the cultivation of groundnuts, millet, cowpeas, cassava and watermelon. The hydromorphic "deck" soils cover nearly 15% of the land, particularly in areas suitable for cereal crops (sorghum) and market gardening. The "deck-dior" soils represent only a few pockets. Groundnut cultivation, practiced on very favorable soils ("dior"), is the main source of income. Millet, which also grows very well on this type of soil, is the food base of the population. The area continues to face significant land use pressure. The constraints for the agricultural sector are: land degradation; the inadequacy of land legislation; strong increase in water salinization; poor modernization of the agricultural sector; rainfall deficit; difficulties in accessing inputs and obsolescence of agricultural equipment; insufficient water resources; low level of production marketing (absence of processing units, unsuitable marketing channels); low valuation of agricultural products.

3.   Kaffrine Landscape. The core area of the landscape covers approximately 251,985 ha of rural domain located in central Senegal, in the peanut basin. It includes four communes (Missirah Wadène, Maka Yop, Ngainthe Pathè, Ida Mouride) with 86,508 inhabitants. The climate is Sudano-Sahelian with a short rainy season from June to October. Temperatures are generally high with significant variations (between 26 and 39 ° C). The soils encountered in the region are of three types: tropical ferruginous soils exploited for the cultivation of groundnuts and millet; hydromorphic soils characterizing lowlands and rivers, with a generally clayey texture, called "deck" with "deck-dior" variants; halomorphic soils, characteristic of salty or tan environments. The soils of the region are characterized by continuous impoverishment linked to human action and natural factors. Salinization also remains a major problem that strongly affects productivity; degradation of the forest, water and wind erosion, and irregular rainfall among others, are the greatest challenges facing local stakeholders. In the face of these challenges, governance issues are mainly related to inherent problems either in public institutions or in community behaviour. Kaffrine is one of the poorest regions of Senegal with a very high poverty rate (63.8%) compared to the national level (46.7%). The constraints remain poor soils, the low use of quality seeds, insufficient human resources for basic technical services (agriculture, livestock, environment), insufficient logistical means for collecting and monitoring products or statistics, the low level of development of production areas, the low level of control of surface water, the absence of structures for the conservation and processing of products, the difficulties of marketing agricultural products and the difficulties of access agricultural credits.

4.   Tambacounda Landscape. This production landscape is located in *Eastern Senegal*, and in particular its northern and western pastoral and agricultural areas. It has an area of 397,898 ha which covers three communes (Sinthiou Malème, Koussanar, Ndoga babacar) with 72, 584 inhabitants. The soils are very diverse, but with a predominance of weakly evolved tropical ferruginous soils (siliceous sand), little leached tropical ferruginous soils (sandy clay or with ferruginous concretion), subarid brown soils, subarid red brown soils. From a climatic point of view, rainfall is characterized by a great spatio-temporal

variability. Groundnuts and cotton are the main cash crops, peanuts can also be counted among the food crops. In some villages, the sale of market garden produce is an important source of additional income. The landscape is rich in natural resources, but these resources are subject to significant degradation, whether of natural or man-made nature. The main forms of degradation recorded are chemical (decrease in fertility), biological (reduction in plant cover, bush fires, loss of habitats, loss of biodiversity, reduction in halieutic biomass), physical (compaction), water and wind erosion (loss of topsoil by surface erosion, gully erosion, bank erosion), and those relating to water resources (narrowing of surface water, reduction in the capacity of backwaters, reduction in capacity wetland buffer). Furthermore, the landscape buffers the KBA Niokolo-Koba, which is under pressure because of growing population growth in its surrounding areas, needing increased agricultural outputs (delivered by expanded agricultural land into classified forests or protected land in the KBA, rather than sustainable production intensification).

The four project landscapes represent the focal areas for the majority of project activities and are representative of the main problems facing, and generated by, the food production system in Senegal. The landscapes are centered on production areas, most of which have been subject in recent years of extensive and relatively rapid deforestation and degradation. The land productivity in these areas is not high and productivity has been declining in recent years as soils are exhausted. However, techniques and models are available, particularly those associated with agro-forestry, that have the potential to significantly increase the overall productivity of many of these areas, while improving livelihoods for their inhabitants and restoring lands and ecosystems services including biodiversity. Multi-stakeholder dialogue at landscape level can help to raise up lessons learned at smaller scales, e.g. innovations at pilot farms, thereby facilitating uptake, replication and transformative change at landscape level and beyond. The proximity and interconnection between production land and natural land in the mixed-use target landscapes (in the KBAs identified above) will be managed in a holistic fashion. Interventions on production land (SLM for LDN) is therefore believed to positively contribute to BD conservation efforts in natural land.

Region	Department	Districts	Communes	Population	Male	Female	Area (ha)	Latitude	Longitude
Fatick	Fatick	Niakhar	1. Niakhar	35 993	17 535	18 458	18 146	14°28'52.48"N	16°23'51.74"W
			2. Patar Sine	31 808	15 744	16 064	11 846	14°33'44.75"N	16°22'59.25"W
		Ndiob	3. Ndiob	23 993	11 978	12 014	12 530	14°32'35.33"N	16°15'25.06"W
			4. Diakhao	5 546	2 516	3 030	1 154	14°27'42.97"N	16°17'28.85"W
		Tattaguine	5. Diouroup	29 270	14 268	15 001	24 830	14°21'56.57"N	16°31'34.56"W
			6. Tattaguine	38 457	19 323	19 133	15 656	14°25'6.58"N	16°36'21.84"W
		Toubacouta	7. Keur Samba Gueye	29 661	14 646	15 015	23 960	13°36'12,58"N	16°36'12.22"W
			8. Nioro Alassane Tall	40 898	19 807	21 091	19 302	13°59'27,58"N	16°33'60.30"W
			9. Toubacouta	44 078	22 089	21989	71 024	13°59'28,21"N	16°46'59.30"W
Diourbel	Diourbel	Ngohé	7. Ngohé	37 489	18 439	19 050	12 859	14°37'43.18"N	16°17'40.40"W
	Bambey	Ngoye	8. Ngoye	57 340	28 392	28 948	15 956	14°38'30.06"N	16°26'2.70"W
Kaffrine	Koungheul	Missirah Waden	9. Missirah Wadène	24 293	12 543	11 751	35 292	13°59'13.15"N	15° 6'54.95"W
		Missirah Waden	10. Maka Yop	17 771	8 874	8 898	37 414	14° 2'9.02"N	15° 1'27.35"W
		Missirah Waden	11. Ngainthe Pathè	19 915	10 144	9 771	129 252	14°16'44.05"N	14°55'45.27"W
		Ida mouride	12. Ida Mouride	24 529	12 514	12 015	50 027	13°59'15.50"N	14°39'51.80"W
Tambacounda	Tambacounda	koussanar	13. Sinthiou Malème	25 605	13 307	12 298	116 872	13°49'6.09"N	13°55'16.00"W
		Koussanar	14. Koussanar	33 746	17 022	16 724	194 828	13°51'57.62"N	14° 4'45.39"W
	koumpentoum	Maka koulibantha	15. Ndoga babacar	13 233	12 566	25 798	86 198	13°43'55.59"N	13°57'54.94"W
			Total	533 625	271 707	287 048	877 147		

Population projection of Senegal / MEFP / ANSD - October 2015 - Updated in January 2021
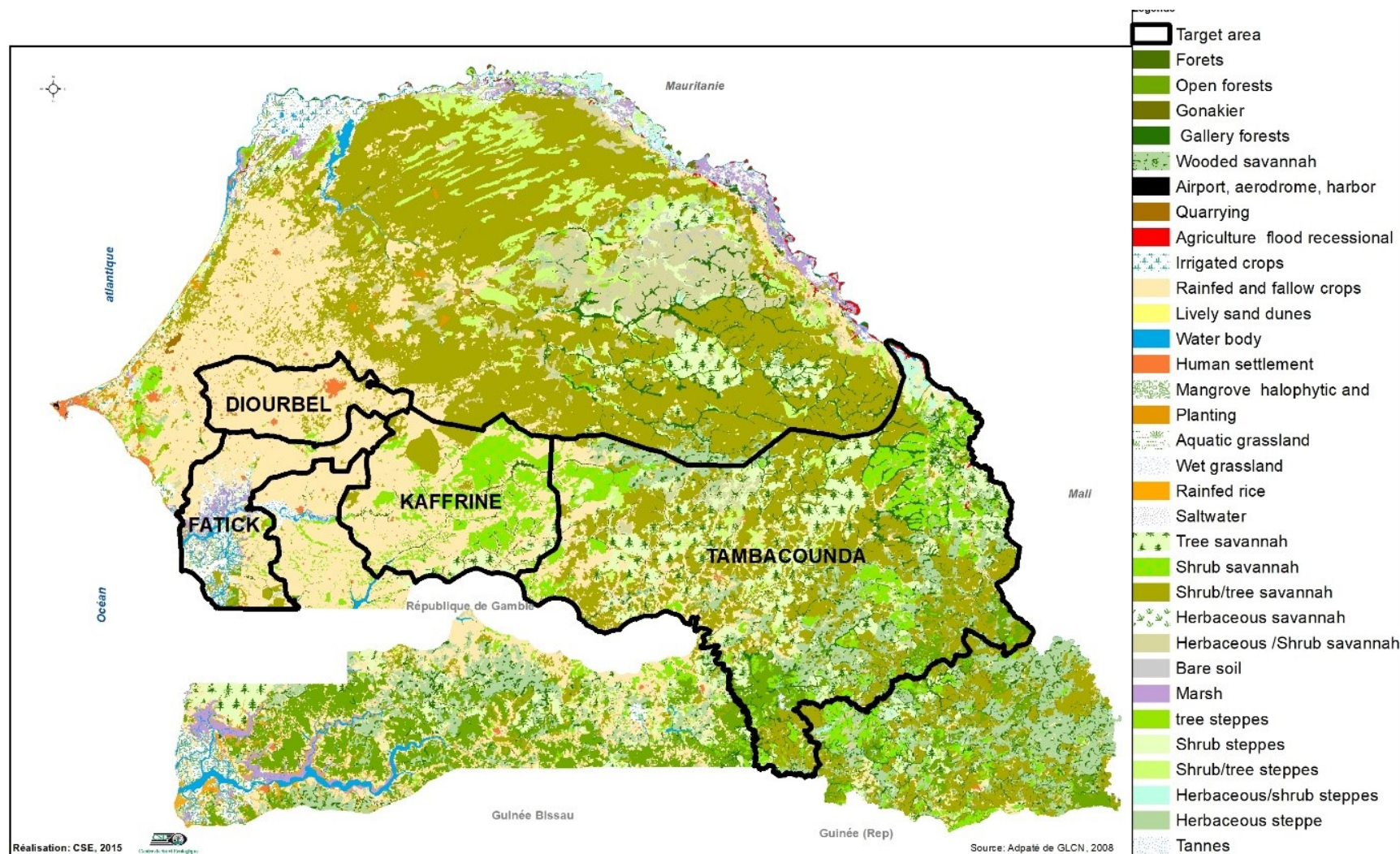
Table 2: A synthesis of the project target communes.

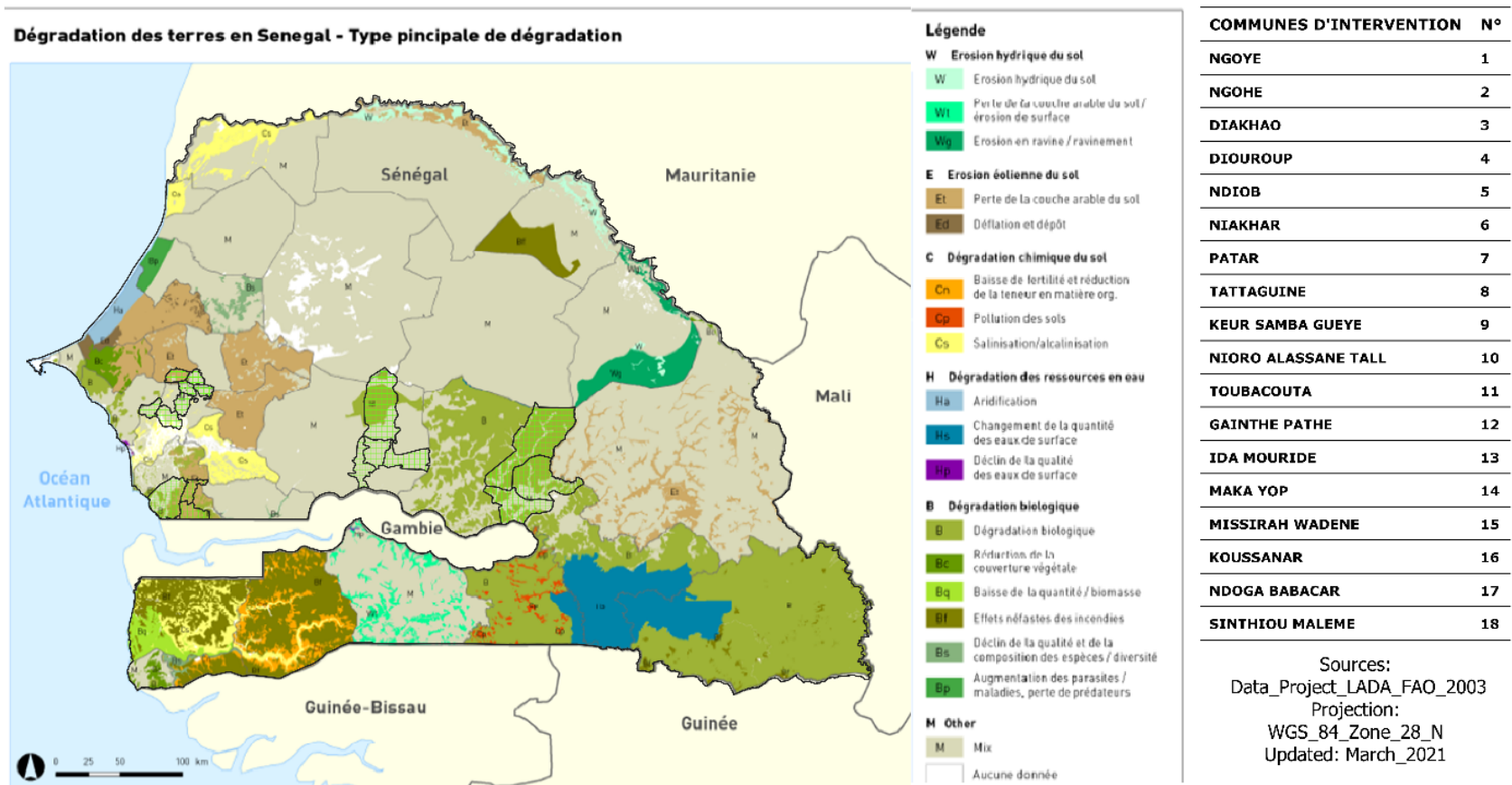Figure 4. Land use systems in project target regions.

Dégradation des terres en Senegal - Type pincipale de dégradation

Légende

W   Erosion hydrique du sol
- W — Erosion hydrique du sol
- W1 — Perte de la couche arable du sol / érosion de surface
- Wg — Erosion en ravine / ravinement

E   Erosion éolienne du sol
- Et — Perte de la couche arable du sol
- Ed — Déflation et dépôt

C   Dégradation chimique du sol
- Cn — Baisse de fertilité et réduction de la teneur en matière org.
- Cp — Pollution des sols
- Cs — Salinisation/alcalinisation

H   Dégradation des ressources en eau
- Ha — Aridification
- Hs — Changement de la quantité des eaux de surface
- Hp — Déclin de la qualité des eaux de surface

B   Dégradation biologique
- B — Dégradation biologique
- Bc — Réduction de la couverture végétale
- Bq — Baisse de la quantité / biomasse
- Bf — Effets néfastes des incendies
- Bs — Déclin de la qualité et de la composition des espèces / diversité
- Bp — Augmentation des parasites / maladies, perte de prédateurs

M   Other
- M — Mix
- Aucune donnée

COMMUNES D'INTERVENTION	N°
NGOYE	1
NGOHE	2
DIAKHAO	3
DIOUROUP	4
NDIOB	5
NIAKHAR	6
PATAR	7
TATTAGUINE	8
KEUR SAMBA GUEYE	9
NIORO ALASSANE TALL	10
TOUBACOUTA	11
GAINTHE PATHE	12
IDA MOURIDE	13
MAKA YOP	14
MISSIRAH WADENE	15
KOUSSANAR	16
NDOGA BABACAR	17
SINTHIOU MALEME	18

Sources:
Data_Project_LADA_FAO_2003
Projection:
WGS_84_Zone_28_N
Updated: March_2021

Figure 5. Types of land degradation

The project will target **four barriers** that prevent the achievement of LDN in Senegal:

Poor dissemination of sustainable land management best practices and resilience-enhancing approaches. SLM concepts in family farms production systems are not oriented towards resilient systems based on the integrated landscape approached. Small farmers predominantly believe that the best way to minimize risk is to maximize the output, with little regard for land or ecological health and function. Further, small farmers are generally risk averse, hence they are slow and reluctant to adopt new technologies or practices believing that they result in higher investment with low results. The production of agricultural products in family farms is of great social importance, since it is an important source of income and food security. However, a large number of small size of land plots makes it difficult to adopt and use modern technologies and to reach "economies of scale". Knowledge, practices and know-how is fragmented and is not systematically made available or used by agricultural extension services. Lack of capitalization and dissemination of innovative results or insufficient access to data limits the effective targeting of land degradation interventions and the assessment of the impact of policies and investments. More participatory monitoring is needed both to improve the use of data by communities and to ensure land management assessments are carried out and coordinated. The knowledge needs to be institutionalized so that products are used systematically by different stakeholders. Therefore, it is important to combine approaches and measures that build the capacity of agro-sylvo-pastoral producers to apply the conceptual framework of LDN to withstand shocks and to adapt to the threats of climate change while aiming at improving their food and nutritional security and increasing their incomes. While representing the majority of rural assets, women and youth have lower access to these technologies. Activities under **Component 1** will catalize the adoption and dissemination of SLM practices.

