ADAPTATION FUND

FULL PROPOSAL FOR SINGLE COUNTRY

Mauritania Oasis Project

Enhancing the resilience of communities of agropastoral and oasis ecosystems of Ziyara and Dhaya to the adverse effects of climate change in the Adrar region in Mauritania

Title of Project	Enhancing the resilience of communities of agropastoral and oases ecosystems of Ziyara and Dhaya to the adverse effects of climate change in the Adrar region in Mauritania
Country:	Mauritania
Thematic Focal Area:	Multisector project
Type of Implementing Entity:	Regional Implementing Entity
Implementing Entity:	Sahara and Sahel Observatory (OSS)
Executing Entity:	SOS Oasis Mauritania
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Stage of Submission:	Full Proposal 6th submission

Stage of Submission:

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

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

In case of a resubmission, please indicate the last submission date: 2/27/2026

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Abbreviations

AF	Adaptation Fund
CAIC	Climate Adaptation and Innovation Center
CC	Climate Change
CCC	Community Consultation Committee
CE	Cost Effectiveness
CEA	Cost-Effectiveness Analysis
CER	Cost Effectiveness Rate
CNA	Capacity Needs Assessment
CSOs	Civil Society Organizations
CTS	Scientific and Technical Committee
E&S	Environmental and Social
EbA	Ecosystem-Based Adaptation
EE	Executing Entity
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
GAAP	Gender Action Plan
GHG	Greenhouse Gas
GRM	Grievance Redress Mechanism
IEC	Information, Education and Communication
IGAs	Income-Generating Activities
IRR	Internal Rate of Return
IWRM	Integrated Water Resources Management
KAP	Knowledge, Attitudes, and Practices
LDCs	Least Developed Countries
LWMCs	Local Water Management Committees
M&E	Monitoring and Evaluation
MEDD	Ministry of Environment and Sustainable Development
MEL	Monitoring, Evaluation, and Learning
MoUs	Memorandums of Understanding
NEE	National Executing Entity
NSC	National Steering Committee
NSO	National Statistics Office
O&M	Operations and Maintenance
ONSER	National Office for Rural Water Services
OSS	Sahara and Sahel Observatory
PDDO	Oases Sustainable Development Programme in Mauritania
PGM	Producer Group Model
PGs	Producer Groups
PMU	Project Management Unit
PPPs	Public-Private Partnerships
PRAGOA	Enhancing the resilience of communities of agropastoral and oases ecosystems of Ziyara and Dhaya to the adverse effects of climate change in the Adrar region in Mauritania
RIE	Regional Implementation Entity
SLM	Sustainable Land Management
SNDE	National Water Distribution Company
ToRs	Terms of Reference
ToTs	Trainer of Trainers
TSC	Technical and Scientific Committee
WRMP	Water Resource Management Plan

PART I PROJECT INFORMATION

A. Project Background and Context

1. Background

1. Mauritania is located in West Africa featuring a coastline of over 750 km[1] on the Atlantic Ocean. According to the National Statistics Office (NSO) estimates, its population is expected to exceed 4.17 million by 2020[2] with an annual population growth rate of 2.8 percent. As the large areas of the country are part of the Saharan region, the majority of the population is concentrated in the larger coastal cities of Nouakchott and Nouadhibou, as well as in the Senegal River valley, which has a more moderate Sahelian climate.

2. With an actual GDP per capita of US$1,723 in 2021[3] and an annual GDP growth rate of 2.30 percent, Mauritania ranks as a Low to Middle-Income Country (LMIC). Its economy is dominated by the services sector, which contributes 45.8% (2019) of the country's GDP, followed by the industrial sector (25.3%) and the agricultural sector (18.7%). Mineral products (e.g., iron and copper ores), shellfish, and frozen fish are Mauritania's main export products.

3. More than 32.69%[4] of Mauritania's population is employed in the agricultural sector, on which they are heavily dependent for food security and livelihoods. Concerns about climate change effects are therefore high, particularly with regard to rising temperatures, water availability, flooding risk and other extreme weather events. Agricultural production in Mauritania is essentially for food and is rainfed. The dominant staple crops are cereals, especially sorghum, as well as rice, maize, cowpeas, and millet. However, smallholders are particularly affected by climate variability impacts, especially in arid areas, which reduces their food sources and increases famine and poverty risks.

4. Mauritania is located in an area of the African Sahel most affected by recurrent droughts since 1968. The resulting desertification is all the more pronounced due to the combined effect of climate change and human action, which has direct consequences on an already very precarious environment. The vulnerability of the country to climate change affects all the vital sectors of the national economy.

2. Temperature

5. Mauritania has an arid climate, due to its location in the Saharan desert and the Sahel region. Average annual temperatures range from 21°C to 30°C, with the lowest measured values on the northern coast and the highest in the southeast. Annual rainfall totals range from as little as 20 mm on the northern coast to 400 mm in the south-center which has a Sahelian climate. There is only one rainy season (unimodal rainfall regime) in Mauritania from June to October in the south, with a shortening of the rainy season and rainfall towards the north[5].

6. In response to the rising Greenhouse Gas (GHG) concentrations, air temperature in Mauritania is projected to increase by 2.0°C to 4.5°C (very probable range) by 2080 relative to the year 1876, according to different GHG emission scenarios (*Figure 1*). Relative to pre-industrial levels, the median temperature increase from climate models in Mauritania reaches about 2.1°C in 2030, 2.3°C in 2050, and 2.5°C in 2080, under the RCP2.6 emissions reduction scenario. For the medium-to-high emissions scenario (RCP6.0), the median temperature increase of climate models is 2.1°C in 2030, 2.7°C in 2050 and 3.8°C in 2080.

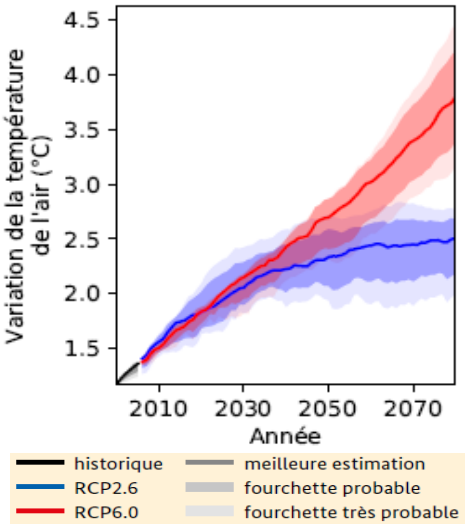

Figure 1: Air temperature projections in Mauritania for different GHG emission scenarios

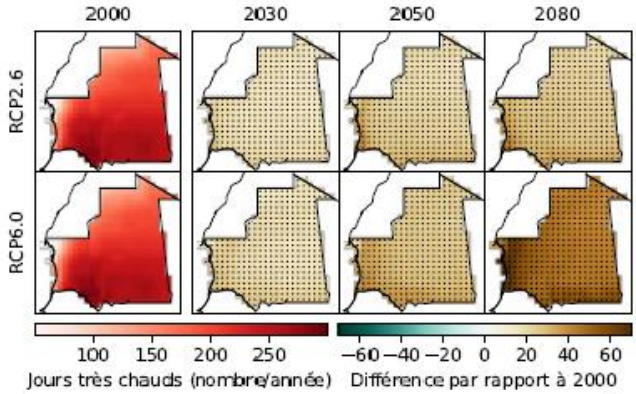

Figure 2: Projections of the annual number of very hot days (maximum daily temperature above 35°C) for different GHG emission scenarios

7. Along with the increase in annual mean temperatures, the number of very hot days per year (days with maximum temperature above 35°C) is projected to strongly increase, with particular high certainty in the western part of Mauritania (Figure 2). Under the medium to high emissions scenario RCP6.0, the median of the multi-model set (averaged over the whole country) predicts 18 more hot days per year in 2030 than in 2000, 27 in 2050 and 49 in 2080. In some parts of the country, particularly in southwest Mauritania, this equates to about 300 very hot days per year by 2080.

[1] CIA World Factbook, "Mauritania," 2020. Disponible en ligne : https://www.cia.gov/library/publications/the-world-factbook/geos/mr.html
[2] World Bank, "World Bank Open Data," 2019. Disponible en ligne : https://data.worldbank.org
[3] World Bank, "World Bank Open Data," 2021. Disponible en ligne : https://data.worldbank.org
[4] Trading Economics," 2023: https://tradingeconomics.com/mauritania/employment-in-agriculture-percent-of-total-employment-wb-data.html
[5] "Profil de risque climatique: Mauritanie", GIZ,2021

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3. Precipitation

8. Rainfall projections are less certain than temperature projections due to high natural variability from year to year. Of the four climate models used in this analysis, two models project no change in the mean annual precipitation in Mauritania, and two models project a decrease. The median of model projections for RCP2.6 shows a slight increase in precipitation of 6 mm per year by 2080, while the median of model projections for RCP6.0 shows a decrease in precipitation of 11 mm by 2080 compared to the year 2000.

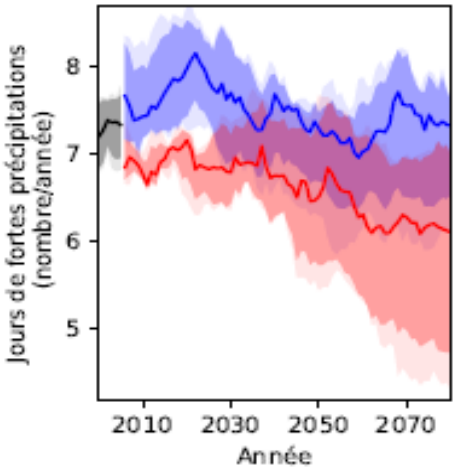

Figure 3: Projections of number of days with heavy rainfall in Mauritania for different GHG emissions scenarios, compared to the year 2000.

