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IMPLEMENTATION COMPLETION AND RESULTS REPORT

TF A0663

ON A

GRANT FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US\$4.81 MILLION

TO THE

ISLAMIC REPUBLIC OF MAURITANIA

FOR THE

Mauritania Sustainable Landscape Management Project
under the Sahel and West Africa Program

August 8, 2021

Environment, Natural Resources & The Blue Economy Global Practice
Central and Western Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective {Jul 29, 2021})

Currency Unit = Ouguiya

36.12 MRU= US\$1

0.028 US\$ = 1 MRU

FISCAL YEAR

July 1 - June 30

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ABBREVIATIONS AND ACRONYMS

BD	Biodiversity (GEF focal area)
BRICKS	Building Resilience through Innovation, Communication and Knowledge Services
CBA	Cost Benefice Analysis
CDA	Community Development Association
CEA	Cost Effectiveness Analysis
CPF	Country Partnership Framework
DAF	<i>Directeur Administratif et Financier</i> (Administrative and Financial Director)
DCE	<i>Direction du Contrôle Environnemental</i> (Directorate of Environmental Control)
DPN	<i>Direction de la Protection de la Nature</i> (Directorate of Nature Protection)
DPREM	<i>Direction de la Protection et la Restauration des Espèces et des Milieux</i> (Directorate for Species and Ecosystems Protection and Restoration)
DREDD	<i>Direction Régionale de l'Environnement et du Développement Durable</i> (Regional Division of Environment and Sustainable Development)
ESIA	Environmental and Social Impact assessment
ESMF	Environmental and Social Management Framework
FM	Financial Management
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEO	Global Environment Objective
GGWI	Great Green Wall Initiative
GIS	Geographic Information System
GoM	Government of Mauritania
ICR	Implementation and Completion Report
IRR	Internal Rate Return
ISR	Implementation Status and Results Report
LD	Land Degradation (GEF focal area)
M&E	Monitoring and Evaluation
MEDD	<i>Ministère de l'Environnement et du Développement Durable</i> (Ministry of Environment and Sustainable Development)
NDVI	Normalized Difference Vegetation Index
NGO	Non-Governmental Organization
NPV	Net Present Value
OSS	Sahara and Sahel Observatory
PACV	Mauritania Community Based Watershed Management Project
PAD	Project Appraisal Document
PDO	Project Development Objective
PGDP	<i>Projet de Gestion Durable des Paysages</i> (Mauritania Sustainable Landscape Management Project under the SAWAP)
PMU	Project Management Unit
PRAPS	Regional Sahel Pastoralism Support Project
PRSP	Poverty Reduction Strategy
RCU	Regional Coordination Unit
RF	Results Framework
RPF	Resettlement Policy Framework
SAWAP	Sahel and West Africa Program
SFM	Sustainable Forest Management
SLM	Sustainable Landscape Management
TTL	Task Team Leader
WB	World Bank

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P144183	Mauritania Sustainable Landscape Management Project under the SAWAP
Country	Financing Instrument
Mauritania	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	

Organizations

Borrower	Implementing Agency
Ministry of Economy and Industry	Directorate of Protection and Restoration of Eco-system and Milieu of the Ministry of Environment an

Project Development Objective (PDO)

Original PDO

The Project Development Objective (PDO) is to strengthen sustainable landscape management in targeted productive ecosystems in Mauritania.



FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
TF-A0663	4,810,000	4,810,000	4,809,190
Total	4,810,000	4,810,000	4,809,190
Non-World Bank Financing			
Borrower/Recipient	0	0	0
Total	0	0	0
Total Project Cost	4,810,000	4,810,000	4,809,190

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
04-Aug-2015	17-Dec-2015	06-Feb-2019	31-Jan-2021	31-Jan-2021

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
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KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Moderately Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	04-Nov-2015	Satisfactory	Satisfactory	0
02	13-May-2016	Satisfactory	Satisfactory	0
03	20-May-2017	Moderately Satisfactory	Moderately Satisfactory	.50
04	30-Oct-2017	Moderately Satisfactory	Moderately Satisfactory	.95



05	01-Dec-2018	Moderately Satisfactory	Moderately Satisfactory	1.61
06	07-May-2019	Satisfactory	Moderately Satisfactory	2.13
07	08-May-2020	Satisfactory	Moderately Satisfactory	3.48
08	03-Feb-2021	Satisfactory	Moderately Satisfactory	4.81

SECTORS AND THEMES

Sectors

Major Sector/Sector (%)

Agriculture, Fishing and Forestry 100

Irrigation and Drainage 30

Public Administration - Agriculture, Fishing & Forestry 15

Forestry 55

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3) (%)

Private Sector Development 100

Jobs 100

Urban and Rural Development 36

Rural Development 36

Land Administration and Management 36

Environment and Natural Resource Management 64

Renewable Natural Resources Asset Management 26

Biodiversity 26

Water Resource Management 38

Water Institutions, Policies and Reform 38

ADM STAFF

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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

Country context

1. **Mauritania is a lower middle-income country part of the Sahel Region.** It covers an area of 1,030,631 km² and three-quarters of the country is covered by desert or semi-desert areas. In 2013, its population was estimated at 3.8 million inhabitants, with a Gross Domestic Product (GDP) per capita of US\$1,270 and almost half of the population living on US\$2 a day or less (over the decade 2003-2013)¹. Extreme levels of poverty and highest number of people living in poverty (70 percent) are found in rural areas.
2. **An economy relying on natural resources:** Mauritania has a dual economy: (a) a "modern economy" based on mining², extractive industries, and industrial fishing and (b) a "subsistence economy" based mainly on rain fed agriculture, livestock and small-scale fishing. Its economic growth depends on both renewable and non-renewable natural resources, with mining (accounting for 38 percent of GDP), livestock (20 percent) and fishing (3 percent) in 2013. The value of Mauritania's renewable natural resources (through fishery, agriculture, forestry, and livestock holding) was estimated at 30 percent of the total national wealth stock³.
3. **Desertification, land degradation and weak environmental governance:** Mauritania is one of the Sahelian countries most severely affected by the periods of drought that have been occurring since 1968. The impact of the droughts has been exacerbated by unsustainable human exploitation practices, resulting in fragmentation of natural habitats and loss of animal and plant species. At time of appraisal, the condition of land, water, forests and biodiversity was continuously deteriorating due to the combined effect of harsh climatic conditions and continued exploitation pressure such as deforestation for agriculture, timber and fuel needs and growing concentration of sedentary livestock in vulnerable areas. Added to this was weak environmental governance, i.e., limited institutional, material, financial and human resources available to the authorities in charge of environmental management.
4. **Food insecurity:** Weak agricultural productivity had affected most of the country's rural areas: the Government of Mauritania's (GOM) Food Security Strategy (2011-12) and Third Poverty Reduction Strategy (PRSP III, 2011) show that 26 percent of the population is affected by food insecurity, with the most vulnerable groups being women and young children. This situation is aggravated by the overall level of poverty, lack of investment in social and other productive sectors, harsh climatic conditions, low and unreliable rainfall, poor agricultural water management systems, and a very low level of irrigation development.

¹ Mele, Gianluca. 2014. Mauritania Economic Update, July 2014. World Bank Group, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/19973> License: CC BY 3.0 IGO

² Mauritania is the second exporter of iron ore in Africa; it also has significant potential in gold, copper, phosphate, and oil. The Mauritanian coast has one of the largest volume of fish in the world.

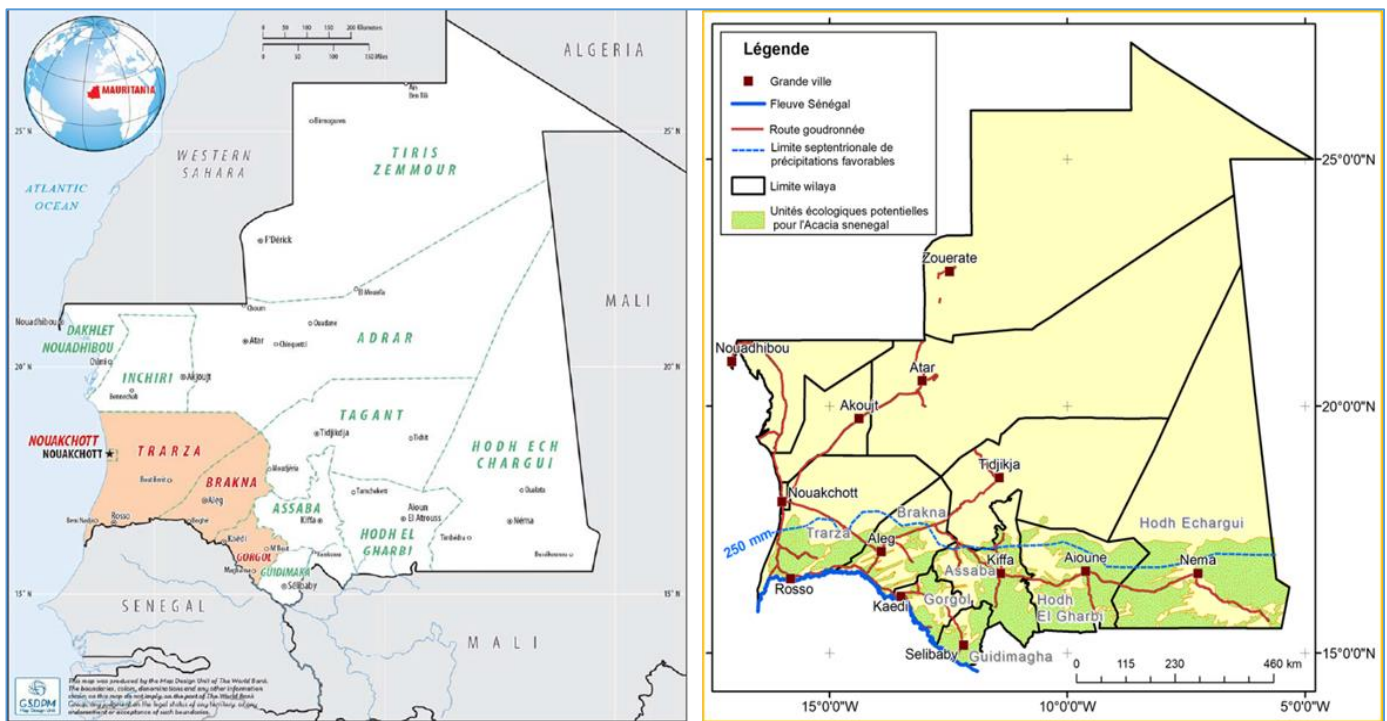
³ World Bank. Mauritania: Counting on Natural Wealth for a Sustainable Future. Policy Research Working Paper No. 6887. Washington DC, 2014



Sector context

- Gum Arabic Producing Ecosystems:** Geographically positioned at the frontline of the southward-expanding Sahara Desert, a transitional area between the Sahara and Sahel zones, potential sites for Gum Arabic producing ecosystems span 16.5 million hectares (1,100 km in length and 150 km in width), north of the Senegal River Valley. They cover the administrative regions of Trarza, Brakna, Assaba, Guidimaka, Gorgol, Hodh Ech Chargui and Hodh El Gharbi. Mauritania was the second largest exporter of Gum Arabic with an average annual production of 5,700 tons between 1968 and 1972. Later, gum production dwindled because of droughts and over exploitation of gum, wood, food and fodder. At time of appraisal, Gum Arabic production stood at about 500 tons annually. Gum Arabic was of both local and international use while demand on the global market was rising.

Figure 1: Project Map (left) and Map of favorable ecological units for the development of *Acacia Senegal* in Mauritania⁴ (right)



- Gum Arabic is produced from two tree species: *Acacia Senegal* and *Acacia Seyal*.** *Acacia Senegal*, which is the more prevalent species in Mauritania, produces higher gum quality. Both species are known to help fight desertification due to their adaptability to arid environments and easy establishment, as well as soil enriching and soil and water retaining qualities. Gum Arabic is usually obtained in open access sylvo-pastoral land, but it has also been successfully planted on small scale agro-sylvo-pastoral land (agroforestry). Gum Arabic is generally harvested by the most vulnerable parts of the population (e.g., herders) in open access lands, usually as a supplemental source of income. Two harvesting techniques are commonly used: extensive low impact gathering and more destructive “deep bleeding”. *Acacia Senegal* is a protected species according to Forest Law No. 97-007 of January

⁴ MEDD report financed by the project: “Distribution géographique des écosystèmes gomme arabe et du potentiel pour l’extension des pratiques de GDP avec une détermination du potentiel hydrologique au niveau des 7 wilayas”, juin 2020



20, 1997. However, in practice low impact gum gathering is accepted (but not the deep bleeding techniques) and development programs supporting Gum Arabic production have been allowed.

7. **The gum production sector faced several constraints at both local and national levels.** Local constraints were related to the production systems and their economic characteristics, as well as weak socio-economic characteristics of communities leading to opportunistic behaviors (such as unsustainable harvesting and storage practices), cultural practices and ecological constraints. National constraints include disorganized marketing channels, the absence of a suitable marketing financing structure, lack of research, data, and capacity to develop suitable production and transformation technologies.

World Bank Strategy and responses

8. **The project contributed to the preservation and regeneration of gum Arabic producing ecosystems in three regions through expansion and strengthening of selected Sustainable Landscape Management (SLM) practices.** The project focused on the regions of Trarza, Brakna and Gorgol, targeting 39 communes with a total beneficiary population of 480,000 (this is the total number of beneficiaries, of which 160,000 were to be direct beneficiaries - a third of the targeted areas' total population), 52 percent of whom are female. These regions were selected based on their landscape characteristics (steppe and Sahelian savanna favorable to *Acacia Senegal* stands), poverty levels and the experience and complementarity with other programs of similar objectives. Project direct beneficiaries are inhabitants of targeted communes benefitting from capacity building and knowledge exchange and SLM investment activities supported by the project. As the targeted rural communes in these regions experience major migration movements, in particular of male individuals towards urban areas both inside and outside the country (e.g. Mali and Senegal), the remaining women taking care of the household and agricultural activities were major beneficiaries of the project. Envisioned SLM practices were expected to induce many quantifiable and non-quantifiable benefits, including increased agricultural productivity, reduced soil erosion, improved biodiversity and soil fertility, increased fodder availability, improved access to water resources and greater carbon sequestration. The above SLM outcomes were expected to ultimately provide increased livelihoods opportunities and concrete socioeconomic benefits to the beneficiaries.
9. The project supported the **World Bank Group's corporate goals of ending extreme poverty and boosting shared prosperity** by improving the quality of life and resilience of the most vulnerable and poorest communities in the targeted three regions, and providing them with sustainable livelihoods opportunities using their natural resource assets.
10. The project is **one of twelve investments** under the **GEF/World Bank Sahel and West Africa Program (SAWAP)** which is the Bank's main support to the continent's **Great Green Wall Initiative (GGWI)**⁵. The SAWAP objective is to expand

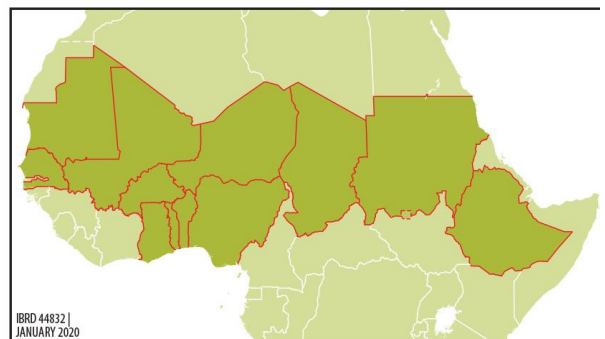


Figure 2: SAWAP countries

⁵ **Background and Context: Overview of the GGWI, SAWAP, and the Sahel Initiative.**

- The **Great Green Wall Initiative (GGWI)** is an African initiative to transform the Sahel into a stable, sustainable, resilient region through improved management of natural resources, land, water, and climate risks. The GGWI promotes an integrated landscape approach in participating Sub-Saharan and North African countries.



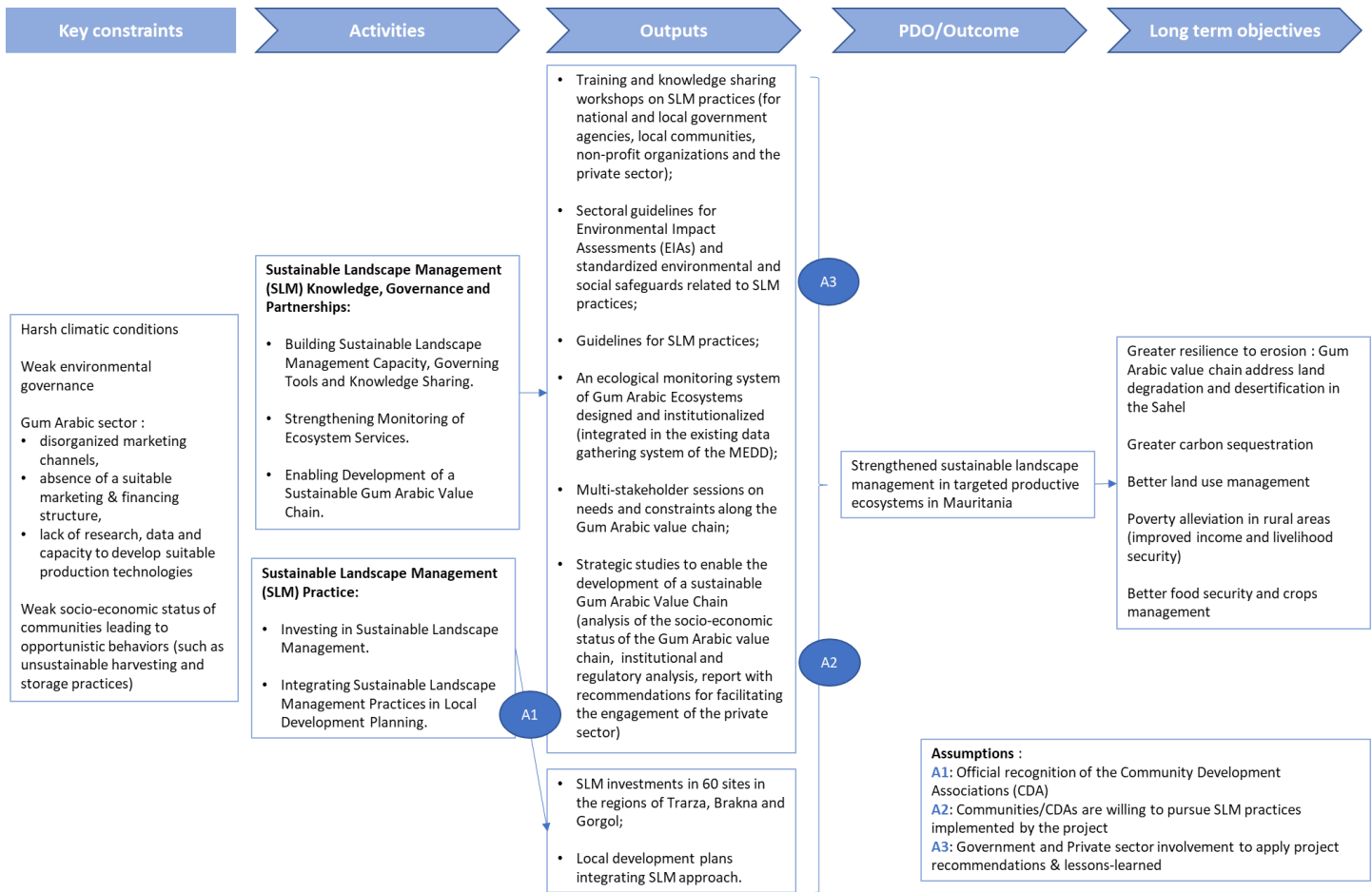
sustainable land and water management in targeted landscapes and in climate vulnerable areas in West African and Sahelian countries. Through the SAWAP, the Bank has been supporting countries to address land degradation and desertification in the Sahel and Sahara, boost food security, and support communities to adapt to climate change.

11. **At time of appraisal, the project was consistent with the World Bank/IFC/MIGA Country Partnership Strategy (CPS) for FY2014-2016** (Report No: 75030-MR) for Mauritania, which was discussed by the Board of Executive Directors on October 1, 2013. In particular, the project contributed to CPS Pillar One “Growth and Diversification”, which aims at increasing productivity and expanding the productive base of the economy as well as helping to unleash the potential of the agriculture sector. The project was included in the operational activities of the CPS under Outcome 7 “Resilience to climate change integrated in Mauritania’s overall development agenda”.

Theory of Change (Results Chain)

12. The Concept of Theory of Change was not explicitly mentioned, nor required at the time of approval, in the Project Appraisal Document (PAD). Hence the proposed Theory of Change below has been prepared for the purpose of the ICR based on the rationale developed in the PAD and the results framework (RF).
13. The project focused on promoting sustainable landscape management practices for the regeneration of productive ecosystems, with special emphasis on Acacia species producing Gum Arabic. These activities were expected to (i) enhance biodiversity, water and soil conservation and vegetation and soil carbon storage on the one hand, and (ii) improve the socio-economic resilience of communities, with strengthened livelihoods through production and sale of Gum Arabic and other natural products (non-timber forest products and fodder), on the other. The latter was aimed to strengthen the sustainability of supported SLM practices, through community engagement and ownerships. The project also aimed to enable the development of a sustainable Gum Arabic value chain by enhancing access to commercial markets. The project would monitor the changes in ecosystem productivity and services as a result of various SLM practices supported by the project.

-
- The Bank’s **Sahel and West Africa Program in Support of the GGW (SAWAP)** is a portfolio umbrella with 12 independent country-led investment operations financed by IDA, GEF, and trust funds, and a regional umbrella project (BRICKS). SAWAP combines a US\$100 million GEF grant dedicated to support the Great Green Wall as well as other sources of funding (around US\$ 1 billion) dedicated to support broader objectives of Sustainable Land Management (SLM) and related domains (e.g. agriculture and disaster risk management), to generate impact at scale in the Sahel region. SAWAP was prepared under the TerrAfrica program. The 12 countries are: Benin, Burkina Faso, Chad, Ethiopia, Ghana, Mali, Mauritania, Niger, Nigeria, Senegal, Sudan, and Togo.
 - The **Sahel Initiative** was recently launched by the WB and UN, with a renewed focus on boosting the region’s economic growth and reducing poverty by transforming livelihoods and landscapes in the Sahel. SAWAP is a strategic part of this effort.



Project Development Objectives (PDOs)

- The PDO as presented in the PAD is the same as in the Grant Agreement. The PDO and the Global Environment Objective (GEO) was to **strengthen sustainable landscape management in targeted productive ecosystems in Mauritania.**
- Sustainable landscape management is defined as the use of land and water resources, considering both the needs of production and service functions of the ecosystem within the larger landscape.