Limited scientific knowledge and data. Most data needed for evidence-based decision-making on land management is either old, irrelevant, or isolated. Several studies have been carried out often localized to a specific geographic area not fully representing the socio-economic realities of the country. While there are national outdated studies on land cover change (primarily for forests), extensive and up-to date analysis and data at scale are missing, in particular on the SOC and land productivity. Concensus on a national methodology for land degradation status and SLM assessment, and a centralized SLM knowledge management system are lacking. As a result, local communities do not have access to knowledge materials on alternative practices and their benefits, severely undermining responses oriented towards resilience. Most farmland in the national domain is neither mapped nor demarcated[31] which is a key obstacled for ensuring food security and protecting community rights.

Integration of sustainable land management and land tenure into policy implementation and local development plans. Most of the frameworks set up for participatory natural resource management have remained sluggish, thus failing to ensure the integration and promotion of traditional natural resource governance in many regions. Such governance systems have been eroded by population growth and poverty, changes in tenure and the need to strengthen property rights for women and youth. Senegalese farmers are, in fact, currently in a situation of illegality when they sell, inherit, or rent the land that they cultivate.While awareness of these challenges is growing, there is still a lack of knowledge and capacity in securing and managing land sustainably, including lack of knowledge of shared farming practices and SLM. At the policy level there are serious gaps related to integrated management of land, and a lack of a harmonized agro-environmental strategies and financing mechanisms that could support the implementation of LDN and institutions lack relevant information to mainstream SLM. Despite being integrated within the boundaries of the landscapes and administrative units, the responsible Government agencies do not have a joint coordination mechanism and instruments for spatial, local and administrative planning. Insufficient integration of strategies of line ministries involved in various aspects of land management leads to silos and weak SLM mainstreaming in sectoral policies, which is unfavorable to LDN.

Improving governance through greater involvement of local and regional authorities is key to sustainable land management, and innovation is needed to put in place effective coordination mechanisms that are accepted and respected by stakeholders (agro-forestry producers, traditional authorities, local authorities, central line ministries). Results of LADA analysis (2010) concluded that the lack of appropriate soil fertility strategies during the expansion and intensification of agricultural activities resulted in a dramatic drop of crop and labour productivity. Target interviews demonstrated that the capacity constraints is the single most important reason for inability to scale out SLM. Capacity building of institutions for natural resource governance and strengthen local livelihoods are developed in **Component 2**.

Limited development of inclusive value chains. Agricultural sector has a crucial role to play in job creation and rural poverty eradication in Senegal. Emerging Senegal Plan (PSE) – a framework policy for economic and social development to Senegal an emerging economy by 2035 - identifies the weak structure of agriculture value chains as a major constraint to agricultural development. Coherence of local authorities' interventions around land degradation issues and linkages with private sector to facilitate access to agricultural financing is still limited. In this context, strengthening the participation of young people and women in agriculture and sustainable food systems can potentially reduce rural poverty, but also maintain all the dynamics of sustainable SLM practices. The territorial approach helps ensure the integration of young people and women into wealth creation mechanisms based on the real commitment of the actors and regional capacities. Under **Component 3**, private investment will facilitated through improved access to financial services and development of stronger value chains.

To overcome these barriers, **Land Degradation Neutrality (LDN)** has been proposed as an overarching approach to guide different organisational levels of the project, combining the various social, economic, and environmental challenges under a single guiding holistic participatory methodology to ensure no future loss in quantity and quality of productive land.

Lessons learnt from previous SLM initiatives.

Senegal has benefited from several GEF and LDCF projects, on sustainable land management and restoration, including in the Groundnut Basin over the last fifteen years. Relevant lessons learned in project management, dissemination strategy are synthetized in an annexed document and will help the team adopt successful routines and avoid pitfalls from previous projects. Below is a **summary of lessons learned for the development of the project strategy (see Theory of Change section)**

Project approach

Project **beneficiary selection criteria** should be selected during the PPG to avoid confusion during implementation (lesson learned from the project GEFID 5566). The proposed project identifies target landscape criteria and target landscapes already at the PIF stage.

The ongoing project GEFID 5867 is assisting 24 **Economic Interest Groups that are essentially made up of women** in the project's sites. The proposed project identifies a strategic and meaningful role for women.

M&E

The project should put in place an operational **manual for Monitoring and Evaluation** that will detail the harmonized procedures and tools to capitalize on the project outcomes for monitoring and evaluation during the implementation (lesson learned from the project GEFID 5566).

Sustainability

The project should develop an **exit/continuation plan** at least six months before the official end date to avoid adversely affecting the project results afterwards (lesson learned from the project GEFID 5566). The project strategically follows the LDN guidelines and will ensure the sound governance and sustainability mechanisms (Components 1 and 3).

Technology introduction and scaling out

The project should develop a **technology introduction procedure early on in the process**. Technology characteristics on flexibility, accessibility, and scalability will be analysed during the PPG and the technology introduction procedure will be developed during the PPG. It will build on the experiences available in the country, local know-how, the Global WOCAT database, and stakeholder consultations. A cost-benefit analysis may be utilized. The lesson learned from the project GEFID 5566 showed that introduced technologies could be abandoned without a substantial participation of the beneficiaries. Success factors behind previously strengthened value chains and introduced technologies for avoiding, reducing, and reversing LD will be concisely and consistently summarized. These will include lessons from the project GEFID 2268 on bee-keeping, mangroves and oyster strings, introduction of fruit trees in compounds and community orchards, amongst others. Technologies generating co-benefits, such as for example carbon sequestration, will be considered (lesson learned of the project GEFID 3386).

Exchange visits between beneficiaries and stakeholders – such as line ministries, sector heads, farmers and herders - to share the successful experiences enables capacity development and dissemination of SLM best practices (lesson learned from GEFID 2511).

Communication

A clear **dissemination and communication plan** to install innovative or existing technologies requires specification of the objective, such as demonstration or outreach for scaling up (lesson learned from the project GEFID 5566).

Likewise, through **awareness raising** conducted by the project during local workshops, radio and television programs broadcasted at the regional and local levels and advocacy done by CQG, **women** spoke in meetings and participated in decision making, which has allowed to take into account their demands in the budget and encouraged the adoption by CR of deliberations to grant land to groups of women.

Access to finance

Senegal has mixed experience with access to finance. Collaboration with the mutual saving and credit banks under the project GEFID 2268 allowed producers to improve their banana production thanks to input credits. While another example showed that *"access to microcredit does not always live up to its promises of prosperity, especially when loans are used to finance activities that do not generate profits. It can be difficult to repay the value and accrued interest at the date of repayment of the loan, and when individuals borrow increasingly higher amounts from different institutions to repay loans (with interest) previously contracted with other institutions… In some projects, financial mechanisms are developed with a view to be managed by Community Based Organizations established by the project which rarely have the competence required to pursue the management and services autonomously when support ends"* (lesson learned from GEFID 2511). The key success factors behind access to finance in this project were the following:

1) Selecting the partner that has an overlapping mission with the project objective (including gender), as well as sound credit portfolio, and good transparency track record.

2) Supporting only supports productive activities evaluated by feasibility studies and imposes a set of conditions that prevent farmers to get trapped in a debt spiral;

3) Integrating SLM and NRM criteria in the identification of income generating activities to be supported by the micro-credits.

4) **Women's groups** in particular have demonstrated ownership and creative integration of microfinance. The groups demonstrated an enhanced vision of the possibilities to grow their assets from loans and small grants and of potential benefits to eventually meet their daily needs. Stakeholder consultation leadership is a key to ensure success of meaningful gender mainstreaming.

Land tenure

Experience has showed that special attention should be given to *"the terms and conditions of contracts, conventions or other forms of agreement that define the rights and obligations of the parties in NRM to ensure that the investment of local populations (in-kind and financial) are secure or fairly compensated in the event of changes in the use of lands they have contributed to improve and that would affect their access to cultivable land of good quality and natural resources"* (lesson learned from GEFID 2511).

In the same project, thanks to awareness actions made during workshops and through **Gender** Quality Circles, Rural Councils have adopted deliberations for the granting of good quality and well-located land to women groups. Since 2011, some women sit on domanial commissions for the allocation of land. Whereas before poorer quality plots were allocated to women, they now have access to plots closest to houses as well as plots with good soil quality.

Market prices monitoring

Given the large variations in selling prices of natural resources (e.g. fodder) from one place to another and in order to maximize profits of village communities, it is recommended to projects and technical services to support them in the commercialization and marketing of products derived from the rational use of natural resources, particularly for determining fair and equitable selling prices on the basis of continuous information about regional and national markets.

a.   The baseline scenario or any associated baseline programs.

The Senegalese Government has been putting considerable efforts toward improving its population's living conditions intertwining food security and sustainable development by establishing a favourable policy environment, and national and international initiatives. There is a wide package of SLM options developed and tested by research organizations and implemented on the ground, many of which are documented in the WOCAT SLM database. The country has central and decentralized structures whose mission it is to develop, implement, and monitor national policies and NRM initiatives. There's a large number of legal instruments and sectoral plans of relevance to NRM, and specifically on SLM, with a track record of their implementation. Senegal is well set up institutionally – decentralized structures made up of local authorities (Regions, Communes, Rural Communities) are empowered to manage their land and implement public policies; there is a large number of research institutes, NGOs, extension agents and private sector entities (see Stakeholders section). Senegal actively participates in several relevant platforms, such as "Saloum Mangrove Platform" and "Platform on Land Governance" (see Knowledge Management section for details).

National baseline initiatives

Social development

The past twenty years have been characterized by the succession of several important governmental economic and social policy strategies, the main ones being the two **Poverty Reduction Strategy Papers (DSRP I 2003-2005 and DSRP II 2006-2010)** and the **Economic and Social Policy Document (DPES 2011-2015)** replaced in 2012 by the **National Strategy for Economic and Social Development (SNDES 2013-2017)**. In December 2013, the government launched the **Emerging Senegal Plan (PSE)**, an accelerated version of the SNDES, which, since enactment, has been the reference for economic and social policy in the medium and long term with the aim of making Senegal an emerging economy by 2035. All these governmental economic and social policy frameworks are structured around three main areas identified as priorities: (i) growth, productivity and wealth creation; (ii) human capital, social protection and sustainable development; and (iii) governance, institutions, peace and security.

Other key policies, laws, and regulations:

· National Health and Social Development Plan (PNDSS) 2019-2028.

Agriculture, food security, and rural development

The government aims to make agriculture an engine of economic growth, as stated in the **Agro-Sylvo-Pastoral Orientation Law (LOASP)** enacted in 2004, which constitutes the legal framework for the development of agriculture in Senegal for the next 20 years. The adoption of this law resulted in the formulation of several operational programmes such as the **National Agricultural Development Programme**, the **National Livestock Plan** and the **Grand Agricultural Offensive for Food and Abundance (GOANA)**.

In terms of growth, the **Accelerated Growth Strategy (SCA),** adopted in 2008 and then mainstreamed into the SNDES and the PSE, aims to double GDP and GDP per capita in 10 and 15 years, respectively. In order to achieve this, high potential key economic clusters have been identified, including: livestock, agriculture and agroindustry (cereals, horticulture, oleaginous and products from wild harvest), fish and aquaculture products.

Senegal has elaborated its **National Agricultural Investment Programme (PNIA)** and related Investment Plans in the context of the agricultural policy of the Economic Community of West African States (ECOWAS) and the Comprehensive Africa Agriculture Development Programme (CAADP). The investment plan focuses on eight specific objectives, among which the increase of inputs production and productivity; the enhancement of agricultural products value through further processing; and the improvement of market access for agricultural products. Senegal has devoted 10% of their national budgets to investments in agriculture by lending support in the form of inputs such as seeds, fertilizers, foods, cattle to farmers, as well as farming implements including ploughs, harrows, etc.), and mowing and hay compacting to ensure feeding productive animals in the dry season[32].

The Accelerated Programme for Agriculture in Senegal (PRACAS), the agricultural component of the PSE, was launched in February 2014. It is built around the vision of a competitive, diversified and sustainable agriculture sector that would be the major source of economic development. This programme aligned with the previous agriculture development programmes, thus maintaining continuity. The government decided, as an initial step, to focus its investments on strategic products with the objectives of achieving rice and onion self-sufficiency, and then **optimizing the performance of the groundnut sector** and developing the off-season fruits and vegetables sector. The programme will then progressively cover all main agricultural commodities.

Agriculture and Livestock Competitiveness Program (P164967), Results-Based Program Loan (PPR) (2020). The objective of the Program is to improve productivity and market access to the value chains of priority agricultural commodities in the groundnut and livestock products production zone and throughout the national territory. It is part of the implementation of the Government of Senegal's programs, the Senegalese Program for Accelerating the Rate of Agriculture (PRACAS II), the National Livestock Development Plan (PNDE), as well as the Guidance Note for the Development and Optimization of Performance of the Groundnut Sector in 2018. The program's areas of intervention will focus on three results areas: improving the productivity and resilience of crops and livestock; improving the business environment and market integration; and improving the governance, coordination and management of programs in the sector. The document provides for actions to strengthen stakeholders in the processing of agricultural products at different levels of the value chains with the aim of contributing to reducing the frequency and incidence of food risks in rural areas in view of climatic hazards. The document emphasizes that access to agricultural products at lower cost will contribute to improving food security and nutrition, especially for vulnerable populations. Other expected effects of the program are: improving air quality by reducing greenhouse gas (GHG) emissions; promoting integration between agriculture and livestock; better management of conflicts between farmers and livestock breeders; combating deforestation and desertification; soil restoration and fertilization; and improving water management. Among other actions planned with regard to food, is to emphasize the promotion of farmers and livestock breeders' groups for food security in favour of poor households; and the increase of agricultural and livestock yields as well as that of production leading to the improvement of food availability and access of households to household food and household food security in the long term. Second, the document emphasizes that the proposed program will be used strategically to strengthen Senegal's environmental and social management systems by building the human, financial and logistical capacity of key institutions to promote best practices, provide quality assurance and monitor compliance. The program should invest in the training of technical specialists, extension workers and farmers in integrated soil fertility, pest and crop management for long-term environmental sustainability, and livestock advisory services. To improve implementation capacity, the program should have environmental and social development specialists, provide training in environmental risk management for relevant departments, and ensure that projects and sub-projects subject to EIA procedures are properly selected and their potential risks managed through an environmental and social management framework. For efficient use of agricultural inputs and monitoring of environmental impacts and food safety, the program should establish baselines for the use of organic fertilizers and pesticides and adopt an integrated approach to soil fertility and crop/pest management. Another objective of the program is the improvement of the social and economic living conditions of the populations and concretely the implementation of investments that have been strategically identified and that increase the resilience of rural populations to climate change. In addition, the program aims to strengthen the role of women in decision-making at the household level and their knowledge of agro-pastoral product processing and marketing chains. In addition, the preparation of the ESES and the development of measures to strengthen environmental and social management systems has benefited from diverse information and a broad consultation process, and the ESES Action Plan will be an integral part of the Program's Global Action Plan.

Other key policies, laws, and regulations:

· Agro-sylvo-pastoral orientation law (2004).

·   Ministerial Order No. 5122 MAEL-UPA establishing and organizing the National Rural Infrastructure Program (PNIR).

National Agricultural Investment Program for Food Security and Nutrition in Senegal (PNIASAN, 2018-2022)

Water management

Since the DSRP II (2006-2010), disaster risks prevention and management have become governmental priorities and growing attention has been dedicated toward flood management, especially after the recent severe floods in 2005, 2009, and 2012. This has led the government to launch a **Ten-Year Flood Management Plan (PDGI 2012-2022)** and to establish a ministerial department for the restructuration and planning of flood risk areas.

Other key policies, laws, and regulations:

·   Action Plan for the Integrated Management of Water Resources in Senegal 2007.

Land tenure and sustainable land and forest management

Senegal has developed the **National Strategic Investment Framework for Sustainable Land Management** (NSIF/SLM) with the objective that by 2026, the favourable political, legal, institutional, technical and financial environment will be able to reverse land degradation in all ecosystems in favour of sustainable production and the well-being of its people. This objective clearly highlights the development of value-added value chains by different stakeholders, including family farming. SLM is considered to be a pre-condition for achieving agro-sylvo-pastoral productivity for prosperity, food security and sustainable development opportunities in rural areas.

The National Strategic Investment Framework for Sustainable Land Management (NSIF-SLM) translates the Plan for an Emerging Senegal (PES)'s vision and strategic orientations. It reinforces the need for rationality, efficiency and effectiveness tackling land degradation. It also promotes the achievement of SDG-15 "Life on Land", and specifically target 15.3 on Land Degradation Neutrality (LDN), an opportunity to reduce land degradation increasing threats and to reap multiple socio-economic benefits deriving from LDN. The Framework will serve as a key guiding document for the project's LDN monitoring system.

The National Agro-sylvo-pastoral Development Fund (FNDASP)[33] has been created in 2004 following the adoption of the Agro-sylvo-pastoral orientation law; it is the technical and financial arm of the national agricultural advisory system, but also an instrument for rural people to finance the training of actors in value chains and large-scale dissemination technological innovations. The FNDASP is a vision of agricultural finance that relies on a demand-driven approach for

the benefit of value chain actors, in particular Senegalese producers. It finances in particular: agro-sylvo-pastoral advisory, training of producers and institutional support to producer organizations and agro-sylvo-pastoral research. Funding for the FNDASP is provided by contributions from the State, producers, local communities, development partners and the private sector.