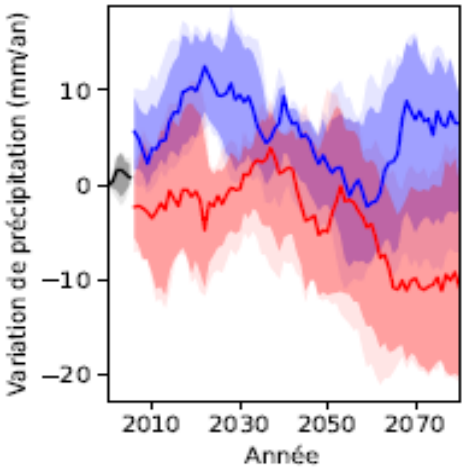

Figure 4: Average annual rainfall projections in Mauritania for different GHG emission scenarios, relative to the year 2000

9. In response to global warming, heavy precipitation events are expected to increase in intensity in many parts of the world as the atmosphere becomes warmer and its capacity to hold water vapor increases. The number of days with heavy precipitation is also expected to increase. However, this trend is not reflected in the climate projections for Mauritania, with climate models predicting a decrease in the number of days with heavy rainfall from 7 days per year in 2000 to 6 days per year in 2080 under RCP6.0. Under RCP2.6, no change is projected.

4. Water resources

10. Mauritania is subject to strong seasonal and annual variations in rainfall as well as recurrent droughts, which are major problems for agricultural production[6], The country was hit by repeatedly with droughts in the 1970s and 1980s as rainfall declined. This decline in precipitation led to a massive reduction in, water resources and vegetation cover, land degradation and desertification[7], which in turn led to the loss of arable land and the reduction of agricultural production, as well as loss of pasture and depletion of livestock[8].

11. Regarding Surface water in Mauritania, there are about 400 hydraulic works (dams, dykes, dikes,) with a potential volume of 850 million m^3 to irrigate 25,209 ha. However, 36% of these structures are not currently functional, resulting in a potential water loss of about 300million m^3 [9].

12. In addition, the effects of the drought have led to conflicts between farmers and herders in the Senegal River Valley, which led to the Senegal-Mauritania conflict (1989), resulting in the high population deaths and the high displacement rate within the region[10]. Even though annual rainfall totals have increased again in the 1990s, it remains below the national average for the past century with the subsequent droughts of 2005, 2008, 2010, and 2012. Overall, Mauritania's freshwater resources are unevenly; concentrated, distributed, along the southern border, leaving the country's growing population in shortage of water and in a situation of competition for this limited resource.

5. Agriculture

13. Smallholder farmers in Mauritania are increasingly challenged by the uncertainty and variability of weather caused by climate change. Since crops are predominantly rainfed, yields highly depend on water availability from precipitation and are prone to drought. However, the length and intensity of the rainy season is becoming increasingly unpredictable and the use of irrigation facilities remains limited. In 2004, less than 10% of the estimated irrigation potential of 250,000 ha (0.6 % of total national crop land) were irrigated. The main irrigated crop is rice, in addition to maize, sorghum and vegetables[11]. To note, central and northern Mauritania are especially characterised with sandy soils which are poor in nutrients, thus complicating irrigation and crop production resulting into decline of agro-biodiversity and loss of local crop varieties.

[6] K. Sissoko, H. van Keulen, J. Verhagen, V. Tekken, and A. Battaglini,"Agriculture, Livelihoods and Climate Change in the West African Sahel," Reg. Environ. Chang., vol. 11, no. 1, pp. 119–125, 2011.
[7] P. Ozer, Y. C. Hountondji, J. Gassani, B. Djaby, and D. L. F,"Évolution récente des extrêmes pluviométriques en Mauritanie (1933–2010)," XXVIIeme Colloq. l'Association Int. Climatol., pp. 394–400, 2014.
[8] Islamic Republic of Mauritania, "National Adaptation Programme of Action to Climate Change," Nouakchott, Mauritania, 2004.
[9] Fourth national communication of mauritania, july 2019
[10] A. Nicolaj, "The Senegal Mauritanian Conflict," Africa Riv. Trimest. di Stud. e Doc. dell'Instituto Ital. per l'Africa e l'Oriente, vol. 45, no. 3, pp. 464–480, 1990
[11] Y. M. Bachir and A. Ould Hamadi Sherif, "Mauritania Livelihood Zoning Plus," Washington, D.C. and Madrid, Spain, 2013.

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6. Ecosystems

14. Climate change is expected to have a significant influence on the ecology and distribution of tropical ecosystems, though the magnitude, rate and direction of these changes are uncertain[12]. With rising temperatures and increased frequency and intensity of droughts, wetlands and riverine systems are increasingly at risk of being converted to other ecosystems, with plant populations being succeeded and animals losing habitats. Increased temperatures and droughts can also impact succession in forest systems while concurrently increasing the risk of invasive species, all of which affect ecosystems. In addition to these climate drivers, low agricultural productivity and population growth/pressure might motivate further agricultural expansion resulting in increased deforestation, land degradation and forest fires, all of which will impact animal and plant biodiversity. The country has lost 86,000 ha of forest cover in the period from 2001 to 2016, which is equivalent to a 28 % decrease.

7. Country Vulnerability to Climate change

15. Mauritania is at risk to hydrometeorological hazards and natural disasters. The southern parts of the country are classified at high risk for river flooding due to heavy rainfall interspersed with increased aridity. Flash flooding is also considered likely as high risk as Mauritania is ranked as high risk for coastal flooding due sea level rise and increased vulnerability as the majority of its population residing along coastal areas.

16. The country is at risk to water scarcity due to the projected increased variability of runoff and river flows, increased temperatures resulting in increased evaporation of surface waters and reduced runoff, increased competition over reduced water resources as well as limited infrastructure. Extreme heat is an existing challenge for the country and one that is projected to get increasingly worse. The entire country is ranked at high-risk for extreme heat, with Climate change expected to increase risks and severity of natural disasters in Mauritania. Vulnerability is exacerbated due to the country's high level of poverty and high dependence on 'climate change sensitive' sectors, such as agriculture, fisheries, mining and livestock. Human-induced environmental pressures include land degradation and desertification as a result of poor agricultural practices, overgrazing and deforestation. Extreme weather events, including heavy precipitation and severe droughts, are expected to exacerbate climate change impacts.

8. Economic and social situation

17. Socially, Mauritania experienced a period of sustained growth between 2008 and 2014, which was accompanied by significant increase in household livelihood. However, some segments of the Mauritanian population have not benefited from this progress, while the country lags behind on many social indicators[13]

18. Poverty has not declined, probably due to migration to urban areas, with the capital attracting the poorest people. Labour force participation and employment rates have also not increased, and those excluded from social progress, including youth, women, and the working poor, are increasingly marginalized. School enrolment for children aged 6 to 11 is only 55%, where one-third of households live in poor housing, and only 38% of the population has access to electricity. This situation has been further been impacted by the climatic situation and the periods of flooding and drought that Mauritania has experienced, which inherently affected access to resources, soil quality, various agricultural activities and vulnerable ecosystems, including oases.

9. Adrar: Geographic and geological context

9.1. Location

19. The Wilaya of Adrar is located in the north of Mauritania and covers an area of 233,478 km^2, which is 22.65% of the total area of Mauritania (1,030,700 km^2). It is bordered to the north by the Wilaya of Tiris Zemmour, to the west by the Wilayas of Dakhlet Nouadhibou and Inchiri, to the east by the Wilaya of Hodh El Chergui and Mali, to the south by the Wilayas of Trarza and Tagant.

20. Administratively, the Wilaya is divided into four Moughataa (province) (Atar: the regional capital, Aoujeft, Chinguetti and Ouadane), and has eleven Communes and two Districts (Choum and N'Terguent). In the Wilaya of Adrar there are chains of tabular plateaus with peaks reaching up to 815m in altitude (Plateaux de l'Adrar) and majestic sand dunes characteristic of the region (El Mejabât El Koubra, Erg Ouarâne), offering magnificent panoramas between the sand and the stones. Between these plateaus, you can admire beautiful sites including canyons (canyon of the Amogjâr pass).

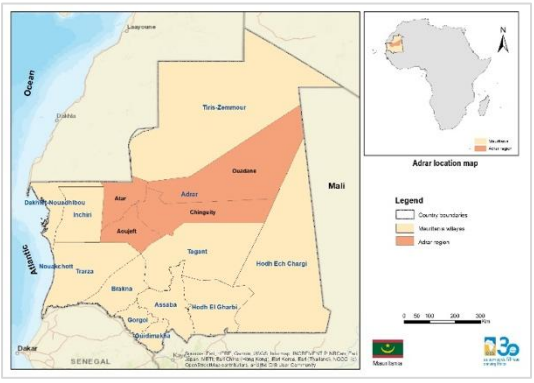

Figure 5: Map showing location of Adrar

21. In 2023, the population of the Wilaya of Adrar had 71,623 inhabitants according to ONS statistics. Of this total 36,913 were women and 34,710 were men. With a population density of about 0.3 inhabitants per Km2, ranking Adrar as the second least populated Wilaya behind Tiris Zemmour and before Inchiri. The Wilaya is divided into four (04) Moughataa (Atar, Aoujeft, Chinguetti and Ouadane), eleven (11) communes and 306 localities, as shown in the table 1 below.