Key Expected Outcomes and Outcome Indicators

- Project Development Objective:** At appraisal the PDO was to strengthen sustainable landscape management in targeted productive ecosystems. This PDO was retained throughout the life of the project.
 - PDO outcome indicator 1:** Land area where sustainable land management practices have been adopted as a result of the project (hectares) (Core Sector Indicator)



- PDO outcome indicator 2: Average vegetation cover in intervention areas (%) (Vegetation cover change represents a proxy for enhanced management of all three environmental services targeted by the project: biodiversity conservation, soil and water conservation, and vegetation carbon storage).
- PDO outcome indicator 3: Project beneficiaries (number) of which female (percentage) (Core Indicator)

Components

17. **Component 1: Sustainable Landscape Management Knowledge, Governance and Partnerships (Estimated costs: US\$1.31 million, Actual costs: US\$0.93 million, ratio: 71 percent)**. The main intended outcomes for this component were: Strengthened Sustainable Landscape Management knowledge base among various stakeholders (national and local government agencies, local communities, non-profit organizations and the private sector), an improved governance system and more effective partnerships to support the development of the Gum Arabic sector. Sub-components included:
- **Sub-component 1.1: Building Sustainable Landscape Management Capacity, Governing Tools and Knowledge Sharing** : Institutional and capacity support were provided to relevant national and local governmental agencies to enhance their ability to mainstream principles of SLM into the valorization and regeneration of degraded ecosystems, with special attention to degraded Gum Arabic ecosystems. Communities involved in Gum Arabic production received relevant training. The project also supported MEDD in formulating a number of governance tools, financed awareness-raising activities on social and environmental requirements, supported regional exchanges between targeted local SLM associations, workshops and outreach activities, and developed knowledge-sharing products to reach a larger audience and make the knowledge accessible.
 - **Sub-component 1.2: Strengthening Monitoring of Ecosystem Services**: The MEDD, in particular the Department of Planning, Intersectoral Coordination and Data, and local partners received technical and financial support from project funds, to monitor changes in production of Gum Arabic and other non-timber forest products and fodder, and changes in biodiversity conservation, water and soil conservation, and vegetation and soil carbon storage capacity using a participatory approach. To achieve this, the project financed and put in place a monitoring system to enable the evaluation of the impact of the various SLM practices supported by sub-component 2.1, on vegetation cover. This sub-component also supported a more in-depth assessment of the geographic distribution of Gum Arabic producing ecosystems and the potential for future up-scaling of regeneration practices in terms of water availability. In addition, this subcomponent supported the acquisition of some necessary materials, equipment and vehicles, to strengthen the capacity of local authorities to facilitate the operationalization of the M&E system and the monitoring of project activities in the three participating remote regions where the project was implemented.
 - **Sub-component 1.3: Enabling Development of a Sustainable Gum Arabic Value Chain**: This sub-component initiated the promotion for the development of a sustainable Gum Arabic value chain by evaluating the current situation and making policy and regulatory recommendations for improvement.
18. **Component 2: Sustainable Landscape Management Practice (Estimated costs: US\$3.26 million, Actual costs: US\$3.39 million, ratio: 104 percent)**. The main intended outcome of this component was to strengthen



management of Gum Arabic producing landscapes, and to enhance integration of Sustainable Landscape Management considerations in local development planning in the regions of Trarza, Brakna and Gorgol.

- **Sub-component 2.1: Investing in Sustainable Landscape Management:** This subcomponent provided sub-grants to targeted communes to finance SLM investments in the selected 60 sites along two categories of sub-projects: (i) Participatory SLM investments which supported the regeneration of degraded Gum Arabic producing ecosystems; and (ii) Investments which responded to immediate local needs and enhanced sound environmental management of land and water resources; activities under this category were funded in conjunction with the first category investments.
- **Sub-component 2.2: Integrating Sustainable Landscape Management Practices in Local Development Planning.** This sub-component supported the integration of project objectives and activities into local communal plans for mutual reinforcement, in collaboration with the *Local Government Development Project* and the *Regional Sahel Pastoralism Support Project (PRAPS)*. Sub-regional local development plans integrating SLM, each one concerning a number of communes in one of the regions Trarza, Brakna and Gorgol, were to be developed while building on previous efforts where possible.

19. **Component 3: Project Management (Estimated costs: US\$1.59 million, of which GEF: US\$0.24 million and Government (including in-kind contribution): US\$1.35 million, Actual costs: GEF: US\$0.48 million (ratio: 200 percent) and Government direct contribution⁶: US\$0.13 million).** The outcome of this component was that the management of the project is carried out efficiently and effectively.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs and Outcome Targets

20. **No change in the PDO** was made during the life of the project.

Revised PDO Indicators

21. The PDO indicators were not revised.

Revised Components

22. The components were not revised.

⁶ The Government in-kind contribution data was not shared by the project, we therefore only included here the direct contribution, which does not allow to calculate a ratio for the Government contribution and for the total cost of the component. Government contributed directly to the project implementation through mobilization of civil servants, including the project coordinator, as well as infrastructure for the project implementation (building, utilities...)



Other Changes

23. While no formal restructuring was required for the project, one small change in the implementation arrangements was made related to the ecosystem monitoring system. At appraisal, it was supposed to be designed and operationalized by the Sahel and Sahara Observatory (OSS), who supported the ecosystem M&E of all the SAWAP countries under the BRICKS (Building Resilience through Innovation, Communication and Knowledge Services) project. Due to some difficulties to have the OSS solutions tailored to the ministerial internal Information system, the contract of OSS was terminated in 2019 before operationalization of the ecosystem M&E. Instead, in agreement with the World Bank (WB) team, the Project Management Unit (PMU) hired trainees and a local GIS specialist for the implementation of a monitoring method more adapted to the local context and capacity, which allowed the project to monitor the evolution of vegetation coverage in the project sites.

Rationale for Changes and Their Implication on the Original Theory of Change

24. No Theory of Change was prepared at appraisal, but the above-mentioned change did not impact the expected outputs and outcomes from the project as initially planned.

II. OUTCOME

A. RELEVANCE OF PDOs

Rating : High

Assessment of Relevance of PDOs and Rating

25. **The PDO was relevant at the time of appraisal and it remains highly relevant** to the new **Africa Climate Business Plan (2020)**, and the **FY18-FY23 World Bank Country Partnership Framework (CPF)**. The Strategic Direction II of the Africa Climate Business Plan (Ecosystem Stability and Water Security) aims to revitalize landscapes, seascapes, and watersheds by ameliorating negative trends in the face of a changing climate to secure ecosystem and water security across spatial and temporal scales so communities and countries can meet and sustain their core development goals. The following action areas are proposed: (i) enhance considerations of natural capital in macroeconomic and sectoral policy; (ii) enhance management of landscapes, seascapes, and watersheds to increase resilience and enhance carbon sequestration; and (iii) strengthen water security in the face of climate uncertainty through improved planning and management. Climate-related targets in the regional strategy seek to support integrated landscape management in 20 countries over a total of 60 million hectares. The commitment of the World Bank Group to contribute to the **Great Green Wall initiative**, to improve livelihoods and restore degraded land, was reaffirmed at the One Planet Summit on Biodiversity in January 2021⁷.
26. At national level, the project is fully aligned with the **Country Partnership Framework** Focus Area One which aims to promote economic transition for diversified and resilient growth, by increasing agriculture and livestock production in the face of climate change. Indeed, the long term objective of the project is to support a resilient growth through a sustainable gum Arabic value chain to address land degradation and desertification in Mauritania. The project is

⁷ Remarks by World Bank Group President David Malpass at the One Planet Summit : <https://www.worldbank.org/en/news/speech/2021/01/11/remarks-by-world-bank-group-president-david-malpass-at-the-one-planet-summit>



also consistent with the **2020 President Priority Program** (*Programme Prioritaire Elargi du Président*): Reforestation and Green Job Creation is clearly identified as one of the 6 priority areas of the Government's recovery plan to the COVID 19 crisis.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Rating: Substantial

Assessment of Achievement of Each Objective/Outcome

27. **ICR methodology and confidence in results.** This ICR was conducted remotely during the COVID-19 pandemic, without the possibility of an ICR field mission to visit project sites. The assessment conducted is therefore based on (i) desk review of project documents (PAD, ISRs, Aide-memoires, audits, financial reports, studies supported by the project), (ii) virtual closure mission in January 2021, (iii) videoconferences with WB and PMU team members, (iv) data from the M&E system including the ecosystem monitoring developed under the project, with remote sensing images, (v) the socio-economic evaluation of the project conducted in January 2021 based on a qualitative beneficiaries' satisfaction survey, (vi) the GoM completion report and (vii) a documentary film produced by the project in December 2020. Although the last in-country implementation support mission to the project sites was in October 2019, the ICR team was able to draw on tangible results to assess the efficacy of the project based on: regular monitoring, assessments at mid-term and at closing, beneficiaries survey and remote ecosystem monitoring.
28. **The PDO articulates a single outcome, namely, to strengthen sustainable landscape management in targeted productive ecosystems.**
29. **The overall efficacy is rated substantial.** The project did strengthen sustainable landscape management of Gum Arabic producing ecosystems in the three wilayas of Trarza, Brakna and Gorgol. The PDO and intermediate indicators of targeted outcomes were substantially achieved, most either met or surpassed.
- PDO indicator 1: Land area where sustainable land management practices have been adopted as a result of the project (hectares). Achieved (100%)
 - IR3: Participatory SLM investment activities. Overachieved (140%)
30. The project contributed to the conservation/protection and regeneration of targeted ecosystems in the regions of Trarza, Brakna and Gorgol through implementation of participatory SLM practices in 3,000 ha of degraded gum Arabic producing ecosystems. The project supported SLM investments in 60 sites of 50 ha each (referred as "pilot sites") in the 39 targeted communes of the project. SLM practices included various combinations of interventions such as: i) control of pastoral pressures (through fencing); ii) vegetation enrichment with Gum Arabic seedlings (*Acacia Senegal*) and herbaceous species for fodder and iii) soil and water conservation practices (for example, with construction of stone bunds and zai pits). Investments were performed by local associations through financing agreements with the project. Over the duration of the project, the CDA implemented 104 SLM sub-projects (60 for fences and 44 for other SLM practices, often a combination of different techniques). Every "pilot site" was fenced, which allowed the project to reach its target of 3,000 ha of land benefiting from SLM practices (exploitation control). Fences were the first investment and the main expense for the CDAs to allow for growth of herbaceous vegetation.



In a conflictual and complex tenure context, the fences were also seen as means for an anticipated management of conflicts between pastoralists and members of the CDAs.

- ✓ Thirty-five (35) sites were reforested with 320,000 *Acacia Senegal* seedlings planted. The success rate for reforestation was 30% (strongly dependent on water availability).
- ✓ Twenty (20) sites were planted with herbaceous species with a success rate of 50%.
- ✓ Twenty (20) sites benefited from water and soil conservation techniques: 39,098 m of stone barriers, 2,100 m of stone bunds, 43,425 units of zai pits. Water and soil conservation techniques were used in the most degraded sites (subject to wind and water erosion, where rainwater infiltration is very unlikely due to soil characteristics). Small scale water capture structures (e.g., stone bunds, zai pits) were used to help rooting of tree plants.
- ✓ Ten (10) sites benefited from experimental bleeding practices on Acacia Trees to boost Gum Arabic production: on those sites gum production increased from about 90 to 100% (an average of 270g/tree instead of 120g/tree).

- PDO indicator 2: Average vegetation cover in intervention areas (%). Overachieved (160%)⁸

31. In terms of **environmental impacts**, results from the project's ecosystem monitoring system (using satellite and drone images)⁹ show an average increase of vegetation cover in intervention areas of 32% between 2018 (before SLM investments) and 2021 (end of the project). The combination of fencing with water and soil conservation techniques clearly improved vegetation cover in intervention sites. An estimated 1,100 ha of degraded land has been successfully restored with a strong appearance of new herbaceous species (e.g. *Aristida mutabilis*, *cassia tora*, *panicum turgidum*). These effects helped increase the supply of livestock feed, which represents an important step towards reducing future potential conflicts between competing land uses during dry seasons (grazing vs. farming). Some CDAs were able to stock-up fodder for livestock in dry periods. In addition, the project planted an extensive area of *Acacia Senegal* (2,200 ha - 320,000 *Acacia Senegal* seedlings planted) and improved the management of existing plantations. Although the new plantations had a survival rate of only 30 percent, the project's achievements (surviving trees, soil and water conservation works) resulted in an improved production of ecosystem services in the project area (e.g. reduced erosion, better water retention).

32. Indeed, although hardly quantifiable with available data (see M&E section), those results confirm the benefits of selected SLM activities to improve biodiversity and soil fertility, reduce soil erosion and enhance carbon sequestration. Local beneficiary communities and technicians from local governments have adopted through the project a method adapted to the local context for the regeneration of degraded lands. With regards to Acacia tree plantations and Gum production, it should be noted that these will require continued monitoring after closure of the project to draw tangible results as the gum trees needs a minimum of 5 years to start producing gum. Since investments only started in 2018, the project only had access to three years of monitoring so far.

- IR4 Indicator: Local needs investment activities. Partially achieved (85%)

33. **The integrated approach of the project, combining SLM interventions with income generating activities proved to be effective and strongly contributed to the success of the project.** Each of the 60 targeted sites benefited from at least one demand-based investment to contribute to communities' livelihoods in the short term, ensure their engagement and sustain SLM practices in the long-term. The combination of investments has led to both a stronger

⁸ It should be noted that ecological monitoring/change in vegetation cover data has been extrapolated from 42 out of 60 project sites

⁹ Examples of vegetation coverage maps derived from satellite and drone images are provided in Annex 8.



enabling environment and increased capacity to sustainably manage the natural assets. These investments included:

- ✓ Installation or enhancement of 62 vegetable gardens (1 ha each) with fences and sets of horticultural equipment and seeds;
- ✓ installation or improvement of watering facilities (for each garden, with solar systems and wells up to 70 m deep);
- ✓ provision of 7 solar fridges and 3 grain mills;
- ✓ establishment of 12 local community boutiques and 1 food processing shop.

- PDO indicator 3: Project beneficiaries, of which female. Achieved (102%)

34. **Both types of investments (SLM and immediate needs) provided increased livelihood opportunities and concrete socio-economic benefits to an estimated 164,050 direct beneficiaries**, corresponding to the population living within 3 km of the intervention sites, of which 52,7% were women¹⁰. In rural areas with a strong agro-pastoral vocation, livestock, agriculture, and natural environmental resources constitute the main growth potential in terms of job creation and income generation. Approximately 115 jobs were created through SLM practices and income generating activities and more than 2,000 women had access to the gardens, at least 6 months of the year. Local benefits generated by the project included: increased production of vegetables due to irrigation and fencing (e.g. by 50 percent in Oumou El Ghoura, Trarza); higher production of livestock feed in fenced sites; increased households net income due to alternative livelihoods (e.g. net annual benefit of US\$360 due to purchase of grain mill in Wabounde, Brakna, sales of fodder and products from the market gardens). In Wabindé, the income generated from the sale of fodder was reinvested by the CDA to build three premises (a grain mill, a fish store and a community store).
35. **Women** were the main direct beneficiaries of these **85 income-generating activities supported by the project**. These investments of immediate interest increased livelihoods opportunities through improvement of nutrition and water supply, access to basic consumer products and creation of additional income, which could be reinvested to extend the benefit to the community.
36. The **provision of water** to populations has been one of the priorities of the CDAs in regions where problems of access to water are acutely experienced. The gardens and watering facilities increased the agricultural productivity and sustained the SLM practices as the Acacia seedling nurseries (400,000 plants grown) were set up within the garden fences, where water was available to ensure survivance of the seedlings once in the ground.
37. The project also improved hygiene and health conditions of targeted populations by providing drinking water and vegetables. Community stores allowed access to basic products, and in addition they fulfilled a social function by allowing the poorest people in the village to purchase on credit, which, in a context of poverty, constitutes a safety valve. In the satisfaction survey conducted at the end of the project, participants stated that the project significantly improved the living conditions of communities. Yet, provided data did not allow to clearly identify the types/categories of beneficiaries (e.g.: herders, farmers, women ...) and the extent of specific benefits in a quantified manner (e.g.: household income increase, ...).

¹⁰ This estimate was based on the 2013 population census, updated to 2021



Intermediate indicators illustrate satisfying achievement of the project in providing **institutional support for SLM practices**, through knowledge products and governance tools:

- IR5 Indicator: Local development plans integrating landscape management approach. *Partially achieved (33%)*

38. **Provision of local governance tools.** The project enhanced the integration of Sustainable Landscape Management in local governance tools. Two communal development plans, promoting SLM practices, were completed for the communes of El Khatt (Trarza) and Choggar (Brakna). The elaboration of these plans helped raising awareness among mayors and municipal councilors of the necessity to integrate sustainable natural resource management into communal budgets and plans. They will serve as models for other communes and for future SLM projects to be implemented by the GoM. Partly due to the COVID-19 pandemic which strongly affected the implementations of activities in the last year of the project (limitation for hired consultants to go to the field and for consultations with stakeholders), the PGDP did not manage to reach its target of 6 local development plans integrating SLM. .

39. The positive outcome highlighted above benefited from a set of activities aiming at strengthening SLM knowledge base at national and local levels, improving SLM governance system, and enabling the development of the Gum Arabic sector. The project also provided strategic studies on the gum Arabic sector, to evaluate the current situation and provide recommendations for the development of a sustainable gum Arabic value chain in the country. These studies and lessons-learned from the project are now available and have been used to inform the GoM's **National Reforestation Strategy 2021-2030**.

40. **Enabling development of sustainable Gum Arabic Value Chain.** The project laid the foundations for the development of the Gum Arabic Sector in Mauritania by organizing consultations workshops and completing strategic studies for the sector. These included (i) a socio-economic analysis of the gum Arabic production sector (ii) a study on the geographic distribution of Gum Arabic producing ecosystems and the potential for future up-scaling of regeneration practices in terms of water availability¹¹ and (iii) an assessment of the policy, legislative and financial frameworks. It allowed the identification of possible reforms, including the modification of the forestry code, to allow the practice of tapping to increase gum production, while not endangering the tree. These studies were complemented by the organization of four consultation workshops (1 per region and 1 national) with stakeholders of the gum Arabic sector (producers, collectors, traders, government agencies and civil society) to understand the prospects and opportunities for the development of the sector. The key recommendation from those consultations was to organize the sector at the national level by creating a federation of producers recognized by the government. These studies and consultations were only completed over the last 18 months of the project, so due to the COVID-19 pandemic, the initially planned strong dissemination campaigns were not possible. Similarly, the project was not able to organize an international conference on Gum Arabic (as initially planned) for dialogue between the different stakeholders within the gum Arabic value chain. Impacts of institutional activities supported by the project are expected after its closure, by informing GoM and sectors on future strategies and policies.

- IR1: Stakeholders benefiting from knowledge building products provided by the project. *Overachieved (129%)*

41. Considerable institutional strengthening was achieved through a strong collaboration between the MEDD, its regional directorates (*Directions Régionales de l'Environnement et du Développement Durable - DREDDs*) and regional NGOs to work with and improving the CDA model.

¹¹ he study estimated the area of potential and favorable zones for the development of gum trees at 127,392 km².



42. **Capacity building.** A total of 773 stakeholders, benefited from trainings, workshops and knowledge exchanges. Stakeholders included: national and local authorities (mostly from the MEDD), regional NGO representatives, CDA representatives, gum arabic producers and traders. The project enhanced the capacity of the MEDD, especially at the local level, on SLM.
43. A **guidance document** on SLM was developed by the project and served as a reference to all SML trainings. Four capacity building workshops were organized for MEDD staff (from central and regional administrations: DPN/DCE/DPCID/3 DREDDs) and NGOs on (i) Environmental Impact Assessments and (ii) SLM techniques. These trained staff (50) were then later able to sensitize and support the beneficiaries of the sub-projects. CDA members were trained on water and soil conservation techniques, forest nursery and tree planting techniques, market gardening techniques and reasonable use of pesticides.
44. **Knowledge exchanges** also proved to be very effective and appreciated in disseminating SLM best practices. This modality was adapted to the rural context as a large proportion of the CDAs members being illiterate (about 50%). Four knowledge exchanges were organized over the period of the project on demonstration of bleeding techniques and other SLM best practices, benefiting to 100 CDA members. In 2020, a **training workshop** was provided to gum Arabic producers on collection, processing, conservation and storage techniques (30 participants). This packaging system (storage, sorting and bagging) predisposes the gum Arabic products to obtain a better price in the market.
45. The CDAs were also empowered with the necessary knowledge and tools to manage their sub-projects. Six workshops were organized on project management, procurement and financial management of community-based activities for presidents, secretaries, treasurers and procurement officers of the 60 approved CDAs (240 members trained). Capacity building for CDAs members and MEDD technicians, on project management, safeguards instruments and SLM practices proved to be essential to successfully implement the investments.
- IR2: An ecological monitoring system of Gum Arabic Ecosystems designed and institutionalized. *Achieved*
46. **Ecosystem monitoring system.** The project provided institutional support to the MEDD through capacity building (as mentioned above), provision of equipment and governance tools. An ecosystem monitoring system using Geographic Information System (GIS), remote sensing (open source satellite data, drones’ imageries) and ground control sites was developed. Hosted by the MEDD, it became operational by the end of the project and was used to inform the result framework (PDO indicators). The project supported the acquisition of some necessary materials, equipment (e.g: drones) and vehicles (3), aimed at facilitating the operationalization of the M&E system and the monitoring of project activities in the three beneficiaries’ regions. As part of the 12 SAWAP projects, the PGDP benefited from the knowledge exchange platform established by the BRICKS project on M&E and ecological monitoring. PMU members and MEDD staff benefited from 3 regional workshops on ecosystem monitoring organized by the Sahara and Sahel Observatory (OSS). One workshop on GIS and remote sensing took place in Rosso in the Wilaya of Trarza (at the *Institut des Sciences et de l’Enseignement Technologique*) (11 trainees).