The Constitution of 2001 recognizes economic and social rights, including the right to own property for every citizen. **The National Domain Law** was intended to limit the influence of ethnic and religious hierarchies; it encourages a more productive use of land and the creation of better condition for agricultural exports, while also giving control over land to decentralized government bodies. **The Rural Community Law** of 1972 established the structure for rural councils, which have the authority to allocate use rights to land and the criteria for the improvement of production-based on local development plans.

Decree No. 96-1134 implementing the law on the transfer of powers to regions, municipalities and rural communities, in matters of the environment and the management of natural resources. The GoS has also been involved in a process of decentralization of national policies, focusing on the existence of viable and competitive 'landscapes' that can bring about sustainable development through an inclusive, participatory and results-based approach involving multiple stakeholders. The Government has thus confirmed the importance it attaches to decentralization through (i) strengthening the capacities of local authorities thanks to targeted training programmes; (ii) the promotion of inter-municipal solidarity and cooperation, the harmonious collaboration between local authorities, the promotion of Territorial Clusters and (iii) the promotion of good local governance.

Senegal has set a national objective of **Land Degradation Neutrality** (LDN) to reduce the significant vulnerabilities resulting in (i) inter-annual variations in water storage depletion caused by the discharge process during years of rainfall deficit; (ii) the decrease in groundwater levels; (iii) the decline of woody vegetation in 2/3 of the country and of biodiversity (estimated at 30%); (iv) the acceleration of soil degradation resulting from the depletion of vegetation cover and the pressure exerted without proper restoration of soil fertility; (v) the increasing vulnerability of soils to water and wind erosion; (vi) the quantitative and qualitative deterioration of available forage; (vii) the decrease in storage capacity of ponds and water points due to excessive evaporation; and (viii) the low regenerative capacity of forest tree species due to climate change and anthropogenic pressure. The LDN Target-Setting Report also identified LD hot and bright spots based on the LADA analysis (2010).

In this context, the GoS has developed five voluntary national targets[34]:

1.   Over the 2020-2035 period, 18,809.96 km2 of **forest lands** will be restored and sustainably managed.

2.   Over the 2020-2035 period, 10,257.06 km2 of **grasslands and rangelands** will be restored and sustainably managed.

3.   Over the 2020-2035 period, 19,894.12 km2 of **cultivated lands** will be restored and sustainably managed.

4.   Over the 2020-2035 period, 1,147.58 km2 of **wetlands** will be restored and sustainably managed.

5.   Over the 2020-2035 period, 1,348.27 km2 of **marginal areas** (artificial lands, bare lands and others) will be restored and sustainably managed.

Other key policies, laws, and regulations:

·   Forest code (Law n ° 2018-25 of 12 November 2018).

·   Law on land ownership regime (Law n ° 2011-07 of March 30, 2011).

<u>Baseline investments mobilised as co-financing</u>

Sustainable value chains

Water Management for Value Chain Development project (Valorisation des eaux pour le développement des chaines de valeurs, **PROVAL-CV**) (2019-2024) aims at launching a strong economic growth process that is inclusive and sustainable and supports the improvement of well-being and livelihoods of rural poor. The project is financed by the African Development Bank for an amount of approximately EURO 60 million and the Africa Growing Together Fund (AGTF) EURO 26.7 million in the Niayes, Peanut Basin and Casamance agro-ecological zones) and it is implemented by the MAER. This change process is believed to be fuelled by the development of entrepreneurship and key value chains, contributing to improved income for rural populations. Management of surface and groundwater is the basis of the development of key agricultural value chains. Therefore, the project aims to develop over 12,000 ha of agricultural land and invest in pastoral and post-harvest infrastructure. It aims to benefit 300,000 people. The PROCAL-CV project will co-finance the proposed GEF project for a total amount of US$ 1.6 million. The project will facilitate the livelihoods development component 3 of the proposed GEF project.

Land tenure and land use planning

Senegal has developed a strategy based on a territorial approach to planning, which establishes the foundations for the sustainable development of local communities through an inclusive, participatory and rewarding approach involving all categories of stakeholders. It highlights a number of guiding principles: participation, equity and gender equality, solidarity, partnership, sharing of experiences, anticipation and sustainability.

Municipalities and Agglomerations Support Program (**PACASEN**) is part of a global approach aimed at supporting the operationalization of the Act III of Decentralization, contributing to a lasting improvement of local governance and of financial and human resources of all Senegalese TCs through the introduction of structural and multi-sectoral reforms. The implementation of this project illustrates Senegal's option to ensure the capacity building of local communities and to implement a training policy for locally elected representatives. This provides a solid basis for developing synergies to promote the integration into local policies of sustainable natural resource management approaches in order to increase resilience through the proposed GEF project. The PACASEN program is funded by the Government of Senegal (US$60 M), the World Bank (US$110 M), and AFD (US$90 M) (2018-2023), implemented and

supervised by the Ministry of Territorial Governance, Development and Regional Planning MCTDAT. The initiative will co-finance the proposed GEF project to the tune of US$ 4,2 million. This provides a solid basis for developing synergies to promote the integration into local policies of sustainable natural resource management approaches in order to increase resilience of the proposed GEF project.

Senegal Cadastre and Land Tenure Improvement Project financed by the World Bank is implemented by the Ministry of Finances and Budget (2020-2025). Total project financing is US$80 million. The project aims to strengthen the Government's capacity for the implementation of its cadaster at a national level and to improve the land use and property rights registration system in selected areas. The project has three technical components: Component 1: Strengthening land institutions and investing in infrastructures. The specific objective of this component is to strengthen the institutional capacities for implementing, monitoring, and supervising field operations and to provide the needed infrastructures required for a National Land Tenure Program. Component 2: Supporting land rights registration operations. The specific objective of this component is to undertake field operations using simplified operating modes and updated technologies, aiming at achieving an initial quantitative target in terms of the archiving of existing land tenure documentation, first-time land registration of individual and collective land rights, including women land rights, and the delineation of Communes' boundaries. Component 3: Supporting a Land Training, Communication and Research Action Plan. The proposed GEF project will build on the project to ensure integration of LDN principles on land governance alignment with the national development objectives. The initiative will to co-finance the proposed GEF project in the amount of US$ 1 million.

Support for improving land management The objective of this project funded by GIZ, implemented by the Ministry of Finance and Budget during the period 2020-2023, is that National and decentralized authorities, local authorities and local actors are able to improve land tenure security for the local population in selected areas of Senegal. The amount made available to Senegal in the context of this regional project is 13 million Euros. The proposed GEF project will build on the project to ensure integration of LDN principles on land governance alignment with the national development objectives. The initiative will co-finance the proposed GEF project for a total of US$ 0.5 million through the intervention axis which aims to improve governance in the field of land law and land management in pilot municipalities (POAS).

Resilience and Intensive Reforestation Project for the Safeguarding of Territories and Ecosystems in Senegal (RIPOSTES) project (2021-2025) is implemented by FAO with support by the European Union. The project objective is to help build the capacity of communities to adapt to climate change through SLM. The project targets scaling up of 50,000 ha with restoration options on improving forest cover for the benefit of 10,000 households from 13 communes, of which nine overlap with the proposed GEF project. RIPOSTES aims to (i) Promote holistic and integrated governance of natural resources and contribute to the management and optimization of local resilience dynamics; (ii) Boost the restoration and rehabilitation of agroecosystems and promote a sustainable system of land use through a landscape approach to SLM, with a view to contributing to carbon sequestration and the improvement of ecosystem services; (iii) Strengthen the capacities of populations, including vulnerable groups, by stimulating the creation of sustainable opportunities for the enhancement and development of non-timber forest products value chains and by promoting public-private partnerships. The project supports biodiversity conservation by strengthening current fragmented terrestrial ecosystems, reducing habitat loss and encouraging natural regeneration, while rolling out of the national action plans for youth employment and skills development in rural economic value chains, support to design and implementation and policy dialogues on a

coordinated approach to decent youth employment and entrepreneurship. The proposed GEF project will benefit from the capacity and infrastructure investment to diversify livelihood options in order to create more climate-resilient communities. RIPOSTES will co-finance the proposed GEF project for a total amount of US$5 million.

Global Transformation of Forests for People and Climate: a focus on West Africa project is implemented by FAO with support from Sweden (2019-2023). The project aims to strengthen forestry decision-making overall land management. In particular, the project targets 1) knowledge of the state of forest ecosystem dynamics; 2) forest and land-related laws, policies and strategies at the sub-regional level; and 3) demonstration and dissemination of sustainable forest and land use practices. The proposed GEF project will build on the capacity development on landscape management and strengthening of conducive institutional environment for resilient mangrove ecosystem management. Co-financing amount for the proposed GEF project totals US$2 million.

Climate Change Resilience and Coastal Zone Management Project (CCGIZC). The project, implemented by Ministry of the Environment and Sustainable Development for the period 2020-2024, aims to protect coastal areas against coastal erosion and rising sea levels by planting trees to slow down coastal erosion, the installation of dikes to prevent rising water levels. Of a total of 5 million Euros from the EU, this initiative will co-finance the current GEF project in the amount of US$ 0.7 million through the intervention on SLM / salinization and biodiversity in the Saloum delta.

Management of mangrove forests from Senegal to Benin (PAPBIO). This EU funded project, implemented jointly by Wetland International and IUCN aims at integrated protection of biodiversity and fragile mangrove ecosystems in West Africa. It will reinforce the actors in the management of protected and unprotected mangrove sites. The aim is to link governance and production systems with the structures of conservation of mangroves at the territorial level. The total budget is 5 million Euros (2019-2023). This initiative will co-finance the current GEF project for a total of US$ 1 million through the intervention on SLM / salinization and biodiversity in the Saloum delta.

Mangrove Capital Africa is a ten-year programme (2017-2026) led by Wetlands International (a global not-for-profit organisation) and funded by DOB Ecology. Its goal is to safeguard and restore African mangrove ecosystems for the benefit of people and nature. We expect that by 2027, 1 million hectares of African mangroves are conserved or restored, maintaining their biodiversity while also benefitting some 2 million people. The total budget is 10 million Euros, this initiative will co-finance the current GEF project in the amount of US$ 0.5 million through the intervention on SLM and biodiversity in the Saloum delta.

Water management and climate change adaptation

Sahel Irrigation Initiative Support Project (PARIIS), has been mobilised as co-financing and implemented by Ministry of Agriculture and Rural Equipment. Contributing to the regional Sahel Irrigation Initiative (2iS), which is to expand irrigated agriculture that is productive, sustainable and profitable for jobs and food security in the Sahel. This project aims at improving stakeholders' capacity to develop and manage irrigation and to increase irrigated areas using a regional solutions approach in Burkina Faso, Mali, Mauritania, Niger, Senegal and Chad. To this end, the investment is geared towards two main components,

including modernization of the institutional frameworks and irrigation investment solutions. The amount made available to Senegal in the context of this regional project is US$25 million. In Senegal, this 7-year project was launched in 2019, thus the investment is being valued as mobilised investment and is featured as baseline project to the tune of US$ 1.7 million. The proposed project will benefit from the infrastructure and capacities at the local and regional level in the context of water management.

The **Communities Re-green the Sahel** project funded by DOB Ecology [35]implemented in Burkina Faso, Niger and Senegal is part of a dynamic of support to agricultural and fodder production through the introduction of trees in livestock breeding and farming areas, using the technique of assisted natural regeneration (ANR). The aim is to support communities to achieve the rehabilitation of degraded land. The programme thus aims to build the resilience of populations and ecosystems through inclusive governance of natural resources. The expected results are the restoration of 200,000 hectares and an increase in agricultural production, food security, biodiversity preservation and, by ricochet, an increase in the income of households involved in the regreening process. The project will support the valorization of resources that will result from regreening actions by facilitating market access to non-timber forest products that are available in those areas. The amount made available in the context of this regional project is US$1 million. In Senegal, this 10-year project was launched in 2017, thus the investment is being valued as mobilised investment and is featured as baseline project to the tune of US$ 1M. It is being implemented by BothEnds (an international NGO) in Senegal and focuses on 12 municipalities: Eastern Senegal (Ndoga Babacar, Koussanar) Peanut basin (Mbayene, Fissel, Ngoye, Ndiob, Diarrère, Diouroup, Tattaguine, Djognick, Ndiaganiaw) Ferlo (Mboula). This initiative, in all its components, is in phase with GEF 7, particularly on land restoration, policy support and income generation. The special feature of this action is the exclusive option of RNA.

Building the climate resilience of food insecure smallholder farmers through integrated management of climate risks (the R4 Rural Resilience Initiative) financed by the Green Climate Fund in the amount of US$ 9.98 m (2020-2024) and it is implemented by the World Food Programme. The objective of this project is to build the climate resilience of 45,000 households (or 405,000 people from vulnerable smallholder households) through the provision of four key tools: 1. Risk reduction interventions encompassing the creation of climate adaptation assets such as community-based water and soil conservation measures and small-scale community infrastructures as well as the provision of climate services with the aim to reduce the risk and impacts deriving from climate change. 2. Risk transfer through weather index insurance (WII), to transfer the risk to the international market and provide farmers with compensation in case of climate shocks to avoid the sale of productive assets such as livestock or tools. 3. Risk reserves, aimed at providing farmers with the ability to save, use their savings as buffer or to invest in income generating activities (IGAs), but also build a sustainability path transitioning them to the commercial insurance market. 4. Prudent risk taking encompassing interventions such as the warrantage[36], allowing farmers to use their surplus production as collateral for loans, the aim being to unlock credit for investments in agricultural inputs or other IGAs. The initiative will co-finance the proposed GEF project with an amount of US$ 3 million. The GCF project's intervention areas include the regions of Fatick, Kaolack and Tambacounda, i.e. some of the proposed project's target regions. Technical solutions for the financial instruments disseminated by the GCF project (Components 2, 3 and 4) will be capitalised upon under Outputs 3.1.1 and 3.1.2 of the proposed project.

Increase the resilience of ecosystems and communities by restoring the productive bases of salt lands funded by the Green Climate Fund (GCF) for an envelope of USD 7.61 million excluding USD 546,000 of co-financing from the State of Senegal (Centre de Suivi Ecologique CSE) for a period of four (4) years (2020-2023). The project aims to ensure effective prevention of the risks of land salinization due to climate change and to develop appropriate mechanisms to reduce and manage salty land affected by salinity; the ultimate goal being to improve land fertility and consequently food security as well as economic and

financial profitability. The project is in line with Axis 2 of the Emerging Senegal Plan (PSE) for the period 2014-2018 entitled "Human capital, social protection and sustainable development" which emphasizes the need "to integrate principles of sustainable development in national policies and to reverse the observed trend against the loss of environmental resources "by" ensuring a balance between the development of production activities and environmental management ". It is also articulated in the Sector Policy Letter for the Environment and Sustainable Development (LPSEDD); the National Strategy for the sustainable management of runoff and the fight against soil salinization; the agricultural development policy document, the livestock development policy and the national livestock development plan; the Fisheries Development Policy, the Fisheries Development Action Plan and the Aquaculture Development Operational Plan; the law of agro-sylvo-pastoral orientation and the water policy. The initiative will to co-finance the proposed GEF project in the amount of US$ 2 million. This provides a solid basis for developing synergies to promote the integration into local policies of sustainable natural resource management approaches in order to expand practices contributing to Land Degradation Neutrality.

Opening up Production Areas in Support of the National Local Development Programme (PDZP/PNDL) financed by the Government of Senegal, African Development Bank, and OFID in the amount of US$39 million, and implemented by the Ministry of Territorial Governance, Development and Regional Planning. The project's strategic objective is to help trigger robust and inclusive economic growth. At the sector level, it seeks to open up roads in to the hinterland with a bid to expand access to production zones and make it easier for rural communities to reach to markets and basic socioeconomic services. Apart from the infrastructure that will be rehabilitated or built (550 km of access roads; value chain support infrastructure, including 20 market gardening areas, 15 weekly markets, 30 storage warehouses, 6 multifunctional platforms, 5 mechanization service centres, etc.), the project will help to: (i) develop agricultural value chains with high employment potential for the youth and women; (ii) improve access to basic socioeconomic services for territorial economic development; and (iii) build the capacity of local stakeholders (local authorities, regional development agencies, central and decentralized technical services) to implement Act III of the decentralization policy and achieve the targets of the Emerging Senegal Plan (PSE). The initiative will to co-finance the proposed GEF project for an amount of US$ 7 million. PDZP/PNDL intervenes in four regions (namely Kaffrine, Kaolack, Fatick and Tambacounda) that are common with the proposed GEF project. PDZP/PNDL investment under its Components 1 and 2 will provide an enabling environment for the development of agricultural VCs to be implemented under Component 3 of the proposed project.

Support to Agricultural Development and Rural Entrepreneurship Programme in Senegal (PADAER) Phase 2. The development objective is to sustainably improve food security and the incomes of small producers (farmers and pastoralists), as well as to create sustainable and remunerative jobs for rural people, in particular women and young people. It is funded by IFAD, OFID, Spanish Cooperation and the Government of Senegal for a total amount of US$ 48,56 million (2018-2024). The interventions will be in the regions of Tambacounda, Matam, Kedougou and Kolda. In Senegal. This 6-year project investment is being valued as mobilised investment and is featured as baseline project to the tune of US$ 0.4 million for the Region of Tambacounda. It is implemented by the MAER and supports hydro-agricultural development, the creation of horticultural perimeters over 600 ha, 2,000 ha of PIV, 700 ha of lowlands and spreading plains, 300 ha of small market gardening perimeters and 6,000 ha impacted with soil and water buffering infrastructure.