[12] T. M. Shanahan, K. A. Hughen, N. P. McKay, J. T. Overpeck, C. A. Scholz, W. D. Gosling, C. S. Miller, J. A. Peck, J. W. King, and C. W. Heil, "CO2 and Fire Influence Tropical Ecosystem Stability in Response to Climate Change," Nat. Publ. Gr., no. July, pp. 1–8, 2016.

13 Fourth national communication of mauritania, july 2019

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Table 1: Distribution of communes, number of localities and areas of Adrar Moughataas

Moughataa	Area in Km²	Commune	Number of localities
Atar	**24.728**	Atar	5
		Aïn Ehel Taya	33
		Tawaz	32
		Choum	21
Aoujeft	**26.159**	Aoujeft	31
		Maeden	48
		N'Terguent	38
		El Medah	37
Chinguetti	**61.813**	Chinguetti	31
		Aïn Savra	14
Ouadane	**120.778**	Ouadane	16
Total	**223.478**	**11**	**306**

9.2. Topography

22. The Adrar region is dominated by the Mejabat El Khoubra, an almost impermeable desert that covers 52% of the Wilaya's area with altitudes that can reach between 200 and 350 m in hight. Lemreye and Ouarane dune fields, make up the eastern and southern parts of Mejabat El Khoubra. Amsaga, a flat Saharan peneplain of 100 to 200 m high, extends to the west and southwest of the region.

23. The Adrar regroups the most important landform of the country, where there are tabular mountain chains with peaks reaching up to 800 m high[14] (figure 6), that make up the Adrar plateau. It is located in the western half and is dominated by a multitude of cliffs of which the Dhar of Chinguetti is the most important one; as well as several peaks including the Guelb Richatt (north of Ouadane) and hills in the northwest.

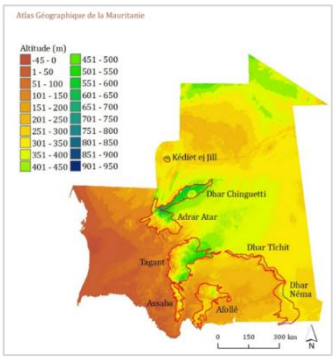

Figure 6: Major mountains and escarpments (interpreted from Jarvis et al., 2008).

9.3. Hydography

24. Adrar is mainly characterized by aquifer resources and a number of temporary pools. In addition to these, there's also water from scarce rains, particularly the torrential ones that are sometimes recorded in the Wilaya and that flood the ponds and shallows. During the so-called "rainy" years, the ponds fill up and the shallows and the basins are flooded. Aquifer recharging and irrigation is thus made easier. It has several rivers that are endorheic. The most important are the Séguelil wadi and the El Abiod wadi which converge in the Aïn Ehel Taya area and flow into the great Yagref flood plain whose bottom elevation is at an altitude of 110 m on the topographic map of Atar.

25. In terms of groundwater resources, the Wilaya of Adrar is located on the edge of the vast Taoudeni sedimentary basin, which is an enormous syncline that integrates the eastern edge of Guidimakha and the two Hodhs, and extends into Mali. It is located: (i) In Amsaga, in the West, on ancient basement formations of granitic and gneissic type: (ii) In the East, on ancient sedimentary formations of the Primary Period, consisting of sandstone, limestone, pelitic and schistose rocks; (iii) In Amsaga, the ancient granitic and schistose basement is likely to contain only discontinuous aquifers in the zone of alteration or fracturing, of low extension, possibly soft but often not perennial, of poor quality and delivering small flows; (iv) In the center (Atar, Aoujeft), the sedimentary formations that form the high landforms of the Dhar, are mostly made up by a typically silicified and relatively impermeable sandstones; on the other hand the structural position at the edge of the basin does not favour the existence of continuous captive aquifers; and (v) To the south-east, there is also a set of schistose and greenstone metamorphic formations belonging to the Mauritanian Arc, in which studies have located freshwater resources but probably in modest volumes.

26. In terms of surface water resources, the region is marked by the presence of wadis (temporary watercourses) that operate according to rainfall. The brutality and irregularity as well as the low rate of rainfalls give rise to little important runoff. In the Adrar massifs, a long network of anaclinal drainage collects this water and forms depressions called "baten": (i) In the south, the Adrar baten is drained by the Wadi Seguellil in the Amsaga peneplain; (ii) To the north, a system of independent basins aligned from Ghallaouia to the Chemchame sebkha.

27. These are also mostly threatened by the formation of sand dunes. Floods become rare but devastating during the rainy season at times. The surface hydraulic infrastructures (dams, dykes, dykes) existent in the area have been summarized in the table below.

Table 2: Situation of dams, dykes and other water reservoirs built up to 2014. Source: MA/PNDA, 2016

Category	Number of Reservoirs	Area (ha)
Inventory of water reservoirs (2008)	45	–
Deductions without identified area	5	–
Deductions with identified area	40	3,749
Dams constructed (2009–2014) *(DAR + PDDO)*	4	490
TOTAL – Achievements until 2014	**44**	**4,239**

[14] Source: Naia, M., Brito, J. C. (2021). Atlas Géographique de la Mauritanie. CIBIO/InBIO. Biodéserts Rapport FR-02. 101 pg.

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28. From a hydrogeological point of view, the Wilaya of Adrar can be subdivided into 2 sets from west to east:
    - The Mauritanides chain and the Reguibat ridge to the West and North-West;
    - The Taoudenni basin in the center and to the east.
29. The Reguibat ridge consists of heavily eroded basement rocks, mainly granitic and gneissic. The superficial weathering layer is poorly developed. Aquifers are therefore mainly linked to fracture zones that are more or less connected to each other. The extension of aquifers is necessarily very limited and the groundwater resource is very low. The slice of alteration is too small to be of hydrogeological interest.
30. This domain consists essentially of metamorphic or magmatic rocks whose hydrogeological character is characterized by the discontinuity of the aquifers. These aquifers sometimes take on a certain importance at the level of the wadis. The infiltration of flood waters allows them to be recharged. The static levels are between 13 and 80 m, the flow rates from 3 to 10 m3/h. Further north, all the boreholes carried out in the area have found water at depths between 6 and 40m. The waters are mostly brackish.

31. The Taoudéni basin. The water resources of the Mauritanian part of this basin are contained, compared to the sections of the project, in the aquifers of the Adrar which has been the subject of several hydrogeological reconnaissance campaigns. The results obtained on boreholes from 20 to 220 m deep were relatively positive in the Agueni sandstones, the Atar limestones and those of Toueiderguilt.

32. The sources of water supply in the Wilaya are: 11.7% in the AEP networks; 3.12% in public fountains; 24.63% or a total of 39.45% and the rest 60.55% unidentified.

Table 3: Sources of water in Adrar

Water source	Adrar	National
	Rate (%)	Rate (%)
AEP network	11.7	**15.0**
Public Fountain	3.12	**25.7**
Well	24.63	**37.3**
River-source	0	**13.0**
Others (unidentified)	60.55	9.0
Total	**100.0**	**100.0**

9.4. Water, Sanitation and Hygiene (WASH) in Mauritania – Focus on the Adrar Region

33. In the Adrar region, water shapes life. Its scarcity defines the social, economic, and health dynamics of communities. In such a context, the issue of WASH, access to water, sanitation, and hygiene represents far more than a basic service: it is an essential condition for public health, dignity, and resilience.

34. At the national level, Mauritania has made significant progress in access to drinking water, but improvements remain uneven across different areas. The most recent data from the WHO/UNICEF Joint Monitoring Programme (2023) show that a substantial share of the population still lacks access to safely managed water services. Rural areas, where more than 60% of Mauritanians live, are particularly affected by the lack of infrastructure, the aging of networks, and the limited capacity for local maintenance.

35. Sanitation also remains a major challenge. Many households, particularly in rural and peri-urban areas, still rely on unimproved latrines or practice open defecation. In 2015, the proportion of households practicing open defecation reached nearly 39% nationwide, and more than 63% in rural areas (UNICEF, 2019). This situation increases the risks of groundwater contamination, the spread of waterborne diseases, and vulnerability to climate shocks.

36. In the project region, these challenges take on a particular dimension. The rugged terrain, deep aquifers, and climate variability make water supply complex and costly. Some localities depend on water trucks or boreholes powered by fragile solar systems. In oases areas, water is used simultaneously for domestic needs, irrigation, and livestock watering, further straining the available resources. The absence of adequate sanitation systems, combined with limited runoff and high evaporation, makes the management of liquid and solid waste particularly difficult.

37. Nevertheless, local authorities and technical partners have stepped up their efforts. In Atar, the regional capital, a 2025 workshop organized by the National Sanitation Office (ONAS) and the Ministry of Hydraulics highlighted the urgent need to establish a sanitation and stormwater drainage network.

38. Thus, in the Adrar region, where every drop of water counts, the WASH approach must be integrated and systemic. It should link equitable access to safe drinking water, secure sanitation, waste management, and the promotion of hygiene practices. By combining appropriate infrastructure, community engagement, and good governance, it becomes possible to improve health, strengthen climate resilience, and promote more inclusive and sustainable development for the populations of this Saharan region.

9.5. Bioclimatic Zones

39. The region of Adrar is located in the center of the arid zone, 73% of which is subject to Saharan climate and 27% to desert climate. The strong North and North-East winds, from continental origin, blow from January to September with a lull from October to December. Annual temperatures range from 42.0°C (July) to 12.7°C (December). The rainy season is under the influence of the monsoon. It extends from July to September-October. Rainfall is very irregular in time and space. Annual rainfall totals in the area vary from 40 to 100 mm from north to south.