Table 1: PDO indicators and intermediate results indicators

	Target value	Achievement	Comment
PDO Level Results Indicators			
1. Land area where sustainable land management practices have been adopted as a result of the project	3000 Ha	3000 Ha	Target achieved (100%)



2. Average vegetation cover ¹² in intervention areas (augmentation between 2018 and 2021)	20 %	32%	Target overachieved (160%)
3. Beneficiaries : Project beneficiaries , of which female	160,000 (52 % women)	164,050 (52,7%)	Target achieved (102%)
Intermediate Result Indicators			
Component 1: Sustainable Landscape Management Knowledge, Governance and Partnerships			
IR1: Stakeholders benefiting from knowledge building products provided by the project	600	773 (25% women)	Target overachieved (129%)
IR2: An ecological monitoring system of Gum Arabic Ecosystems designed and institutionalized	Yes	Yes	Target achieved
Component 2: Sustainable Landscape Practice			
IR3: Participatory SLM investment activities	60	104	Target overachieved (140%)
IR4: Local needs investment activities (income-generating activities)	100	85	Target partially achieved (85%)
IR5: Local development plans integrating landscape management approach	6	2	Target partially achieved (33%)

Justification of Overall Efficacy Rating

47. **The project’s efficacy has been rated substantial** as its activities led to strengthening the implementation of sustainable landscape management in gum Arabic productive ecosystems in Mauritania. Despite some delays in implementation of investments, the project met its objectives within the initial time frame and budget, with all PDO indicators reaching or exceeding their target values. With regards to the intermediate result indicators, those were largely achieved as well, although falling short on the number of local development plans integrating SLM adopted through the project. The deviations in the indicators remained limited and were mainly caused by external factors, including the COVID-19 crisis. Overall, SLM practices implemented in pilot sites improved vegetation cover and fodder availability, investments enhanced communities’ livelihoods and MEDD’s capacity in SLM has been strengthened. Importantly, with the creation of the CDAs, the project engaged communities in an adaptive process that delivered results in the short term, while also enabling them to continue to proactively take adaptation measures in the long term.

C. EFFICIENCY

Rating: Substantial

Assessment of Efficiency and Rating

48. The project efficiency is assessed based on two criteria: economic analysis and implementation efficiency.

Economic analysis

49. At appraisal, a Cost-Benefit Analysis (CBA) was conducted for activities related to Acacia Senegal. It showed a financial Internal Rate Return (IRR) of 15 percent and an economic IRR of 14 percent – as a result of the high yields of gum Arabic assumed due to the project. At completion, yields of new plantations have not yet been observed,

¹² Vegetation cover change of the soil represents a proxy for enhanced management of all three environmental services targeted by the project: biodiversity conservation, soil and water conservation, and vegetation carbon storage



primarily due to the late start of interventions (2018) and the time necessary for the trees to bear fruit, e.g. 5-6 years after plantation. Thus, an indicative CBA is carried out to assess the likely profitability of these plantations in the future. This section provides the results of a Cost-Effectiveness Analysis (CEA) conducted for several activities, of a CBA for Acacia plantations, and of the Incremental Cost Analysis for the GEF funds. Annex 4 presents more details related to these analyses.

50. **Cost-effectiveness analysis.** Overall, the project disbursed US\$4.9 million for activities related to knowledge management, adoption of SLM practices, and immediate local support investments. This corresponds to a unit cost of US\$1,600/ha, which is higher than that disbursed in other SAWAP projects (e.g. in Sudan, Togo, Ethiopia), and substantially lower than that in Mali (Table 2). In addition, through component 2, the project disbursed US\$2.1 million¹³ to adopt SLM practices on 3,000 ha. This gives a unit cost of about US\$700/ha, which is in the same range of costs found for other countries. Although cost data for many SLM practices were not available, the analysis shows that some **relevant practices were cost-effective**, i.e. planting *Acacia Senegal* and establishing soil and conservation works (half-moons).

Table 2: Results of cost-effectiveness analysis (US\$/ha)

	Unit Cost ^d		
	Current project at appraisal ^a	Current project at completion ^b	Other projects ^c
Project cost	2,100	1,600	70 in Sudan, 150 in Togo, 160 in Ethiopia, 1,500 in Ghana, 5,500 in Mali
Cost of SLM	700	700	50 in Sudan, 110 in Togo, 110 in Ethiopia, 780 in Ghana, 2,000 in Mali
Cost of individual practices			
- Reforestation Acacia	n.e.	180	150 in Cameroon, 320 in Niger
- Half-moons (<i>demi-lunes</i>)	n.e.	220	170 in Burkina Faso, 290 in Niger

Notes: All unit estimates for SLM and individual practices represent establishment costs only. n.e. = not estimated¹⁴.

51. **Cost benefit analysis.** An analysis was carried out for the plantations of *Acacia Senegal* made by the project. Based on local data (e.g. life cycle, survival rate, local prices) and a few scenarios of tree growth, the analysis indicates that these plantations **can be profitable for the farmer and for the society in the long run**, assuming that future management will ensure the survival of all the remaining trees and will provide yields higher than 0.2 kg of Arabic gum/tree during maturity. These results are conservative, as they do not capture the economic value of fodder, fuelwood, and other ecosystem services, such as soil protection, and biodiversity conservation; had these benefits been estimated, the net returns from Acacia plantations would have been substantially higher (see annex 4 for details).

52. **Incremental Cost Analysis.** The analysis conducted at completion showed a baseline scenario with an actual cost of US\$19 million, a GEF support of US\$4.8 million and a direct GoM co-funding of US\$0.13 million. This led to a co-

¹³ The estimate refers only to the SLM investments, thus excluding the immediate local support community projects (e.g. income generating activities, etc.)

¹⁴ Sources: (a) Current project, PAD. (b) Current project, borrower completion report. (c) Estimates are based on: Sudan Sustainable Natural Resources Management (P129156), ISR of December 2020; Togo Integrated Disaster and Land Management Project (P123922), ICR; Ethiopia Sustainable Land Management Project (P133133), ICR; Ghana Sustainable Land and Water Management Project (P098538 and AFs), draft Borrower ICR; Mali Natural Resources Management in a Changing Climate Project (P145799), ICR; Ndjomaha. 2008. Etude socio-economique de la filiere gomme arabique dans le nord et l'extreme-nord (updated estimates); <https://reca-niger.org/spip.php?article382> for Niger; GEF/UN. 2017. Evaluation des besoins technologiques pour l'adaptation dans les secteurs de l'agriculture et de la foresterie au Burkina Faso. (d) All unit costs, except for the unit costs of individual practices, are related to SAWAP projects.



financing ratio similar to that expected at appraisal (4:1). In addition, the project contributed to three GEF focal areas, through the following achievements and global environmental benefits: (i) promoting the reversal of current trends in land degradation, by restoring 1,100 ha through implementation of soil and water conservation works (LD3); (ii) stimulating conservation and sustainable use of biodiversity, e.g. by planting 2,200 ha of Acacia trees (BD 2); and (iii) reducing pressure on forests and improving the flow of ecosystem services generated by these plantations, e.g. better water retention due to increased forest cover (SFM 1). The project supported also climate change mitigation through the enhancement of carbon sequestration from new plantations. Moreover, by contributing to an important increase in vegetation cover (32 percent) and by financing income generating activities, the project supported the Great Green Wall initiative towards combatting the effects of desertification, improving food security and local livelihoods' resilience in the target areas.

Implementation efficiency

53. The project was implemented based on a scheme composed of six steps: creating a CDA in each village; fencing 50 ha per village; establishing tree nurseries; planting and watering trees; implementing water and soil conservation techniques in the most degraded sites; building the capacity of CDAs' staff. The team encountered several challenges during the project implementation, e.g. investment delays due to lengthy process of creation and official recognition of the CDA ¹⁵, several changes in the project task team leaders (TTL), limited available human resources at the MEED to support the project, with some disengagement during project implementation (see section III, para 67) and the restrictions related to COVID-19 situation. Despite these difficulties, the project successfully managed to meet most of the project objectives, while disbursing nearly 100 percent of the allocated GEF funds. The strong ability to deal with the COVID-19 crisis, which occurred at a key moment of its implementation (last project year) was remarkable, particularly given the limited project timeline resulting from the initial investment delays.

Justification of Overall Efficiency Rating

54. **Overall**, the above analysis indicates that some relevant project activities (e.g. reforestation, establishing half-moons) were cost effective, and that the Acacia plantations can generate positive net returns in the future, if sustainably managed (e.g. proper maintenance of fences, irrigation, etc.). In addition, despite the difficulties faced during implementation (e.g. complexity of creating new structures, leading to investment delays), the team successfully managed to implement the project activities on a timely basis, while demonstrating a strong capacity to adapt to the COVID-19 crisis. For these reasons, the efficiency rating of the project is assessed **substantial**.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Satisfactory

55. Considering the **high relevance** of the PDO, the **substantial relevance** of design and implementation of the project, the **substantial achievement** of objectives of the project and related outcome indicators, albeit with some shortcomings, the overall project outcome is rated **satisfactory**. The project met its objectives and it is worth highlighting that although this was a relatively small project in terms of budget, it had a great impact both at the local (improving livelihoods and restoring degraded ecosystems) and institutional levels (in terms of capacity building and promoting SML practices for a resilient growth). The objectives and approach taken

¹⁵ In certain areas, some investments started in 2018, while in others, they started in 2020.



by the project remain highly relevant going forward, which is confirmed by the Government willingness to adopt it for its reforestation program which aims at restoring 10,000 ha of degraded gum Arabic producing ecosystems over the next 10 years (President Priority Program). This scale up opportunity is a great achievement for the project which was designed as a pilot.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

56. Overall, the project has had very positive outcomes related to gender, with 52,7% of the 164,050 beneficiaries of the project being women. Testimonies and surveys¹⁶ conducted among beneficiary communities highlighted the positive socioeconomic impact of the project on women. Income-generating activities supported by the project were particularly relevant in a gender perspective. These activities were mostly implemented by women and contributed to the reinforcement of their economic power and improvement of family income. Market gardens have enabled women to improve and diversify vegetable production for family consumption and to increase family income from the sale of produce on the markets. Water supply provided with the market gardens (digging and rehabilitation of wells, drilling, water tower) improved access to water, enhancing health and hygiene conditions, agricultural production and facilitating women daily cores. More than 2,000 women directly benefited from market gardens (on average 40 women per market gardens). Community stores guaranteed access to everyday products at all times, especially during the rainy season when many villages are isolated (cut-off) from the rest of the country. It reduced the need for communities (especially women) to travel to other localities, providing savings in time and transport costs. The grain mills have enhanced the women's well-being by reducing the time spent grinding grain or traveling to other locations to grind grain. Also, the solar fridges allowed conservation of unsold vegetables from market gardening productions but also conservation of meat or fish and ice making, to reduce their burden.
57. While the positive outcomes were acknowledged, there is limited gender disaggregated and quantified information available on the perception and acceptance of the different sub-projects, and employment generated for women. The overall beneficiary rate of 52,7% women reflects the population composition. In contrast, only 25% of the beneficiaries of trainings were women, which is likely related to the low rate of women employed by the local administration or locally elected. Although this was not a requirement at the stage of appraisal, a gender action plan could have contributed to fostering the role of women during project implementation.

Institutional Strengthening

58. The project contributed to institutional strengthening at national and local levels. The project enhanced MEDD's capacity in Sustainable Landscape Management through capacity-building, provision of equipment, strategic studies, and governance tools. The project made efforts to retain and maintain local capacity in the long term in the government. 50 MEDD staff (from central and regional administrations) were trained on Environmental Impact Assessment and SLM practices, with guidance documents available. The ecosystem monitoring system developed for the project M&E was institutionalized within the MEDD and is operational to monitor future SLM investments in Mauritania. DREDDs of targeted regions were also reinforced with equipment. At the local level, two communes benefited from a communal development plan integrating SLM, available as models for other rural communes of the area. The rural institutional framework has also been enriched by the emergence of CDAs, which can be

¹⁶ Surveys conducted in January 2021 for the impact assessment of the project (final report : *Evaluation d' impacts du projet PGDP – évaluation qualitative*) and Testimonies collected by the WB team during the Mid-Term review Mission (Mid Term review Aide Memoire)



considered as a level of local governance. CDAs have facilitated the dialogue between communities, local administrations, and technical services. At the closing of the PGDP, the satisfaction survey highlighted the adhesion of population around the CDAs.

Mobilizing Private Sector Financing

Not applicable

Poverty Reduction and Shared Prosperity

59. By targeting rural population of the regions of Brakna, Gorgol and Tarza, which are characterized by a high poverty incidence (an average 44% of the population in 2014), the project has been directly contributing to poverty reduction and improved livelihood. As already mentioned above, approximately 115 full-time jobs have been created to implement SLM investments and income-generated activities (60 guards for the fenced areas paid by the CDAs with the revenue generated from the sale of fodder, 28 jobs for Acacia nurseries, planting and water and soil conservation activities, 26 jobs for the community stores, grain mills, solar fridges and butcher). And more than 2,000 women have access to the vegetable gardens, at least 6 months of the year, providing vegetables for family consumption and additional income. Additional sources of income generated by the project included sales of fodder sometimes reinvested to extend the benefit to the community (construction of community store, grain mill ...). Improved fodder availability, agricultural production and access to water were relevant outcomes in terms of poverty reduction and shared prosperity in targeted rural areas with strong agro-pastoral vocation. In the satisfaction survey, participants stated that the project significantly improved the living conditions of communities and no complaints have been reported about unfair distribution of project benefits.

Other Unintended Outcomes and Impacts

60. The strength and cohesion of the CDA determined in large part the success of the field-based SLM activities. The most successful of these CDAs further expanded their activities beyond the scope of the project by designing additional activities and seeking out alternative sources of technical support and financing. For example, CDAs of Séyène, Patoukone and Agrije (in the wilaya of Gorgol) were trained by a local NGO (financed by OXFAM) in the technique of transforming fresh milk into curdled milk and equipped with a solar fridge for the conservation of processed dairy products.

61. Through the fences, the project contributed to social peace between farmers and pastoralists. As mentioned earlier, given the conflictual and complex tenure context, the fences were a mean for anticipated management of conflicts within the community.

62. In intervention sites, the project helped farmers cope with the 2019 drought¹⁷. The development of herbaceous cover through project activities allowed communities to make important fodder stocks for livestock during the lean season. This has been particularly beneficial in dealing with the severe drought experienced by Mauritania in 2019.

¹⁷ Inquiétude des éleveurs en Mauritanie, 21 aout 2019, <https://www.bbc.com/afrique/region-49416901>



III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

63. **Realistic objectives and simple design.** The PDO and design of the project were clear and most of the activities were pre-identified at appraisal and straightforward. While the target of 3,000 ha of land under SLM can seem low in terms of ambition given the needs on the ground, it was realistic, for a pilot project, given low local capacity and adverse natural conditions. The implementation scheme was also adapted to the limited technical capacity in the Regions, with support from local administrations for close monitoring of activities, and regional partners for the M&E (OSS for the ecosystem monitoring).
64. **Risks and mitigation.** Overall, risks and mitigation measures were well identified. Limited institutional and stakeholder's capacity was a strong concern, and efforts were made to mitigate these risks through several institutional strengthening and capacity building activities planned under Component 1. Regional Coordination Units were established (one in each intervention region, hosted in the DREDD) to mitigate the risk related to the institutional set-up; whereby the project was anchored at the central level while implementation of key activities took place at the local level, where there was an obvious lack of human and financial resources and capacity.
65. **Readiness for implementation.** At the time of approval, the framework of interventions was clear and well understood by the different partners.
66. The following were key design factors that affected implementation and outcome:
67. **The institutional arrangement for project management** proved to be challenging during implementation. The PMU was anchored in the MEDD and was supposed to be mainly composed of MEDD staff. This was designed to enhance MEDDs capacities and ensure sustainability of interventions, for technical and fiduciary positions. However, because of limited available human resources, this scheme did not work as expected. In 2018, the GoM decided to stop granting incentives, as part of the government in-kind contributions to the projects, to staff seconded from the MEDD to the Project. This has caused a freeze on their interventions. To deal with this situation, the project had to hire most of its specialists. With budget allocated to Component 3 (project management) mainly relying on counterpart funds (supposedly in-kind contribution), mobilization of civil servants was an important challenge throughout the five years of the project.
68. **Accreditations of CDAs.** By design, the PGDP promoted community led SLM activities. Investments were to be implemented by local SLM associations, and this was a great achievement of the project. However, to ensure transparency and sustainability of activities after project closure, these associations needed to be officially recognized. The recognition process by the Ministry in charge of the Interior was laborious and consumed significant time and efforts to the project. It took 2 years to obtain the first accreditations and investments could only start on year 3 of the project. As a result, the project disbursement initially was slow, leading to low implementation ratings until the mid-term review. Establishment of appropriate community structures for implementation was not foreseen as an issue during preparation.



B. KEY FACTORS DURING IMPLEMENTATION

Factors subject to the control of the government and/or implementing entities

69. **Coordination and engagement.** The PMU included a core team of committed specialists with the required skills and was led (until closure) by a Coordinator with strong engagement. In particular, the support of the technical advisor during the whole project phase (from its preparation phase to its closure) strongly helped the project to carry its activities and meet its objectives. The strength and continuity of the national project implementation team compensated for the lack of continuity of TTL leadership on the Bank side. The government demonstrated significant ownership of the project, including close supervision of activities and activity partners.
70. **Fiduciary - mobilization of counterpart funds.** The GoM contribution was mostly expected on in-kind basis for the costs of the Project Management Unit's civil servant staff (project coordinator, two assistants and technical staff from the MEDD information and administrative departments), Regional Coordination Units' (RCU) staff, project premises, utilities, a vehicle for overall coordination and the operational expenses of the vehicles to be provided to facilitate the ecological monitoring sub-component. While some of these engagements were fulfilled, the GoM decision to stop granting incentives to the PMU civil servant's staff resulted in a lack of commitment, pushing the project to hire more consultants than initially planned in the budget for project management. The US\$0,13 million direct contribution from the GoM were not sufficient to address this issue. The PGDP has suffered from this situation, with difficulties in recruiting the consultants necessary for a good follow-up of the project and risk of default of payment of these consultants.
71. **A strong local and community driven approach.** The positive project's outcomes relied on a strong community involvement promoted from the design phase throughout its implementation. To ensure sustainability of investments after the project, a CDA was created for each intervention site. CDAs needed to be legally recognized by the Ministry of the Interior and Decentralization. This institutional recognition took significant time and delayed the start of field activities; thus, no investments could start before 2018¹⁸. However, all the 60 CDAs finally received their accreditation, a key measure of likely sustainability for the continuation of activities after the end of the project. To support the CDAs, RCUs were established (hosted in the DREDDs in each intervention region) to monitor and accompany activities as close as possible to the field. Besides, in 2019, the project recruited three Non-Governmental Organizations (NGOs), one per region, to build CDAs' capacities (see below). Intervention sites and activities were selected on a consultative approach, based on initial analysis, by Regional Development Committees composed of local authorities (Walis, Hakems, mayors, heads of regional technical services), local development partners and civil society. According to the satisfactory survey at project closure, in the region of Brakna 90% of surveyed stakeholders consider the project succeeded in involving communities in project interventions, a guarantee for ownership and sustainability of activities.
72. The **physical and financial participation of communities** in all investments was considered an important achievement of the project. Direct transfer of resources and tools ensured equitable and direct access to public investments and greater efficiency. According to the PMU, the CDAs have demonstrated good financial management and prudence. Out of the 189 sub-projects financed, no case of embezzlement has

¹⁸ The first accreditations to CDAs were delivered in December 2017 and last ones in June 2020).



been observed or reported. Transparency, effective participation of communities in decision making and planning, and their accountability in the execution and management of sub- projects have shown to be efficient. Besides, CDAs have proven to be effective conflict management structures at the local level by amicably resolving disputes (for example: concerning fencing layout). Through the CDAs, the project strengthened traditional systems of environmental and social management

Factors subject to World Bank control

73. **Adequacy of supervision:** The project experienced four TTLs during its five years of implementation. This instability complicated continuity on supervision, despite the efforts made to facilitate transitions between TTLs. Different levels of supervisions were applied by the different teams, depending also on the project needs: from a high-quality supervision on year 1, with an extended team, it then shifted to a more targeted supervision, which led the team to focus its supervision actions to the essential.
74. **Alignment with partners' activities.** During preparation, the World Bank's team ensured effective coordination with partners and other donors to enable maximization of resources and create synergies, especially through the Working group of development partners supporting environment and sustainable development. Unfortunately, this effort was not maintained. Although it did not directly impact the results of the project, it could have strengthened the impact of the project and dissemination of its results, especially for Component 1.

Factors outside the control of government and/or implementing entities

75. **The 2018 local and legislative elections followed by the 2019 presidential elections** hampered project implementation, slowing the pace of activities for almost three months. All the stakeholders (including the PMU and project beneficiaries) were mobilized by the elections.
76. **COVID-19 pandemic:** The outbreak of the COVID 19 pandemic in March 2020, has strongly impacted project implementation at a critical time for the project, just few months before its closure. The containment measures and travel restrictions taken to curb the pandemic have affected the implementation of in the field (investments planned in 2020 and completion of the local development plans), as well as the studies and consultations planned under component 1. Limitations for hired consultants to go to the field and organize consultations with stakeholders caused significant delays. This caused many activities to be completed in the very last month of the project, when conditions improved, and restrictions were lifted.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

Rating : Substantial

M&E Design

77. By design, the Project's Results Framework (RF) was relatively simple, with three PDO indicators and five Intermediate result indicators, and appropriate to monitor progress towards the PDO. Most of the indicators had a



clear frequency, data source, and target and end line values. Overall, the RF was adequate for monitoring progress along the different elements of the theory of change and towards the PDO.

78. Project M&E was designed to be carried out at three integrated levels: (i) at the project level, looking at the performance of the project in general and per component in accordance with the project Results Framework; (ii) at the GEF Focal Area level by tracking performance using the Biodiversity Tracking Tool, the Land Degradation Portfolio Monitoring and Tracking Tool and the SFM/REDD+ Tracking Tool and reporting them at midterm and completion and (iii) at the ecosystem level, evaluating productivity and services functions' changes as a result of various combinations of SLM practices.
79. The overall M&E and reporting responsibilities relied on the PMU. Envisioned measures to ensure sound M&E were as follow: (1) at the project level : during the first year, hire a M&E consultant, who will conduct training for relevant MEDD staff, who will then take over this responsibility; (2) at the local level provide technical assistance and capacity building to the RCUs to track progress of the activities; (3) at the ecosystem level, contract with OSS to develop and implement an ecosystem monitoring system.
80. Proposed M&E framework was adapted to the limited technical capacity. However additional intermediate indicators would have permitted better measurement of the project's impact on beneficiaries, ecosystems, and associated ecosystem services. Ecological Monitoring proved to be challenging during implementation. Having a methodology ready to be used by the project at appraisal, with baseline data available, would have been helpful. Besides, no intermediate indicator allowed to capture the impact of the project on enabling the development of a sustainable gum Arabic value chain (under component 1).