In conclusion, for each component the project builds on a solid baseline of national policies, laws, regulations, and strategies that address sustainable agriculture, natural resource management, stakeholder participation, capacity building, agro-pastoral field schools, and climate-intelligent village model. These tools and approaches have proven to sustainably reduce vulnerabilities of rural communities.

Better integration across the key sectors is required in order to design LDN interventions. In addition, investments need to take more of a landscape approach to scaling up in order to set and meet the national LDN targets. A territorial approach to value chain building is needed to create sustainable food systems carried out by the landscape (the '*terroir*') approach. Such can strengthen linkages between different supply chains and provide new opportunities for employment and food promotion. Local communities still lack sufficient information and knowledge about SLM and have limited capacity to adopt successful agro-pastoral practices. Concurrently, the local knowledge on SLM is not widely shared. Learning and dissemination of SLM and SFM practices also need to be strengthened in order to meet SDG15.3 target.

While investments are important, they do not consistently apply innovative tools to address the fundamental issues and linkages between land use management, production practices and the strategic decision-making frameworks needed to mitigate land conflicts and to address youth employment, women's inclusion, private sector involvement, and strengthening local governance of natural resource management. There is no integrated plan for improving interactions between pastoralists and farmers. The Climate-Smart Village approach, for instance, which facilitates an intervention at the local scale, must include practices integrating access to climate information, sustainable land management, pasture management, pastoralism, dryland cereal cultivation, and the integration.

b.   **The proposed alternative scenario with a brief description of expected outcomes and components of the project -** Project Theory of Change Block 3.

Project Objective: Demonstrate the LDN approach in the Peanut Basin and Eastern Senegal for achieving food security, delivery of ecosystem services, and livelihood resilience.

Project technical principles:

1) LDN.

LDN principles are a set of 19 principles that govern the LDN implementation process that are designed to ensure that LDN achieves its positive outcomes, while avoiding or minimising the unintended and negative outcomes[37]. These include:

1. Maintain or enhance land-based natural capital.

2. Protect human rights and enhance human well-being.

3. Respect national sovereignty.

4. The LDN target equals (is the same as) the baseline.

5. Neutrality is usually the minimum objective.

6. Apply an integrated land use planning principle that embeds the neutrality mechanism in land use planning.

7. Counterbalance anticipated losses in land-based natural capital with gains over the same timeframe, to achieve neutrality.

8. Manage counterbalancing at the same scale as land use planning.

9. Counterbalance "like for like".

10. Balance economic, social and environmental sustainability.

11. Base land use decisions on multi-variable assessments.

12. Apply the response hierarchy.

13. Apply a participatory process.

14. Apply good governance.

15. Make use of three land-based indicators and associated metrics.

16. The integration of results of the three global indicators should be based on a "one-out, all-out" approach where if any of the three indicators/metrics shows significant negative change, it is considered a loss (and conversely, if at least one indicator/metric shows a significant positive change and none shows a significant negative change it is considered a gain).

17. Make use of additional national and sub-national indicators, both quantitative and qualitative data and information, to aid interpretation and to fill gaps for the ecosystem services not fully covered by the minimum global set.

18. Apply in-situ validation and local knowledge obtained through local multi-stakeholder platforms to interpret monitoring data according to local context and objectives, within agreed guidelines.

19. Monitoring should be viewed as a vehicle for learning.

2) Building Back Better

The pandemic has resulted in reduced agricultural yields[38]. Only 45% of households having a stock of cereals (estimated at a very low 22 days of average duration)[39]. These elements suggest that the resilience of food systems – and the associated improved management of land and other natural resources – is a major factor determining how the Senegalese society can cope with external shocks such as sanitary crises and extreme climatic events. In this context, the proposed project is fully aligned with the "Build Back Better" approach taken by FAO in the framework of its Covid-19 Response and Recovery Programme. The proposed project will contribute to three of the seven key areas of action identified in the Programme.

· Boosting smallholder resilience for recovery: by supporting them through Components 1, 2 and 3, the proposed project will empower smallholders to fulfill their role as investors in the agricultural sectors generating business and employment opportunities for the economy, and as custodians of natural resources and ecosystem services[40].

· Economic inclusion and social protection to reduce poverty: the proposed project will adopt a territorial approach to build resilience among the rural poor by increasing the sustainability of their livelihoods. Under Components 1 and 2, reversing land degradation processes and disseminating sustainable landscape management practices will further enhance the resilience of rural livelihoods in target regions. This will be complemented under Component 3 by interventions aiming to foster job creation and extract value-added in selected value chains[41].

Food systems transformation: agri-food enterprises will be supported under Component 3, with the objectives to generate economic activity in the transformation sector and support supplying farmers with secure and diversified markets[42].

The proposed GEF project will align with the PAP/PSE-II, as it supports more productive and resilient agro-sylvo-pastoral production and value chains, therefore contributing to the ambition to become more food and nutrition secure, combat rural poverty through more and better livelihoods for agro-sylvo-pastoral youth, women and men. The GEF project also addresses barriers to access finance for MSMEs to invest in SLM, to access markets and access knowledge and know how. Opportunities to contribute to Senegal's efforts to building back better and stronger will therefore be fully explored during the PPG phase.

Project strategy is to reverse the "positive feedback loop" of the existing socio-economic system - where LD is an unintended consequence of system behaviour - to position LDN as an accelerator of SDG targets implementation in Senegal. Under the business-as-usual scenario, current LD trends will continue leading to reduced soil fertility, land productivity, and land use change. The project will set the enabling environment for LDN and demonstrate the LDN approach in the Peanut Basin and Eastern Senegal for achieving food security, delivery of ecosystem services, and livelihood resilience. The alternative scenario leverages key enablers leading towards **land degradation-neutral Senegal by 2030 and "building back better" for resilient emerging economy by 2035**.

Project Theory of Change

The Theory of Change (ToC) for the project was developed to assure quality of the intervention in the complex and multi-causal contexts. The ToC diagram (Figure 6) outlines a set of key causal pathways leading to and arising from the project activities. It ensures stakeholder engagement throughout the lifecycle of the project, helps define and analyze monitoring data that contribute to continuous learning through the intervention, constraints the flexibility boundaries in the project to genuine adaptability justified by thoughtful amendments to the ToC and consistent with agreed goals, rather than being a result of arbitrary deviations, frames ex-post evaluation, and aids learning that informs subsequent projects[43]. The ToC follows the STAP guidelines on the scientific conceptual framework for LDN[44] and takes a phased approach adapting the DPSIR framework[45] to the project needs. The assumptions underlying these causal connections are further outlined below. The ToC has been developed throughout the PIF development process, benefited from a large number of stakeholders, and was presented at the final stakeholder consultation on February 11, 2021, feeding back the comments.

Figure 6. Project Theory of Change diagram (please see attachment)

<u>Setting the vision and system characterization</u>

First, the country has selected four regions of Diourbe, Fatick, Kaffrine and Tambacounda based on the national priorities. Further community selection process will be conducted during the PPG and will be based on transparent selection criteria and stakeholder prioritization. The target regions, landscapes, and the selection criteria are outlined in the *GEB section*.

<u>Setting the LDN baseline.</u> The LDN baseline is the land-based natural capital as measured by three global voluntary LDN indicators (land cover change (LCC), Net primary productivity (NPP), and SOC) and additional national impact, process, and stress-reduction indicators (See *Block 5 LDN Monitoring System* in the ToC diagram). The "LDN baseline" values on do not show land degradation status and differ from "project baseline" that specifies the outlines the existing systems or current projects that the GEF project builds on and is described in the relevant section of Project Baseline.

Each of the *impact indicators* assesses a different aspect relevant to LDN: LCC detects the human actions that drive land degradation and its reversal; land productivity reflects the impacts of those drivers on plant production as a measure of ecosystem function; and change in the SOC stocks, which responds more slowly, indicates the change in productive capacity. The PPG process will further study and provides details on the proposed methodologies for measuring the indicators. Additional national impact indicators have been proposed by the GoS and the list will be verified during the PPG.

National *impact indicators* identified during PIF formulation to achieve the objective of neutrality[46] and contribution to national targets will be confirmed during PPG, include the following:

· Area under sustainable management (ha, expansion)

· Land productivity

· Soil organic carbon

The main recommended measures will be: (i) agronomic measures (crop rotation, low pressure micro-irrigation, mulching, sustainable agriculture with few external inputs, organic amendment, etc.); (ii) structural measures (stone bunds, retention basins, water retention dams, anti-salt dikes, etc.); (iii) management measures (defenses, fallow, creation of marine protected areas, forest management, and (iv) vegetative measures (recovery of salty land, dune fixation by reforestation, mangrove restoration, and regeneration assisted natural)

Process indicators include the following:

·   Adoption of the LDN monitoring framework

·   Strengthened LDN monitoring framework:

o Improved land governance (degree of change indicator TBD during PPG)

o Number of sectoral and local authorities that report on improved policy and institutional framework supporting SLM

o Number of participatory land management plans

o Number of people trained on SLM (broken by group)

Stress-reduction indicators include the following environmental and socio-economic indicators:

Environmental:

·   Increased amount of productive land (12,000 ha restored and 400,000 ha under climate-resilient SLM) in four regions

   ·   Increased CO_2 sequestration in agro-sylvo-pastoral systems (6,818,889 Mton CO2-eq) thanks to SLM measures

Socio-economic:

·   A number of farmers with access to advisory or extension services (total # per region)

·   Increased investments in SLM

·   Number of awareness raising activities

·   Increased livelihoods and economic resilience through improved climate resilient value chains

·   Improved food security through increased land productivity (project contribution defined, but attribution not monitored)

·   Increased social resilience and human well-being (Gender equality, access to information and finance)

·   Improved access to finance for small-holder farmers

·   Increased climate resilience of the local farmer communities

Establishing mechanism for neutrality

Achieving LDN requires land managers to monitor land use decisions that may impact the neutrality, and estimate their likely cumulative impacts, so that these can be counter-balanced by reversing land degradation on the same land type, elsewhere. Available land use planning processes will be further studied during the PPG, and the project will develop participatory integrated land-use plans in four regions and manage counter-balancing LD at the level stipulated by

the land-use planning processes. To ensure that counterbalancing measures do not diminish the well-being of land users, a statistically-sound socio-economic baseline analysis will carried out in target regions (PPG).

Clear physical boundaries of the land use and system classes as well as land tenure boundaries are essential to prevent conflicts and avoid illegal changes of land use (e.g. from forest to arable land). The status and condition of land is important for leasing purposes. These measures will be put in place under Component 1.

LDN planning and implementation

To ensure technical coherence of the framework, the land degradation status and trends will be identified in the land use systems in Peanut Basin and Eastern Senegal. Building on the stakeholder-driven approach for the assessments, the project will apply a participatory process for implementation by including land users and relevant representatives of local government and extension. The project will strengthen the enabling environment for LDN, land-use planning processes, and security of tenure rights with the specific focus on Peanut Basin and Eastern Senegal. It will be followed by implementation of the LDN hierarchy of responses (avoid>reduce>reverse) under Component 2 to enhance the productivity and restore degraded land and based on the status of land degradation in target land use systems (see Table 3 and 4 below).

Table 3. Potential SLM technologies and approaches in the target regions in accordance with LDN hierarchy of responses

Status of LD	LDN hierarchy of response measures	Dominant land use systems	Under business-as-usual scenario	Potential SLM technologies/ approaches (see Table 4 below)	Cost rate	Targets (ha)
Not degraded	Avoid LD	Sylvo-pastoral	Unintegrated management of a mosaic landscape; encroaching agriculture onto forests and mangroves; risk of reduced ecosystem resilience and worsening food insecurity	4, 5, 12, 13, 14	Low	400,000
Moderately degraded	Reduce LD	Irrigated, croplands, forestry, transhumance	Continued loss of topsoil and nutrients; declining yields; Decreasing tree cover due to many disturbance agents; habitat loss	1, 2, 3, 7, 8, 9, 10	Moderate	10,000
Highly degraded	Reverse LD	Floodplains	Continued soil physico-chemical and biological degradation	6, 11	High	2,000

Table 4. Initial list of potential climate-resilient SLM technologies and approaches for target landscape application

#	Name
	SLM technologies
1	Agroforestry with Farmer Managed Natural Regeneration[47]
2	Enclosures[48]
3	Agroforestry community gardens[49]
4	Community forest management[50]
5	Rangeland firebreaks[51]
6	Recovery of salinized lands with halophytes[52]
7	Stone bunds with living hedge[53]
8	Kadd park (*Faidherbia albida*) with crop rotation[54]
9	*Cordyla pinnata* park with natural park[55]
10	Water reservoir[56]
11	Anti-salt dike[57]
	SLM approaches
12	Farmer Field Schools (FFS)[58], Exposure visits
13	Dimitra Clubs
14	E-advice (Agricultural Service and Digital Inclusion in Africa-SAIDA)

This phase also involves balancing of the anticipated losses from impacts of land use decisions through restoration of degraded land (land use of the same type), thus achieving LDN on the ground generating the GEBs and socio-economic co-benefits. The counter-balancing of the LDN will be done at the same scale as land use planning process that will be established under the land management plans (Component 2). This will be followed by scaling up the select approaches within Peanut Basin and Eastern Senegal and elsewhere in the country using and targeted capacity building programs and scaling out strategy (Component 2 and 3).

Monitoring neutrality

The final phase will include setting up the LDN monitoring system. It will include the three global LDN indicators, additional national impact, process, and stress-reduction indicators. Local knowledge and continuous learning will be applied to validate/interpret the data, and anticipate/adjust/create new steps – closing the LDN loop (Component 4).

To ensure delivery of the project objective, the project development (PPG) will focus on the following baseline studies and activities:

Initial baseline studies and activities	Objective
GIS analysis of available relevant images (e.g. SOC, land cover, land/vegetation productivity, mountain cover, fire activity, surface water resources availability and trends)	Basis to define · Project geographies, risks (e.g. fire), and opportunities (e.g. restoration potential) · Similarity criteria for SLM scaling out (precipitation, temperature) · SDG linkages (e.g. SDG 6 on water, SDG 15 on mountain green cover index): an entry point to understanding how to maintain or enhance the quality of all ecosystem services while minimising trade-offs between environmental, economic and social outcomes · LDN baseline for counterbalancing gains and losses · LDN monitoring system · Impact of project intervention on biodiversity conservation using B-Intact (identification of patches and image interpretation with ground-truthing if necessary) · A proxy to land intensification potential · To potentially aim higher than neutrality, that is, to improve the land-based natural capital above the baseline
Mapping SLM technologies and approaches (further elaboration and actual mapping of PIF's Table 4)	Basis to define · Bright spots for the project replication, a proxy to land intensification potential · Success factors and obstacles for performance of SLM field trials · Off-site impacts of SLM (e.g. drought mitigation downstream, sustaining the quantity of groundwater in hydrologically linked areas)

Value chains analysis and mapping	Basis to define activities for 3.1.3. Opportunities to provide benefits to women using FAO gender-sensitive value chain assessments approach: · Opportunities to add value for livelihoods strengthening, private sector project positioning · Entry points for identifying introduction of renewable energy options (i.e. cold storage based solar for perishables)
Rapid analysis of available market-based instruments	Basis to define activities for 3.1.1., 3.1.2 · Success factors and obstacles for performance in SLM
Social/gender analysis* *A household survey may be commissioned depending on data availability at local levels	Basis to define · Gender-focused Theory of Change · Gender Action Plan · Drivers of degradation · Behavioural change pathways · Capital/asset base and social vulnerability to shocks
Policy analysis	Basis to define activities for Output 1.1.1, 1.1.2, 1.1.3. Specifically: · Situation analysis on land tenure/land dispute mechanisms, land use planning, available SLM scaling out support mechanism · Define activities that require awareness and/or action by policy makers seeking to ensure appropriate governance in support of LDN · Drivers of degradation · Policy coherence and co-benefits (linkages with relevant policies, such as water management, etc.)
Climate change risks	Basis to define · Potential project risks and opportunities (mitigation, adaptation), and adaptive capacity
Stakeholder analysis	Basis to define · Direct and indirect beneficiaries · Barriers, risks and assumptions

	· Implementation arrangements
Stakeholder consultations (national, sub-national, local)	Basis to define · Drivers of degradation · Ensure local input in the baseline assessments · Land administration systems gaps for information that is essential to tracking LDN decisions, assessing land potential, condition and resilience, and monitoring LDN · Ground-truthing of the satellite images · Collaboration for co-financing, coordination, building on lessons learned · Target beneficiary profile (including detailed criteria for selection) · Target value chains (including criteria for selection) · Capacity building needs (1.2.2, 2.1.1, 3.1.2) · Success factors/obstacles behind already introduced SLM technologies · Determine the rules for counterbalancing land gains and losses · Identify information needs (scale, type) · Identify knowledge gaps and needs for further research to support evidence-based decision-making (i.e. LDN monitoring system, LDN decision-support system, insights (i.e. local assessment tools and methods, quantification for decision-making, etc.) on off-site impacts of SLM, climate change risks and opportunities for scaling out SLM, costs and benefits of SLM, national system dynamics model for policy cross-pollination/true integration, etc. · Implementation arrangements, including coordination mechanisms with co-financiers and other relevant projects · Ensure that actions taken in pursuit of the LDN target do not compromise the rights of land users Basis to ensure engagement of relevant stakeholders throughout project cycle through full participation in consultation, awareness, decision-m

aking, benefit-sharing and implementation.

Key project assumptions:

System-level assumptions:

Complex dynamic socio-economic-environmental system behaviour can rarely be understood without modelling system behaviour. While the PPG will assess the feasibility of quantitative analysis of the existing system, it is not feasible to correctly describe and analyse the system with the information available at PIF level to forecast its behaviour change. Nevertheless, the project assumes a number of leverage points – places to intervene in the system where an incremental change leads to a large shift in behaviour.