9.6. Vegetation

40. The region has experienced decades of severe droughts. The ergs and Saharan regs are bare while the desert regs and stabilized sand dunes have sparse vegetation consisting mainly of *Acacia flava* and *Aristida pungens*. On rocky soils covered with sand or

superficial, in desert climates, one can find rich paths of *Panicum turgidan, Acacia flava* and *Zizyphus lotus*. In areas of water build up, such as El Beyid, Guelb Er Richat and Yaghref, the vegetation is lush: forests of *Acacia tortilis*, *Capparis decidua*, *Tamarix senegalensis, Acacia seyal* and *Acacia albida* (Ouadane).

41. All along the wet valleys, there are beautiful date palm oases. The latest census in 2012 shows that Adrar has 75 oases, spread over more than 8800 farms and covering an area of 5673 ha, representing 21% of the total number of oases in Mauritania. The total number of date palms is 1,192,218, representing 45% of the total number at the national level. In Adrar, 65% of date palms are located in the Moughataa of Aoujeft with a concentration in the communes of Elmaaden and El Meddah. The average size of an oases in this Wilaya is 75 ha in terms of area and 15,896 tree/ha.

10. Socio-demographic characteristics

10.1. Socio-economic context

10.1.1. Population

42. The Wilaya, which is home to 62,658 inhabitants in 2013, has significant potential that can be exploited to make a good contribution to the policies of fight against poverty, unemployment and the promotion of employment of young people. Moreover, the weight of the population of the Wilaya of Adrar compared to the total population of the country is around 1.77%. The density of approximately 0.3 inhabitants per km^2; that of the country is 3.43 inhabitants per km^2.

43. The table below gives the distribution of the populations listed in the Wilaya in its four (4) Moughataas in 1988, 2000 and 2013.

Table 4: Distribution of populations identified in the Wilaya

Moughataa	1988	2000	2013
Aoujeft	16 217	20 181	12 997
Atar	3 5317	38 962	38 877
Chinguetti	6 327	6 704	6 810
Ouadane	3 186	39 395	3 974
Total	**61 047**	**105 242**	**62 658**

44. The monograph of the Wilaya of Adrar drawn up by the National Office of Statistics (ONS) in 2017 showed an evolution in the number of populations for the whole of the Wilaya of Adrar, with a remarkable variation at the level of the Moughataas. The results show that the population of the Wilaya is still young, because approximately 45.45% of the population are under 15 years old, against 59.46% for the active age group (15-64 years old). This population is dominated by the female sex, because approximately 53% of the total population of the Wilaya are women against 47% for the male sex. The distribution of households according to the source of drinking water supply shows that 32.2% of households most often get their drinking water from a truck or cistern, while 21.8% of households use uncovered wells.

45. The data collected in the 2013 Census at the Wilaya level reveal that more than 19.7% of the population aged 6 and over have not received any education and that approximately one person in four of the population of the Wilaya aged 10 and more is literate (25%) with a difference in favour of women (27%) against (22%) for men.

10.1.2. Agriculture

46. The oases cultures which concern mainly 5 Wilayas of the country, in particular Adrar (Aoujeft pole), Tagant (Rachid pole), Assaba and the two Hodhs (Tamchekett and Néma poles).

47. In Adrar and Tagant, the oases are generally located along the wadis in the rocky plateaus which are sometimes difficult to access. In the two Hodhs, they are located in the interdune depressions. Several palm groves are uninhabited and are only visited at specific times of the year; at the time of pollination (February/March) and during the harvest (Guetna) during which entire populations settle in the oases from the start of the ripening of the first dates until the final harvest.

48. The Adrar and the north of Tagant are areas with an ancient oases tradition where farmers had proven date palm expertise. On the other hand, the south of Tagant, Assaba and the Hodhs have a recent date palm tradition with little know-how. Farm management is based on palm cultivation and associated irrigated crops: market garden crops, cereals, but also henna (Lawsonia alba) and alfalfa. There are flood-recession crops (sorghum, cowpea, etc.) sometimes next to the oases, behind dams, on sandy loam soils.

49. The Wilaya of Adrar (Pole Aoujeft) is considered as the first date-producing region of the country. It currently represents around 45% of national production, i.e., around 12 727 tons net. This quantity is distributed as follows (PDDO, 2020):

- 7 700 tons consumed fresh locally during the Guetna period;
- 3 500 tons marketed at the major markets (50% Nouakchott, 20% Atar, 30% other markets (Nouadhibou, Zouérate, etc.) and the remaining quantities are stored in the oases.

The average annual production of dates fluctuates from year to year due to climatic conditions, varieties and the quality of cultivation techniques. Date palms in Adrar are generally less productive compared to countries in the sub-region, with average yields of 15 to 20 kg per tree without irrigation, while irrigated palm groves achieve yields of 30 to 50 kg per tree (PNDA-2016, STM-2019 and PDDO-2020).

Table 5: Evolution of areas used for date palm cultivation. Source (Oases project and PDDO)

Wilaya	Year	Number of palm trees	Area (ha)	Number of farms
Adrar	1984	386 017	2 187	2 876
	1993	883 060	1 876	6 590
	2020	1 212 876	5 759	10 211

50. All of the palm groves are subject to significant damage caused by the white cochineal (*Parlatoria blanchardi*), palm mites (*Olygonycus afrasiaticus*) as well as many other parasites and various diseases. The irregularity of the treatments against these parasites have a negative effect on the yields, the quality of the dates and their market value.

Table 6: Main constraints of oases crops

Domain	Constraints
Production	• Insufficient water control in the oases: ineffective management, overexploitation of groundwater, and poor dissemination of water saving techniques and low-cost pumping systems. • Insufficient promotion and adoption of improved farming techniques. • Weak protective action against the silting up of the oases. • Low yield of palm trees and aging of the plantation. • Depletion of the gene pool of the palm grove and disappearance of certain cultivars. • Low level of supervision and advisory support.
Harvest, packaging, storage, drying, transformation, transportation	• Low knowledge of improved harvesting techniques; • Poor knowledge of improved post-harvest techniques: packaging, storage, processing, transport; • Insufficient packaging and storage infrastructure adapted;
Marketing	• Strong competition (quality and price) of dates from Morocco, from Algeria, Tunisia and Saudi Arabia.
Actors of the sector	• Insufficient organization and cooperation between the players in the sector (producers, suppliers of goods and services, transporters, merchants, advisory support structures, consumers)

51. The city of Atar, capital of Adrar (80 km from Aoujeft) has had a date and vegetable packaging plant since 2019 with a storage capacity of 500 tons. It includes 4 cold rooms, two freezing rooms and workshops for sorting and processing dates. This factory is managed by the Firm Toumour Mauritania (STM), the first national establishment specializing in the conservation and marketing of dates and vegetables in Mauritania. It aims to improve the economic activity of the populations in the oases and to exploit the local product to make the most of it and partly cover the country's needs for quality dates, thus competing with imported dates, particularly from Tunisia and Algeria. This company has mixed capital (State and Caisse des Dépôts et de Développement). In Adrar, market gardening is an occupation and an income-generating activity, especially for women and young people. Annual production varies from year to year. It strongly depends on the climatic conditions, the availability of water, the plant material and the technical itineraries adopted. Producers' access to quality vegetable seeds and other inputs (fertilizers and phytosanitary products) is quite limited.

52. Transport is done in poor conditions, not taking into account the perishability of market garden products. Depending on the distance from the production area to the market as well as the operator, transport is done using non-specialized vehicles, especially small trucks, and transport costs are high. In addition, poor transport conditions lead to poor sales caused by loss of product and value (lower selling prices).

53. The main indicators characterizing the Adrar region Socio-demographics are listed as follows below:

- From a demographic point of view, the region has experienced a significant increase in population despite the phenomenon of rural exodus recorded;
- Economically, the region is dominated by a specialization in agriculture and tourism;
- Regarding agriculture, the regional profile indicates a relative specialization in phoeniciculture, vegetables and fodder;
- In terms of human development, the region lags behind with regard to poverty;
- In terms of investment, the region has been characterized by a low attraction of private and public investors; and
- In terms of unemployment, the region has many unemployed youths.

54. The data on the zones are heterogeneous and insufficient, so they do not provide a clear picture of the agropastoral dynamics of the zone, marked by, among other things, the exodus, the abandonment of production areas (Ghraras, palm groves), the loss of plants and livestock, etc.

55. Agriculture in the Adrar region is practiced in three main forms ranked in order of importance: phoeniciculture, market gardening, lowland/barrage crops and rainfed crops. Cereal production, which is largely dependent on irregular rainfall, covers, during good years, only 30% of estimated needs. The types of grown grains are mainly sorghum and, to a lesser degree, wheat and barley. Agricultural production in Adrar is generally in deficit despite (i) the efforts made by the public authorities and the various technical and financial development partners; (ii) the existence of relatively significant potential for its development. Indeed, a series of constraints hinder the success of sustainable agricultural development initiatives in the Wilaya, the main ones being (i) the impact of climatic hazards (significant rainfall deficit and lowering of groundwater levels in particular); (ii) the inadequacy and degradation of water control infrastructure (dams and dykes); (iii) the isolation of some production areas; (iv) the high transportation cost, reducing the competitiveness of local agricultural products; (v) environmental degradation related to increasing desertification; (vi) the inadequacy of the workforce in the oases ; (vii) low resources allocated to producer empowerment; (viii) low capacity of socio-professional organizations; (ix) lack of an appropriate agricultural credit system; (x) lack of agricultural input and equipment supply systems; (xi) low operational capacity of the regional agricultural service and civil society; (xii) insufficient protection of crops against

animal rambling; (xiii) lack of modernization and innovation in agriculture practices coupled with the growing disaffection of rural areas.

56. The livestock breeding sub-sector in Adrar is essentially extensive due to the existence of rich pasture potential, but which remains dependent on structurally deficient rainfall. The main species are camels and goats with few sheep and almost no cattle.