M&E Implementation

81. At project level, a dedicated M&E specialist was hired (part-time) and remained part of the PMU until the end of the project. Contrary to what was envisioned at appraisal, this function was not transferred to a MEDD staff. At the project launch, efforts were made by the World Bank team to ensure shared understanding of the results framework and indicators description. The M&E specialist benefited from several regional capacity building activities organized by the BRICKS project. At local level, the efforts to reinforce the capacity of the RCUs, responsible for monitoring of field activities, included hiring financial and administrative staff, providing trainings, computer equipment and vehicles. The RCUs regularly monitored the execution of project investments and collected primary data from the CDAs to inform the monitoring and evaluation system. Joint supervision missions with PMU and RCUs staff were conducted on intervention sites.
82. Most indicators were set in a simple and straightforward manner and were monitored regularly. Indicators were tracked for each Implementation Status and Results Report (ISR) but the implementation of the ecological monitoring (necessary to inform PDO indicator 2: average vegetation cover in intervention sites) has been a challenge. As per the PAD, OSS was contracted to develop the ecological monitoring system. But the proposed system¹⁹ was too complex and costly to implement and the contract was terminated in 2019 before its operationalization. In agreement with the World Bank, the PMU hired trainees and a local GIS specialist for the implementation of a monitoring method (based on GIS, remote sensing through satellite and drone data and ground control sites) better adapted to the national context and in line with the GIS system of the MEDD. As a result, the

¹⁹ PGDP Monitoring and Evaluation Operational Manual, September 2018



monitoring system was developed during the last year of implementation and results for PDO indicator 2 only available for the closure of the project. Although this did not directly impact the results of the project, it did not allow for good monitoring at the ecological level.

83. Data derived from satellite images to inform PDO indicator 2 (change in vegetation cover) are available for 36 sites; it consists of maps of vegetation cover obtained by deriving the Normalized Difference Vegetation Index (NDVI). The NDVI provides an indication of greenness with most of the signal coming from grass and herbaceous cover but it is poorly correlated to other indicators for changes in woody vegetation cover, such as percentage tree cover, biomass, or carbon content. The project tried to address this gap by using a new method derived from drone footage (photogrammetry) to monitor the percentage of tree cover. It was applied on six sites and provided interesting results as it allowed good classification of objects on the ground, either trees or stone cordons. Although the method gave interesting results, the lack of baseline data (before SLM interventions) did not allow to draw conclusions in terms of ecological impacts related to the project.

M&E Utilization

84. The M&E was used to track implementation of activities. The results and indicators were monitored regularly allowing to inform implementation support missions, Aides-Mémoires and ISRs. This allowed the project to adopt a results-oriented approach, focusing their interventions on priority activities to achieve the project's development objectives. The M&E utilization has been effective in tracking implementation of field investment activities. On the other hand, the shortcomings in the implementation of the ecological monitoring system did not allow for a broader assessment of the project's ecological impact including ecological services functions, which could have helped to capture additional benefits from project's outputs (e.g. biodiversity or carbon sequestration).

Justification of Overall Rating of Quality of M&E

85. The M&E framework was adapted to the limited technical capacity of the country and the regional support provided by the Bricks project contributed M&E capacity building. Indicators and results were monitored regularly. M&E tools helped better manage the project and guide the PMU towards the successful implementation of the project. Some shortcomings affected the implementation and utilization of the ecological monitoring system, but those did not alter project implementation or the overall appreciation of the project outcome. For these reasons, the overall rating of quality of M&E is **substantial**.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

86. **Environmental and Social Safeguards.** Given its focus, the project brought significant positive environmental and social impacts, including restored ecosystems with improved soil fertility and enhanced livelihoods for targeted communities. At appraisal environmental and social impacts were judged modest and the project was classified as Category B. Potential impacts related to investments included: loss of vegetation due to land clearing, soil erosion and degradation due to activities involving excavation, poor construction-related waste management, nuisance due to dust and noise from construction activities, risks of increased prevalence of HIV/AIDS and other Sexually Transmitted Diseases due to foreign workers on construction sites, environmental and health risks associated with use of pesticides. An Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF) and a Pest Management Plan were prepared prior to appraisal based on pre-identified interventions.



Table 3: Safeguard Policies triggered

Safeguard Policies Triggered	Yes	No
Environmental Assessment (OP/BP 4.01)	An Environmental and Social Management Framework (ESMF) has been prepared	
Natural Habitats (OP/BP 4.04)	Due to expected (positive) changes in management of natural habitats in the targeted areas	
Forests (OP/BP 4.36)	Due to forest management activities funded by the project, which are expected to improve the management and status of forests in the three project areas	
Pest Management (OP 4.09)	Investments in re-vegetation and agroforestry activities may require the use of pest control methods and pesticides management on the part of local producers	
Physical Cultural Resources (OP/BP 4.11)	To reflect the possibility that artifacts could be revealed during field work	
Indigenous Peoples (OP/BP 4.10)		X
Involuntary Resettlement (OP/BP 4.12)	This policy is triggered despite the fact that the planned types of activities are not expected to lead to land acquisition or significant restriction of access to sources of livelihood. A Resettlement Policy Framework (RPF) was prepared	
Safety of Dams (OP/BP 4.37)		X
Projects on International Waterways (OP/BP 7.50)		X
Projects in Disputed Areas (OP/BP 7.60)		X

87. The project reinforced MEDDs capacity at national and local level through trainings on environmental and social impact assessment (ESIA). Sub-projects were selected based on participatory diagnostics, with local communities, and involvement of MEDD and project staffs trained on ESIA. This process was designed to enable environmental and social safeguards to be considered from the design stage of the sub-projects. It also allowed to sensitize the members of the CDAs' on how to take into account the project's environmental and social safeguard policies in the preparation and implementation of their sub-projects. During implementation, the project prepared simplified environmental and social impact assessments for each sub-project (189 in total). These were reviewed and approved by the Environmental Control Division (DCE), which has this mandate at the national level.

88. Two environmental issues arose during implementation and mitigation measures were implemented in agreement with the World Bank Team: (1) plastic wastes generated by the tree nurseries and (2) the management of pesticides used by market gardeners to reduce the negative effects of pests. Regarding **plastic bags**, the project had obtained an exemption from the Ministry for the use of these bags, given the ban on the use of plastic bags on Mauritanian territory. In the absence of alternatives, the solution chosen by the project was to bury the used bags in a safe place. Regarding market gardening, the project acquired a moderate quantity of **insecticides** to reduce the negative effects of pests, under control of the Plant Protection Directorate. Acquired chemical products were registered pesticides and training/awareness-raising activities on the use of pesticides as well as protective equipment were provided to users.



89. The main social risk identified during project preparation was the restriction of access to natural resources within the fences for herders. This risk did not materialize during implementation mainly thanks to the social cohesion around the CDA. Fences were managed by the communities and any conflicts related to land restrictions were addressed within the CDA. While no formal Grievance Redress Mechanism (GRM) was put in place, the use of traditional grievance and conflicts management bodies has allowed most conflicts to be resolved at the local level. Only two more significant complaints (more significant) were raised at the PMU level, one concerning the need to modify the layout of the fences so as not to disturb the passage of livestock and the other concerning the wish to extend the area of market gardens in order to cover more beneficiaries. In both cases, solutions satisfying all stakeholders were implemented. In the first case, the local authorities played their role as mediators, and a consensus was reached on a new fence line. In the second case, resources generated by ongoing activities in the CDA allowed for the expansion of the fenced area for market gardening. During mission's field visits, community representatives denied any negative impact related to land use restrictions. It appears that the availability of land near the communities made any land use restrictions – for grazing, hay collection or firewood - a minor impact.
90. **Financial Management.** During preparation, the FM risk was rated High since the MEDD had no previous experience in implementing World Bank projects and did not have strong financial management and procurement teams. Several actions were agreed on to mitigate the above-mentioned risks; these included (i) developing a manual of financial, accounting and administrative procedures; (ii) recruiting a qualified accountant satisfactory to the World Bank; (iii) acquiring a well set up accounting software; and (iv) recruiting a part-time internal auditor. These actions, implemented by the project with some delay, were not sufficient to ensure satisfactory financial management of the project: throughout implementation, **FM rating fluctuated between moderately satisfactory and moderately unsatisfactory**. Until 2018, multiple issues were raised by: (a) bank reconciliations performed irregularly; (b) Financial Monitoring Reports not prepared or unsatisfactory; (c) the Annual Work Program and Budget not submitted on time; (d) no external auditor hired; (e) ineligible expenses engaged by the project (compensation payments); (f) some expenses not sufficiently justified; (g) and lack of availability of counterpart funds. In 2018, with the change in project coordination, efforts were made to respond to the WB's recommendations, resulting in improvements in the project's FM. However, some difficulties persisted on two fronts: the regularization of ineligible expenses incurred and the mobilization of counterpart funds (planned for Component 3 including payment of the PMU consultants).
91. **Procurement.** At appraisal, procurement was considered a High risk. Both the Directorate for Protection of Nature (DNP) and Directorate of Administrative Affairs (DAF) (handling contracts less than US\$42,000 equivalent) had significant capacity gaps with no previous experience in management of WB projects. The Public Procurement Commission of the Rural Sector (CPMP-SR), responsible for contracts above US\$42,000 equivalent (as per existing law), also needed to strengthen member skills and capacities. An action plan was prepared to strengthen the capacity of DNP and DAF, including preparing a procurement manual, providing procurement training for the involved staff, and hiring technical assistance in procurement to assist MEDD to manage the procurement processes in accordance with World Bank procurement guidelines. This mitigation measures were implemented, but instead of hiring a specialized firm in procurement to assist the project and train MEDD staff, the PMU hired a procurement specialist (part time). Throughout implementation, **the project's procurement rating remained moderately satisfactory** with shortcoming resulting from delays in procurement of activities, failure in keeping STEP up-to-date and shortcomings in



some procurement processes. Ex-post expenditure reviews conducted in June 2018 and June 2019 revealed that procurement risk remained Substantial. Further mitigation measure was implemented by hiring of an assistant to update STEP. During last year of implementation, improvements were made, and procurement risk was finally considered Moderate.

C. BANK PERFORMANCE

Rating: Moderately Satisfactory

Quality at Entry

92. **Soundness of the background analysis.** The project was well prepared. Its PDO and design were clear and most of its activities were predetermined and straightforward. Thanks to the studies²⁰ and consultations carried out during the preparation phase, physical investments (including income-generated activities) were well defined: 116 sites were known as potential intervention sites, regeneration options of Acacia species and best SLM practices to be considered by the project were pre-identified, and a list of eligible income-generated activities was provided. Institutional activities including capacity-building, knowledge exchange and strategic studies to be completed were detailed in the PAD, and the stakeholders to be mobilized for the different components were well identified. Lessons from other SLM projects in the Region and from the Mauritania Community Based Watershed Management Project (PACV, closed in March 2013) were used in the design of the project. The implementation scheme was adapted to the limited technical capacity, with support from local administrations for close monitoring of activities, and regional partners for the M&E (ecosystem monitoring). At the time of approval, the framework of interventions was clear and well understood by the different partners.

Quality of Supervision

93. As mentioned earlier, the project experienced four TTLs during its five years of implementation. These changes interfered with efficient supervision, despite the efforts made to facilitate transitions between TTLs. At entry, the project benefitted from the support of a large WB Team including multisectoral experts²¹, safeguards, procurement, financial and M&E specialists. During project implementation, the supervision effort has been reduced to also match the more limited supervision budget. The information available for years 2017 and 2018 is limited (the TTL having left the Bank he could not be interviewed, and no Aide-Memoires are available – although the client report mentions 2 missions in 2018) and suggests a lower level of supervision over that period. Supervision missions were carried out irregularly: twice a year in 2016, 2018 and 2019, with field visits when investments had started, and the new coordinator has been appointed. No formal mission was organized in 2020 partly due to the COVID-19 pandemic and associated travel ban²². However, half-day meetings were organized at least every three months to track projects' progress and identify actions. The ISR were informed based on that information. A virtual mission was

²⁰ IUCN pre-feasibility study conducted through the BRICKS project and with support from the TerrAfrica Program, to provide guidance on the various regeneration options of Acacia species and best practices to be considered by the project
Socio-economic study of the *Acacia Senegal* and *Acacia Seyal* sector for the production of gum Arabic, MEDD, 2014
Comprehensive consultation process in the Wilayas of Brakna, Gorgol and Trarza, with administrative and municipal authorities, technical services, communities and CSOs (about 55 villages visited)

²¹ agro-ecologist and agro-economist

²² An implementation support mission was planned on May 2020, cancelled because of travel ban, and in November 2020, postponed to January 2021, because of health issues within the PMU.



organized in January 2021 for the project closure. It should also be specified that being a small project only one implementation support mission was required a year (according to the project execution manual).

94. Despite the numerous requests from the WB Team to submit the documents in STEP as early as possible, many clearances for procurement requests for provided outside of the procurement system (STEP). This flexibility was given because of limited access to the system due to poor internet connection (this is a frequent issue in Mauritania, where project procurement teams need to go to the WB's office to access STEP). Efforts were made at the end of the project to have all contracts included in STEP.
95. Despite these shortcomings, Aide Memoires and ISRs, which assessed the progress of the project with candor, tracked the activities while also identifying shortcomings and suggested actions to overcome them. Particular attention was paid to fiduciary compliance as it was rated high risk. Missions on the field allowed to address environmental issues linked to plastic waste management and pest management.

Justification of Overall Rating of Bank Performance

96. Based on the effectiveness in preparation and above-mentioned shortcomings in supervision, the World Bank's performance is rated Moderately Satisfactory.

D. RISK TO DEVELOPMENT OUTCOME

97. The project has satisfactorily achieved its project development objective. Nevertheless, while the project was designed to ensure the sustainability of the project outcomes and achievements, there is a moderate to substantial risk to the development outcome of the project.
98. The investments realized by the project (fences, stone bunds, water supply system...) are expected to last with proper maintenance. During the project, some associations have demonstrated their capacity for sustainable management, using part of the fodder sales revenue to ensure the maintenance of the equipment or further investments. Nevertheless, the ability of CDAs to levy necessary maintenance fees can be a concern as it is not clear whether their revenues would be sufficient to carry out maintenance activities without external funding, before Arabic gums could be generated. Moreover, CDAs are young structures that still need to be supported in their development with continuation of capacity building activities.
99. The sustainability of the project outcomes depends to a large extent on whether the Government with assistance from external donors would deepen and expand SLM activities introduced in the 60 pilot sites covered under the project. When comparing the scope of the project (30 km² of land under SLM) with the scale of need in the Mauritanian Sahel (estimated 127,392 km² of potential and favorable zones for gum tree development) the PGDP can be considered a pilot project. The approach has proven effective but needs to be scaled up to bring significant results in terms of reforestation and desertification control, and to allow the development of the gum Arabic sector in the country. The government's current commitment to a gum Arabic reforestation policy and the renewed interest of the international community and financial partners in the Great Green Wall Initiative are conducive to this scale-up.
100. The project has developed sustainable systems, with creation and recognition of local sustainable landscape management associations, involvement of local and national administration and its capacitation.



Strong involvement of the MEDD, institutionalization of the ecosystem monitoring system within the MEDD, strategic studies and consultations with relevant stakeholders has created an enabling environment for sustained momentum, which should allow the efficient integration of future supports.

101. The initial objective of having a PMU with a majority of MEDD staff did not work, due to a lack of commitment from the GoM. Nevertheless, the maintenance of the Director of the DPN (Direction de la Protection de la Nature - Directorate of Nature Protection) as project coordinator (now Director of DPREM- Direction de la Protection et la Restauration des Espèces et des Milieux - Directorate for Species and Ecosystems Protection and Restoration) is a guarantee of continued efforts to scale-up at the national level. This is confirmed by his efforts to engage some of the PMU specialists in the existing government institutions to absorb their capacity (including technical advisor and GIS specialist).

V. LESSONS AND RECOMMENDATIONS

102. **Need for tailored capacity building activities and a gender action plan.** This type of project has more chance to be successful if tailored capacity building and communication approaches are used and if information tools are adapted to the level of understanding/education of their audience. The rural environment of South Mauritania is characterized by widespread illiteracy: more than 50% of CDA members were illiterate. The introduction of exchange visits between beneficiaries was an appreciated innovative practice. This allowed beneficiaries to share their good practices and to give each other advice based on experiences in similar conditions. An adult literacy mechanism could also be considered in future operations. Besides, the experience of the project show that capacity building operations are less likely to reach women if specific actions are not envisaged, and it is unclear how many women were involved in the SLM associations, for sub-project management. A gender action plan is needed to ensure women's involvement in all project components.
103. **Need for a clear and robust M&E.** Future SLM projects should be tracking their impacts on ecosystem services, household food security, poverty reduction, resilience and more, with a clear baseline. Projects should not stop at measuring just hectares of SLM introduced without measuring some of the impacts of those SLM measures. Unfortunately, after five years, the PGDP was not able to provide conclusive evidence about changes in biodiversity and carbon stocks. The project did not collect baseline information and relied on the use of NDVI data, which estimates cover changes but not suited to assess changes in tree cover. In any future SLM project, all sites should be geo-referenced and mapped from the outset, and baseline information should be collected using a coherent over time M&E framework. This would allow to collect time-series on actual changes in vegetative cover, soil health and other multiple impacts of investments. In addition, greater effort should be made to define the types/categories of beneficiaries and the extent of specific benefits.
104. **Community engagement.** The strength and cohesion of the CDA determined in large part the success of the field based SLM activities under the PGDP. Future SLM projects in the regions should rely on existing local SLM associations and continue supporting them. The physical and financial participation of communities was an important achievement and communities benefiting from the investments have so far demonstrated good management and prudence. The 60 CDAs created for the PGDP can be considered as



an institutional level of local governance whose maintenance and consolidation should be supported by future SLM projects.

105. Success of SLM interventions is more likely under **an integrated approach** which combines investments in landscape management and income generating activities. Income generating activities were key to ensure involvement of communities from the beginning of the project. They contributed to communities' livelihoods in the short term and they should sustain SLM practices in the long term. For example, watering facilities provided with the market gardens were essential for successful planting of Acacia trees, and the tree nurseries were installed in the fenced gardens provided by the project.
106. Future projects aiming to restore Gum Producing Ecosystems in Mauritania should consider water availability as successful reforestation/acacia tree planting in the Region requires water. The experience of the project has shown that, in addition to the water and soil conservation techniques, watering is needed to ensure the survival of the Acacia plants; in the tree nurseries, but also in ground the first year after plantation. For this purpose, the project used water tanks transported by vehicles from the villages. The integration of a watering facility within the fenced sites for reforestation could be considered to facilitate the planting. A scaled-up operation would require considering water availability and water supply in the design of the project. For some sites, to provide water for market gardens, the project had to realize hydro-geological studies and 70 m deep well were dug.
107. Sustainable Landscape Management projects supporting the Gum Arabic sector requires long term engagement. Under the PGDP, implementation and monitoring of SLM investments (including plantation of Acacia trees) have been limited to three years, while the gum tree needs a minimum of five years to start producing gum. The duration of the PGDP did not allow to monitor the results of the gum tree plantations until the first productions. A natural resource management project targeting gum Arabic producing ecosystems requires a programmatic approach combining medium term outcomes with long term objectives. Moreover, behavioral changes require long-lasting support, to become the new practices, and experience sharing between communities proved to be very efficient. Also, adaptation process is a learning process, to build on lessons learnt and adjustments

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ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Strengthen sustainable landscape management in targeted productive ecosystems in Mauritania

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Land area where sustainable land mgt. practices were adopted as a result of proj	Hectare(Ha)	0.00 31-Jul-2015	3000.00 31-Jan-2021		3,000.00 31-Jan-2021

Comments (achievements against targets):

Achieved by 100%: The project supported SLM investments in 60 sites of 50 ha each (referred as “pilot sites”). Every “pilot site” was fenced, which allowed the project to easily meet its target of 3,000 ha of land benefiting from SLM practices (exploitation control). Fences were the first investment and the main expense for the CDAs. Other SLM practices were then implemented in the fenced sites (e.g. Acacia tree plantation, water and soil conservation techniques (stone bunds, zai pits))

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
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Average vegetation cover in intervention areas	Percentage	0.00	20.00		32.00
		31-Jul-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

Overachieved by 160%: The vegetation cover change of the soil represents a proxy for enhanced management of all three environmental services targeted by the project: biodiversity conservation, soil and water conservation, and vegetation carbon storage

Results from the ecosystem monitoring system developed under the project show an average augmentation of vegetation cover in intervention areas of 32% between 2018 (before SLM investments) and 2021 (end of the project). This increase results from the combination of fencing, water and soil conservation techniques and increased rainfalls in September 2020. Field observations confirmed the widespread appearance of new herbaceous species on intervention sites (e.g. *Aristida mutabilis*, *cassia tora*, *panicum turgidum*, etc.) .

Data to inform this indicator were derived from satellite images; it consisted of maps of vegetation cover obtained by calculating the Normalized Difference Vegetation Index (NDVI). The NDVI provides an indication of greenness with most of the signal coming from grass and herbaceous cover. The NDVI varies from year to year depending on annual rainfall amounts and distribution.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00	160000.00		164,050.00
		31-Jul-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

Achieved by 102%: 36. Both types of investments implemented by the project (SLM and immediate needs) provided increased livelihood opportunities and concrete socio-economic benefits to an estimated 164,050 direct beneficiaries, corresponding to the population living within 3 km of the intervention sites, of which 52,7% were women. This estimate was based on the 2013 population census, updated to 2021.



The overall beneficiary rate of 52,7% women reflects the population composition

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
of which female	Percentage	20.00	52.00		52.70
		04-Aug-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

A.2 Intermediate Results Indicators

Component: Sustainable Landscape Management Knowledge, Governance and Partnerships

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Stakeholders benefiting from knowledge building products provided by the project	Number	0.00	600.00		773.00
		31-Jul-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

Overachieved by 129% : A total of 773 stakeholders, benefited from trainings, workshops and knowledge exchanges. Stakeholders included: national and local authorities (mostly from the MEDD), regional NGO representatives, CDA representatives, gum arabic producers and traders. Four capacity building workshops were organized for MEDD staff (from central and regional administrations) and NGOs on (i) Environmental Impact Assessments and (ii) SLM techniques. CDA members were trained on water and soil conservation techniques, forest nursery and tree planting techniques, market gardening



techniques, use of pesticides and project management. Four knowledge exchanges were organized on demonstration of bleeding techniques and other SLM best practices. This modality proved to be very effective and appreciated in disseminating SLM best practices with a large proportion of the CDAs members being illiterate (about 50%). Six workshops were organized on project management, procurement and financial management of community-based activities for presidents, secretaries, treasurers and procurement officers of the 60 approved CDAs. In 2020, a training workshop was provided to gum Arabic producers on gum Arabic collection, processing, conservation and storage techniques.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
An ecological monitoring system of Gum Arabic Ecosystem designed and institutionalized	Yes/No	No 31-Jul-2015	N 31-Jan-2021		Yes 31-Jan-2021

Comments (achievements against targets):

Achieved: An ecosystem monitoring system using Geographic Information System (GIS), remote sensing (open source satellite data, drones' imageries) and ground control sites was developed. Hosted by the MEDD, it became operational by the end of the project

Component: Sustainable Landscape Management Practice

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Participatory SLM investment activities	Number	0.00 31-Jul-2015	60.00 31-Jan-2021		104.00 31-Jan-2021



Comments (achievements against targets):

Overachieved by 140%: The Community Development Associations (CDA) implemented 104 SML sub-projects on the 60 intervention sites of the project (60 for fences and 44 for other SLM practices, often a combination of different techniques). SLM practices included various combinations of interventions such as: i) temporal control of exploitation pressures (through fencing); ii) vegetation enrichment with young Gum Arabic tree species (acacia Senegal) and herbaceous species for fodder and iii) soil and water conservation practices (stone bunds and zai pits). Investments were performed by local associations through financing agreements with the project.