1) LDN offers a new paradigm to reach land productivity and delivery of vital ecosystem services. LDN offers a shifting mind-set that will lead to enhanced multi-level collaboration and coordination that will lead to acceleration of other SDGs. It is assumed that other relevant projects will shared in time to allow timely information access and coordination.

2) Market-based instruments define the system's scope and boundaries and thus are key leverage points towards achieving LDN.

3) Other policies have synergetic effect on the established project objective. During the PPG, we will assess the feasibility of establishing a model to capture the synergetic effects of indirect policies and measures that will take place during project implementation. Contribution vs. attribution of the project is a key principle behind the LDN monitoring framework, GEBs, and co-benefits.

4) Behaviour change is a long-term process. The project success will be accumulated after the project ends and may not be accounted in time of final evaluation to demonstrate impact.

5) There is a potential time delay between COVID-19 impacts and when the information is made available. It is also possible that the full spectrum of impacts may be higher than envisaged. This also applies to climate change impacts. IPCC report on Land identified that "accumulated carbon in vegetation and soils is at risk from future loss (or sink reversal) triggered by disturbances such as flood, drought, fire, or pest outbreaks, or future poor management". Multi-faceted resilience is at the core of the project's principles.

Key outcome-level assumptions:

1) Data and information. Data and information for assessing LDN from previous projects will be made available and has sufficient resolution for field application.

2) Collaboration. There is willingness of key stakeholders to be involved, participate, and cooperate on LDN.

3) <u>Knowledge materials.</u> There is an interest of stakeholder in knowledge materials.

4) <u>Capacity.</u> Key institutions and staff have the interest and capacity to access and internalise new knowledge on LDN. The project interventions will develop sufficient capacity among farmers, local cooperatives and companies to implement interventions for improved sustainable value chains.

5) <u>Participation.</u> Local people are interested in and motivated to participate in FFS. Local government are willing to participate and identify their priorities in a participatory manner. Local land users are willing to demonstrate new and innovative SLM practices. Women are interested in participating in the training and other project activities.

A brief description of expected outcomes and components of the project

The landscape approach is required to to increase the productivity and sustainability of the agriculture sector. According to the recently released IPCC report on Land, SLM can prevent and reduce land degradation, maintain land productivity, and sometimes reverse the adverse impacts of climate change on land degradation. LDN approach can avoid, reduce and reverse land degradation, at scales from individual farms to entire watersheds, can provide cost effective, immediate, and long-term benefits to communities and support several SDGs with co-benefits for adaptation to and mitigation of climate change, among others. The landscape approach to integration across sectors and scales increases the chance of maximising co-benefits and minimising trade-offs.

The project will therefore promote SLM and landscapes restoration for achieving LDN commitments of Senegal. The project will meet this objective through implementation of four interlinked components that will strengthen the enabling environment for SLM to achieve LDN and scale out successful SLM practices in the target landscape. This will be underpinned by strengthened knowledge management that will facilitate further scaling up and out at the national level of LDN.

Component 1. Enabling environment for large-scale SLM dissemination

Improving land quality and living standards of the rural population requires policy responses that improve the condition of terrestrial ecosystems by avoiding, reducing and reversing degraded land. The proposed alternative scenario will see strong involvement of local and regional authorities in sustainable land management through better access to finance, informed decision-making, based on improved data and information on land health. Strengthened evidence through data and information will serve as a basis for improved target-setting processes at local and sub-national levels, and for integrating LDN principles into municipal investment and action plans. Particular emphasis will be placed on the coordination, planning and management of ecosystems and landscapes, land and water management, based on improved inter-sectoral collaboration at local and national levels. Lessons learned demonstrate that the involvement of local authorities and populations remains a condition for the success and sustainability of responsible governance of natural resources. The component highlights the territorial dimension through the strengthening of policies and strategies for the management of natural resources at local level, in order to create an enabling environment. This component will also support the establishment and or the reinforcement of multi-sectoral inter-community platforms for multi-stakeholder dialogue on land governance.

It will be in addition to the core activities carried out by various projects as part of the implementation of the Strategic Investment Framework for Sustainable Land Management (CNIS/GDT). The Component 1 will establish mechanisms for landscape level planning and prioritization of actions, including identification of institutional capacity for sustainable land management, NDT objectives and investment priorities. The Component will strengthen governance in the four administrative regions Diourbel, Fatick, Kaffrine and Tambacounda to remove the barriers of weak capacity of the the institutions and poor governance and strengthening women's skills in SLM management to improve their roles in land access mechanisms and their potential to contribute to value chain development. This Component supports participatory planning, decision-making and will generate resource utilization agreements that will serve as a basis for strengthening land rights and more transparent governance. The project will develop a synergy with the capacity building component of the Support Program for Municipalities and Agglomerations of Senegal (PACASEN). Two outcomes are envisaged as a result of this work:

1.1. Strengthened inclusive land governance for better biodiversity conservation and natural resources access through the application of LDN and VGGT principles. The outcome will be achieved through three outputs:

1.1.1. Review of strategic regulatory frameworks and territorial planning instruments to enhance local stakeholder participation and mainstreaming of LDN, biodiversity conservation and land tenure at national and sub-national levels

1.1.2. Land, biodiversity and natural resource governance and planning tools are stenghtened in accordance with LDN principles (using FAO Land Resource Planning Toolbox, VGGT, etc.)

1.1.3. Governance of customary and formal natural resources management is strengthened with special focus on vulnerable groups

1.2. Enhanced capacity for the mobilization and sustainable management of financial resources by the municipalities and the coordination of SLM interventions in favor of LDN and biodiversity conservation. The outcome will be achieved through three outputs:

1.2.1. LDN principles are integrated into municipal investment and action plans

1.2.2. Capacity building program for multi-stakeholder policy dialogue on SLM in accordance with the guidelines of The National Strategic Investment Framework for SLM (CNIS-GDT)

1.2.3. Inter-sectoral coordination mechanisms at the national and the level of each intervention region are operational /strengthened

1.3 Accessibility of data and information on land degradation enhanced. The outcome will be achieved through two outputs:

1.3.1 Targeted multi-scale data and information on land degradation status and trends (such as Collect Earth, LADA, and others) and biodiversity status (such as B-Intact) developed in a participatory manner and shared and training material on LDN and LDN for biodiversity conservation developed for practitioners, feeding into the indicator-based LDN monitoring system

1.3.2. A national platform/information system (management tools and data dissemination) on degraded lands and vegetation cover is set up

Component 2. Scaling up SLM and biodiversity conservation using a landscape approach in the Peanut Basin and Eastern Senegal

Component 2 of the project aims to disseminate natural resource management strategies, technologies, and best practices at the level of small agro-sylvo-pastoral producers. The implementation of activities in the communes and at the inter-communal level will facilitate a definition of rules and regulations in the field of land management, in particular to support drought-smart SLM, the natural and assisted regeneration, restoration of salinized lands, reduction of water erosion processes, etc. The project will capitalize on planning tools at the local level and build the capacity of stakeholders, engage men and women in sustainable management and land restoration practices, and engage with decision-makers to improve their livelihoods ensure that policies at the national and local levels support the identified approaches to SLM and the development of value chains with good involvement of the private sector and financial structures. This component will use the FFS approach as a tool for scaling-up farmers' adoption of SLM practices and adaptation technologies. The community-led facilitation of practices and technologies will strengthen adoption processes and will be additional to baseline approaches that do not include cross-sector collaboration among local resource users. Furthermore, the component will promote Smart Climate Village model. This model favours an intra and inter-communal collaboration based on an agro-ecological diagnosis with regard to climate effects. The partnership with the project of valorization of waters for the development of the chains of values (PROVAL) will facilitate the diffusion of the good practices of SLM through the fields schools which will be put in place. The component will also promote gender relations to enable women and youth to ensure full participation and active intervention. Two outcomes are envisaged as a result of this work:

Outcome 2.1. Increased technical and institutional capacities of agro-sylvo-pastoral communities on SLM technologies and approaches. The outcome will be achieved through the following:

2.1.1. Capacity building program on SLM technologies and approaches (using Farmer Field Schools approaches, Dimitra Clubs, e-advice, exposure visit, facilitation of farmers' cross learning visits, LADA, WOCAT, Community-Based Ecological Mangrove Restoration-CBEMR etc.) in order to sustainably intensify ecosystem productivity

The project's capacity building strategy is based on the principle of sustainability for several reasons. The project promotes successful capacity building approaches taking stock of lessons learnt from previous projects on NRM and SLM. The lessons learned from these capacity building programs for the benefit of communities show that farmer field schools, events such as trade fairs, on-farm exchange visits, field days, use of resource/champion farmers, and on-farm training are key avenues for promoting farmer-to-farmer information sharing and enabling a successful supporting the uptake of contextually appropriate innovations and governance of natural resources, conservation of natural resources, biodiversity, promotion of income generating activitiess, etc. These methods are based on the production and distribution of support at the farm level (individual / household benefit) or at the regional level (collective benefit for farmer organization). The capacity building events relate to techniques of governance, improvement of biodiversity and productivity through SLM, access to market and finance. Also, gender issues and the consideration of the environmental dimension are addressed to have a positive impact on the empowerment of women, the employability of young people and the increase in environmental benefits. The programme will continue to use this approach in promoting adoption of new technologies.

Outcome 2.2. Improved ecosystem services, habitat for biodiversity and resilience in target agroecosystems of Peanut Basin and Eastern Senegal in line with LDN principles. The outcome will be achieved through three outputs:

2.2.1. Participatory integrated land use plans (PLUP) developed in Peanut Basin and Eastern Senegal

A bottom-up method of analyzing the suitability of agricultural production systems, and the examination of soil and land degradation and socio-economic factors affecting household decision-making on land-use and natural resources management in agricultural landscapes, with the aims to assist with developing context-specific recommendations for the implementation of an agreed intersectoral plan. PLUP implementation involves establishing a dedicated PLUP team that will work with the community. Relevant information on agro-ecosystem and the land units (LUs) and land use types (LUTs) within these zones need to be gathered. This information will then be organized in maps and tables to give the PLUP teams and community members a clear view of the current situation of their landscape. This serves to inform them of potential issues that may influence land use in the future, helping the community to adapt accordingly through the identification and implementation of appropriate interventions. Community engagement and team preparation, their vision setting, prioritization of options to be implemented, the actions planning and implementation, the collaborative monitoring and co-learning will ensure sustainability and joint resource mobilization before other partner.

2.2.2. Innovative SLM technologies and approaches applied and scaled out on agro-sylvo-pastoral landscapes to reduce land degradation, restore degraded land and contribute to biodiversity conservation (restoration of salinized lands, mangrove restoration and conservation, crop rotation, agroforestry/plantation of high value tree species e.g. Fadherbia albida, etc.)

2.2.3. Seed/seedling production capacity improved to support restoration of degraded lands and biodiversity conservation

Seed and seedling production will be developed with existing or newly established producers organizations. The approach is based on building technical, organizational and good governance capacities for agricultural and forestry seed producers. The principle of sustainability is based on Support for recognition by DISEM and accreditation by MAER (agricultural) for the furniture of certified seeds. Partnership relations will be developed with DEFCCS / PRONASEF for the process of collecting, treating and conditioning quality forest seeds. A mechanism called the Sustainable Input Supply System (SADI) from other project will be deployed. It is a mechanism for linking producer associations with service providers, whereby any member of these associations can benefit from fertilizers, and seeds and seedling, agricultural insurance and training on soil fertility management. The cost of the service will be pre-financed by a partner MFI that the producer will reimburse in agricultural products of equivalent value at the end of the season.

Component 3. Rural employment and livelihoods enhanced to sustain improved management of production land.

Component 3 will facilitate the inclusive and sustainable financial investments needed to remove barriers to accessing finance for women and youth. Diversification of activities will include adapted cereal varieties (millet, maize, rice) introduced into ecological zones, aquaculture, non-timber forest product management to increase resilience and food security given the diversity of climatic conditions. For herders and pastoral livelihoods, land management and increased forage quality, forest resources and their resilience to CC will be achieved by using some improved species and varieties and domestication of some forest. The implementation of adaptation measures will provide valuable feedback for knowledge creation and dissemination processes and sustainable food chain development. A territorial approach will ensure a strong anchoring between sustainable land management and the creation of multiple interdependent and territorialized value chains that will provide employment for young agribusiness entrepreneurs. Lessons learned on contractual agreements between farmers' organizations and market operators (OP-OM); access to micro-credits, and the empowerment and professionalization of agricultural and non-agricultural actors in the provision of social and economic services is an important part of wealth creation promoted by the project. The project will increase access to technical assistance to small and medium-sized enterprises (SMEs) promoted by women and youth for the application of innovations in agricultural and livestock production systems. This process intends to establish links with the private sector and foster the emergence of local businesses. Investments, particularly in hotspot locations characterized by both high restoration potential and high socioeconomic benefits in poverty areas, will improve the conditions of the most vulnerable people and increase the resilience of ecosystems.

The project will work with women by removing constraints that limit their participation in SLM activities as regards access to land, technical training and equipment, and access to credit and its management. Awareness and advocacy done through to open the door for women to speak and to their participation in decision-making, and the granting of parcels of land for groups of women for the development of income generating activities through microcredit provided FNDASP. An inclusive financial mechanism will be rolled for all beneficiaries with the special focus on women. Approaches of improving access to microcredits and reliable and relevant sources of market information will also be piloted. Efforts will be undertaken to identify cost-effective and appropriate agro-processing technologies and link targeted agro-processes to suppliers of these technologies. Finally, women-led micro-credit mechanisms will be proposed for scaling-up SLM. Context appropriate options such as the "bancs villageois" (GEF# 2511) which support economic interest groups consisting of solely women working on nurseries, gardening, harvesting forage, fattening goats, forest fruit processing and transformation of peanuts, will be scaled up.

One outcome is envisaged as a result of this work:

Outcome 3.1. Enhanced incentive mechanism framework for investment in family farms in local agro-sylvo-pastoral value chains for improved livelihoods. The outcome will be achieved through six outputs:

3.1.1. Innovative market-based incentives for financing LDN-oriented and biodiversity-friendly inclusive agriculture value chains are identified and strengthed (e.g. subsidies, tradable permits, Public-Private Partnerships, certification programs, penalties, etc.)

3.1.2. An inclusive financial mechanism and training program are operational to strengthen the capacity of farmers and farmer organizations to engage in SLM

This mechanism will be rolled out for all beneficiaries but focus will be put on women (75%). The gender gap in financial inclusion represents one of the main barriers not only to women's empowerment in rural contexts, but also their involvement in SLM.

3.1.3. Development and implementation of a sustainable strategy/action plan to improve local value chains (millet, cowpeas, rice, NTFPs, oysters farming, mangrove beekeeping) and mainstream biodiversity into SLM

The PPG gender analysis will be a key component of this process, to ensure that many of the supported value chains are conducive for women's meaningful participation, as 75% of beneficiaries are aimed to be women. Corresponding capacity strengthening initiatives of the FOs and other relevant value chain actors will then be developed and initiated. The ultimate aim is to develop the ability of the FOs to tap into the identified market niches and successfully adapt to changing market conditions into the future. Successes associated with the Innovation Platforms tried and tested under various projects will further be reviewed and possibly experimented. It will also include orienting and training local actors in established approaches, such as Making Markets Work for the Poor (M4P) and FAO's Market Analysis and Development approach. This will be complemented by efforts to facilitate dialogue among and strengthen the capacity of relevant value chain actors, as well as strengthen the capacity of existing women led agriculture and tree-based enterprises. Approaches of improving access to reliable and relevant sources of market information will also be piloted. Finally, efforts will be undertaken to identify cost-effective and appropriate agro-processing technologies and link targeted agro-processes to suppliers of these technologies.

3.1.4. Women-led micro-creditmechanisms (5 per commune) proposed for scaling-up SLM

A review of existing financial products piloted in previous project will be conducted during the PPG phase. Context appropriate options such as the "bancs villageois" (of GEF# 2511) with economic interest groups consisting of women solely working on nurseries, gardening, harvesting forage, fattening goats, forest fruit processing and transformation of peanuts, will be scaled up.

Component 4. Learning, knowledge management and communication

Component 4 will include project monitoring and evaluation to ensure effective and adaptive management. It aims to capitalize and inform national decision-makers of the results and best practices resulting from the implementation of the project's actions under the first, second and third components in the form of policy briefs. It will develop a M&E manual, and a clear communication and dissemination plan. Component 4 encourages dialogue with key stakeholder groups at national and local levels to build consensus on good practices and policies. One outcome is envisaged as a result of this work:

Outcome 4.1. Learning and political engagement for scaling up and sustainability of project achievements. The outcome will be achieved through two outputs:

4.1.1. Project monitoring system is operational, providing systematic information on the project progress made and capture of lessons and knowledge

4.1.2. Mid-term and final evaluation conducted, project best practices and lessons learned developed and disseminated

d. Alignment with GEF Focal Area Strategies

The project aligns with the overall objectives of the GEF-7 focal area of land degradation by promoting progress towards national land degradation neutrality targets under the Convention and implementation of the strategy of the 2018-2030 Convention. The project contributes directly to the achievement of SDG 15 target 15.3, which particularly encourages countries to "combat desertification, restore degraded lands and soils, including affected lands" through desertification, drought and land degradation, floods, and strive to reach a neutral land degradation world by 2030. The project is also contributing to the African Forest Landscape Restoration Initiative (AFR100) with the objective of improving livelihoods, pasture populations in the Sahel and improve ecosystem services that benefit local communities and society at large. The project places particular emphasis on the need to promote diversified agro ecological food production systems, mobilizing private investment in sustainable land management to move up a gear proven approaches in degraded drylands.