57. As in the rest of the country, this sub-sector faces constraints in both the production and the processing and conservation segments, in addition to the lack of operational capacity of the main actors (the DR of livestock and livestock associations), without which it would be impossible to take charge of the activities.

58. Other constraints on the sector include: (i) the absence of annual vaccination of camel and goat/sheep livestock against the main diseases; (ii) the absence of an operational legal framework organizing the veterinary profession and the management of medicines and veterinary products; (iii) the low level of training and the lack of follow-up for the upgrading of veterinary auxiliaries; (iv) the absence of fodder crops and straw conditioning; (v) the lack of water points in potential grazing areas; (vi) the lack of human resources to implement activities; (vii) the lack of logistic means for monitoring and ownership of support by the populations; (viii) the low level of budgetary resources allocated to the operation of the livestock service; (ix) the low operational capacity of civil society actors.

59. Adrar has a multitude of natural depressions (lowlands and other places where runoff water is concentrated) and oases that, because of their morphology, have hydrological characteristics that make them areas of high agricultural potential and great biological diversity. However, desertification and silting threaten a large part of the territory of the Wilaya.

60. For reasons of cost and habits, charcoal is still a source of energy used in Adrar. Reforestation areas would represent a feasible option in forestry areas and oases areas to ensure their protection against erosion and other forms of land degradation.

61. The main constraints identified at this level are related to the following aspects: (i) strong anthropic pressure on scarce natural resources for domestic needs and agro-pastoral production; (ii) great modification of settlements, biotopes and ecosystems; (iii) wind erosion of sandy soils due to winds; (iv) silting that affects arable land and infrastructure; (v) degradation of land and soils ; (vi) weakness of operational capacity (financial, human and equipment) of the regional environmental service; (vii) pollution risks in connection with mining and oil exploration and their potential exploitation; (viii) weakness of the capacities of civil society actors; (ix) lack of information and of reliable data collection and lack of knowledge of environmental resources.

11. Climate trends in the Adrar region (impacts on agriculture, livestock, water resources and ecosystems)

62. The observed climate changes have exacerbated the negative effects of ecosystem degradation in Adrar. Since 1960, Mauritania's climate with a lense in the Adrar Region has become progressively drier and the desert region has expanded by 150,000 km2. Over the past five decades, several notable climatic trends have been observed: i) an increase in the frequency of intense rainfall events leading to flash floods; ii) a decrease in low intensity and long duration rainfall events leading to prolonged dry periods; iii) longer and more frequent droughts; and iv) an increase of 0.9°C in the mean annual temperature. These climate changes have had negative impacts on communities in Mauritania, particularly those living in the drier northern regions. For example, the drier conditions experienced in the 1970s and 1980s caused rural nomadic pastoralist communities to settle near oases or migrate to urban areas. As a result, meat production declined significantly throughout the country and pastoralists suffered considerable income losses.

63. In the Adrar region, as part of other West African countries specificities, the main activity sectors in the area are: agriculture and livestock breeding where agropastoral production systems (agriculture and livestock) are among the most vulnerable in the world due to their dependence on rainfall, intra- and inter-seasonal climate variability, droughts and floods that repeatedly affect crops and livestock, as well as poverty level in rural areas, which limits the adaptive capacity of agricultural and rural communities.

64. Agriculture in this area is expected to face major challenges, namely major crops yields decline. Changes in cropping seasons will also affect production systems and crop potential in some areas (Cook and Vizy, 2012). "Integrated crop-livestock" systems may also evolve toward the pre-eminence of extensive livestock production due to shorter rainy seasons and the occurrence and succession of low-fruiting agricultural seasons (Jones and Thornton, 2009; Thornton et al., 2010). In several agro-ecological transition zones, livestock could replace crops by 2050 (Jones and Thornton, 2009).

65. Temperature increases above 2°C are projected to negatively affect the performance of modern grain varieties, which are generally more sensitive to heat stress compared to traditional hardy varieties (Sultan et al., 2013). In the short term, a better understanding and management of climate change associated impacts and variability could significantly contribute to enhancing agriculture adaptive capacity (Funk et al., 2008). The observed climate changes have exacerbated the negative effects of ecosystem degradation in Adrar. Since 1960, Mauritania's climate with a lens in the Adrar region has become progressively drier and the desert region has expanded by 150,000 km2. Other climate changes that have been observed over the past five decades include: i) an increase in the frequency of intense rainfall events leading to flash floods; ii) a decrease in low intensity and long duration rainfall events leading to prolonged dry periods; iii) longer and more frequent droughts; and iv) an increase of 0.9°C in the mean annual temperature. These climate changes have had negative impacts on communities in Mauritania, particularly those living in the drier northern regions. For example, the drier conditions experienced in the 1970s and 1980s caused rural nomadic pastoralist communities to settle near oases or migrate to urban areas. As a result, meat production declined significantly throughout the country and pastoralists suffered considerable income losses.

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67. Agriculture in this area will face major challenges, namely major crops yields decline. Changes in cropping seasons will also affect production systems and crop potential in some areas (Cook and Vizy, 2012). "Integrated crop-livestock" systems may also evolve toward the pre-eminence of extensive livestock production due to shorter rainy seasons and the occurrence and succession of low-fruiting agricultural seasons (Jones and Thornton, 2009; Thornton et al., 2010). In several agro-ecological transition zones, livestock could replace crops by 2050 (Jones and Thornton, 2009).

12. Identification and description of the project area and target population

68. The project intervention areas are the 2 poles of Dhaya and Ziyara in the Moughataa of Atar Wilaya of Adrar as seen below.

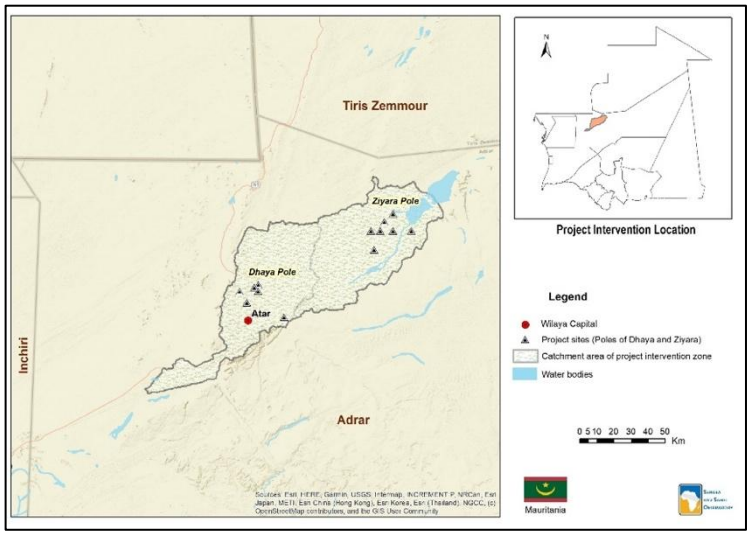

Figure 7: Project Intervention Areas

69. In the project of intervention areas of (Dhaya and Ziyara), the population of direct beneficiaries is estimated at 5,035 people, including 2,375 men and 2,660 women, distributed in the villages/localities as indicated in table 7 below.

Table 7: Direct beneficiaries of the Project

Moughataa	Locality	Estimated population		
		Men	Women	Total
Atar	Ziret Elhilla	320	350	670
	Dhaya	140	155	295
	Doubai	170	130	300
	Tezegraz	200	250	450
	Rkeina	180	210	390
	Taryouvet	100	175	275
	Ziyara	300	350	650
	Nguermellil	160	190	350
	Oueinet rvayeg	140	150	290
	Mintevaa	150	200	350
	Eguemoun	100	90	190
	Loudeyatt	165	140	305
	Jreiv	250	270	520
Total		**2375**	**2660**	**5035**

70. In terms of livelihoods in the project area, agriculture (food crops and phoeniciculture) and livestock are the main economic activities. The main crops grown are: sorghum, beans, watermelon, barley, wheat and palm. Yields are very low due to severe water stress. Livestock breeding is practiced in all project areas, but is more important in the Ziyara area, notably transhumant pastoralism.

71. The main characteristics of the farming systems in the project areas are low crop yields, prevalence of poverty and food insecurity, particularly in rural areas, and lack of pasture and watering points for livestock. More than 10,000 people living in rural areas in the project's implementation zone will benefit indirectly in terms of improved food and nutritional security and income levels.

72. Thus, by the end of the project, more than 15,000 people will have benefited from the strengthening of their technical and operational capacities. These are:

- More than 5,000 farmers and breeders (more than 50% are women);
- More than 24 producers' and breeders' organizations;
- More than 40 Local Water Management Committees (LWMCs)
- More than 40 technicians and supervisory staff from the ministries in charge of agriculture, livestock, environment and hydraulics;
- More than 4 research institutions specialized in issues related to the adaptation of agriculture and livestock to climate change.

B. Project Objectives:

1. General Objectives

73. The project is part of the Mauritanian government's environmental policy, a framework supported by numerous development partners. For over 20 years, SOS-OASIS has been contributing through targeted interventions using inclusive and contextually adapted methods. The project's strategy will be based on a participatory approach involving all stakeholders, especially women and youth in the targeted localities. Thus, the expected support will be aligned with the overall strategy defined by the Government and its partners in the promotion of restoration techniques and sustainable management of natural resources in order to contribute to the fight against climate change and its effect on the loss of scarce biodiversity resources in drylands.

74. The overall objective of the project is to strengthen the resilience of communities (women and youth) of Ziyara and Dhaya oases ecosystems, to climate change impacts through sustainable soil and water and management techniques as well as natural resources and related agrosystems.