Thirty-five (35) sites were reforested with 320,000 Acacia Senegal seedlings planted. The success rate for reforestation was 30% (strongly relying on water availability). Twenty (20) sites were planted with herbaceous species with a success rate of 50%. Twenty (20) sites benefited from water and soil conservation techniques: 39,098 m of stone barriers, 2,100 m of stone bunds, 43,425 units of zai pits. Bleeding of Acacia Trees was performed on (10) sites to boost Gum Arabic production: : on those sites production increased from about 90 to 100% (an average of 270g/tree instead of 120g/tree).

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Local needs investment activities	Number	0.00	100.00		85.00
		31-Jul-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

Partially achieved by 85%: . Each of the 60 targeted sites benefited from at least one immediate needs investment to contribute to communities' livelihoods in the short term, ensure their engagement and sustain SLM practices in the long-term. The 85 local needs investment activities consisted of (i) enhancement of vegetable gardening (62 gardens of 1 ha with a fence and a set of horticultural equipment and seeds); (ii) installation or improvement of watering facilities (for each garden, with solar systems and wells sometimes up to 70 m deep); (iii) provision of solar fridges (7) and grain mills (3); (iv) establishment of local community boutiques (12) and (v) butchery (1).

The provision of water to populations has been one of the priorities of the CDAs. The gardens and watering facilities increased the agricultural productivity and sustained SLM practices as they were also used for reforestation purposes (acacia tree nurseries were set up within the garden fences and water was



needed to ensure survivance of the seedlings). These Income-generating activities increased livelihoods opportunities through improvement of nutrition and water supply, access to basic consumer products and creation of additional income.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Local development plans integrating landscape management approach	Number	0.00	6.00		2.00
		31-Jul-2015	31-Jan-2021		31-Jan-2021

Comments (achievements against targets):

Partially achieved by 33%: Two communal development plans, promoting SLM practices, were completed for the communes of El Khatt (Trarza) and Choggar (Brakna). The elaboration of these plans helped raising awareness among mayors and municipal councilors of the necessity to integrate sustainable natural resource management into communal budgets. Partly due to the COVID-19 pandemic which strongly affected the implementation of activities in the last year of the project (limitation for hired consultants to go to the field and organize consultations with stakeholders), the PGDP did not manage to reach its target of 6 local development plans integrating SLM.



B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: Strengthened Sustainable Landscape Management in targeted productive ecosystems in Mauritania	
Outcome Indicators	<ol style="list-style-type: none"> 1. 3000 ha of land where sustainable land management practices have been adopted as a result of the project 2. 25% average vegetation cover augmentation in intervention areas 3. 164,000 project beneficiaries , of which 52% female
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. 600 stakeholders benefiting from knowledge building products provided by the project 2. An ecological monitoring system of Gum Arabic Ecosystems designed and institutionalized 3. 60 participatory SLM investment activities 4. 100 local needs investment activities 5. 6 local development plans integrating landscape management approach
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	<ol style="list-style-type: none"> 1. Built capacities This was achieved through training , knowledge sharing workshops and guidelines on SLM practices 2. Improved governance system An ecological monitoring system of Gum Arabic Ecosystems was designed and institutionalized (integrated in the existing data gathering system of the MEDD) 3. Initiate the development of a sustainable Gum Arabic value chain This was achieved through Multi-stakeholder sessions on needs and constraints along the Gum Arabic value chain and Strategic studies (analysis of the socio-economic status of the Gum Arabic value chain, institutional and regulatory analysis)



7. Participatory (community based) implementation of SLM

investments in 60 sites in the regions of Trarza, Brakna and Gorgol

8. Integration of SLM practices in local communal plan

Two local development plans integrating SLM approach were adopted



ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Dahlia Lotayef	Task Team Leader(s)
Moustapha Ould El Bechir	Procurement Specialist(s)
Celestin Adjalou Niamien	Financial Management Specialist
Mohamed El Hafedh Hendah	Team Member
Brahim Sall	Team Member
Fatou Fall Samba	Team Member
Sylvestre Bea	Team Member
Medou Lo	Social Specialist
Fatou Fall	Team Member
Ayala Peled Ben Ari	Team Member
Batouly Dieng	Team Member
Siobhan McInerney-Lankford	Counsel
Jayne Angela Kwengwere	Team Member
Salamata Bal	Social Specialist
Supervision/ICR	
Nicolas Benjamin Claude Desramaut	Task Team Leader(s)
Brahim Hamed, Ndeye Magatte Fatim Seck, Mamata Tiendrebeogo	Procurement Specialist(s)
Fatou Fall Samba	Financial Management Specialist
Vanessa Retana Barrantes	Team Member
Medou Lo	Environmental Specialist
Moustapha Ould El Bechir	Procurement Team
Maimouna Toure	Procurement Team
Batouly Dieng	Team Member
Siobhan McInerney-Lankford	Counsel
Nicolas Kotschoubey	Team Member
Rahmoune Essalhi	Procurement Team
Anta Tall Diallo	Procurement Team
Dahlia Lotayef	Team Member
Gernot Brodnig	Social Specialist
Jayne Angela Kwengwere	Team Member
Annick Lachance	Team Member



B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY14	9.105	102,548.07
FY15	7.269	142,703.04
FY16	1.082	46,082.11
Total	17.46	291,333.22
Supervision/ICR		
FY16	1.921	84,019.02
FY17	4.715	67,361.13
FY18	10.926	43,965.66
FY19	5.350	45,590.59
FY20	7.350	65,207.23
Total	30.26	306,143.63



ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$M)	Actual at Project Closing (US\$M)	Percentage of Approval (US\$M)
Sustainable Landscape Management Knowledge, Governance and Partnerships	1.31	0.93	141%
Sustainable Landscape Management Practice	3.26	3.39	104%
Project Management	0.24	.48	200%
Total	4.81	4.80	99.9%



ANNEX 4. EFFICIENCY ANALYSIS

Economic, financial and incremental cost analyses

This annex provides a description of the project benefits; an economic and financial CBA of new Acacia plantations, and an incremental cost analysis for the GEF funds.

a. **Project benefits.** The project generated several types of benefits. Although monitoring of the project impacts has not been conducted systematically during implementation, examples of these benefits include:

- *Local benefits*, e.g. increased production of vegetables due to irrigation and fencing (e.g. by 50 percent in Oumou El Ghoura, Trarza); higher production of livestock feed, due to grain cultivation (on 1,000 ha); increased family net income due to alternative livelihoods (e.g. net annual benefit of US\$360 due to purchase of grain mill in Wabounde, Brakna). In addition, improved management practices of existing trees (*test saigné*) enhanced yields from 120 g/tree to 270 g/tree in certain sites of Trarza²³.
- *National benefits*, e.g. improved ecosystem services due to adoption of SLM. A comparison of land cover maps between 2018 and 2021 indicates an increase in vegetal cover by 32 percent in the project area²⁴. This increase is due to both project activities and other factors, e.g. improved rainfalls; the extent to which the project contributed to this increase is not known. In addition, lack of data on changes in ecosystem services (e.g. reduced erosion, improved water availability) makes it hard to quantify the actual magnitude of these benefits.
- *Global benefits*. Through its interventions in adopting SLM practices, the project also provided benefits with global significance: promoting reversal of current trends in land degradation (1,100 ha restored²⁵ due to implementation of water and soil conservation works), stimulating conservation and sustainable use of biodiversity (2,200 ha of acacia plantations), and improving the flow of forest ecosystem services generated by these plantations.

b. **Cost-Benefit Analysis of new plantations of Acacia Senegal.** The CBA carried out at appraisal assumed: a density of 200 trees/ha; 100 percent survival rate; and 50 percent increase in gum productivity of new plantations. These assumptions were quite optimistic. In fact, at completion, available information suggests that the project planted about 145 trees/ha²⁶ and the survival rate was 30 percent, leading to an actual density of only 44 trees planted/ha. Since no yields have been observed during implementation, this CBA does not estimate the net present value (NPV) for any “base” scenario – it rather focuses on estimating the switching values, e.g. the value of gum yield that would make the new Acacia plantations profitable for the farmer (financial CBA) and for the society as a whole (economic CBA). The analysis assumes a time frame of 23 years

²³ Direction de Protection et de Restauration des Espèces et des Milieux. 2021. Evaluation d’impact/resultats du projet PGDP.

²⁴ Direction de Protection et de Restauration des Espèces et des Milieux. 2021. Rapport d’Evaluation SIG de l’évolution du couvert vegetal dans les sites du PGDP.

²⁵ Direction de Protection et de Restauration des Espèces et des Milieux. 2021. Rapport d’achèvement du projet de gestion durable des paysages.

²⁶ Estimated as 320,000 trees planted/2,200 ha (communications with the Ministry of Environment).



(the life cycle of *Acacia Senegal* trees in Mauritania²⁷) and a discount rate of 6 percent²⁸. The analysis described below is based on data drawn from PGDP/DPN/World Bank (2020)²⁹, if not otherwise specified.

Financial CBA. From the farmer’s perspective, costs relate to the maintenance of the fence and plantations, and labor (trimming and harvest). Benefits include future local sales of gum Arabic. Under a sustainable management, these plantations would yield 0.25 kg/tree during years 6-11; 0.5 kg/tree at maturity (years 12-17); and a decline to 0 till year 23. Using the local price of gum in the project area (US\$8/kg), the valuation indicates that the plantations would be profitable for the farmer if gum yield was as low as 45 percent of the above values. This corresponds to slightly over 0.2 kg/tree at maturity (Table 4).

Economic CBA. From the economic perspective, costs include the maintenance of the fence and plantations, labor (trimming, harvest), transportation to urban areas, and the opportunity cost of land (potential loss of grazing benefits due to prohibited access through fencing). Benefits cover the returns to different actors of the value chain (e.g. producers and traders) and the value of ecosystem services generated by improved vegetation cover (e.g. improved water supply). While the latter could not be estimated due to data limitations, the estimation of the returns to different actors is based on the same experience of a neighboring region (Guidimakha), where 11 percent is sold locally (US\$8/kg), and 89 percent is sold in urban areas (US\$12/kg, Nouakchott). The results indicate that these plantations would be profitable for the society if gum yield was as at least 0.25 kg/tree at maturity. In reality, this is a conservative result, since the value of ecosystem services was not estimated in monetary terms.

Table 4: Results of financial and economic CBA for different scenarios of yields of Arabic gum

Scenarios (yields of Arabic gum at maturity, kg/tree)	0.15	0.2	0.25	0.3	0.35	0.5
Financial CBA (NPV, US\$/ha)	-130	-38	56	149	242	522
Financial CBA (IRR, %)	n.a.	3%	9%	13%	15%	22%
Economic CBA (NPV, US\$/ha)	-189	-88	12	113	214	517
Economic CBA (IRR, %)	n.a.	n.a.	7%	11%	14%	20%

Sources: Data from communications with the Ministry of Environment and Sustainable Development, complemented by PGDP/DPN/World Bank (2020). Time horizon of 23 years and discount rate of 6 percent. n.a. = not available.

Overall, the above analysis indicates that the *Acacia* plantations can be profitable if future management ensured full survival of the existing trees and a yield higher than 0.2 kg/tree at maturity. Given the current tree density of 44 trees/ha, this yield is equivalent to about 9 kg/ha at maturity. This is close to the upper bound of the yield that *Acacia* trees currently produce in the project areas, i.e. between 5-10 kg/ha (PGDP/DPN/World Bank, 2020, p. 47).

It should be noted that the above results are only **indicative** estimates of future profitability of *Acacia* plantations. A more refined analysis should include information on other potential benefits of *Acacia Senegal* (e.g. ecosystem services, firewood, non-wood forest products etc.) and observed yields of Arabic gum in the project areas.

c. **Incremental Cost Analysis.** The analysis conducted at appraisal considered a baseline scenario with a cost of US\$17.85 million; a direct co-financing of US\$1.35 million; and a GEF support of US\$4.81 million

²⁷ PGDP/DPN/BM. 2020. Etude socioeconomique sur la filiere de la gomme arabique, p. 24.

²⁸ World Bank. 2016. *Discounting Costs and Benefits in Economic Analysis of World Bank Projects*. Washington DC: World Bank.

²⁹ PGDP/DPN/BM. 2020. Etude socioeconomique sur la filiere de la gomme arabique.



contributing to three focal areas: *land degradation* (LD3), *biodiversity* (BD2) and *sustainable forest management* (SFM1) (Table 2).

Table 5: GEF funds and co-financing (US\$ million)

Funding source	Original amount (expected at appraisal)	Actual amount (disbursed at completion)
GEF		
- LD	2.68	2.68
- BD	0.92	0.92
- SFM	1.21	1.21
Total GEF (1)	4.81	4.80
Direct co-financing		
- GOM	1.35	0.13
Total direct co-financing (2)	1.35	0.13
Baseline (parallel) financing		
- PNIDDLE (World Bank)	11.22	7.70
- PRAPS (World Bank)	6.63	3.22
- PARIIS (World Bank)	0	3.56
- AMCC (European Union)	0	2.54
- PATAM (African Development Bank)	0	1.88
- PRODEFI (FIDA/ASAP)	0	0.07
- WACA Res IP (World Bank)	0	0.03
Total baseline financing (3)	17.85	19.00
Total co-financing (2 + 3)	19.20	19.13
Ratio (co-financing/GEF)	4 : 1	4 : 1

Notes: Totals might not add up exactly due to rounding. PNIDDLE = Local Government Support Project (P127543); PRAPS =Regional Sahel Pastoralism Support Project (P147674); PARIIS = Sahel Irrigation Initiative Support Project (P154482); AMCC = Alliance Mauritanienne contre le Changement Climatique Phase 2; PATAM = Agricultural Transformation Support Project; PRODEFI = Projet de Developpement des Filieres Inclusives; WACA Res IP = West Africa Coastal Areas Resilience Investment Project (P162337). **Sources:** for the original amounts: PAD, see p. 56 and p. 58. For actual disbursements - for GEF and GOM: communications with the Ministry of Environment and Sustainable Development; for PNIDDLE: estimation based on actual disbursement rate (69%, see PNIDDLE ICR) and the co-financing estimated at appraisal (US\$11.2 million, PAD, p. 52); for PRAPS: communications with the PMU; for PARIIS: communications with the project national coordinator; for PATAM: <https://projectsportal.afdb.org/>; for AMCC: communication with the EU focal point in Mauritania; the disbursements cover Trarza, Brakna, Gorgol and Guidimaka, due to the impossibility of separation by region (hence, slightly overestimated); for PRODEFI: communication with the focal point in Mauritania; for WACA Res IP: current Bank disbursements.

The analysis suggested that the baseline scenario would provide sound local development planning and large-scale investments in improving institutions, infrastructure and natural resource management. However, without the GEF support, limited attention would be paid to enhancing biodiversity, fostering sustainable forest management, and reversing land degradation. Moreover, the Ministry of Environment would not have the resources necessary to build on previous accomplishments³⁰ to improve the sustainable landscape management. The GEF alternative was expected to build on baseline investments to promote the sustainable landscape management of degraded Gum Arabic ecosystems, by improving the yields of tangible products (e.g. Gum Arabic, non-timber forest products, etc.) and the value of ecosystem services (e.g. biodiversity, soil and water conservation).

At **completion**, the GEF disbursements amounted to US\$4.8 million, corresponding to nearly 100 percent of the

³⁰ e.g. GEF funded Mauritania Community Based Watershed Management Project, SDC funded Improving the Sahelian Populations Resilience to Environmental Changes Project, etc.



estimated GEF cost at appraisal. The total co-financing was estimated at US\$19.1 million, covering contributions from the sources identified in Table 5. Overall, the ratio total co-financing/GEF funds is similar to that expected at appraisal (4 : 1). In addition, the project contributed to the focal areas of *Land Degradation, Sustainable Forest Management, and Biodiversity*, through the following achievements and **global environmental benefits**:

- ***Land degradation***. The project improved land management by planting trees, establishing water points, and installing a wide range of soil and water conservation works. Based on field observations at the end of the project, land degradation has been reversed on about 1,100 ha – demonstrated by a widespread appearance of new herbaceous species (e.g. *Aristida mutabilis*, *cassia tora*, *panicum turgidum*, etc.)³¹. This has resulted in positive on-site (e.g. increased herbaceous production) and off-site impacts (e.g. slowdown in water runoff from the regenerated area). These effects helped increase the supply of livestock feed, which represents an important step towards reducing future potential conflicts between competing land uses during dry seasons (grazing vs. farming).
- ***Sustainable forest management***. The project provided technical assistance to support good management practices of forests, particularly *Acacia Senegal*, by: developing guidelines on sustainable land management practices; providing training sessions to staff of the Ministry of Environment and Sustainable Development and other development partners on sustainable plantation methods, and soil and land management techniques; strengthening the knowledge of farmers regarding the most suitable techniques for collection, conservation, and storage of Gum Arabic. In addition, the project planted an extensive area of *Acacia Senegal* (2,200 ha) and improved the management of existing plantations, by applying new techniques for enhancing yields (*test saigné*). Although the new plantations had a survival rate of only 30 percent, the project's achievements (e.g. surviving trees, soil and water conservation works) resulted in an improved flow of ecosystem services in the project area (e.g. reduced erosion, better water retention).
- ***Biodiversity***. The project implemented concrete actions for conserving the biodiversity related to several ecosystems: *forests*, by planting new *Acacia* trees, and improving practices of existing forests, as mentioned above; *rangelands*, through pasture enrichment (1,000 ha); and *agriculture*, by providing technical assistance, water points and improved seeds, which helped improve crop productivity (e.g. vegetables, cereals, etc.).

In addition, the project supported ***climate change mitigation*** by enhancing carbon sequestration through plantation of *Acacia* trees. Moreover, by adopting appropriate SLM techniques, SFM practices and other income generating activities within a context of integrated landscape approach, it contributed to a sensible increase of vegetation cover, thus supporting the larger ***Great Green Wall initiative*** towards combatting the effects of desertification, climate change, as well as improving food security in the target areas.

³¹ Direction de Protection et de Restauration des Espèces et des Milieux. 2021. Rapport d'achèvement du projet de gestion durable des paysages, p.21.



ANNEX 5. EXTRACT FROM THE BORROWER COMPLETION REPORT

We are providing below an excerpt from the borrower completion report “Rapport d’achèvement du projet de gestion durable des paysages (PGDP) : Juin 2015- Janvier 2021, DPREM/MEDD, Mai 2021”. This extract concerns the sections of the report related to (VI) Main achievements of the project, (VII) Impact of income generating activities, (VIII) Major constraints, (IX) Lessons-Learned and (X) Perspectives.

SOMMAIRE DU RAPPORT D’ACHEVEMENT DU PROJET DE GESTION DURABLE DES PAYSAGES (PGDP) :

- I.CONTEXTE
- II.OBJECTIFS
- III. COMPOSANTES DU PROJET
- IV. MONTAGE DU PROJET
- V.COÛT DU PROJET
- VI. PRINCIPALES REALISATIONS
 - VI.1 Evaluation du cadre des résultats (cadre logique)
 - VI.2 Evaluation des composantes
- VII. IMPACTS DES MPC
- VIII. PRINCIPALES CONTRAINTES
- IX.PRINCIPAUX ENSEIGNEMENTS
- X.PERSPECTIVES
- ANNEXES
 - 1. Répartition géographie des villages
 - 2. Répartition par types d’investissements
 - 3. Décaissements

EXTRAITS :

VI. PRINCIPALES REALISATIONS DU PROJET

VI.2 Evaluation des Composantes

Composante 1 : Connaissances, gouvernance et partenariats en matière de gestion durable des paysages (FEM 1,31 million EU)

Sous - Composante 1.1: Renforcement de capacités de gestion durable des paysages, outils fondamentaux et partage des connaissances

Cette sous composante a connu les réalisations ci-dessous :

- Planification et organisation des 3 ateliers régionaux (1 atelier par région) de lancement du projet et un atelier National qui ont regroupé 198 participants (voir Tableau Ateliers et formations).

Les ateliers régionaux ont permis de sensibiliser les autorités régionales et municipales, des services techniques décentralisés, les partenaires au développement et les ONG présents au niveau région sur les objectifs du PGDP, sa stratégie d’intervention à travers la mise en place des ADC comme porte d’entrée dans les villages ciblés, etc. Quant à l’atelier national qui s’est tenu à Nouakchott, plusieurs partenaires administratifs, techniques, financiers et de la société civile ont répondu à l’invitation du PGDP ; à l’issue des débats, les



participants aux différents ateliers ont formulé d'importantes recommandations à tenir en compte dans la mise en œuvre des activités du PGDP (voir rapports d'ateliers disponible base de données du PGDP).