The project will respond to the priorities of the CNIS / GDT to remedy all forms of land degradation through a coherence of the missions and interventions of SLM actors in order to definitively eliminate the duplication between institutions and to guarantee more efficiency and effectiveness in SLM actions, an expansion of SLM practices to improve the productive base of different agro-ecological zones and greater political, legal and financial ownership of SLM.

Project Potentially Contributes to Land Degradation Neutrality Objectives (NDT): Objective 1. Support for SLM Field Implementation to Achieve NDT Objectives: Integrated Soil Fertility Management (management of organic matter, stony cords and bunds to combat erosion, actions against salinization of land). The project will strengthen governance and mobilize funds to support the scaling up of validated SLM practices at commune and inter commune level. Objective 2. To improve the implementation of NDT's voluntary goal at NDC. The project will strengthen local and governmental institutions to enable management of communal lands, develop knowledge and build capacity for informed planning and action on the ground.

The project will contribute to the implementation of the nationally determined contribution (NDC), through reforestation: reduce the rate of deforestation by 25% by 2023; improve forest management and reforestation; reforestation of 22,392 hectares per year from 2011; reforestation of 200 000 to 204 000 hectares from 2017 but also to the coherence of policies and actions by aligning national targets of neutrality in terms of land degradation.

Coherence with the objectives of the sectoral policy letter (2015-2020) of the Ministry of Territorial Governance ensures a perfect integration of local and regional authorities in the implementation of the project.

In addition, the project is aligned with the GEF-7 Biodiversity Focal Area programming Directions, Objective 1. Mainstream biodiversity across sectors as well as landscapes and seascapes. Mainstreaming biodiversity conservation into the agricultural sectors includes provisions of spatial and land-use planning to ensure sustainable production intensification and therefore a halt to its negative impact on biodiversity. SLM practices promoted in the project will also be move biodiversity positive, and the uptake and up-scaling of these practices is facilitated by the capacity built and investment opportunities created both in the context of this GEF investment and its co-financing investments that operate in the same landscapes/geographies. As highlighted previously, and further developed below (section GEBs), the project contributes to the achievement of a number of national Aichi Targets.

e. Incremental cost reasoning and expected contributions from the baseline, the GEFTF and co-financing

In general terms, the proposed project has the scope to address the main gaps and barriers regarding weak capacity in adopting SLM practices to cope with degraded land induced threats, lack of tools and technologies addressing SLM strategies and a weak institutional capacity to support policies and programmes to strengthen a pro-active preparedness approach for a sustainable development plan. Identified baseline projects address community based project implementation approaches, capacity building of farmers through the FFS approach, sustainable agriculture based on SLM approaches, capacity building in agricultural value chains and monitoring SLM. community-based rangeland management needs to be further boosted and expanded; the concept of "agricultural productivity" needs to be expanded to also include range and grassland sustainable management schemes; and the experiences of local species use need to be systematized and scaled up for adoption by farmers and pastoralists.

The promotion of smallholder access to markets presents bottlenecks along the value chain that need to be further focused and rural activities need to be diversified. Pastoral smallholder food security still needs to be improved and implementation of existing laws needs to be stepped up. The government is implementing several programmes which involve territorial communities. Otherwise existing tools which are validated need to be further enhanced at a decentralized/local scale. The proposed project intervention is needed to fully address the need for a more integrated approach to address land degradation, which takes into account the complex interactions between agricultural and pastoral production in, and with particular emphasis on, key productive landscapes shared by agriculturalists, agropastoralists and herders. The project intervention will boost the adoption of SLM tools and practices, increase capacity building, and support coordinated policies and programs to shift from a reactive response towards a pro-active preparedness approach to climate events.

The proposed project marks a shift from previous SLM initiatives by implementing an intensification / integration strategy based on the pillars of the Climate Smart Village (CSV) (I) the use of climate predictions and information; (II) the choice of resilient varieties and good climate change adaptation practices; (III) the practice of agroforestry with fruit trees with a short production cycle; (IV) management of natural regeneration assisted by producers; (V) the concerted management of inter-village sylvo-pastoral spaces; (VI) the planting of priority forest fruit trees in the concessions; (VII) diversification of crops (maize, market gardening, watermelon, vegetables) and sources of income with the creation of small forestry and agricultural enterprises (baobab fruit, peanuts, poultry farming, etc.).

While capitalizing on the results of the first operationalization initiatives of the CSV model, the proposed project will establish cross-sectoral and multi-stakeholder partnerships to develop agro-sylvo-pastoral practices adapted to the context of the small producer. The implementation of the project at the municipal and inter-municipal level will promote a scaling up of good practices and a more coherent intervention that will make the best use of the combination of local knowledge and technical expertise in terms of collection, treatment, analysis and monitoring and dissemination of data and information for the purpose of improving food production systems.

In particular, the GEF investments articulates with the baseline investments in the following way:

Component 1: As highlighted earlier, Senegal has adopted a territorial (i.e. landscape) approach to planning, establishing the foundations for the sustainable development of local communities. A number of land tenure and land use planning investments have been mobilised as co-finance supporting component 1 of the GEF project in particular, including the *Senegal Cadastre and Land Tenure Improvement*, the *Municipalities and Agglomerations Support Program* (**PACASEN**) and the *Support for improving land management* projects. These investments secure the set up and development of the infrastructure and human/institutional capital to implement a decentralized landscape management approach, for instance investing in training of locally elected representatives, in improved land use and property rights registration systems, in improved supervision of field operations, and much more (see details in baseline investment section). The proposed GEF project will build on the results of these investments, ensuring integration of LDN principles on land governance alignment with the national development objectives.

Component 2: A cohort of investments from a number of different partners (CSE, MAER, MEDD, Wetland International, BothEnds, WFP and FAO) focus on capacity development of local communities on sustainable land and forest management practices oftentimes in order to build more resilient production systems and at times to help conserve biodiversity, protecting habitat loss due to erosion and other climate induced triggers for degradation. Baseline projects and programmes invest in water management and other basic infrastructure in support of a resilient rural development effort. The proposed project will benefit from the infrastructure and capacities at the local and regional levels, further build upon them and align and expand practices and approaches contributing to Land Degradation Neutrality.

Component 3: The GEF investment ensures that a transition towards SLM and biodiversity conservation is compatible with livelihood development and resiliency efforts, making use of and building upon existing investments, including particularly the *Water Management for Value Chain Development* project (**PROVAL-CV**) invests in the development of entrepreneurship and key value chains, contributing to improved income for rural populations. The *Building the climate resilience of food insecure smallholder farmers through integrated management of climate risks (the R4 Rural Resilience Initiative)* project invests in

risk transfer mechanisms providing farmers with compensation in case of climate shocks, also building a sustainability path transitioning them to the commercial insurance market. Technical solutions for the financial instruments used in this project will be capitalized under Outputs 3.1.1 and 3.1.2 of the GEF project.

Component 4: The main baseline investment for this component is the Municipalities and Agglomerations Support Program (PACASEN) project. Its investments facilitate local capacity building and create space for multi-stakeholder dialogue. This is a solid basis for learning and communication activities planned under the GEF project.

f. Global environmental benefits (GEFTF) - Project Theory of Change block 4.

The main objective of this project is to contribute to the implementation of CNIS / GDT and to help Senegal reach land degradation neutrality by 2030 by creating favourable conditions for intensification, good practice of SLM. The project will be implemented in close collaboration with the local authorities to rehabilitate and sustainably manage the production systems, in the targeted communal territories covering a total of 412,000 ha. This project will contribute to restore land and ecosystem functionality, the generation of benefits for local livelihoods and the strengthening of community resilience to droughts subject to improved governance for significant impact on wider ecosystem. Results will improve land productivity due to increased organic carbon and soil moisture, which will result in increased agricultural production and climate resilience

Other important benefits of the project include the conservation of biodiversity, adaptation and mitigation to climate change. Biodiversity will be conserved and restored as part of innovative landscape restoration activities that are socially accepted by communities. Agroecological approaches will contribute to a diversification of natural habitats and an increase of the fertility of the grounds, the rehabilitation of the hydrological cycles.

The project will aim to restore 12,000 ha based on experiences and lessons learnt for restoration technologies and community participation methodologies using enriched natural regeneration, seeding and planting diversified native species, considering non-timber forest products (NTFP) species for income generation and development of climate-resilient value chains. Scaling-up restoration addressing landscape scale will enabling users to achieve trade-offs among conflicting interests and balancing social, cultural, economic and environmental benefits. Restoration of ecosystems' natural capital from barren lands to robust dryland ecosystems has large mitigation benefits from increased soil organic matter and above ground biomass.

The project will support the achievement of the following Aichi targets:

Target 1: By 2025, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably (this is realized through ICAFs, CSV, PPP, community based conservation initiatives);

Target 7: By 2025 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity (in 5th NBSP, through participatory forest management plans); and

Target 15: By 2025, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 18: By 2025, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels

Socio-economic benefits

IPCC report on Land states that *"Most of the land management-based response options that do not increase competition for land, and almost all options based on value chain management (e.g., dietary choices, reduced post-harvest losses, reduced food waste) and risk management, can contribute to eradicating poverty and eliminating hunger while promoting good health and wellbeing, clean water and sanitation, climate action, and life on land"*. The proposed project will thus contribute to improving the socio-economic conditions of small farmers and pastoralists, rural households in targeted vulnerable areas. The integrated implementation of the four components will have an impact on knowledge enabling rural populations to adapt to the impacts of climate change; expand their sustainable natural resource management practices; improve food security through diversification of activities; an improved marketing system for agricultural products and non-timber forest products by capitalizing on the experience of linking market operators and producer organizations; a contribution to reducing social tensions between farmers, agro-pastoralists and pastoralists, as well as other users of natural resources, through better integration of production systems. Gender mainstreaming will strengthen the empowerment of women and youth through information, training and advocacy to encourage the mutual participation of all social categories. The proposed project will follow the GEF and FAO policy to ensure gender equality.

Enabling rural people to learn about and apply good practices for the sustainable management of natural resources will also help to reduce land degradation and prevent competitive pressures on natural resources and the risks of desertification (indirect benefits for the global environment). In addition, the project will reduce their vulnerability and enhance adaptive capacity to prevent climate-induced economic losses (direct adaptation benefit). Additional socio-economic analysis will be conducted during project preparation to explore linkages and identify win-win solutions and socio-economic benefits. The proposed LDN monitoring system (Theory of Change Block 5) will capture key SDG co-benefits in the form of indicators, and co-benefits monitoring will be undertaken as a standard practice of GEF projects. Project contribution vs. attribution to co-benefits will be distinguished during the PPG.

The project results will be attributing to two SDG targets, and contributing to a number of others, as outlined in the table below.

Table 5. Project's contribution and attribution to SDGs.

SDG #	SDG	Targets	Indicators	Project's attribution/contribution
		Project **attribution** to SDGs		
15	Life on Land	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management	Project will help restore and sustainably manage degraded forests. The dedicated target will be defined during the PPG.
		15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	15.3.1 Proportion of land that is degraded over total land area	The project will demonstrate the LDN approach and thus avoid degradation on 400,000 ha, and reduce degradation and restore 8,000 ha of degraded land in accordance with LDN hierarchy of responses
		Project **contribution** to other SDGs		
15	Life on land	15.1 Ensure conservation of ecosystems and their services 15.4 Ensure conservation of mountain ecosystems 15.5 Reduce degradation of natural habitats 15.8 Reduce impact of invasive alien species 15.9 Integrate ecosystem and biodiversity values in policy	TBD during PPG	TBD during PPG
		1.1 Eradicate extreme poverty		TBD during PPG

1	No poverty	1.2 Halve % of people in poverty 1.4 Ensure equal rights to resources, ownership over land 1.5 Build resilience, reduce vulnerability	TBD during PPG	
2	Zero hunger	2.1 End hunger 2.2 End all forms of malnutrition 2.3 Double agriculture productivity and incomes 2.4 Ensure sustainable food production systems	TBD during PPG	TBD during PPG
6	Clean water and sanitation	6.4 Increase water-use efficiency 6.5 Implement integrated water resources management 6.6 Protect and restore water-related ecosystems	TBD during PPG	TBD during PPG
7	Affordable and clean energy	7.2 Increase share of renewable energy	TBD during PPG	TBD during PPG
13	Climate action	13.1 Strengthen resilience to climate-related hazards 13.2 Integrate climate change measures in policy	TBD during PPG	TBD during PPG

As a result of project intervention, the following socio-economic co-benefits are envisaged at the time of the PIF formulation:

· A number of farmers with access to advisory or extension services (total # per administrative district per region)

· Increased investments in SLM

- Increased livelihoods and economic resilience through improved climate resilient agro-sylvo-pastoral value chains (25% increase in income)

- Increased social resilience and human well-being (Gender equality, access to information and finance) of 87,500 farmers (50% women)

- Improved access to finance for small-holder farmers

- Improved food security through increased land productivity (project contribution defined, but attribution not monitored)

- Improved biodiversity conservation

g. Innovation, sustainability and potential for scaling up

recent decades, several sustainable land management practices and climate change mitigation and adaptation measures and technologies have been developed to pe with the gradual degradation of the environment and people's livelihoods. However, these practices have faced a multitude of constraints, particularly in terms of eir implementation at the local level. A rapid analysis of lessons learnt from past investments in the Groundnut Basin point at some context-specific elements to nsider for a more sustainable project that has a potential for upscaling, inscaling and outscaling. The innovation and the sustainability and upscaling potential of the oject build on a number of principles, including:

Participatory learning and community stewardship
e project promotes a change of approach based on participatory learning (e.g. farmer field schools) involving producers as partners in the search for locally adapted chnologies has been promoted. This approach builds an environment conducive to sectors synergy and the stewardship of local communities. Lessons from evious SLM investment also point out the importance to link up the local communities to technical expertise. The project will therefore facilitate the exchange with tension services, local/national research institutes, as well as well-rooted specialised NGOs/CSOs. The approach will integrate different models and approaches veloped by FAO and other partners: climate-smart village model, cashier approach, youth integration model in agriculture, Dimitra Clubs, and Farmer Field Schools. me of these approaches have been demonstrated and have had positive results, while others are innovations in the target area.

each commune the project reinforces a combination of agro-sylvo-pastoral approaches increasing technical skills and social mobilization for SLM. Building an vironment that promotes a full participation and involvement of communes to address SLM issues is innovative as an approach adopted by the project. rticipatory tools based on non-formal educational methods promote a community based engagement. Everyone is encouraged to participate and share ideas. isting local knowledge is solicited, valued and tested along with newly introduced ideas.

rthermore, consultations on the management of natural resources will ensure a dialogue between resource-using populations and institutions, thus increasing the cial sustainability of actions (reducing conflicts, improving access), information, consultation and local participation, etc.). The project's approach is based on the tive participation of the population in promoting endogenous know-how that ensures social sustainability. Thus, social groups sharing interests and facing the same vironmental constraints are linked to share their experiences and concerns. The relevance of the actions advocated to answer questions raised within organizations d the involvement of local authorities is also a key element of social sustainability since they reinforce the cohesion of groups (collective actions around an tegrated holistic approach).

Women empowerment

Strategically engaging women in the project is believed to have a more lasting impact. A number of SLM/natural resource management investments have seen positive returns and multiplying effects from working with women and women groups primarily. To introduce a gender transformative approach, the project will develop a gender TOC during PPG. It will rely on a number of gender transformative approaches (Dimitra club and farmer field schools, gender-sensitive value chain assessments) and deploy mechanisms to mainstream gender equality and women empowerment, including:

Providing critical information for policymakers on the main barriers and prevailing gender bias in accessing finance, and facilitate measuring progress;

Generating valuable market information about potential business opportunities for women

Targeting capacity-building needs to enhance financial literacy for women

Providing technical support, capacity-building and back-stopping to activities related to commodity production, enhancing market access and access to finance in consultation FNDASP.

Strengthening existing and creating new women-based saving groups and credit associations

Lobbying on credit access to farmer groups including youth/women and other vulnerable groups.

Women access to finance

Building on lessons from SLM/NR management projects in the project landscapes, context-specific success factors will be considered to secure sustainability of results. These success factors include: 1) Selecting the partner that has an overlapping mission with the project objective (including gender), as well as sound credit portfolio, and good transparency track record; 2) Supporting only productive activities evaluated by feasibility studies and imposes a set of conditions that prevent farmers to get trapped in a debt spiral; 3) Integrating SLM and NRM criteria in the identification of income generating activities to be supported by the micro-credits; and 4) **Women's groups** in particular have demonstrated ownership and creative integration of microfinance. The option to introduce a window for women-led SLM micro-projects by FNDASP will be explored to accompany activities planned under component 3.

SLM decision support

The project will involve the stakeholders at all levels, from local to national and international. The project rationale is grounded in the results and lessons learned of FAO-WOCAT DS-SLM project. The project will develop a strategy and action plan for mainstreaming, scaling up and out of SLM. For that, further analysis of the relevant previous activities, the existing data and information on different SLM practices, including their implementation details, and the remaining critical barriers will be conducted.

To ensure the success of the resulting SLM mainstreaming mechanism at the landscape level, the ecological, institutional, socio-economic, and cultural conditions will be studied during the PPG to support informed decision-making. The public expenditure on SLM will be reviewed and an analysis carried out how the expenditure is aligned to land policies and how it is targeted to land degradation hotspots. The project may also deploy a combination of the similarity and/or suitability analyses. To scale out, the project may also deploy, among other tools, a Cost-Benefit Analysis to assess the returns to land management practices of major land use types, namely forests, rangelands, and selected crops/value chains (to be selected during the PPG).

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[1] FAOSTAT.