2. Specific Objective

75. The specific objectives of the project are as follows:

- Ensure rational management of water resources in oases,
- Implement concrete adaptation actions to strengthen the resilience of oases and agro-pastoral ecosystems
- Implement concrete adaptation measures to diversify income sources and improve the living conditions of vulnerable women in the project area,
- Strengthen the institutional and technical capacities of the different actors, share knowledge and raise awareness among stakeholders at different levels.

76. To fulfil the above objectives, the project will have four components as follows:

77. Component *1: Improved water resources access and management for local communities:* This first component aims to improve water management techniques as well as water pumping systems. In response, an oases resources management process this will be implemented to set up and rehabilitate small hydraulic infrastructures, to valorise innovative techniques of water irrigation and to promote good water resource management practices. The activities herein will be implemented in cooperation with national structures such as the Ministries of Hydraulics, Agriculture and Environment, etc.

78. Component *2: Improved resilience of ecosystems and livelihoods to climate change and variability:* This component focuses on building the resilience of the oasian and agropastoral eco-systems to CC impacts and improving community adaptive capacities. This will be achieved through appropriate and concrete solutions in agriculture, pastoralism, and land Management fields, critical sectors to food security and livelihoods in the target regions.

79. Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth: This component aims to strengthen the livelihoods of communities in order to improve their resilience and adaptive capacities. The priority actions planned are related to the implementation of Income-Generating Activities (IGAs) and environmental benefits related to agricultural production, livestock, and agro-pastoral product processing units for the benefit of vulnerable communities, particularly women, youth and people living with disabilities.

80. Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels: This component aims at addressing the gaps in capacities regarding CC adaptation at various levels in the project target zone as well as providing means to ensure dissemination of lessons learned through capacity building, communication and training. It will also contribute to the creation of a solid information framework and network integrating CC adaptation planning into decision making structures.

81. The project aims to enhance the resilience of agro-pastoral oases ecosystems and local communities to climate change through the following Theory of Change (ToC), which illustrates the logical framework guiding these efforts. It presents a clear pathway linking project activities to expected outcomes and long-term impacts. The ToC emphasizes that improved water access, availability, and management, combined with inclusive adaptation actions, will strengthen ecosystem resilience and reduce community vulnerability.

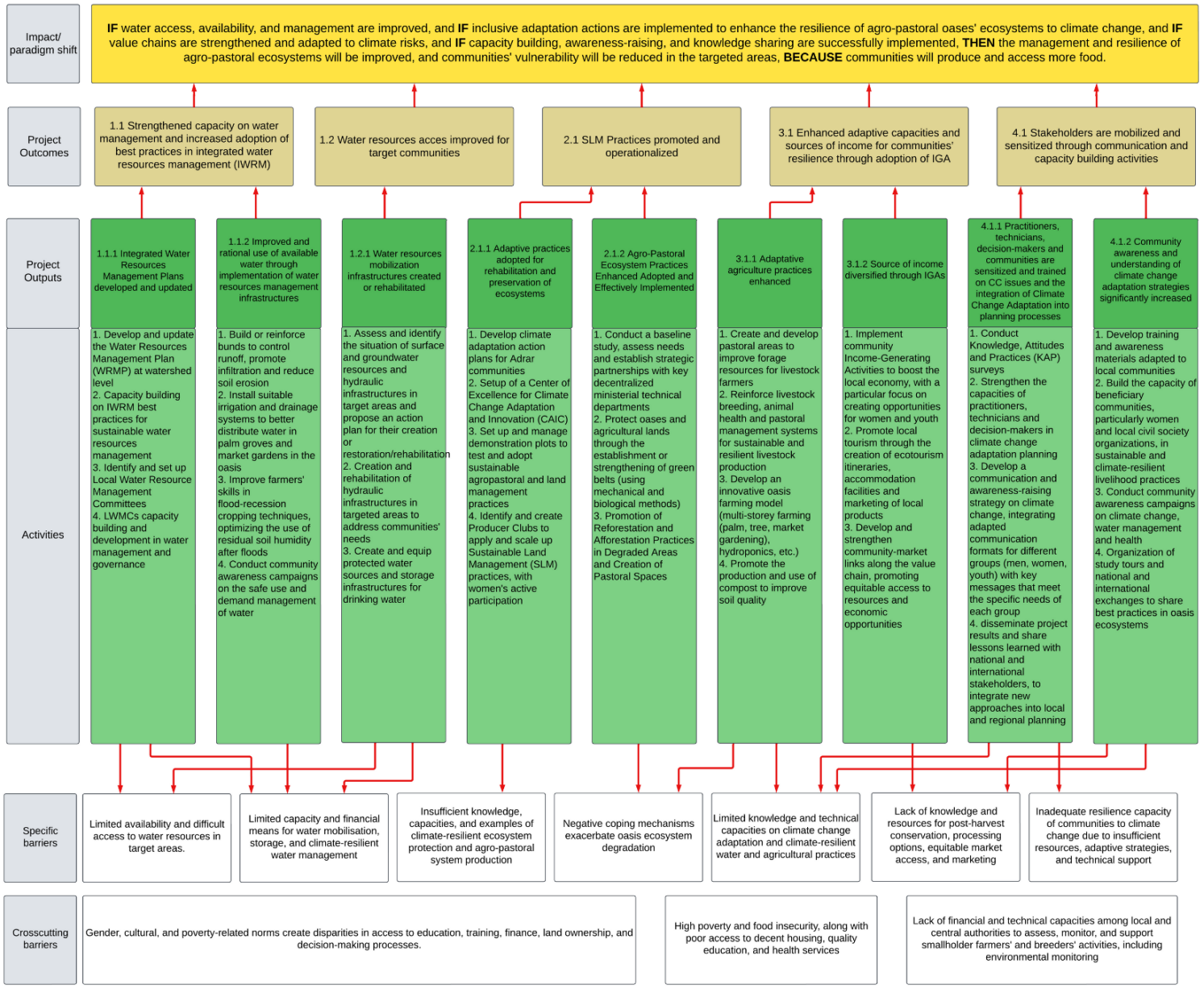

Figure 8: Project theory of change

C. Project Components and Financing

Table 8 : Project component financing table.

Project Components	Expected Outcomes	Expected Outputs	Amount (USD)
Component 1: Improved water resources access and management for local communities	Outcome 1.1: Strengthened capacity on water management and increased adoption of best practices in integrated water resources management (IWRM)	Output 1.1.1: Integrate Water Resource Management Plans developed or updated	400,000
		Output 1.1.2: Improved and rational use of available water through implementation of water resources management	1,026,350
	Outcome 1.2: Water resources access improved for target communities	Output 1.2.1: Water resources mobilization infrastructure created or rehabilitated	1,250,000
Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability	Outcome 2.1: SLM practices promoted and operationalized	Output 2.1.1: Adaptive practices adapted for rehabilitation and preservation of ecosystems	992,890
		Output 2.2.1: Agro-pastoral ecosystem practices enhanced adopted and effectively implemented	1,187,235
Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth	Outcome 3.1: Enhanced adaptative capacities and source of income for communities' resilience through adoption of IGA	Output 3.1.1: Adaptive agriculture practices enhanced	1,594,320
		Output 3.1.2 Source of income diversified through IGAs	1,247,750
Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels	Outcome 4.1: Stakeholders are mobilized and capacity built to CC impacts activities	Output 4.1.1: Practitioners, technicians, decision-makers and communities are sensitized and trained on CC issues and the integration of Climate Change Adaptation into planning processes	310,000
		Output 4.2.1: Community awareness and understanding of climate change adaptation strategies significantly increased	441,455
Activities budget (A)			8,450,000
Project Execution cost (B)			790,000
Total Project Cost (C)=A+B			9,240,000
Project Cycle Management Fee charged by the Implementing Entity			760,000
Amount of Financing Requested			**10,000,000**

D. Projected Calendar:

Table 9 : Projected calendar

Milestones	Expected Dates
Start of Project Implementation	June 2026
Mid-term Review	June 2028
Project/Programme Closing	May 2030
Terminal Evaluation	December 2031

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PART II PROJECT JUSTIFICATION

A. Description the project components

82. The project aims to strengthen the resilience of ecosystems and communities living in the **Ziyara** and **Dhaya** oases region, to the impacts of climate change through the improvement of water mobilization and management techniques as well as the implementation of concrete adaptation measures. For a result-based intervention, the project will be implemented following a participatory and inclusive community and inter-institutional approach which will integrate the knowledge management and set forth the appropriate channels to enable an active participation of all key stakeholders, including the project's beneficiaries during the entire cycle of implementation. The project will also strengthen the capacities and raise awareness of all the relevant stakeholders at different levels, for a more effective adaptation to CC.

83. The project proposes to adopt an Integrated Water Resources Management approach (IWRM), anchored in a watershed-based framework, to promote the coordinated development and management of water, land and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital oases ecosystem. This approach is based on the understanding that water resources are an integral component of the ecosystem, a natural resource, and a socio-economic asset. Its basis is that the many different uses of finite water resources are interdependent. High irrigation demands and polluted drainage flows from agriculture, for example, mean less freshwater for household use and wastewater could be reused carefully to avoid polluting water bodies and threatening the ecosystems. The watershed-based IWRM approaches which will be adopted and mainstreamed in the project include, mainly:

- Integrating domestic, agricultural, environmental and ecosystem needs into catchment scale water planning and aligning water infrastructure, demand management and quality considerations among the user groups.
- Encouraging inclusive and participatory processes involving all groups of water users.
- Emphasizing the role of women in water management and decision-making processes.
- Balancing economic efficiency, ecosystem sustainability, and social equity.