- Toutes les 60 ADC reconnues ont été formées en organisation et gestion ainsi qu'en procédures de passation des marchés communautaires. Ces deux formations ont permis aux ADC d'organiser et de gérer leurs sous projets qu'ils ont acquis dans le respect des procédures de passation de marchés et ce à travers la tenue d'ateliers régionaux de formation.
- Formations du MEDD et partenaires principaux sur l'élaboration des EIES et la conformité aux instruments de sauvegardes environnementales et sociales du projet. A cet effet et avant le démarrage de la mise en œuvre des microprojets communautaires (MPC), un large programme de formation et d'information sur les documents de politiques de sauvegarde et de l'utilisation de la fiche de filtration a été dispensé aux techniciens du MEDD aussi bien au niveau central qu'au niveau des URC qui, à leur tour, ont sensibilisé les bénéficiaires des microprojets (ADC) et des partenaires locaux ; ce qui a permis de renforcer les capacités de 50 cadres du MEDD (DPN/DCE/DPCID/ DREDD) et les ONG facilitatrices ont bénéficié d'une formation sur l'Elaboration et le suivi des EIE et la conformité aux instruments de sauvegardes environnementales et sociales du projet .
- Dans le cadre de la mise en œuvre des microprojets communautaires(MPC) , le PGDP a financé 188 conventions de cofinancement au profit ADC portant sur la réalisation d'investissements communautaires villageois identifiés au terme de l'élaboration de diagnostics participatifs villageois en présence des cadres formés en EIES ; toutes ces conventions ont fait l'objet de filtration environnementale et sociale où toutes les mesures d'atténuation aux effets négatifs identifiés ont été mises en œuvre de façon satisfaisante . Ce processus a été conçu afin de garantir que le processus d'évaluation écologique et sociale est conduit et intégré au stade de conception du sous-projet et garantir que les activités du sous projet sont écologiquement et socialement saines et viables. A cet effet les 649 membres des bureaux exécutifs des ADC ont été sensibilisés sur la prise en compte des politiques de sauvegarde environnementale et sociale du projet dans la préparation et la mise en œuvre de leurs microprojets ; ce qui a permis aux ADC d'envisager et d'appliquer des mesures d'atténuation dans la mise en œuvre des microprojets.
- Elaboration du document de référence Gestion Durable des Paysages (GDP) (concepts, pratiques etc...) ; ce document a véritablement servi de base pour toutes les formations des techniciens et des ADC sur les techniques de CES-DRS et de plantations d'arbres. Le document de référence gestion durable des paysages (GDP) est disponible au niveau de la documentation du PGDP. Aussi, il a été dispensé des formations du MEDD et partenaires principaux, à travers les ateliers régionaux, sur les techniques de la GDP où 52 cadres et techniciens du MEDD, des DREDD et ONG facilitatrices ont été formé ; ce personnel formé a eu à encadrer les membres des ADC dans la conduite des travaux de production de plants forestiers en pépinières et plantation, de restauration des terres dégradées par les techniques de CES-DRS. Ces techniques ont permis aux membres des ADC de restaurer plusieurs sites dégradés et mis en défens par l'installation de cordons pierreux, demi-lunes et diguettes anti érosives et de plantation d'arbres de gommiers et autres espèces locales.
- Formation des producteurs sur la collecte et la conservation de la semence, la récolte et stockage de la gomme arabique à travers les ateliers régionaux ; ce qui a permis de renforcer les capacités techniques des techniciens et des représentants des ADC sur les techniques de récolte et de stockage des semences de gommiers, de saignée , de cueillette et de conditionnement de la gomme arabique . Ce système de conditionnement (stockage, triage et mise en sac) prédispose le produit gomme arabique à une vente à de meilleurs prix au marché local, national et voire international.
- En matière de communication, le projet a réalisé d'importantes actions notamment :
 - Elaboration d'un dépliant, en arabe et en français , présentant le projet par composante et sous



composante (montage institutionnel, coûts et domaines d'intervention). Il a été publié au cours de l'atelier national de lancement et des ateliers régionaux du projet. Le logo du projet a également été partagé et validé avec les partenaires ;

- un dépliant élaboré et publié au cours de l'atelier national de lancement du projet. Ce dépliant présente en résumé le PGDP, ses composantes, son montage institutionnel, le cout du projet et les domaines d'intervention. Nous retiendrons que l'élaboration de ce dépliant a fait l'objet d'une large concertation entre l'équipe de l'UGP et celle de la Banque Mondiale pour sa validation. Le dépliant, disponible au niveau de l'UGP, en arabe et en français a été multiplié et ventilé auprès des partenaires au développement et des unités régionales d'intervention du projet.
- Production d'un documentaire sur les impacts du PGDP et sa diffusion à la TVM en appui
- La réalisation d'une communication par un reportage sur le gommier de deux sites du PGDP.
- Elaboration, par un consultant spécialisé en IEC (novembre 2018), d'une stratégie et d'un plan de communication interne et externe disponible au niveau de la documentation du PGDP ; ce volet a connu un renforcement en personnel qualifié par le recrutement d'un expert en communication/GRN qui appui la partie mise en œuvre de la communication du projet dans tout son processus vis-à-vis des partenaires et des ADC au niveau local.
- Elaboration d'un plan de gestion / dissémination de la connaissance dans le domaine de la gomme arabique disponible au niveau de la documentation du PGDP ; ce plan vient en appui au MEDD dans la sensibilisation et la vulgarisation des acquis du PGDP dans le domaine de la gomme arabique auprès du grand public ciblé par le projet.
- Participation de l'expert en communication à l'atelier régional de renforcement des capacités des équipes SAWAP et des hommes/femmes de média à l'utilisation des médias sociaux et outils collaboratifs du web2.0 pour le développement du 13 au 16 février 2017 à Accra (Ghana)
- Participation de l'expert en communication à l'atelier régional sur la communication des résultats du projet aux différents publics du 17 au 21 juillet 2017 à Niamey (Niger).

Sous-composante 1.2 : Renforcement du suivi des services éco systémiques

Le Suivi d'exécution est fonctionnel comme l'illustrent les différents rapports produits par l'UGP. Les principales informations sur le déroulement du projet sont régulièrement collectées et diffusées. Cette sous composante a connu les réalisations suivantes :

- Un contrat a été signé en 2018 avec l'OSS (Observatoire du Sahara et du Sahel) pour opérationnaliser un système du suivi écologique à travers l'élaboration d'un manuel de suivi des indicateurs écologiques. Le manuel de suivi des indicateurs écologiques a été élaboré par l'OSS et de même le logiciel spécial de suivi a été identifié par cette structure. Une formation du personnel de l'UGP, de l'URC et du MEDD sur le suivi-évaluation dispensée par l'Observatoire du Sahara et du Sahel (OSS) ;
- Formation de 11 formateurs, par l'OSS, sur le thème : « SIG et Télédétection en appui au Suivi Evaluation du système écologique » à l'Institut .des Sciences et l'Enseignement Technologique (ISET) de Rosso (wilaya du Trarza).
- Le manuel de Suivi Evaluation a été réalisé par l'équipe d'appui de la Banque mondiale et l'UGP
- Le logiciel de TOM2PRO MONITORING initialement programmé dans le PTBA 2018, sur recommandations de



l'OSS, devrait être remplacé par le logiciel DELTA utilisé par tous les pays du SAWAP/BRICKS afin d'assurer l'uniformité du modèle de stockage de données dans toutes les bases de données des 12 pays concernés.

- Le logiciel spécial de suivi TOM2PRO MONITORING initialement programmé dans le PTBA 2018, sur recommandations de l'OSS, doit être remplacé par le logiciel DELTA utilisé par tous les pays du SAWAP/BRICKS afin d'assurer l'uniformité du modèle de stockage de données dans toutes les bases de données des 12 pays concernés.
- Participation, du 16 au 22 juin 2019, de l'expert S&E à un atelier régional final sur le S&E du programme SAWAP : Résultats et Acquis, suivi du Sommet International de la Société Civile : Desertif'Action organisé par l'Observatoire du Sahara et du Sahel .
- Participation de deux (02) jours (26 et 27 octobre 2017) de l'expert S&E à un atelier organisé à Cotonou (Bénin) par l'OSS sur le S&E
- Participation de l'expert S&E à un séminaire de sept (07) jours (27 novembre 2017 au 01 décembre 2017) à Dakar Sénégal préparé par le BRICKS sur l'exploitation du portail du SAWAP ;
- Il faut noter que l'Observatoire du Sahara et du Sahel a organisé, du 16 au 22 juin 2019, un atelier régional final sur le S&E du programme SAWAP : Résultats et Acquis, suivi du Sommet International de la Société Civile : Desertif'Action 2019 tenu du 17 au 21 juin 2019 auquel a pris part l'expert du S&E du projet.
- Recrutement de l'OSS (- finaliser la mise en place du SE écologique participatif, du FEM/Tracking Tools et du cadre de résultats ainsi que l'intégration des données dans les systèmes d'information nationaux, assistance technique OSS, formation à l'utilisation des outils, rapportages,etc,
- La mission de supervision de la Banque mondiale en octobre 2019 a proposé de suspendre le contrat relatif à l'achat dudit logiciel DELTA, vu le temps restant pour la clôture du projet (12 mois), mais de recruter un consultant spécialisé en SIG pour faire la cartographie de tous les sites. Ce consultant a été recruté et gère actuellement toute la base de données SIG du projet avec interprétation des cartes sur les ressources végétales au niveau des sites de mise en défens ; ce qui a permis de renseigner, en appui des images prises par le drone du projet au niveau des sites, l'indice du couvert végétal (ICV) .
- Acquisition de trois (3) véhicules (1 véhicule/Wilaya) en 2017 tout terrain destinés aux unités régionales pour le suivi de la mise en œuvre des activités du projet
- Acquisition de matériel informatique, de bureau et fournitures de bureau, téléphones portables, etc. pour l'UGP et les URC
- L'année 2019 a été marquée par deux missions de supervision de la revue à mi-parcours de la Banque mondiale du PGDP.
- Une mission de supervision de la Banque Mondiale au niveau des ADC DE TIGMATINE ET DE BOER TOWRESS dans la Wilaya du Trarza du 26 au 27/04/2018
- Réalisation de l'étude sur la distribution géographique des écosystèmes gomme arabique et du potentiel pour l'extension des pratiques GDP (situation hydrologique) dont le document est disponible au niveau du projet.
- Développement du système SIG / GIS sur la situation et le potentiel du développement des écosystèmes gommés pour l'utilisation au niveau MEDD et intégration des données de suivi d'impacts des GDP
- Des réunions de programmation et de restitution des activités du PGDP (2018, 2019 et 2020) se sont tenues régulièrement entre les URC, l'UGP et le MEDD pour faire le bilan de l'année d'exercice, tirer les leçons pour



l'année à venir tout en partageant au cours de ces rencontres les différentes expériences des uns et des autres et des difficultés rencontrées devant contribuer à améliorer les interventions ultérieures.

Sous-Composante 1.3 Faciliter le développement d'une chaîne de valeur durable de la gomme arabique

Cette sous composante composée contenant essentiellement les études et ateliers a connu les réalisations suivantes :

- La réalisation de l'étude sur l'évaluation de la politique sectorielle, du cadre législatif et stratégique, fiscale et financier pour l'identification des opportunités de réformes. Le document de l'étude est disponible dans la base de données au PGDP et sera intégrée à la base données du MEDD et constituera une source d'informations utiles dans le cadre de la stratégie de relance de la filière gomme arabique
- Etude sur l'évaluation de la politique sectorielle, du cadre législatif et financier pour l'identification des opportunités de réformes- disponible au niveau de la documentation du PGDP / Janvier 2021
- Une analyse socio-économique de la filière de gomme arabique, y compris une analyse coûts-bénéfices à la fois au niveau de la filière et au niveau national et son poids dans le PIB.
- Un atelier communautaire d'échange d'expérience a été organisé à Cheguend (Méderdra au Trarza) au profit de 11 ADC du Trarza (2 producteurs par ADC). Les participants ont été formés sur le traitement sylvicole (collecte et conservation des semences de gommier) et la saignée.
- Organisation de quatre (4) ateliers (1 par région et 1 national) de discussion entre les différentes parties prenantes au sein de la filière de gomme arabique (comme les producteurs, collecteurs, les commerçants, les agences du gouvernement et les associations civiles) où les grandes conclusions s'articulent autour de l'organisation des producteurs en une fédération à l'image de la fédération des agriculteurs et éleveurs reconnue par l'état et qui bénéficie d'appuis auprès de l'état et des partenaires extérieures Cette fédération aura en charge, avec l'appui du MEDD, à organiser la filière au plan national (mise en place des sous fédérations régionales de gestion de la filière gomme arabique) et facilitera les mises en relations entre les producteurs et les exportateurs (MGA et) dans l'intérêt bien compris de toutes les parties qui respecteront les protocoles techniques appropriés (récolte, stockage de la gomme arabique, le calibrage et triage des nodules de gomme , la mise en sac et le transport jusqu'aux différentes destinations de vente ou d'exportation).

Composante 2 : Pratiques de gestion durable des paysages (FEM 3,26 millions dollars EU)

Sous Composante 2.1 Investissements dans la gestion durable de paysage

Cette sous-composante finance les investissements dans la GDP au niveau des 60 sites sélectionnés suivant deux catégories d'investissements : (i) les investissements participatifs dans la GDP qui appuient la régénération des écosystèmes producteurs de gomme arabique dégradés et (ii) les investissements qui répondent aux intérêts de cette catégorie qui ne seront financées que conjointement avec les investissements de la première catégorie et non de façon autonome.

2.1.1 Investissements participatifs dans la GDP qui appuient la régénération des écosystèmes producteurs de gomme arabique dégradés.

Les investissements participatifs dans la GDP qui appuient la régénération des écosystèmes producteurs de gomme arabique dégradés parviennent aux ADC à travers un processus ponctué par 3 étapes essentielles :

- Le choix des 60 villages d'intervention qui a suivi un processus de sélection au niveau des 3 Wilayas bénéficiaires à travers des comités régionaux de développement (CRD). Dans le cadre du choix des 60 villages



d'intervention du PGDP au niveau des Wilayas cibles du projet (Trarza, Brakna et Gorgol) , se sont tenus les Comités Régionaux de Développement (CRD) qui ont choisi et planifié pour trois (3) ans les villages d'intervention du projet dans leur wilayas respectives . Les CRD, dans ces wilayas, se sont tenus (le 24/10/2016 au Trarza, le 1/11/2016 au Gorgol et le 2/11/2016 au Brakna) sous la présidence des Walis en présence des Hakems des Moughataas et Maires des communes cibles du projet, des chefs de services techniques régionaux, des partenaires au développement au niveau local , de la société civile et d'une équipe du PGDP conduite par son Coordinateur. Sur un total de 116 sites identifiés lors de la préparation du projet, 60 sites d'intervention prévue par le PGDP ont été retenus et validés par les CRD suivant les critères d'importance du potentiel de gommiers, d'absence de conflits apparents, d'absence de duplication des mêmes activités entreprises par d'autres partenaires dans le même site, et d'accessibilité en toute période . Les antennes régionales de l'Agence Mauritanienne d'Information (AMI) et les Radio locales ont largement fait échos de la tenue des CRD reflétant l'importance accordée à la relance de la filière de la gomme arabique qui était la principale ressource monétaire de plusieurs milliers de familles dans le pays que les sécheresses récurrentes des trente dernières années ont fortement détérioré.

- La constitution de 60 ADC prévues au niveau des 3 wilayas (Trarza, Brakna, Gorgol) et la transmission des dossiers au Ministère de l'Intérieur par le biais des Walis des régions cibles s'est effectuée entre 2016- 2017 et 2018 ;
- Les premières reconnaissances des ADC par le Ministère de l'Intérieur qui délivre des récépissés de reconnaissance, porte d'autorisation de tout investissement en vers les ADC, s'est effectuée pour 18 ADC le 25/12/2017.

En observant la progression annuelle des reconnaissances qui étaient la condition principale d'arrivée de l'investissement au niveau des ADC nous retiendrons :

- Le 25/12/2017 il y a 18/60 ADC qui est reconnues soit 30% des ADC prévues
- En 2018 nous avons 17/60 ADC sont reconnues soit 28 % des ADC prévues
- En 2019 nous avons 22/60 ADC sont reconnues soit 37 % des ADC prévues
- En 2020 nous avons 3/60 ADC sont reconnues soit 05 % des ADC prévues

Lors de la préparation et de la mise en œuvre du projet, il était admis que chaque ADC devrait bénéficier au moins de 3 ans de suivi et d'encadrement rapprochés des investissements octroyés par le projet ; l'année 2016-2017 devrait être une année de constitution et de reconnaissance des ADC et 2018-2020 pour le suivi d'exécution.

En observant ainsi les résultats des reconnaissances des ADC avec 30% du total des ADC (18/60 en 2017) qui ont bénéficié de 3 ans d'encadrement et de suivi rapprochés, nous constatons que 42/60 ADC soit 70% du total d'ADC n'ont bénéficié que de 2 ans à moins d'une année d'encadrement et de suivi rapprochés.

Cette situation de lenteur dans l'acquisition des récépissés de reconnaissance des ADC a eu pour conséquence l'insuffisance dans la réalisation de certaines études et ateliers notamment la formation des entrepreneurs au sein de la filière sur les meilleures pratiques, la gestion d'entreprise et le développement des associations des entrepreneurs , la création d'une plateforme/table ronde (par décret) de multi-parties prenantes de la filière gomme arabique , l'organisation d'une conférence internationale par la plateforme de discussion entre les différentes parties prenantes au sein de la filière de gomme arabique (comme les producteurs, collecteurs, les commerçants, les banques, les agences de gouvernement et les associations civiles) avec BRICKS et l'élaboration d'un processus d'intégration de la GDP dans la planification du développement local où 2/6 plans de prévus ont été réalisés ; le peu de temps disponible pour l'UGP et les URC était essentiellement orienté dans l'encadrement et le suivi d'exécution des investissements en direction des ADC.



Au 31/12/2020, les réalisations dans la sous composante 2.1.1 Investissements participatifs dans la GDP indiquent :

- **60 sites, de 50 ha chacun, ont été clôturés (60 Conventions de mise en défens) :**
 - Le taux de couverture végétale a augmenté significativement de plus 32%.
 - 35 sites ont été reboisés : le taux de réussite a été d'environ 30%
 - 20 sites ont été semés : le taux de réussite a été d'environ 50% pour les graines légères
 - 10 sites ont bénéficié des pratiques de saigné : Production a augmenté d'environ 90 à 100% (soit en moyen 270g/arbre au lieu de 120g/arbre)
- **44 sites ont bénéficié des CRS/DRS (cordon pierreux et demi-lune) (44 conventions CES-DRS et reboisement) dont :**
 - Cordons pierreux = 39.098 ml
 - Diguettes filtrantes = 2.100 ml
 - Demi-lunes forestières = 43.425 unités
 - Production de plants et plantation = Pépinière = 400.000 plants
 - Plantation = 320.000 plants plantés

Dans les détails, il convient de préciser que les clôtures de mise en défens dans le cadre du projet constituent le premier poste d'investissement. En plus de son aspect sécurisation des sites de mise en défens, les clôtures sont pour la majorité des ADC des équipements collectifs non marchands.

Dans un contexte foncier conflictuel et complexe, les clôtures des mises en défens sont vécues aussi comme un outil de gestion anticipée de conflits, au sein de la communauté entre éleveurs et les membres des ADC. Cette fonction de paix sociale est non quantifiable. Elle relève de la maîtrise d'œuvre sociale. Dans les villages où les espaces ont été protégés par des clôtures contre les dommages de la divagation des animaux, les conflits entre les éleveurs et les ADC ont été prévenus et atténués. La réalisation des clôtures s'accompagne de la part de l'ADC d'un travail de sensibilisation auprès des éleveurs et des transhumants et en cas de conflits, l'ADC fait recours aux mécanismes traditionnels de règlements de conflits. Des cas illustratifs sont notés dans les ADC de Nkheïla et Waboundé au Brakna et à Agrije et Patoukone au Gorgol où les comités de sages mis en place dans les bureaux des ADC ont réglé à l'amiable des différends entre éleveurs locaux et bureaux de l'ADC (remise à l'état des clôtures détruites par le bétail des éleveurs).

Les mises en défens ont permis de combler le déficit pastoral au niveau de plusieurs ADC qui ont utilisé les fourrages mis en défens dans les périodes de soudure pour le bétail de case qui n'est pas parti en transhumance ; beaucoup d'impacts positifs de la mise en défens ont été observés dans le cadre des missions de terrain : régénération de zones dégradées, développement d'une croûte de surface dans les zones fixées, reprise végétale du tapis herbacé et de la végétation ligneuse. Ces mises en défens contenant des actions de CES-DRS et plantation de gommiers ont permis de rendre disponible des stocks importants de fourrage pour le bétail de case en période de soudure dans des zones qui étaient vides de graminées à cette période de l'année. Une mention spéciale est à décerner tout de même aux ADC de Oulad Imijine au Trarza , Waboundé au Brakna, et Agrije au Gorgol où les ventes de paille des mises en défens ont permis de construire des locaux pour leur Boutique communautaire et moulin à grains (Oulad Imijine et Waboundé) et louer les services d'un tracteur qui labouré une partie du site mis en défens (ADC Agrije) dont les sols sont rocailleux ; ce qui a permis d'améliorer l'infiltration des eaux de ruissellement et améliorer la biomasse herbacée pour le bien d'une augmentation de fourrage en saison sèche dans la mise en défens.

L'approche de restauration et de gestion des sites de mise en défens de gommiers ciblés par le PGDP s'articule au niveau de six (6) principales actions :

- dans une perspective de durabilité des actions après le projet, il est créé au niveau de chaque village d'intervention une association villageoise dénommée Association de Développement Communautaire (ADC) ; ces ADC prennent en charge la gestion et la mise en œuvre de tout le programme d'activités retenues avec le



projet par la signature de conventions de cofinancement

- il est mis en place, au niveau de chaque village d'intervention, un site de 50 ha clôturé en grillage ; tous les sites sont retenus en commun accord avec les ADC , les autorités administratives et municipales , les services techniques décentralisés au niveau régional et les représentants de la société civile au niveau local suivant les critères d'existence de potentiel de gommiers , d'expérience des villages en matière de gestion des ressources naturelles (reboisement, fixation des dunes , restauration des sols, etc.) , d'absence de conflits apparents et d'accessibilité en toute saison .Toutes les interventions de restauration (CES/DRS, plantation d'arbres, démonstration de saignée améliorée, suivi-écologique, etc.) vont s'effectuer à l'intérieur de ces sites mis en défens appelés « sites écoles » pour les ADC.
- La réalisation de pépinières forestières villageoises et les plantations d'arbres s'effectuent avec l'appui d'un encadrement technique des services décentralisés du Ministère de l'Environnement et du Développement Durable (MEDD) au niveau local ; un appui en intrant (sachets, semences, matériel aratoire, etc.) est également fourni par le projet ; les populations prennent en charge la main d'œuvre non spécialisée (arrosage pépinières et plantations dans les sites de mise en défens, gardiennage/surveillance, etc.) .
- Compte tenu de l'irrégularité de la pluviométrie et de sa mauvaise répartition dans le temps, il est effectué des plantations avec apport d'eau (en moyenne 40l/plant au moment de la plantation en saison de pluies) pour s'assurer d'un minimum de survie des plants plantés jusqu'à la saison prochaine de pluies ; des arrosages d'appoint (utilisation de voiture Pick up ou charrettes munies de futs ou petite citerne d'eau pour arrosage) sont souvent apportés aux plants défaillants en période de soudure ; les périmètres maraichers dotés de pompage solaire contribuent largement à la fourniture des eaux d'arrosage d'appoint après le tarissement des eaux de pluies retenues dans des dépressions (Tamourt , marigots, etc.).
- La réalisation des actions de conservation des eaux et des sols (CES/DRS) est également effectué au niveau de certains sites très dégradés où l'infiltration des eaux de pluies est très aléatoire compte tenu de la nature des sols (reg, argilo limoneux, etc.) ; les principales techniques utilisées sont les demi-lunes forestières, les cordons pierreux, les digues filtrantes et les demi-lunes (en terre , en pierre ou mixte) où ces techniques ont permis de restaurer plusieurs parties des sites de mise en défens fortement dégradés (retour de la végétation herbacée , plantation d'arbres réussies, etc.).
- Différentes formations ont été dispensées aux ADC : gestion organisationnelle, administrative et financière ; techniques de conservation des eaux et des sols (CES/DRS) , techniques d'installations des pépinières forestières et plantation d'arbres, techniques de conduite des activités maraichères etc.