[2] https://cgspace.cgiar.org/bitstream/handle/10568/74524/SENEGAL_CSA_Profile.pdf?sequence=3&isAllowed=y

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1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Table 6. Project target regions

Region	Latitude (N)	Longitude (W)
Diourbel	14,51439749	-16,68708863
	15,02707436	-15,43637020
Fatick	13,59331609	-16,79206973
	14,75239323	-15,46221817
Kaffrine	13,74316116	-15,86290161
	14,72318799	-14,58259748
Tambacounda	15,11116958	-11,86417821
	12,62993911	-14,83359495

Source *EPSG:4326 - WGS 84 - Geographic*

Coordinates in UTM

Figure 7. Land cover change map of Senegal (1990-2005). *Source:* FAO LADA.
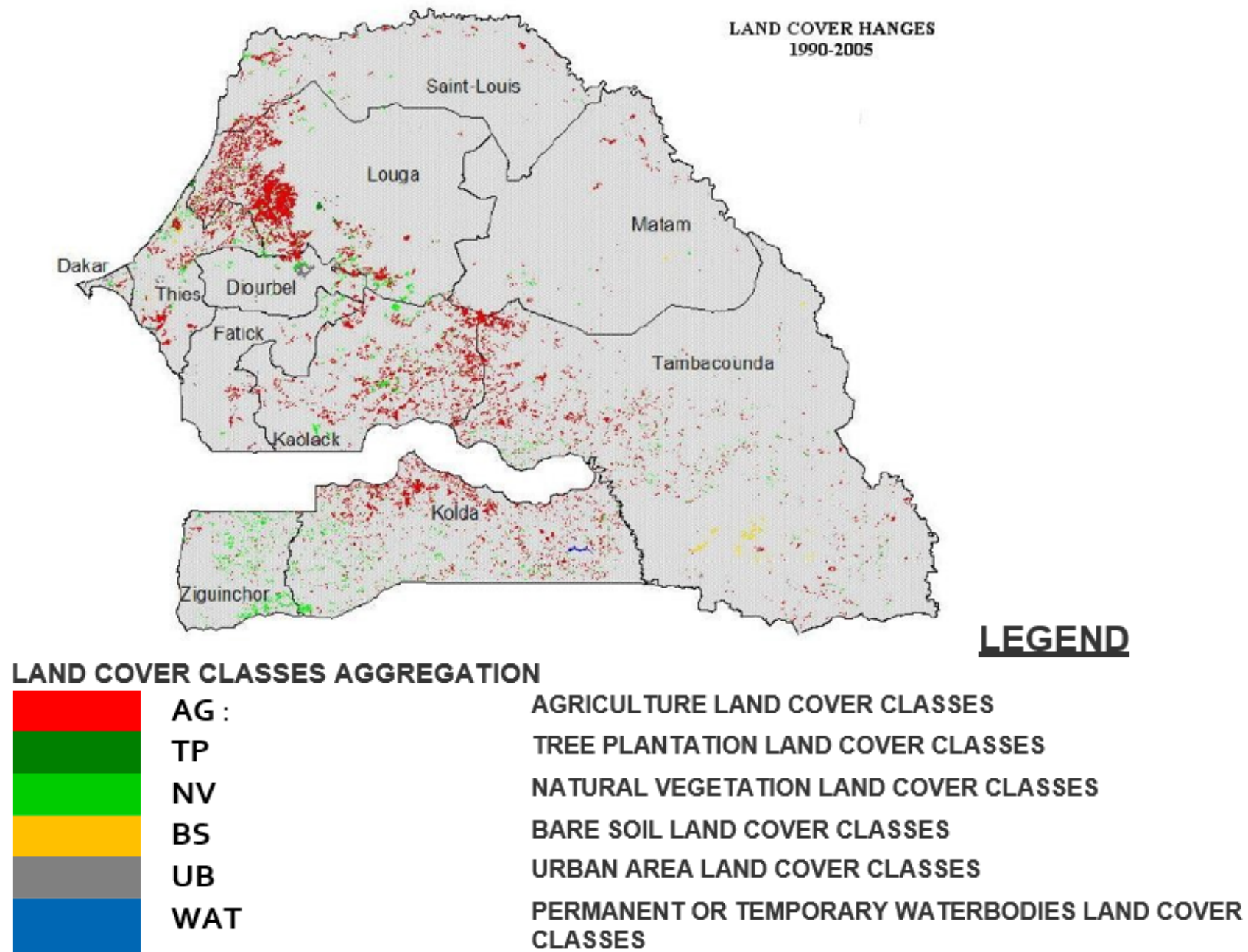
LAND COVER HANGES
1990-2005

Saint-Louis

Louga

Matam

Dakar

Thies   Diourbel

Fatick

Tambacounda

Kaolack

Kolda

Ziguinchor

LEGEND

LAND COVER CLASSES AGGREGATION

🟥	AG :	AGRICULTURE LAND COVER CLASSES
🟩	TP	TREE PLANTATION LAND COVER CLASSES
🟢	NV	NATURAL VEGETATION LAND COVER CLASSES
🟧	BS	BARE SOIL LAND COVER CLASSES
⬜	UB	URBAN AREA LAND COVER CLASSES
🟦	WAT	PERMANENT OR TEMPORARY WATERBODIES LAND COVER CLASSES

Figure 8. Soil organic carbon map of Senegal

LEGENDE

SN_Limites_Regions

Stock_Carbone organique

T C_Ha (0-30 cm)

- 3,56 - 15,62
- 15,63 - 22,41
- 22,42 - 32,97
- 32,98 - 51,45
- 51,46 - 99,73

INSTITUT NATIONAL DE PEDOLOGIE EN COLLABORATION AVEC FAO, ISRA, CSE, IRD (UMR Eco&Sols) et UGB (OCTOBRE 2017)
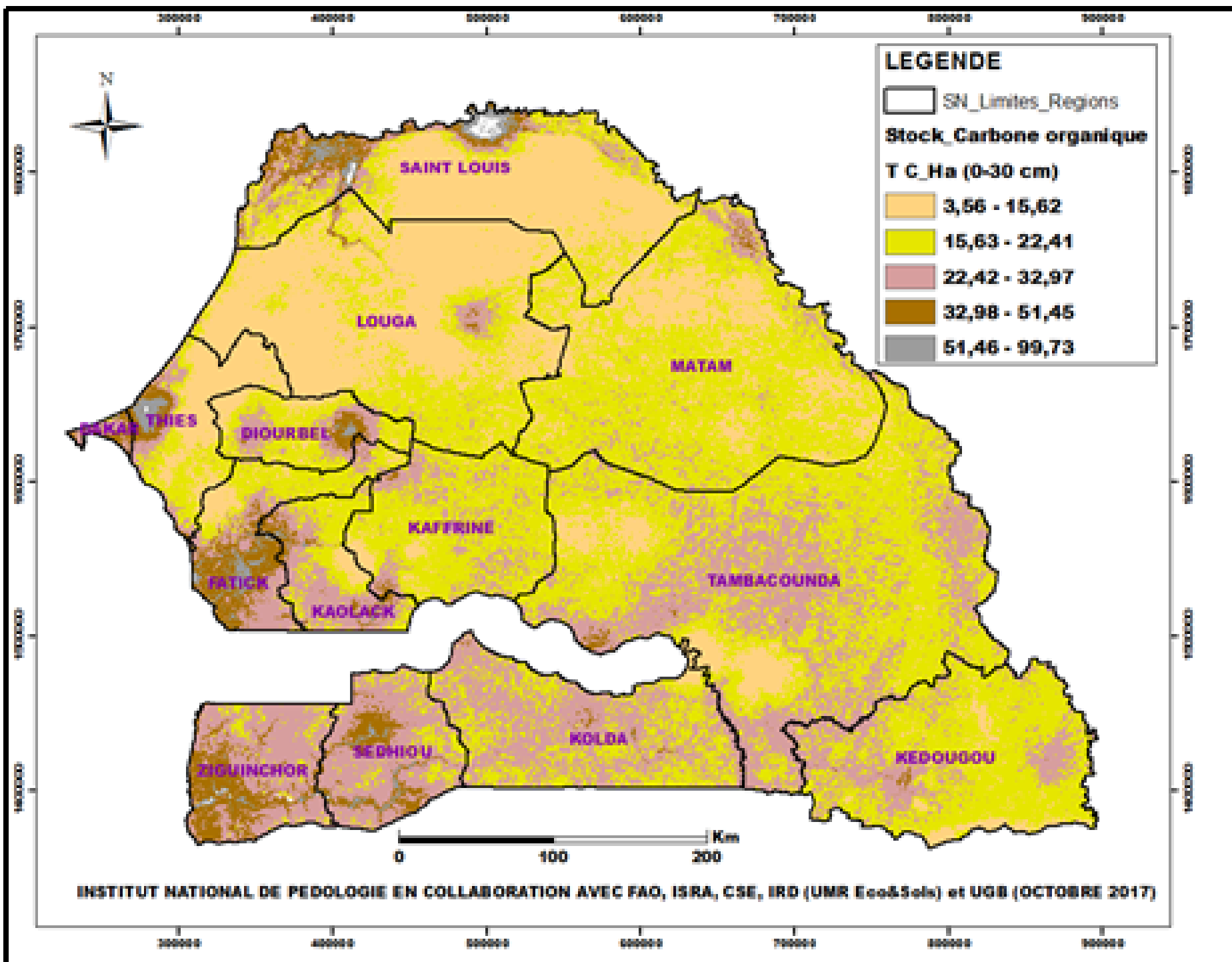
Figure 9. Land productivity map of Senegal

Biomass production 2020 in Senegal

Legend
- Targeted area

Biomass production Kg.MS/ha
- Water
- Very low
- < 500 kg
- 500 - 1000 kg
- 1000 - 1500 kg
- 1500 - 2000 kg
- 2000 - 2500 kg
- 2500 - 3000 kg
- 3000 - 3500 kg
- 3500 - 4000 kg
- 4000 - 4500 kg
- 4500 - 5000 kg
- > 5000 kg

DIOURBEL

FATICK

KAFFRINE

TAMBACOUNDA

CSE
Centre de Suivi Ecologique

Source :
Images satellites PROBA-V
Données de terrain CSE
Cartes de base ANAT/DTGC

0 25 50 100 150 200
Km

2. Stakeholders
Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

Consultations with stakeholders from a wide range of national structures, NGOs, local and regional authorities and producer organizations were conducted. The discussions focused on the comparative advantages of each structure to be used for the development and implementation of the project. A detailed account of the stakeholder consultations conducted can be found as a separate document annexed to this PIF. The table below presents the stakeholders that will be involved during consultations in the project development phase. A comprehensive stakeholder engagement plan will be developed during the PPG phase.

Table 6. Project stakeholders

Stakeholders	Potential role in the project
Ministry of the Environment and Sustainable Development	*The Ecological Monitoring Center (CSE)* will be linked to the Project for Mapping and Assessment of Biomass; (iii) development of land use and management plans *The Senegalese Agency for Reforestation and the Great Green Wall (ASERGMV)*. It will be a key partner for the implementation of the objectives of afforestation, restoration and rehabilitation of degraded lands of agro-sylvo-pastoral systems. The Department of Water and Forests, Hunting and Soil Conservation (DEFCCS) is responsible for the development and implementation of the national forest policy. It exercises state prerogatives in the fields of soil conservation, wildlife management and forest ecosystems. It contributes to building the technical capacities of government officials, local elected officials and grassroots community organizations, and developing their management and organizational capacities. Its field system supports the interventions of local authorities

	The Department of the Environment and Classified Establishments (DEEC) is responsible for piloting the NDC's monitoring and evaluation system. Initiatives are underway with the Adapt'Action project funded by the French Development Agency to support the implementation of an adaptation NDC monitoring system.
Ministry of Agriculture and Rural Equipment	*National Institute of Pedology (INP)* will intervene in the capacity building of the actors in SLM notably in the agro-soil characterization, in the realization of the works of defense and restoration of the grounds (DRS) as well as all the actions which touch the CNIS / SLM. The INP is anchored in the project area with its Peanut Basin and Tambacounda delegations. This mechanism can be used as part of the implementation of project activities.

National Agency of Agricultural and Rural Council (ANCAR), with good skills, will support the implementation of activities related to the institutional and organizational development of POs (structuring, capacity building, support and animation). It will mainly provide agricultural and livestock technical advice. POs and Cooperatives specializing in the production of selected seeds will ensure the production of these seeds. *Senegalese Institute for Agricultural Research (ISRA)* will intervene for the promotion of agroforestry and the scaling up of smart climate villages.

The National Agrosilvopastoral Development Fund (FNDASP) is the technical and financial arm of the national agricultural advisory system, but also an instrument for rural people to finance the training of actors in value chains and the large-scale dissemination of technological innovations. A farmer orgnization financing mechanism will be outlined during the PPG as part of the support for the implementation of activities contributing to LDN and Biodiversity.

National Civil Aviation and Meteorology Agency (ANACIM) will contribute in disseminating climate information to enable farmers to better cope with the climate impacts that threaten their agricultural productivity. |
| Ministry of Territorial Communities, Development and Land Use Planning | Local authorities, local elected representatives and village sections in the targeted communities will be consulted during project development and actively involved in the implementation of the project, especially during the evaluation of rangelands and the community environment. The planning of environmental action. They will play an important role in indicating the direct beneficiaries of all project interventions. |
| Private sector | Private sector actors will be identified during the PPG phase to support acce |

	ss to finance and market for small producers.
Civil society	The NGOs (ASPRODEB, Enda Pronat, Wetland International, World Vision) will provide support to grassroots communities through the implementation of activities aimed at the development of cereal agricultural and agroforestry value chains and the promotion of agro ecological practices to support the resilience of vulnerable pastoral and agro-pastoral communities. Many NGOs are also engaged in relevant gender issues

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

Women in rural areas make up the majority of the labour force - with almost 70% active in agriculture against 30% men – while the heads of households are mostly men, 85% against 15% of women. Women have lower access to inputs, such as land. Studies by The Direction of Agricultural Statistics showed that in 2012 less than 10% of land ownerships were held by women against 90.2% of men .

Rural women are heavily involved in the entire agricultural value chain, from production to processing, to marketing of agricultural products. However, the lack of gender-disaggregated data does not allow for monitoring of gender. Likewise, sex-disaggregated data are often missing from the studies or are not updated . While FAO and IFAD studies show that women's wages in agriculture are similar to those of men , women often have no control over the income generated from their work . The same study in Senegal reports that women have limited access to irrigation and infrastructure and have weaker claims over family labour.

The project will follow the GEF gender policy/ guidelines, FAO gender policy and safeguards related to gender, UN Women/ UNCCD LDN gender manual and gender strategy of the project partners.

The project will promote women's empowerment and gender equality. Fifty percent of project beneficiaries will be women. This project will target vulnerable women in rural areas to enable them to better access and control productive resources (land, water, and agricultural inputs) and increased participation in economic and social activities.

During the project preparation phase (PPG), gender-disaggregation of indicators will be nuanced, including tracking the number of women and youth with enhanced capacity in LDN at national and sub-national levels (Component 1); number of women and youth' access to SLM practices in line with LDN principles, land use plans to be developed and SLM technologies and approaches to be applied will be developed in a participatory matter and be gender-sensitive, knowledge products produced will be gender-sensitive (Component 2); number of youth and women producers supported in improved local value chains with increased income, profitable micro-enterprises set up / strengthened for the benefit of youth and women in agricultural value chains (organic inputs, market development, valuation / enrichment defended), Integrated Community Agricultural Farms (ICAF) of 1 ha each set up, functional and generating decent jobs for young people (50% women) (Component 3); project communication strategy will be gender-sensitive and the gender-disaggregated indicators will be featured in the project M&E systems (Component 4).

The relevant information and data on gender will be drawn from the socio-economic baseline report, field consultations and desk research to be conducted during the PPG, and will lead to the development of a dedicated gender analysis. Gender baseline report will analyse gender in select policy provisions and decision-making (including relevant SDGs), women's contribution to farming and gaps in access to agricultural inputs, and gender dimensions in the target

value chains. The analysis will lead to the development of Gender Action Plan (GAP). The GAP goal is to promote gender responsive SLM and landscape restoration to achieve LDN commitments of Senegal and to promote increased access to natural resources, economic benefits from these resources, increased participation in decision making related to these resources, and reduced workloads for women.

The project builds on a recognition of women's practical needs associated with their traditional gender roles and seeks windows of opportunity to expand them. The project will identify a gender focal point within the team in order to coordinate actions, track adherence to the GAP operational principles (to be detailed during the PPG in line with the FAO, GEF, and UNCCD guidelines and policies), and report on the GAP implementation.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

The project will also capitalize successful experiences on the structuring and financing of value chains:

The strategy developed by the Agricultural Sector Support Project (PAFA) is based on demand and market needs with producer organizations (POs) and market operators (OM) as the main actors. The first ones, engaged in the development of a quality production will have to answer the quality requirements expressed by the demand. The latter, for their part, will have to respect their commitments to buy the products at remunerative negotiated prices. The project will co-finance agricultural inputs, equipment and materials as well as hydro-agricultural development based on the needs expressed by POs through an action plan.

SOL and FONGS have been engaged since 2011 in reducing the dependence on wheat of Senegalese rural processors by creating a sustainable local grain sector with support for the installation of flour mills in the middle to further support non-agricultural employment and make it more remunerative. This process accompanies a professionalization dynamic in rural areas, supports private initiative on activities upstream and downstream of production chains.