84. The project will also generate knowledge, document lessons learnt and best practices on climate resilience and enhancing sustainable land and water management of vulnerable communities as well as improving livelihoods in the face of climate threats. This will be further shared and adversely used to inform policy and serve as baselines for future similar /related interventions in the Adrar Region and holistically replicated to other regions.

85. The project is thus structured around four components. The planned activities as well as the expected outcomes and outputs for each of the components to achieve the project objectives are in line with the Adaptation Fund's strategic outcomes as presented in Part III. The section below outlines the project's components, outcomes, outputs and activities.

Component 1: Improved water resources access and management for local communities

86. Water is the most important natural resource in oases. In 2019, the access rate to drinking water in the Wilaya of Adrar was 73.7% (EPCV), while access to pastoral water infrastructure remains very limited, with only four pastoral water points identified. Access to water in the Wilaya of Adrar is particularly challenging due to several factors. These include scarce rainfall, the limited availability of surface water mobilization infrastructure, restricted access to groundwater resources, unfavourable hydrogeological conditions, and the absence of effective regional coordination among the various stakeholders (public, private, and community) involved in water management. Activities under this component will be carried out in collaboration with national institutions, particularly the Ministries of Hydraulics, Agriculture, and Environment, along with their regional directorates. Other partners include the National Water Distribution Company (SNDE) and the National Office for Rural Water Services (ONSER), which are responsible for water management in urban and rural areas.

87. This first component aims to strengthen the institutional framework, improve water management and access techniques, optimize pumping systems, and build local capacities. A water resource management process will be implemented to establish and rehabilitate small hydraulic infrastructures, promote innovative solar-powered irrigation techniques, and encourage good water management practices through the creation of community water management committees and the installation of drinking water storage facilities.

88. Consequently, improving water management, quality, availability, and accessibility is essential to enhance the resilience of local communities. This will be achieved by promoting and improving irrigation systems.

Outcome 1.1 Strengthened capacity on water management and increased adoption of best practices in integrated water resources management (IWRM)

89. The effective management of water resources and the implementation of adaptation measures require genuine commitment and involvement from various stakeholders at all levels, particularly at the local level. In Mauritania, specifically in the Adrar region, water resource management is fragmented and is marked by weak coordination among stakeholders, despite the priority given to water supply. Actors working in this sector often operate without coordination with the Ministry of Hydraulics or its regional department. This situation is exacerbated by the constant evolution of hydrological cycles and unpredictable rainfall, which increase the frequency and intensity of droughts—one of the most pronounced impacts of climate change in the region. This results in growing water shortages for local communities.

90. To address these complex and interrelated challenges, it is essential to strengthen the capacity of communities to promote sustainable water resource management and associated services. This includes improving water use management and enhancing governance mechanisms at various levels. Activities under this outcome will focus on establishing an integrated management framework for different sectors while strengthening the capacities of national, sub-national, and community-level actors. The goal is

to ensure sustainable and equitable access to water for all by promoting best practices in water resource management. This will involve the rational use of water and the implementation of sustainable mechanisms for its management.

91. This outcome will include USPs as identified in some of the activities as exampled in 1.1.2.1 and 1.1.2.2 which are related to water management.

Output 1.1.1: Integrated Water Resources Management Plans developed and updated

92. Water resource management in the Adrar region suffers from a lack of coordination among stakeholders, weak governance and inadequate technical and institutional capacities, which hinder the effective management of this vital resource. Furthermore, the region faces persistent challenges related to access to safe water, sanitation, and hygiene (WASH), with many communities lacking proper facilities and awareness of good hygiene practices. This output aims to strengthen integrated water and hygiene resource management by developing and updating the Water Resource Management Plan (WRMP) at the watershed level. The plans will focus on catchment protection, sustainable use of surface and groundwater, and infrastructure development and rehabilitation. It will also include capacity building, community training and awareness campaigns on both water resource management and hygiene practices, while supporting the creation and empowerment of Local Water Management Committees (LWMCs) and Hygiene Action Teams to ensure community participation and long-term sustainability.

93. The expected results of this output include improved coordination among institutions and local stakeholders, enhanced technical and managerial capacities for sustainable water resource management, and increased awareness and adoption of hygiene and sanitation practices. Together, these efforts will contribute to the efficient, equitable and sustainable use of water resources, reducing waterborne disease risks, and build resilience to climate impacts in the Adrar region. This output aligns with AF core indicators 1 and 2.

94. **Activity 1.1.1.1: Develop and update the Water Resources Management Plan (WRMP) at watershed level:** As part of this activity, a detailed Water Resource Management Plan for the watershed of the Atar region will be developed, along with the necessary documentation, building on the initial mapping of stakeholders involved in water resource management conducted during the project development process. This mapping will be further analysed to identify gaps and opportunities. The plan will outline strategies, policies, and actions aimed at optimizing the use and conservation of surface and groundwater resources in Adrar, with the goal of significantly improving water supply coverage for the region.

95. The plan will also serve as an overview and a foundation for a more detailed technical study, planned under **Activity 1.2.1.1**, to precisely assess the available resources. It will include measures such as sustainable resource extraction, aquifer recharge, pollution control, and the promotion of water-efficient practices. Furthermore, the plan will propose the development and implementation of community-based management systems for wells and water infrastructure. This activity aims to ensure the sustainable use and maintenance of water resources by establishing protocols and practices for the management of community wells and boreholes. This will involve regular monitoring, maintenance, and resource allocation. By implementing effective well management systems, the objective is to optimize water resource use and ensure their long-term sustainability for the benefit of the community.

96. The integrated approach will include regular reviews of the plan to ensure its adaptability to evolving water management needs. Additionally, the roles and responsibilities of each stakeholder involved in water resource management will be clearly defined to ensure optimal coordination and effective implementation of the proposed actions. Each identified action will be accompanied by cost estimates and alternative scenarios to facilitate decision-making by stakeholders. The plan will consider long-term climate forecasts to propose solutions adapted to anticipated changes, while taking into account the specificities of the national and local context, particularly investment capacity and infrastructure management. The process will require consultations with national, regional, and local institutions, as well as with local communities, farmers, water users, and other stakeholders, to ensure that their needs and concerns are addressed. To consolidate these inputs and build consensus, the draft plan will be presented and validated during a multi-stakeholder validation workshop, ensuring alignment, ownership, and endorsement from all relevant actors. Community participation will be essential to ensure the plan is pragmatic, effective, and fosters a sense of ownership and responsibility for water resource management at local level.

97. Finally, the WRMP will serve as a strategic guide to optimize the use and conservation of surface and groundwater resources while addressing major challenges such as water scarcity, pollution, and infrastructure needs. Regular review and updates of the plan will ensure its relevance and effectiveness over time, thus ensuring water security and long-term sustainable development in the oases of Adrar.

98. **Activity 1.1.1.2: Capacity building on IWRM best practices for sustainable water resources management:** This activity aims to enhance water resource management services by strengthening the capacities of stakeholders at the national, sub-national, and local levels. It is structured around several components, including training, technical assistance, and the implementation of institutional reforms. The objective is to modernize governance tools, increase stakeholder engagement, and establish more efficient monitoring systems tailored to current needs.
The key components of this activity include:

- **Institutional Reforms:** These reforms aim to redesign governance structures and improve frameworks for more efficient and equitable water resource management.
- **Capacity Building:** This component involves training institutions at various levels on modern water resource management practices.
- **Monitoring Systems and Associated Infrastructure:** Optimizing and modernizing monitoring systems is a key element to ensure rigorous, real-time control of water parameters (pH, salinity, temperature, pollutants).

This activity will also include training sessions for various stakeholders on the key elements of the WRMP developed under **Activity 1.1.1.1**. These trainings will emphasize the importance of adhering to the WRMP's guidelines, with a ripple effect expected among all stakeholders.

All these actions aim to promote sustainable water resource management, better anticipate and mitigate risks, and strengthen resilience to climate change challenges. They are also aligned with the implementation of the WRMP developed during the previous activity.

99. **Activity 1.1.1.3: Identify and set up Local Water Resource Management Committees:** The consultation process conducted in the project area revealed that most local communities are neither organized in associations nor equipped for water resource management, with minimal participation in this sector. To address this gap, this activity will focus on identifying target communities and establishing forty (40) Local Water Management Committees (LWMCs) that actively include women, with the aim of strengthening their institutional capacities and ensuring sustainable water resource management.

100. The primary objective is to structure and train these associations to enable them to ensure improved governance, develop management skills, and acquire technical expertise in water resource management and supply systems. These committees will serve as the main entities responsible for local water resource management, tasked with implementing sustainable management practices adapted to the needs of agropastoral and oases ecosystems. This activity will adopt a participatory approach, where LWMC members, selected by the communities themselves, will be responsible for the operation and maintenance of water supply infrastructure. This local management will ensure long-term sustainability and efficient resource use.

101. The project also plans to strengthen the capacities of LWMCs through training focused on decision-making, O&M, leadership development, financial management, and conflict resolution under **Activity 1.1.1.4**. Simultaneously, institutional reforms under **Activity 1.1.1.2** will facilitate the legal recognition of LWMCs by financial institutions and government bodies, ensuring their long-term viability. The leadership of LWMCs will be chosen based on their commitment and willingness to learn and implement sustainable water management practices. Additionally, qualified local agents will be recruited and trained to provide daily operational support to LWMCs, working in coordination with water department extension agents and local authorities.

102. The selection of intervention areas for each LWMC will be based on criteria such as the geographic proximity of communities and population density. This activity also aims to enhance community water resource management by ensuring the maintenance of water points and infrastructure while promoting hygiene practices tailored to the safe use of water. In cases where water point management committees already exist, they will be integrated, and their technical capacities strengthened. 40 LWMCs will be established and supported to eventually operate autonomously. In areas where committees already exist, they will be strengthened and integrated into this initiative.