Les investissements de GDP au profit des populations ont été focalisés principalement sur la mise en défens par des clôtures grillagées et la plantation des gommiers au niveau sites disposant des ADC agréées. Les impacts d'investissement du Projet en GDP ont été étudiés à travers l'élaboration d'une notice d'Impact Environnemental et Social des mises en défens du Projet réalisée en 2017 et 2018.

D'autres activités ont également marqué la vie de cette sous composante :

- Participation à la Journée Nationale du Gommier à Méderdra (Wilaya du Trarza):
 - La journée nationale du gommier, organisée chaque fin d'année à Méderdra dans la wilaya du Trarza, a été sponsorisée cette année 2018 par le PGDP. Le thème de la journée a porté sur le gommier (*Acacia Senegal*) : sa biologie (cycle végétatif), son utilité dans l'industrie, son poids économique d'antan dans l'histoire du développement de la Mauritanie. Un accent particulier a été donné à la régénération de l'espèce et le rôle attendu du PGDP pour booster l'économie du pays en



la matière.

- La journée nationale du gommier, organisée chaque mois décembre l'année, a été fêtée à Méderdra dans la wilaya du Trarza du 04 au 06 janvier 2019. Le PGDP a été l'un des principaux sponsors de la manifestation. Le thème de la journée a porté sur l'arbre lui-même *Acacia Senegal*, la biologie de la plante (cycle végétatif), son utilité dans l'industrie, son poids économique d'antan dans l'histoire du développement de la Mauritanie. Un accent particulier a été donné à la régénération de l'espèce et le rôle attendu du PGDP pour booster l'économie du pays en la matière. La participation au Festival Arts et Cultures, focus gomme arabique. Ce festival a été organisé par les anciens cadres de la Moughataa de Méderdra en souvenir du passé de l'économie locale marquée au 19^e siècle par une forte production de la gomme arabique principale source de revenu des populations locales couplée avec l'apport l'art et de la culture spécifiques au Trarza de l'époque.
- Ce festival a été une occasion de faire une exposition sur l'art et la culture de Méderdra et présenter le processus de cueillette de la gomme arabique à cette époque. Les techniques traditionnelles de récolte ont particulièrement retenu l'attention de l'assistance. Les outils de cueillette appelés « moytar », le stockage de la gomme cueillie dans des outres en peau tannée de chèvre, les manuscrits et écrits à la machine datant de 1826 du temps colonial, les différents protocoles d'accord entre l'Emire des Trarza et l'Administrateur colonisateur installé à Saint Louis chargée de l'organisation du circuit commercial du produit le Trarza et la métropole ont des données d'une richesse inestimable pour les participants de ces journées.
- La présence des représentants du PGDP a permis de sensibiliser les participants sur la présence du PGDP dans le département de Méderdra et des dépliants en version arabe et française du projet ont été distribués à tous les participants du Festival.
- Un atelier communautaire d'échange d'expériences a été organisé à Cheguend (Méderdra au Trarza) au profit de 11 ADC du Trarza (2 producteurs par ADC). Les participants ont été formés sur le traitement sylvicole (collecte et conservation des semences de gommier) et la saignée.

2.1.2 Investissements qui répondent aux intérêts conjointement avec les investissements en GDP au profit d'intérêts locaux immédiats

Il s'agit d'activités génératrices de revenus où les prévisions cibles au départ du projet projetaient en fin de projet la réalisation de 100 microprojets. A la date du 31/12/2020, le projet a réalisé au total 85 microprojets soit 85% de la cible initiale qui est de 100 microprojets. La répartition des microprojets réalisés s'établit comme suit :

- 62 Périmètres maraichers
- 12 Boutiques communautaires
- 7 Frigos solaires
- 3 Moulins à grain
- 1 Boucherie

Les AGR (jardins maraichers, boutiques communautaires, moulin à grains, Frigo solaires, etc) sont d'une utilité essentielle pour les populations féminines en majorité dans le milieu rural :

- Le maraîchage introduit constitue une activité très appréciée par les femmes. Selon celles-ci, le projet a eu un effet perceptible dû à l'apport en matériel horticole, l'approvisionnement en nouvelles semences, l'apport de grillage pour la clôture afin de lutter contre la divagation des animaux, le creusage ou approfondissement de puits ou forages avec un équipement d'exhaure solaire, l'appui en conseils et en intrants, l'appui en



organisation et dans une moindre mesure une amélioration des conditions d'approvisionnement en eau et des tâches d'exhaure. Ceci a permis d'améliorer et de diversifier la production pour la consommation familiale et d'accroître les revenus de la vente des produits. Les jardins maraichers ont permis aux femmes de faire consommer à leurs familles des légumes frais dont l'apport au niveau santé est incommensurable ; les surplus de productions sont vendus sur les marchés et constituent des compléments non négligeables pour les familles ; l'engouement des communautés, principalement des femmes pour l'activité maraîchère témoignent de bénéfices à la fois économiques, sociaux et nutritionnels que l'on tire de ces activités.

- Le maraichage est également apprécié des femmes pour sa composante hydraulique où l'accessibilité à l'eau potable a constitué une des priorités des ADC : adduction d'eau, bassin et château d'eau, creusement et réhabilitation des puits, forage et moyen d'exhaure solaire) ; le projet a eu un effet perceptible dans l'amélioration des conditions d'approvisionnement en eau et des tâches d'exhaure avec l'installation des forages et adductions d'eau.
- L'approvisionnement en eau se présente comme une demande majeure des communautés rencontrées. Les problèmes d'accès à l'eau potable sont vécus avec acuité : éloignement des points d'eau pour les besoins vitaux, absence de moyens d'exhaure qui accroît la pénibilité des tâches notamment celles des femmes, insuffisance des ressources en eau pour entreprendre ou étendre les activités de production (maraîchage, élevage, artisanat).
- Dans les périmètres maraichers ont été établies toutes les pépinières forestières conduites par les femmes du fait de la disponibilité des points d'eau géré par ces femmes qui pratiquent en même temps le maraichage ; c'était en fait le contrat moral conclu au moment du financement des périmètres maraichers où les femmes de l'ADC, en acceptant la conduite des activités maraîchères y conduiraient également la production de plants forestiers destinés aux reboisements des sites mis en défens.
- les boutiques ont permis de garantir un accès en tous temps aux produits de consommation courante, notamment pendant la saison des pluies quand de nombreux villages sont coupés du reste du pays ; les boutiques communautaires qui se sont transformées en banque prêtent en nature et en argent liquide mettant ainsi les paysans à l'abri des commerçants usuriers ; le gain de temps et en coûts de transport vers d'autres localités fait gagner de l'argent avec plus de temps consacré aux travaux champêtres et à l'élevage.
- les moulins à grains ont permis d'améliorer le bien-être des femmes par la réduction du temps de travail lié à la mouture des grains ; ce gain de temps crée des économies d'argent de transport vers d'autres localités pour moulinier les grains et fait gagner plus de temps aux femmes pour d'autres travaux dans les villages.
- Les frigos solaires ont largement contribué à la conservation des légumes invendus des productions maraîchères mais également conserver les poissons et fabriquer de la glace en période de chaleur ; c'est beaucoup de petites recettes utiles pour les femmes qui gèrent ce type de microprojet où les recharges de téléphone aux villages font la fierté des jeunes (filles et garçons) avec leurs iPhone qui sont souvent rechargés par le voyage à longue distance vers les villes électrifiées . Cet appui a permis aux femmes de résoudre localement les problèmes liés au secteur et une réduction de multiples déplacements vers d'autres centres et de diversifier les sources de revenus dans leurs milieux

Le projet intervient en milieu rural où les femmes constituent le groupe démographique le plus nombreux. De par la zone d'intervention, le projet est un projet qui bénéficie autant, si non plus aux femmes. Groupe vulnérable mais aussi acteur agissant, les femmes constituent le groupe démographique le plus important en milieu rural. La pérennité et la réussite des actions dépendent en grande partie du degré de son adhésion et de son implication.

Ainsi, l'appui aux activités génératrices de revenus pour les femmes mises en place par le projet a participé au



renforcement du pouvoir économique de ces dernières, à l'émergence et à l'amélioration des revenus familiaux. Dans ce cadre, le projet a mené des actions diverses de financement au profit des organisations féminines (jardins maraichers, boutiques communautaires, moulin à grains, frigo solaire, etc.) qui ont montré qu'elles sont meilleures gestionnaires et ont géré démocratiquement, collégialement et ont fait des bénéfices. Ces appuis ont suscité chez les femmes le sens de l'initiative et surtout un accroissement de la capacité à générer des revenus par la pratique de petites activités économiques convenablement gérées.

Quelques témoignages des ADC bénéficiaires des AGR du PGDP disent long sur la viabilité des microprojets communautaires :

Témoignages d'ADC (source : Etude d'impacts des Microprojets des ADC)

<p><i>Oulad Imijine (Wilaya du Trarza) :</i> C'est la première boutique du village. Elle a permis d'assurer l'approvisionnement des populations en denrées de première nécessité avec des prix abordables sur place évitant ainsi les charges liées aux déplacements à Boghé et assurant aussi un revenu aux gestionnaires de la boutique. La pièce de la boutique a été construite grâce aux recettes tirées de la vente de paille contenue dans le site de mise en défens</p>
<p><i>Hsey Evelejt / Bagoinite (Wilaya du Trarza)</i> Sans l'intervention du projet qui a agi dans une période assez difficile, les conditions de vie se seraient sûrement détériorées. Le projet a permis de sauver le bétail grâce à la clôture de mise en défens. Les habitants réussissent à améliorer leurs conditions de vie avec la reproduction des animaux aidés à se maintenir en vie et en forme par le pâturage de la mise en défens fournis par le projet... Les deux (2) frigo solaires acquis grâce aux fonds du projet ont permis une meilleure conservation des denrées alimentaires périssables (viande, poisson, etc.), l'accès à l'eau glacée dans une zone où il fait 47° à l'ombre pour une bonne partie de l'année, la recharge des téléphones portables , etc...</p>
<p><i>Nkheïle (Wilaya du Brakna)</i> Le jardin des femmes a permis une proximité d'autosuffisance en légumes, Les femmes n'ont plus besoin de partir à Niabina pour s'approvisionner en légumes.... La mise en défens a sauvé beaucoup de petits ruminants en période de soudure par l'accès à la paille contenue dans le périmètre.</p>
<p><i>Loubeirid (Wilaya du Trarza)</i> Les frigos pour les femmes ont permis de créer des revenus et en conséquence améliorer le quotidien des populations. Ils ont permis l'approvisionnement d'un marché en disponibilisant des produits aux populations...Le jardin des femmes a permis une proximité d'autosuffisance en légumes, Les femmes n'ont plus besoin de partir à Rosso pour s'approvisionner en légumes en partie....</p>
<p><i>Agrije (Wilaya du Gorgol)</i></p> <ul style="list-style-type: none">• La disponibilisation de l'aliment de bétail a pu sauver plusieurs têtes de bétail en période de soudure• La clôture a permis de disponibiliser du foin ce qui a augmenté ainsi la production du lait et l'unité de production du lait caillé à bien fonctionné.• Les recettes tirées de la vente de paille de la mise en défens ont permis de louer les services d'un tracteur agricole qui a labouré une partie du périmètre qui était constituée de sol latéritique avec une faible infiltration des eaux de pluies ; après les pluies de septembre 2020 toute la parcelle



labourée était couverte de paille comme le reste de la mise en défens (bonne infiltration des eaux de pluies)

Djingué (Wilaya du Gorgol)

- Le site de mise en défens a procuré beaucoup de services en matière de pâturage en saison sèche pour le bétail de case
- Les frigos (congélateurs) aux femmes leur ont permis de travailler et gagner de l'argent pour soutenir leurs ménages (vente de glace, de bissap, conserve de viande et poisson)
- La boutique communautaire a permis un gain de temps et d'argent...

Taga (Wilaya du Gorgol)

Les femmes étaient en difficulté pour cultiver leur périmètre maraîcher, elles allaient emprunter de l'argent pour financer la campagne, maintenant il n'y a pas de dettes, c'est l'autofinancement grâce au projet...

Sous Composante 2.2. Intégration des Pratiques GDP dans les Plans de Développement Local

Cette sous-composante soutient l'intégration des objectifs et des activités du projet dans les plans communaux locaux pour un renforcement mutuel, en étroite collaboration avec le LGDT et le Projet régional d'appui au pastoralisme au Sahel (PRAPS) tout récemment approuvé (26 mai 2015). Jusqu'à six plans de développement locaux sous-région aux intégrant la GDP, chacun concernant un certain nombre de communes dans l'une des régions de Trarza, Brakna et Gorgol, seront développés tout en tirant parti des efforts antérieurs si possible. Les activités réalisées dans cette sous composante comprennent au 31/12/2020 :

- Le recrutement de 3 facilitateurs en 2018-2019 (1 par Wilaya d'intervention) qui ont accompagné les ADC dans le suivi, l'animation et l'accompagnement dans la gestion associative des investissements fournis par le projet ; 2 parmi les 3 facilitateurs n'ont pas vu leurs contrats renouvelés en 2^e année de facilitation du fait de leurs manquements aux engagements pris dans la facilitation ; seule la wilaya du Gorgol a continué pour la 2^e année de facilitation
- Elaboration de 2/6 plans de développement communal ; ces 2 plans ont ciblé les communes d'El Khat au Trarza et le 2^e la commune e Chégar au Brakna. Au cours des ateliers de restitution une importante sensibilisation des maires et conseillers communaux réunis à cet effet a été réalisée ; une prise en compte des aspects de gestion des ressources naturelles dans l'élaboration des budgets communaux était devenu indispensable pour une prise en charge des actions de protection et de régénération (mise en place de pépinières forestières pour les plantations communales, mobilisation à la protection des pâturages contre les feux de brousse, lutte contre les déforestation et le braconnage ...) du peu de ressources naturelles encore existantes dans leurs terroirs .

Composante 3 : La Gestion du Projet

Sous la tutelle du MEDD, le fonctionnement du projet est assuré, au niveau central, par l'Unité de Gestion du Projet (UGP) et au niveau régional, par les Unités Régionales de Coordination du projet (URC). Le **comité de pilotage du PGDP** (le 8 septembre 2016 date de sa première réunion) qui a assuré l'orientation générale du projet s'est régulièrement réuni selon ses calendriers arrêtés (PV de réunions disponibles). L'UGP qui assume la responsabilité de l'exécution du projet au plan technique et financier a élaboré annuellement les plans de travail et les budgets relatifs à l'exécution des composantes du projet, ainsi que les plans annuels de passation des marchés. Ces planifications ont été soumises et approuvées au comité de pilotage et à la Banque. L'UGP a apporté une attention particulière au transfert direct de fonds aux ADC et au suivi évaluation des programmes annuels convenus. Les **URC**, logées au sein des Délégations



régionales du MEDD qui en assurent la tutelle au niveau local, ont régulièrement suivi l'exécution des activités du projet sur le terrain et ont collecté les données primaires au niveau des ADC pour renseigner le système de suivi-évaluation. Les relevés de dépenses soumis pour remboursement sur les comptes spéciaux sont acceptés à 100 % ; toutes les DRF sont acceptées à 100% (Source de renseignement : DRF) et toutes les actions recommandées pour le renforcement de la gestion comptable et financière du PGDP ont été globalement réalisées dans les délais. Les rapports d'audit ont été soumis à temps et les réserves émises ont été satisfaites (Source : Différents Rapports d'Audit).

Par ailleurs cette composante a connu la réalisation d'autres activités :

- Le recrutement de tout le personnel externe du PGDP entre 2016 et 2017 (Suivi-Évaluation, Passation de Marchés, Agro forestier, Assistant Technique, Auditeur Interne, Comptable, 3 Agents Administratifs et Financiers, une Secrétaire); ce personnel a accompagné tout le parcours de mise en œuvre du PGDP au niveau central et régional du projet.
- La tenue d'un atelier national de lancement du PGDP qui a eu lieu le 15/12/2016 à l'Hôtel Wissal de Nouakchott. Sous la présidence du Secrétaire Général du MEDD, en lieu et place du Ministre de l'Environnement et du Développement Durable. L'atelier a connu la participation des Secrétaires généraux du Ministère de l'Economie et des Finances, du Ministère de l'Agriculture, du Ministère de l'Elevage et plusieurs représentants des différentes structures de l'Etat, des partenaires au développement au premier rang desquels la Banque Mondiale, les membres de la mission de supervision du projet en provenance de Washington et de la société civile (liste des participants disponible au PGDP).
- Recrutement d'un cabinet d'audit externe EXACO.AMIC qui a fait les audits des exercices du Projet en 2016 et 2017. Les rapports de l'audit externe ont été livrés au Projet au mois de juin 2018 ; un rapport d'audit pour le premier semestre 2019 a également été élaboré.
- Les experts du Projet ont participé aux différents ateliers et conférence internationale : le Programme SERVIR Ouest Africa sur l'occupation et l'utilisation des terres et Rencontre d'échanges et de validation des outils ; les produits développés dans le cadre du Suivi-Evaluation du SAWAP à Accra (Ghana) du 04 au 08 Juin 2018, l'audit interne organisé par la Banque mondiale à Nouadhibou (Mauritanie) en mai 2018.
- Participation aux formations diverses et aux séminaires nationaux et internationaux (en informatique Excel, anglais etc.) : cette action a connu la réalisation de quelques activités en 2017 et ont porté sur : la participation de deux (02) jours (26 et 27 octobre 2017) de l'expert S&E à un atelier organisé à Cotonou (Bénin) par l'OSS sur le S&E et à un séminaire de sept (07) jours (27 novembre 2017 au 01 décembre 2017) à Dakar Sénégal préparé par le BRICKS sur l'exploitation du portail du SAWAP ; la participation de l'expert en communication à l'atelier régional de renforcement des capacités des équipes SAWAP et des hommes/femmes de média à l'utilisation des médias sociaux et outils collaboratifs du web2.0 pour le développement du 13 au 16 février 2017 à Accra (Ghana) et à l'atelier régional sur la communication des résultats du projet aux différents publics du 17 au 21 juillet 2017 à Niamey (Niger) ; une formation de l'équipe fiduciaire en gestion financière a été organisée septembre 2018.
- Acquisition d'un équipement matériel informatique pour le système informatisé de gestion financière (achat logiciel et installation) : Cette activité a été réalisée et traduite par la mise à disposition et l'installation d'un logiciel TOM2PRO multi projets par la société SIGMA entre décembre 2017 et janvier 2018.
- Acquisition du matériel informatique, de bureau et fournitures de bureau (ordinateurs, téléphones portables, etc.) pour l'UGP et les Unités Régionales
- En matière de Passation des marchés et Suivi des contrats du PGDP, les différents marchés exécutés dans le



cadre du projet ont été passés selon les procédures et directives de la Banque Mondiale conformément au Manuel des procédures du projet; les marchés communautaires sont exécutés par les ADC conformément au manuel de passation de marchés communautaires élaborés par le projet et mis à leur disposition après un renforcement de leurs capacités (formation) dans le domaine.

- En matière de d'application et de suivi de la mise en œuvre des mesures de sauvegardes environnementales et Sociales au niveau des microprojets des ADC, les mesures de sauvegarde ont été appliquées conformément au CGES. Dans le cadre de la préparation du PGDP, il avait été élaboré trois (3) documents de Politiques de Sauvegarde environnementales et sociales dont le Plan Cadre de Gestion Environnementale et Sociale (PCGES), le Plan de Relocalisation (PR) et le Plan de Gestion des Pestes et Pesticides (PGPP) dont l'objectif est d'identifier, qualifier et quantifier les effets négatifs environnementaux et sociaux possibles associés à la mise en œuvre des activités du Projet et de proposer les mesures d'atténuation requises à mettre en place pour éviter /atténuer ces effets néfastes . Aussi, une fiche de filtration avait été proposée pour permettre d'évaluer par anticipation les effets négatifs liés à la mise en œuvre des microprojets et de proposer des mesures d'atténuation conformément aux directives des documents de politiques de sauvegarde élaborés à cet effet. Ce processus a été conçu afin de garantir que le processus d'évaluation écologique et sociale est conduit et intégré au stade de conception du sous-projet et garantir que les activités du sous projet sont écologiquement et socialement saines et viables. A cet effet et avant le démarrage de la mise en œuvre des microprojets communautaires (MPC), un large programme de formation et d'information sur les documents de politiques de sauvegarde et de l'utilisation de la fiche de filtration a été dispensé aux techniciens du MEDD aussi bien au niveau central qu'au niveau des URC qui, à leur tour, ont sensibilisé les bénéficiaires des microprojets (ADC) et des partenaires locaux ; ce qui a permis de renforcer les capacités de :
 - 50 cadres du MEDD, de l'UGP, des URC et des facilitateurs chargés d'accompagner les ADC dans la mise en œuvre de leurs investissements tenant comptes de la mise en effet des mesures d'atténuation aux impacts négatifs mineurs identifiés lors des diagnostics participatifs avec les membres des ADC
 - Tous les membres des bureaux exécutifs des ADC soient 649 personnes ont été largement sensibilisé sur les méthodes d'identification des impacts négatifs des microprojets et de détermination des mesures d'atténuation à mettre en œuvre lors de l'exécution du sous projet.

Ce processus a été conçu afin de garantir que le processus d'évaluation écologique et sociale est conduit et intégré au stade de conception du sous-projet et garantir que les activités du sous projet sont écologiquement et socialement saines et viables.

VII. IMPACTS DES MPC ISSUS DES MISSIONS ET OBSERVATIONS AUPRES DES ADC

La démarche participative de responsabilité des populations tout au long du processus de la définition des besoins, à l'exécution et l'évaluation a induit des changements notables dans la dynamique sociologique du développement local au niveau des d'intervention du PGDP; elle a généré une prise de conscience de l'importance de l'initiative endogène et d'émergence de l'esprit d'auto prise en charge. Les visites de terrain et les échanges avec les principaux partenaires/acteurs permettent d'avancer quelques hypothèses sur les changements attribuables aux actions du projet. L'accès culturel et social, est total partout, hommes et femmes, jeunes accèdent aux MPC. La satisfaction affichée des ADC dépasse le cadre d'une opération technique ou financière car elles expriment le bonheur d'avoir été associées à une œuvre de développement dont elles sont en même temps actrices et bénéficiaires (voir étude d'impact MPC du PGDP). Une culture nouvelle de la responsabilisation de la prise en charge par les communautés de leur propre développement a été enclenchée.

Sur le plan institutionnel, le cadre institutionnel rural a été enrichi par l'émergence des ADC qui constituent un niveau



appréciable de solidarité entre les habitants, un espace de dialogue entre les membres et entre le village et la commune et l'administration déconcentrée. L'ADC peut être considérée comme un échelon d'une gouvernance locale.