Relevant stakeholders in the decentralized microfinance sector will be engaged both in project development and in providing financial support for consolidation and scaling up of gains on SLM practices. This support validated and develop markets for priority value chains.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risks	Risk mitigation measures
Politicization and resistance to strengthening land rights, notably for youth and women	The project will address tenure rights in its first component. This is not the first attempt to address tenure rights. The project will build on a solid baseline and the use of VGGT in the project area. Previous project interventions have facilitated inclusive dialogue at multiple levels, targeting local governance processes, including pilot activities which are making a difference on the ground and which contributed to a good level of awareness at national and local levels on access to land for the most vulnerable groups (youth and women), fundamental for improved resilience of populations. The project will bring to bear these experiences, and facilitate a continued dialogue on the issue, using the tried and tested VGGT. The knowledge management strategy of the project will include training, knowledge sharing and others on the topic of tenure rights, addressing different stakeholder groups to smoothen resistance and facilitate peaceful and fully supported access to tenure.
Scaling constraints of good practices established at municipal and inter-municipal level	The project will involve all stakeholders in the dissemination of good practice using appropriate tools for building social mobilization, gender mainstreaming capacities developed by FAO and other partners.
The delay in the intervention of the private sector and decentralized financial services.	The project will be a strong case for investment in the areas of intervention. The demonstration on good practices, awareness raising, and involvement of local authorities are all elements that serve as advocacy to highlight investments at the local level.
Project activities are not well integrated in local planning	The project will establish a multi-stakeholder platform to ensure that Stakeholders and key sectors can influence and benefit from lessons learned from the project through a structured dialogue on mainstreaming results.
Climate change may affect crop and livestock cycles and increase food/nutritional insecurity, due to the likelihood of increased occurrence of more severe droughts. Particularly the South is prone to this risk.	During the PPG phase, a climate change risk screening will be conducted, and based upon the level of risk different assessments conducted. These assessments provide the evidence to smartly integrate climate change into the project's intervention logic and results matrix. It also helps putting in place an adequate mitigation plan for a number of likely climate change hazards to occur.

Local, regional and/or global measures to contain impacts from pandemics (such as Covid-19) and their repercussions on availability of technical expertise, engagement of stakeholders, and securing financing	The project intervention logic considers resilience in a comprehensive way, and therefore addresses food sovereignty, rural poverty and livelihood opportunities. It also makes use of approaches, such as the farmer field school approach, that have proven successful over the past few months, providing extension services despite containment restrictions, and easily and promptly addressing health related concerns so they do not become social, economic and environmental crises. To overcome concerns in mobilizing the technical expertise to support project design and implementation, the project will work with the excellent technical expertise available nationally, and prioritise work with locally rooted (CSOs, NGOs, government institutes, extension services, …) organizations and realities in order to minimize the impacts of limitations on mobility at the national and international level. Technological alternatives to face-to-face consultations will be deployed, securing proper participation and engagement of all relevant stakeholder groups, including women and youth. Government priorities have been defined, and agriculture and livestock are key sectors. It is therefore unlikely that re-orientation of financing is going to materialise in the coming biennium. Still, should it become difficult to secure co-financing, the project will deliver evidence and increase its sensitization and awareness raising and capacity development efforts under component 4 in order to advocate for continued support to green and resilient recovery.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

The planned collaboration between the Ministry of Agriculture and Rural Equipment and the Ministry of Local Authorities will add value to the implementation of the project and facilitate the creation of synergies and partnerships between the project and the project a wide range of "trust projects" from both ministries.

The Ministry of Agriculture and Rural Equipment will supervise the project. The MOA chairs the technical steering committee and provides political support. The following technical structures will be involved in the implementation of the activities in the field: (i) the National Institute of Soil Science (INP) will support SLM practices, which will strengthen the ecosystem approach of the project; (ii) the Senegalese Agricultural Research Institute (ISRA) will contribute to the project activities by strengthening the dissemination of agroforestry practices and the intelligent climate village model, by providing improved or locally improved varieties and will work within the project to strengthen selection and multiplication of seeds; (iii) the National Fund for Agro-Sylvo-Pastoral Development (FNDASP) is responsible for financing, on a competitive basis, agricultural and rural advisory services upon request, as well as for financing the training of producers and the structuring of their organizations; (iv) the National Civil Aviation and Meteorology Agency (ANACIM) will contribute in disseminating climate information to enable farmers to better cope with the climate impacts that threaten their agricultural productivity; (v) The Senegalese Agency for Reforestation and the Great Green Wall (ASERGMV). will support implementation of the objectives of afforestation, restoration and rehabilitation of degraded lands of agro-sylvo-pastoral systems; (vi) The Department of Water and Forests, Hunting and Soil Conservation (DEFCCS) is responsible for the development and implementation of the national forest policy. It will contribute to building the technical capacities of government officials, local elected officials and grassroots community organizations, and developing their management and organizational capacities; (vii) The Department of the Environment and Classified Establishments (DEEC) is responsible for piloting the NDC's monitoring and evaluation system and focal point for the GEF.

The national agency of agricultural and rural advisory (ANCAR) will support the capacity building of the beneficiaries through the approach of the agro pastoral field schools. The Ministry of Territorial Collectivities for Development and Regional Planning through its technical services will contribute to the implementation of the project in the local authorities taking into account the aspirations of the populations, for a sustainable economic development. A project steering committee will include representatives of sector ministries, local authorities, civil society organizations and producer organizations.

FAO will be the GEF agency and therefore guarantee technical and financial oversight and support. FAO will also secure mutual learning and ensure the proposed LD project builds upon existing projects and programmes, including the GEF-financed portfolio of relevant work in the country. This includes the LDCF project 5503, which is part of a cluster of climate change adaptation projects in the region, and has built a wealth of expertise particularly on impact monitoring of farmer field school project interventions. In order to fully benefit from this expertise, the project monitoring tools, approaches and lessons, and team of the 5503 project will be engaged in the proposed LD project. The project will be implemented in close collaboration with other relevant initiatives.

These initiatives include, among others: The World Bank's Senegal Municipalities and Agglomerations Support Program (PACASEN), which aims at effective citizen participation in the management of local affairs and the decentralization process. The sustainable cities initiative project to improve capacity for planning and implementing sustainable city management practices, including resilience to climate change, in selected urban areas.

The synergy with the various co-financing projects will take place at two levels. First, at the level project intervention areas through the establishment / strengthening of regional dialogue frameworks on the management of degraded land. At the national level, coordination will be facilitated by the National Strategic Investment Framework for Sustainable Land Management (CNIS/GDT) through the European Union-backed RIPOSTES project.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions?

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

The project is consistent with the main national laws, regulations, strategies and policies (see baseline section).

All sustainable land management measures have been developed to be in synergy with the conventions ratified by Senegal: UNFCCC, CBD, and UNCCD. Senegal committed itself to set a voluntary national objective of land degradation neutrality and to establish the Sustainable Development Goal 15, "Life on land", and its goal 15.3 on land degradation neutrality, a unique opportunity for countries to reduce the growing threats of land degradation and reap multiple socio-economic benefits. Senegal has set five national voluntary Land Degradation Neutrality targets, and committed to establishing an LDN baseline, and formulation of the associated measures to achieve LDN. Senegal has pledged restore 2,000,000 ha (10.39%) under the Bonn Challenge. The project interventions will be geared towards Mainstreaming biodiversity conservation and sustainable use into production landscapes which has been recognized as a part of the Convention on Biological Diversity's (CBD) Strategic Plan and the Aichi Biodiversity Targets, especially Target 7 (sustainable management of production systems) and Target 13 (maintenance of genetic diversity of crops, animals and other socio-economically important species). Along the coast the project will undertake various land restoration activities in the buffer zone of the Delta du Saloum Biosphere Reserve (RBDS).

Senegal signed and then ratified the Convention on Biological Diversity (CBD) in 1994. Through these acts, the country solemnly pledged to contribute to the achievement of the objectives set by the Convention. To do this, Senegal adopted in 1998 a National Strategy and a National Action Plan for the Conservation of Biodiversity (SPNAB), articulated around four major strategic objectives: (i) the conservation of biodiversity in high density sites, (ii) integration of biodiversity conservation into production programs and activities, (iii) equitable sharing of roles, responsibilities and benefits in biodiversity management and (iv) information and awareness of all stakeholders on the importance of biodiversity and the need for its conservation.

In Senegal the Agriculture, Forestry and Other Land Use (AFOLU) sector is responsible for 64% of the total greenhouse gas emissions of the country. Due to the role of terrestrial ecosystems as a source and sink of emissions land is positioned as a key point of intervention for climate change mitigation and adaptation as reflected in Senegal's Nationally Determined Contributions (NDC). The NDC is part of the forward-looking vision, "Plan Senegal Emergent (PSE)", its strategy and development plans as well as sectoral programs for the sustainable management of natural and environmental resources. The main objective is "Reducing the degradation of the environment and natural resources, combating the adverse effects of climate change and the loss of biodiversity". Focus is put on the fight against deforestation and land degradation with a view to:

- Ensure the restoration and sustainable management of land;

- Significantly reduce the frequency and magnitude of bush fires;

- Reduce the degradation of forest resources

The contribution will be implemented mainly by increasing carbon sequestration, through the implementation of projects related to the agriculture and forestry sectors.

In the forestry sector, the strategic actions of the NDC are: (i) Increase annually the reforested / restored areas by approximately 1,297 ha of mangrove and 21,000 ha of various plantations; (ii) Reduce the areas burned due to late fires by 5% and those due to controlled fires by 10% compared to 2015. These efforts will reduce the deforestation rate by 25%, which will drop from 40,000 ha / year in 2010 to 30,000 ha / year in 2030.

In the agriculture sector, the strategic actions of the NDC are: (i) put annually 99,621 ha of agricultural land under Assisted Natural Regeneration practice and 4,500 ha under compost amendment, by 2030 (ii) increase organic manure production and improved compost along with the production of biogas.

The project will respond to the CNIS / GDT priorities that are strictly linked to investments in actions that will allow (i) a coherence of the missions and interventions of SLM actors in order to definitively eliminate duplication between institutions and guarantee more efficiency and effectiveness in SLM actions; (ii) an expansion of SLM practices and the fight against degradation phenomena in order to optimize actions and improve the productive base of the different agro-ecological zones; (iii) the availability of reliable and up-to-date information on the resources and state of land degradation in the country; (iv) greater political, legal and financial ownership of SLM; (v) a strengthening of the financial, technical and logistic capacities of the actors.

8. Knowledge Management

Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

As indicated in Component 4, the project will capture, develop and disseminate knowledge.

For knowledge and data capture and development, the project will invest in multi-scale data and information on LD and BD status, the development of training material for various knowledge users (e.g. practitioners) and the set up of a knowledge platform/information system on degraded lands and vegetation cover.

For **knowledge dissemination**, the project's lessons will feed into the country's **platforms** that will be useful for knowledge management. The national multi-stakeholder platform on land governance[1] in Senegal is unique in its convening power, bringing together members from relevant ministries (Agriculture, Fisheries, Livestock, Environment, territorial communities) and more recently, the MFB and representatives from CSOs, research institutions, private sector, and local government and farmers' organizations. The existence of a donors' coordination mechanism involved in the land sector facilitates donor information exchange and collaboration, creating synergies and avoiding duplication of investments in the land sector[2]. In addition, "Saloum Mangrove Platform"[3] established with the support of Wetlands International Africa (2015) provides a framework for consultation and harmonization between line ministries and local authorities' interventions to ensure sustainable use and preservation of natural resources in accordance with the principles of the Sine Saloum biosphere reserve. Participatory and inclusive stakeholder engagement throughout planning processes resulted in the development of the strategic plan for the Saloum Delta (2019-2024). The plan has four pillars: 1) Governance, communication and advocacy; 2) Development, conservation, restoration of ecosystems; 3) Capacity building of actors and knowledge management; 4) Sustainable development of natural resources.

The project will develop a strategy to strengthen the **policy dialogue** on SLM at local and national level and by organizing stakeholder forums to present SLM lessons and practices and disseminate lessons and recommendations, with the aim of to initiate the taking into account of the project's achievements in the budgeting and planning policies of the communes for the decision-makers of the governments, the community leaders, the groups of the civil society.

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[1] The platform's Steering Committee is chaired by a representative appointed by the Ministry of Agriculture and Rural Equipment and is co-chaired by a representative of the National Council for Rural Consultation and Cooperation (CNCR). The think tank Initiative prospective agricole et rurale (IPAR) hosts its secretariat

[2] Groupe des partenaires techniques et financiers sur le foncier, sous-groupe du Groupe Thématique Développement Rural et Sécurité Alimentaire (GTDRSA).

[3] https://africa.wetlands.org/video/plateforme-mangrove-delta-de-saloum-cadre-de-coordination-de-creation-de-synergies/

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts
Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Please, see the ESS certificate for details on mitigation measures.

Furthermore, note that safeguard trigger question 2 (Would this project be implemented within a legally designated protected area or its bugger zone?) automatically triggers a high-risk classification. Nevertheless, considering the nature of the project, the technical project design team, led by the Lead Technical Officer, discussed reclassification with the FAO ESS-Unit. This latter agreed to classify the project as a medium-risk project, as no harm from the project on the PA in question is expected. The suggested mitigation measures described in the ESS Certificate will be adopted.

Supporting Documents
Upload available ESS supporting documents.

Title	Submitted
Updated ESS Certification	

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Baba Drame	Operational Focal Point of the GEF Senegal	Ministère de l'environnement et du développement durable	3/12/2021

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

Please, see maps and coordinates already provided earlier.

LOCATION MAP OF TARGETED COMMUNES
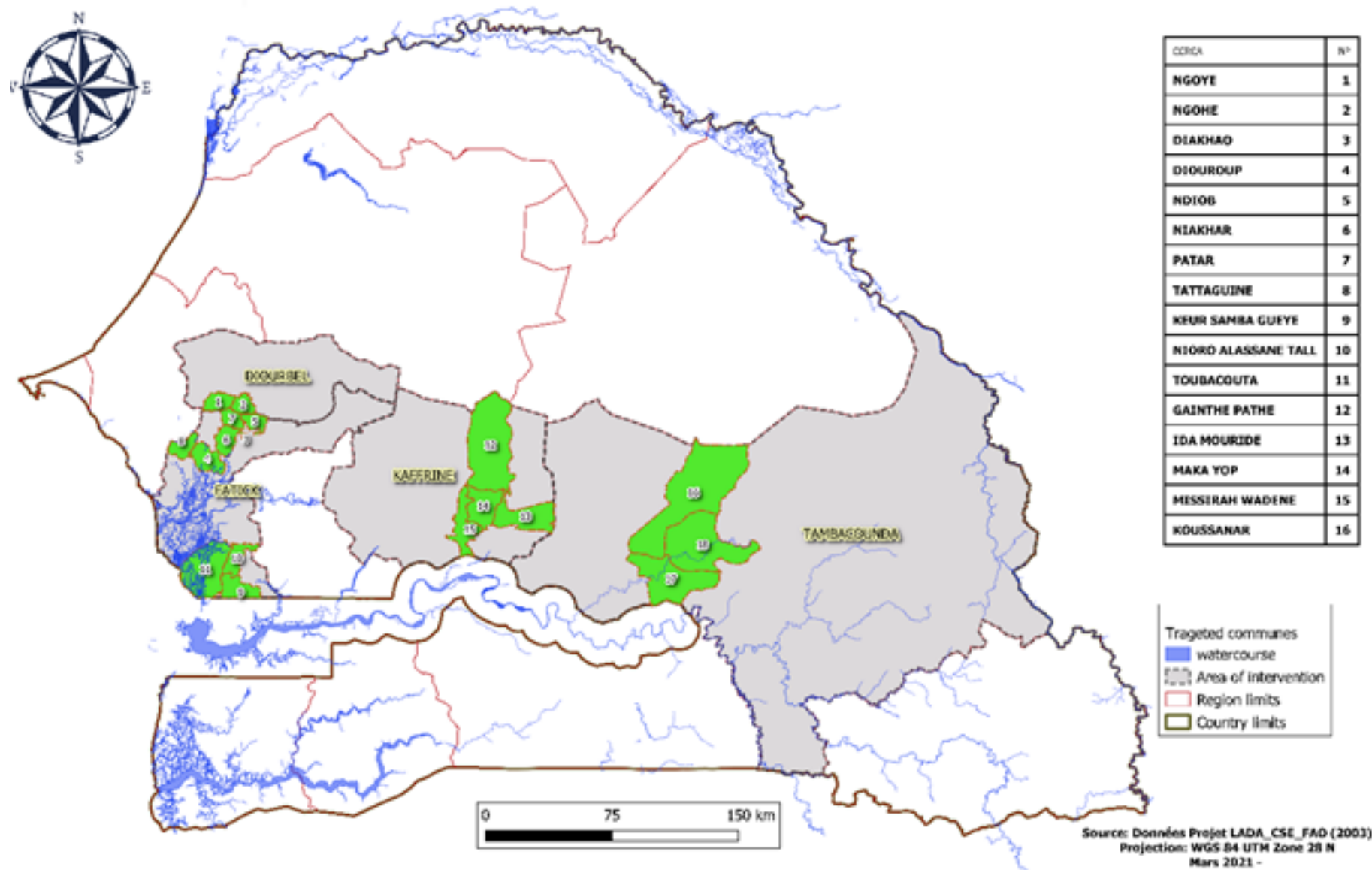
CERCA	N°
NGOYE	1
NGOHE	2
DIAKHAO	3
DIOUROUP	4
NDIOB	5
NIAKHAR	6
PATAR	7
TATTAGUINE	8
KEUR SAMBA GUEYE	9
NIORO ALASSANE TALL	10
TOUBACOUTA	11
GAINTHE PATHE	12
IDA MOURIDE	13
MAKA YOP	14
MESSIRAH WADENE	15
KOUSSANAR	16

Trageted communes
- watercourse
- Area of intervention
- Region limits
- Country limits

0   75   150 km

Source: Données Projet LADA_CSE_FAO (2003)
Projection: WGS 84 UTM Zone 28 N
Mars 2021 -