La création des ADC a contribué à améliorer les contacts entre l'administration, les services techniques et les populations qui ont réussi à alerter les autorités contre les pratiques nuisibles à l'environnement (Coupes abusives d'arbres, carbonisation sauvage, déclenchement de feux de brousse, etc.). Cette mobilisation et la prise de conscience pour la protection de l'environnement des terroirs est un élément essentiel de prise de conscience durable dans la gestion des ressources naturelles des ADC ; à cet égard, il faut mentionner avec satisfaction la pertinence de l'approche d'animation et d'accompagnement qui a permis de prévenir et de gérer les conflits sociologiques.

Les ADCs créées par le Projet, étant reconnues officiellement, sont devenues des partenaires de développement capables de négocier et de contracter au nom de toutes leurs communautés, avec tout partenaire au développement intervenant dans leurs terroirs. Ainsi, l'intervention du projet au niveau des ADC a eu pour principal impact une amorce de changement d'attitudes et de comportements des communautés bénéficiaires à travers une vie associative : développement de capacité en matière de négociation de contrats, de suivi de dossiers administratifs, de recherche de financement de protection de l'environnement.

Certaines de ces ADC ont valorisé, en plus de leurs investissements acquis du PGDP, leurs collaborations avec d'autres partenaires :

- **L'ADC de Séyène (dans la wilaya du Gorgol)** a obtenu d'une ONG Nationale (AMAD financé par l'ONG internationale OXFAM) une formation en technique de transformation du lait frais en lait caillé et l'équipement en frigo solaire pour la conservation des produits laitiers transformés (le PGDP ayant contribué à la construction du local d'abri des congélateurs solaires dédiés) et une provision d'aliment bétail pour la boutique communautaire du village financé par l'ONG Espagnole Céraille
- **L'ADC de Patoukone (Wilaya du Gorgol)** qui a obtenu un financement additionnel de l'ONG internationale OXFAM d'une formation en technique de transformation du lait frais en lait caillé et l'équipement en frigo solaire pour la conservation des produits laitiers transformés.
- **L'ADC Agrije (Wilaya de Gorgol)**, pour qui l'ONG Espagnole Céraille a financé une provision d'aliment bétail pour la boutique communautaire de l'ADC . La même ADC a acquis un financement de l'ONG internationale OXFAM d'une formation en technique de transformation du lait frais en lait caillé et l'équipement en frigo solaire pour la conservation des produits laitiers transformés.
- **L'ADC de Balawa (Wilaya du Brakna)** pour qui la coopération Turc a financé le forage en complément des financements du PGDP
- En accord avec le PGDP, le Ministère en charge de l'Environnement a utilisé les structures ADC dans la réalisation des pare-feux manuels inter villageois pour la protection des pâturages contre les feux de brousse.

L'approche réalisée par le PGDP a permis de garantir aux communautés un accès équitable et direct aux investissements publics. Le transfert direct des ressources et les outils développés assurent une plus grande efficacité des projets de développement en mettant à l'abri les dites ressources de certains circuits d'un impact très faible et prédateur.

Au plan socio-économique nous avons pu observer :

- L'allègement des charges fixes et domestiques de la femme par l'introduction de moulins à grain au niveau des



villages,

- La régularité de l'approvisionnement en produits de première nécessité au niveau villageois là où existent les boutiques communautaires financés par le PGDP ; Les équipes du projet observent que les boutiques communautaires, en plus de leur impact économique, remplissent aussi une fonction sociale en permettant l'achat par crédit par les plus pauvres du village ce qui, dans un contexte de pauvreté, constitue une soupape de sécurité.
- L'amélioration des conditions d'hygiène et de santé des populations par la disponibilité de l'eau potable (forage de puits et adductions d'eau) obtenus des points réalisés au sein des périmètres maraichers mais aussi de la consommation et de la vente des produits maraichers issus des jardins financés par le projet.
- On observe un impact significatif en termes de création d'emplois en milieu rural ; en effet tous les MPC relatifs aux GDP et aux AGR ont généré des emplois au niveau des ADC :
 - gardiennage rémunéré des mises en défens par la vente de la paille issue de ces périmètres (au moins 60 gardiens sont rémunérés annuellement des recettes issues de la vente de paille)
 - Appui rémunéré à la réalisation des actions de CES-DRS, de production et de plantations d'arbres pour un total de 25.387 hj qui ont reçu les appuis matériel et financiers indiqués dans les conventions de réalisations des travaux sus-indiqués 28 emplois durant 5 ans
 - Les AGR où les périmètres maraichers occupent plus de 2000 femmes (en moyenne 40 femmes par périmètres maraicher et ce pour 62 périmètres maraichers) durant 6 mois de l'année dans des activités de productions maraichères en plus des emplois créés par la gestion des boutiques (au moins 1 gérant rémunéré par boutique soit 12 employés pour les 12 boutiques) , les frigo solaires au nombre de 7 , les moulins à grains au nombre de 3 avec un gérant et 1 meunier (soit 6 emplois) et le boucher stable (1 emploi) pour toute l'année au village .

En moyenne plus de 150 emplois ont été ainsi créés ; ce qui contribue à fixer les populations dans leurs terroirs et à lutter contre l'exode rural.

Sur le plan environnemental, on note une importante régénération écologique avec une reprise végétale positive dans les sites mis en défens où les coupes d'arbres sont arrêtées par l'arrivée du grillage de protection :

- Beaucoup d'impacts positifs de la mise en défens ont été observés dans le cadre des missions de terrain, développement d'une croûte de surface dans les zones fixées, reprise végétale du tapis herbacé et de la végétation ligneuse ; ces mises en défens ont permis de rendre disponible des stocks importants de fourrage pour le bétail de case en période de soudure dans des zones qui étaient vides de graminées à cette période de l'année ;
- Les actions de CES-DRS (cordons pierreux, les demi-lunes, etc.) ont permis dans certains villageois, non seulement une recharge de la nappe phréatique, de réduire l'érosion hydrique d'où une régénération végétale marquée par le retour de certaines espèces qui étaient devenues rares tel que le *Panicum turgidum*, *Acacia Senegal*, *Acacia Tortilis*, *Acacia Raddiana*, etc.

VIII. PRINCIPALES CONTRAINTES

L'exécution des programmes écoulés du PGDP a certes induit des impacts positifs au niveau des ADC, mais certaines contraintes ont limité la cohérence et les impacts globaux attendus de la réalisation des programmes retenus avec les associations bénéficiaires :



- La reconnaissance des ADC. Aucun investissement n'était possible avant la reconnaissance des ADC selon un format précis à savoir la délivrance d'un récépissé par le Ministère en charge de l'Intérieur. Cette reconnaissance a été laborieuse et a consommé un temps et des efforts importants du projet (les premiers récépissés sont acquis le 25 Décembre 2017)
- L'irrégularité de la mobilisation de la contrepartie. Des difficultés ont été rencontrées dans la mobilisation de la contrepartie accompagnée par l'insuffisance des montants octroyés (10 millions MRO en 2016 et 9 million MRO en 2017, au lieu 52 millions MRO par an). Le PGDP a souffert de cette situation. De plus les montants octroyés ont été toujours en deçà des programmations complexifiant encore d'avantage le fonctionnement du projet.
- En termes de faiblesse, une grande partie des personnes des ADC à former sont analphabètes. Le milieu rural est caractérisé aussi par l'analphabétisme ambiant : plus de 50% des membres des ADC sont analphabètes ; le besoin est encore grand de consolider les capacités d'organisation et de gestion des ADC
- L'arrivée du COVID 19 en mars 2020 a réduit considérablement le suivi des activités auprès des ADC. La pandémie du COVID-19 qui a frappé et continue d'immobiliser toute l'humanité à partir décembre 2020 a fortement impacté la dynamique de l'élan pris par le projet depuis le démarrage de ses activités en août 2016. Le PGDP est un projet qui concentre ses interventions au niveau du terrain dans les wilayas avec les populations des ADC. Les mesures de confinement prises par le gouvernement pour réduire la propagation de la maladie au sein de la population a donné un sérieux coup à la totalité des activités du projet.
- Le suivi écologique qui devrait être assuré par l'accompagnement de l'OSS s'est arrêtée à mi-chemin du fait des différents retards observés par cette structure

IX. PRINCIPAUX ENSEIGNEMENTS OU LECONS APPRISES

L'objectif de développement du projet a été largement atteint. Le PGDP a mis en place des modalités de financement des ADC au niveau local qui respectent la maîtrise d'ouvrage des collectivités, améliorent la transparence financière et permettent l'apprentissage collectif de la gestion des biens communs.

Les modalités de financement de la gestion des ressources naturelles (surtout potentiels gommiers) basées sur le transfert direct des ressources financières et technologiques aux populations sont engagées. Les principaux enseignements tirés de la mise en œuvre du projet sont traduits à travers les constats ci-après :

- Le temps donné à la relance de la filière gomme arabique, à travers le PGDP, est très insuffisant particulièrement les plantations de gommiers et leurs suivis jusqu'aux premières productions. Toutes les expériences en GDP (mise en défens, production de plants et plantations de gommiers, applications des techniques de CES-DRS pour restaurer les terres dégradés, la pratique de saignée améliorée dans des sites au potentiel élevé de gommiers, etc.) se sont passées dans les sites « écoles » de mise en défens de 50 ha chaque . L'exécution et le suivi n'ont eu que 2ans (2018-2020) au plus sur les 5ans du PGDP à cause des difficultés ci-dessus évoquées. Le gommier a besoin d'un minimum de 5ans pour commencer à produire de la gomme. Cette expérience du PGDP montre ainsi et nettement qu'un projet de gestion des ressources naturelles spécifiquement le gommier devrait avoir une durée minimale de 10 ans où toutes les techniques appropriées pourront être déployées avec un temps suffisant qui apportera des résultats au final plus pertinents et fiables pour cette filière porteuse d'espoir économique pour le pays.
- L'ADC peut être considérée comme un échelon institutionnel d'une gouvernance locale dont le maintien et la consolidation pourront constituer une interface utile avec la commune dans le cadre du développement local.
- L'approche initiée par le PGDP a permis de garantir aux communautés un accès équitable et direct aux



investissements publics. Le transfert direct des ressources et les outils développés assurent une plus grande efficacité des projets de développement en mettant à l'abri lesdites ressources de certains circuits d'un impact très faible et prédateur.

- La participation physique ou financière des communautés est un acquis important. En effet dans toutes les actions entreprises, les populations ont participé de façon significative ; l'un des aspects les plus positifs et qu'il faut bien souligner c'est l'appropriation par les communautés bénéficiaires des infrastructures ou micro-projets réalisés ; un garant de la pérennité des investissements réalisés.
- Le milieu rural est caractérisé aussi par l'analphabétisme ambiant : plus de 50% des membres des ADC sont analphabètes ; le besoin est encore grand de consolider les capacités d'organisation et de gestion des ADC et un mécanisme d'alphabétisation des adultes devrait accompagner la mise en œuvre de tout projet en direction des ruraux.
- L'expérience du PGDP a démontré que la transparence, la participation effective des communautés à la planification, leur responsabilisation à l'exécution et à la gestion de leurs projets constituent un garant de la pérennité des investissements et du développement local.
- Les communautés bénéficiaires des investissements ont jusqu'à présent fait preuve de bonne gestion et de prudence. En effet, sur les 189 MPC financés, aucun cas de malversation n'a été signalé. Ce qui prouve que les communautés sont à même d'assurer leur propre développement.
- L'implication de l'administration et des collectivités locales, par le partage de l'information, à tous les niveaux, a été un gage de réussite du projet.
- L'instauration des visites d'échanges entre les bénéficiaires a été une pratique innovante appréciée. Cette dernière a permis aux bénéficiaires d'échanger sur leurs bonnes pratiques et de se donner mutuellement des conseils basés sur des expériences vécues dans des conditions similaires.
- L'implication des délégations régionales du MEDD a contribué au renforcement de leurs compétences en matière de S&E. Malgré leurs moyens limités elles sont à l'origine de la masse d'information collectée auprès des ADC. Les ADC ont été renforcées en S&E par des formations organisées annuellement à leur profit ou par des visites d'échanges. Les évaluations par les pairs sont des moments appréciés et instructifs.
- Les techniques de production de plants en pépinières, les plantations et les techniques de CES-DRS sont parfaitement bien maîtrisées par les populations des ADC bénéficiaires ; ce qui constitue une ressource humaine importante pour de futurs programmes similaires
- L'intégration des activités de forage de points d'eau dans les sites de mises en défens contribuerait à mieux soutenir les plantations effectuées face à l'irrégularité de la pluviométrie et au-delà créer d'autres activités productrices de revenus (maraichage, cultures fourragères et fruitières ...) pour les populations locales
- L'implication des ONG facilitatrices dans la mise en œuvre des actions de terrain a permis de contribuer au complément en déficit de personnel technique d'encadrement des activités du projet au niveau local
- Le processus de diagnostic, planification et exécution participative, tout en étant fondamental pour assurer l'appropriation et durabilité des actions, doit être accompagné, dès que possible, par quelques activités concrètes d'intérêt collectif et communautaire (AGR) , de manière à encourager l'intérêt des participants et la dynamique participative;
- Le suivi-évaluation et la communication ont été des domaines où de grandes difficultés ont été ressenties.
- L'implication du personnel des services des Délégations Régionales du MEDD, des zones d'intervention du



Projet, depuis la phase d'animation jusqu'au suivi des actions de développement communautaire constitue un véritable acquis pour ce personnel. Ces cadres ont ainsi appris à concevoir et exécuter ensemble un programme de développement intégré d'un terroir villageois. Pour pallier la faiblesse des capacités de la partie nationale, des formations ont été réalisées. Les moyens insuffisants des délégations régionales ont été partiellement comblés par un appui en matériels et moyens de déplacements (véhicules) d'une part et par la réalisation de missions de supervisions conjointes d'autre part ;

X. PESPCTIVES

Il faut retenir que la population est consciente de l'intérêt de réhabilitation et de gestion des gomméraires mais il leur faut du temps (au moins 10 ans pour un projet de ce type) et des revenus immédiats pour inscrire leurs efforts dans la durée. Le Projet doit concilier ces deux préoccupations qui constituent toujours un facteur important de blocage de l'activité.

La réussite future des prochaines activités similaires du PGDP dépendra fortement de la solution des goulots d'étranglement sus énumérés en termes de contraintes marquées par les lenteurs des procédures administratives et la faible mobilisation des fonds de contrepartie dont dépendent à 90% les activités de la troisième composante du projet.

[...]



ANNEX 6. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

Merci pour les annotations qui me semblent fidèles et objectives. Certes l'évaluation est faite pour toute la durée du projet y compris ma période de coordination février 2018 au 21 janvier 2021.

Je vous félicite pour le brillant effort fourni et la très bonne qualité de synthèse et d'analyse.

Comme vous l'avez mentionné, le projet a été mis en œuvre dans des conditions difficiles (Absence au MEDD d'un système comptable et de passation de marché et d'un personnel qu'avait l'expérience préalable dans la mise en œuvre de projets de la Banque mondiale.

En plus, l'arrêt en décembre 2017 de paiement d'incitation au personnel du projet désigné par le MEDD (chargé de passation de marché, chargé de suivi-évaluation, chargé de sauvegarde environnemental) a démotivé ceux-ci ce qui a obligé le projet après concertation avec la Banque à maintenir les consultants (S&E et passation de marché) à la fin du projet.

Je tiens ici à remercier l'équipe de la Banque (TTLs) et l'équipe du projet en particulier le Conseiller Technique Mr Correra, le RAF Mr Bouh, l'expert SIG Mr Baba et la Comptable Mm Cheriva sans eux le projet n'aurait aucune réalisation.

Mes salutations les meilleures



ETHMANE BOUBACAR

Directeur Protection et Restauration des Espèces et Milieux
Ministère de l'Environnement et du Développement Durable



ANNEX 7. SUPPORTING DOCUMENTS

1) Key World Bank documents

Official Documents

Project Appraisal Document, Mauritania Sustainable Landscape Management Project Under the Sahel and West Africa Program (English), July 2015

GEF Grant Agreement, TFOA0663 (English), September 2015

ISRs

Implementation Status and Results Report: Sequence 08 (English), February 2021

Implementation Status and Results Report: Sequence 07 (English), May 2020

Implementation Status and Results Report: Sequence 06 (English), May 2019

Implementation Status and Results Report: Sequence 05 (English), December 2018

Implementation Status and Results Report: Sequence 04 (English), October 2017

Implementation Status and Results Report: Sequence 03 (English), May 2017

Implementation Status and Results Report: Sequence 02 (English), May 2016

Implementation Status and Results Report: Sequence 01 (English), November 2015

Aide-Mémoires

Implementation support mission Aide-Mémoire (French), February 2016

Implementation support mission Aide-Mémoire (French), December 2016

Draft TTL transfer mission Aide-Mémoire (French), April 2018

Mid-Term Review mission Aide Memoire (French), February 2019

Implementation support mission Aide-Mémoire (French), October 2019

Project closure mission Aide-Mémoire (French), January 2021

Project implementation Manual

Babacar Youssouf Diagana, Manuel de procédures d'exécution du PGDP, September 2015

2) Borrower ICR

Rapport d'achèvement du projet PGDP, May 2021

3) Analytical Studies Related to the Project

Moustapha Ould Mohamed, Etude pour l'élaboration d'une base de données relative aux bonnes pratiques de gestion durable des paysages en Mauritanie (French), August 2017

Rapport d'évaluation SIG de l'évolution du couvert végétal dans les sites du PGDP (French), MEDD, May 2021

Cheick Mohamed Fadel, Etude socio-économique de la filière gomme arabique (French), July 2020

Nema Ould Taleb, Evaluation de la Politique Sectorielle, du Cadre Législatif et Financier pour l'Identification des Opportunités de Réformes Contribuant à Faciliter le Développement Durable de la Filière Gomme Arabique en Mauritanie (French), May 2021

Mohamed Salem LOUD, Rapport final d'Evaluation d'impact/résultats du Projet PGDP (French), Janvier 2021



ANNEX 8. PHOTOS



Contraste entre zone clôturée et zone non-clôturée



Pépinière



Plantule individuelle



Plantules dans zone clôturée



Cordon pierreux



Végétation herbacée



Gomme arabique - produit final à commercialiser



Maraichage - panneau solaire et réserve d'eau



Produit du maraichage



ANNEX 9. ILLUSTRATIONS FROM THE ECOLOGICAL MONITORING SYSTEM

Examples of data³² obtained through remote sensing (satellite and drone images) used for the ecological monitoring system of the project (vegetation coverage maps).

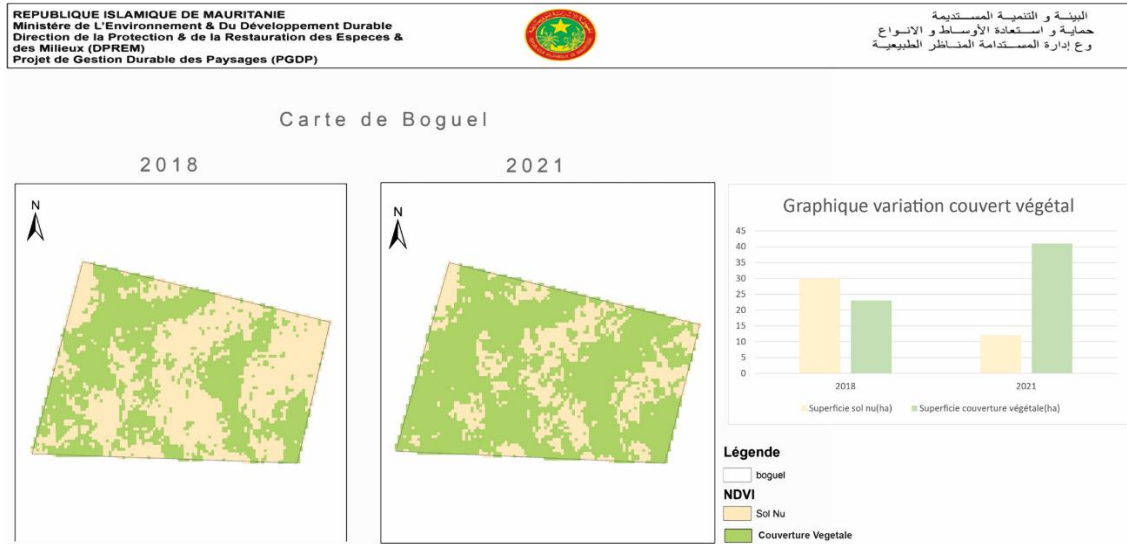


Figure 3: Vegetation coverage maps for the site of Boguel, years 2018 and 2021, derived from Sentinel 2 images. And comparison of the vegetation cover.

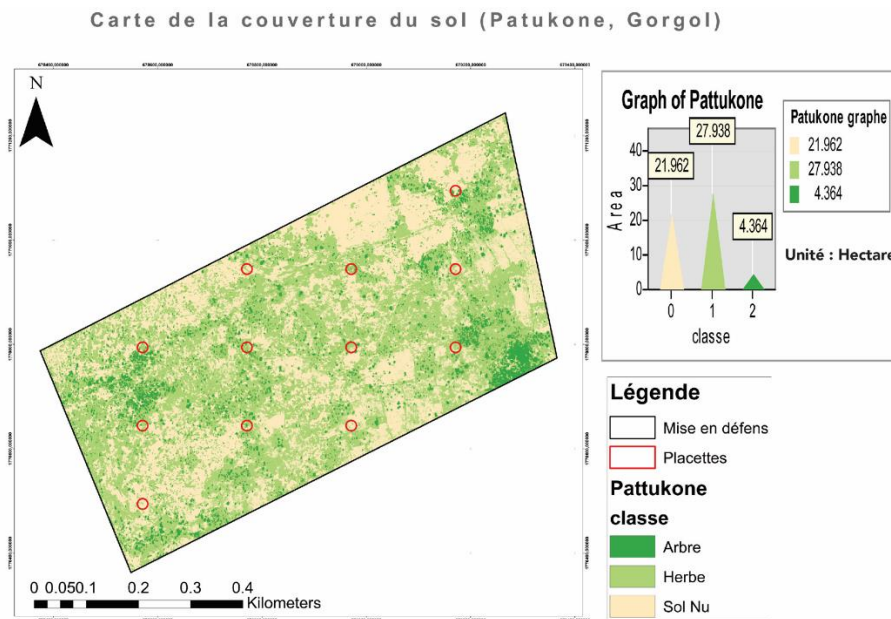


Figure 4: Vegetation coverage map for the site of Patukone, in 2020, derived from drone images.

³² Rapport d'évaluation SIG de l'évolution du couvert végétal pour les sites du PGDP, MEDD, Mai 2021