103. **Activity 1.1.1.4: LWMCs capacity building and development in water management and governance:** The Executing Entity, in collaboration with water departments, will build the organizational capacities of the LWMCs, extension agents, and relevant committees. Topics covered will include group dynamics, meeting management, conflict resolution, and more. Training sessions will primarily take place during the first year of the project, followed by intensive support in the second year to consolidate the outcomes. In addition to enhancing managerial skills, the project will provide the LWMCs with the necessary logistical equipment for effective operational performance. This will include tools for monitoring and maintaining water infrastructure, as well as essential logistical means for their day-to-day functioning.

104. By the end of the two-year implementation period, the LWMCs are expected to operate autonomously, while maintaining continuous access to local government services and project staff support to ensure long-term sustainability. They will also receive technical training on the operation and maintenance (O&M) of water points, including equipment upkeep and the management of equitable water access during periods of scarcity.

105. The LWMCs will be connected to local government water structures, service providers, and spare parts suppliers to ensure continued access to government technical assistance and necessary equipment. In coordination with local development committees and producer organizations, each LWMC will implement a locally adapted user fee system, where water users will pay a small fee to cover the operation and maintenance costs of water infrastructure. This system will also allow the establishment of a financial reserve for unforeseen expenses.

106. In addition to systems for water production and consumption, the LWMCs will be trained in the establishment of watering points to support livestock. To promote the appropriate and sustainable use and storage of water from source to household level, the project will support two main initiatives: water committees and hygiene action teams. These teams will focus on community awareness regarding hygiene, integrating water demand management. They will be trained in best practices for safe water storage and usage, purification techniques, and effective methods for promoting good hygiene and sanitation behaviours.

107. The importance of responsible water demand management, particularly during periods of scarcity, will be emphasized to encourage the efficient use of available resources. By the end of implementation, the 40 LWMCs are expected to operate autonomously, ensuring sustainable and equitable local water governance.

Output 1.1.2: Improved and rational use of available water through implementation of water resources management infrastructures

108. The challenges of water resource management, particularly over extraction, along with the impacts of climate change, pose serious threats to the sustainability and viability of agricultural activities in the Adrar region. These issues have profound consequences on the development and overall well-being of the population, especially in an arid context. This output aims to increase access to water for irrigation and pastoral wells to support agricultural productivity and ensure food security. Efforts to conserve water resources in the oases will be based on an integrated management approach focused on reducing excessive water consumption.

109. The project will promote the adoption of new irrigation methods and infrastructure, such as solar-powered pumping systems, while improving the maintenance of drainage networks to minimize waste. Capacity-building sessions will also be organized for farmers, emphasizing the efficient management of irrigation networks.

110. **Activity 1.1.2.1 Build or reinforce bunds to control runoff, promote infiltration and reduce soil erosion:** As part of this activity, the project will undertake the construction and reinforcement of earth bunds in strategic areas to reduce soil erosion, encourage rainwater infiltration, and trap sediments rich in minerals and organic matter. These interventions will help limit soil loss due to runoff, while enhancing water retention in agro-pastoral and oases soils. 500 hectares of bunds will be built and/or modernized.

111. The actions will be carried out according to the following steps: • Identification and validation of sites: In coordination with local communities and farmers, the project will select areas where the bunds will have the most impact. The interventions will follow the guidelines of the Environmental and Social Management Plan (ESMP) to ensure their environmental and social sustainability. • Installation of bunds with an inclusive approach: During the construction of the bunds, the project will hire qualified local service providers and involve local stakeholders. These communities will be directly involved in the management and maintenance of the infrastructure, ensuring their long-term sustainability. • Capacity building and awareness raising: LWMCs members and local communities will receive technical training on bund management, including maintenance practices and sustainable resource use. Awareness sessions on the benefits of bunds, such as soil preservation, water harvesting, and crop damage reduction, will also be organized to encourage active involvement. • Rehabilitation of existing infrastructure: Where relevant, the project will seek to reactivate existing but non-functional water management infrastructure from previous initiatives. By rehabilitating these facilities, the project will optimize the use of locally available resources and maximize the impact of investments for the beneficiaries. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

112. **Activity 1.1.2.2 Install suitable irrigation and drainage systems to better distribute water in palm groves and market gardens in the oases:** This activity focuses on the installation of adapted irrigation and drainage systems, aimed at improving water management for palm groves and market gardens in oases areas. This will include the identification of the most viable sites for system installation, through a stakeholder engagement process. Local knowledge will play a key role in decision-making, and community members will be actively involved in the planning and implementation phases. This approach aims to ensure that the selected sites meet the agricultural and pastoral needs of the community and have the potential for effective implementation.

113. An expert advisory board will be consulted to identify the appropriate irrigation systems. The installation will be accompanied by an operation and maintenance (O&M) plan, supervised by the Project Management Unit (PMU). The installation of these systems will enable optimized water management for irrigating palm groves and market gardens, contributing to improved agricultural yields and strengthening crop resilience in the face of changing climatic conditions. Additionally, the rational use of water and drainage control will help preserve soil quality and prevent issues of over-irrigation, such as soil salinization. 30 kilometers of irrigation system channels and 20 kilometers of drainage systems will be installed. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

114. **Activity 1.1.2.3 Improve farmers' skills in flood-recession cropping techniques, optimizing the use of residual soil humidity after floods:** This activity involves organizing training sessions aimed at equipping farmers with the knowledge and skills required to optimize the use of residual soil moisture after floods, in order to maintain stable and sustainable agricultural production. The goal is to maximize the use of this moisture to reduce dependence on irrigation and ensure high yields even during periods of low water availability. Participants will receive training on various aspects of this management, covering techniques adapted to the post-flood period (such as planting during the recession, soil moisture conservation, crop rotation management, etc.) and soil management after floods. Exchange visits will also be encouraged, allowing farmers to observe practical practices in other regions. By developing these skills, the objective is to maximize the efficiency and effectiveness of utilizing residual moisture in the soil after floods, thereby ensuring more stable harvests and better water management.

115. **Activity 1.1.2.4 Conduct community awareness campaigns on the safe use and demand management of water:** The LWMCs will regularly organize awareness campaigns in all targeted communities to support interventions related to infrastructure. At least 20 awareness campaigns will be conducted. The awareness efforts, based on capacity building for the LWMCs, will focus on two main themes: (i) safe water use and hygiene; and (ii) water demand management. The first theme includes the dissemination of information on the correct use of water from different sources, along with messages on hygiene and sanitation. The second theme will help communities reduce their water consumption, contributing to water availability during dry and drought periods. The LWMCs will be supported by project staff in the development and implementation of the campaigns.

Outcome 1.2: Water resources access improved for target communities

116. Water resource mobilization is crucial for maintaining and strengthening the economic balance and survival of populations, especially in a region where key economic activities, such as agriculture and pastoralism, heavily depend on this resource, including for drinking water. With the increasing impacts of climate change, the severity of droughts is worsening, particularly affecting water resources, especially surface water. This exacerbates the frequency of water shortages and contributes to the growing scarcity of water, leading to a reduction in grazing areas and arable land. This phenomenon is further compounded by the lack and low presence of hydraulic infrastructure in the Wilaya.

117. To address these challenges, the project aims to improve water mobilization infrastructure by developing supply systems and storage capacities. In this context, an Integrated Water Resources Management (IWRM) approach will be implemented, including a process of gathering information on existing hydraulic infrastructure and methods of water mobilization and storage, as well as identifying the necessary infrastructure to develop or install. This approach aims to ensure equitable and sufficient access to water resources for local communities, thus strengthening their resilience to the effects of climate change.

Output 1.2.1: Water resources mobilization infrastructures created or rehabilitated

118. This output aims to address the issue of water availability and scarcity by enhancing capacities for water resource mobilization and storage, both for domestic and agricultural use. By improving access to quality water in sufficient quantities, this project will help secure the livelihoods of communities, improve their food security, and promote sustainable socio-economic development. Through the enhancement of water infrastructure and the adoption of innovative techniques, it will optimize the use of available water resources while ensuring sustainable management. In this output, special attention will be given to catchment protection, development and rehabilitation, as a key component to ensure sustainability and water availability, complementing investments in infrastructure and water use optimization.

119. **Activity 1.2.1.1: Assess and identify the situation of surface and groundwater resources and hydraulic infrastructures in target areas and propose an action plan for their creation or restoration/rehabilitation:** Feasibility studies, along with the consultation process carried out during the project's design phase, provided an initial understanding of the situation regarding water resources and associated infrastructure, whether used for domestic, agricultural, pastoral, or other purposes. In line with the WRMP developed in **Activity 1.1.1.1**, this activity will involve conducting in-depth assessments to determine the current state of surface and groundwater resources in the specific areas targeted in Adrar, as well as the condition of hydraulic infrastructure systems and storage networks. Through various methods, such as hydrological surveys, monitoring programs, and data analysis, the goal is to enhance understanding of the availability, quality, and sustainability of water sources, while developing a mapping of precipitation zones. This assessment will identify potential challenges and threats to water resources and provide perspectives for solutions, forming a basis for informed decision-making regarding water resource management in the area. Based on these results, an action plan will be developed to optimize water resource management in the region, while supporting the implementation of the priorities and recommendations of the WRMP to strengthen the resilience of local communities. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

120. **Activity 1.2.1.2: Creation and rehabilitation of hydraulic infrastructures in targeted areas to address communities' needs:** With the growing population and the desire to better harness the region's considerable agricultural potential, particularly through date palm cultivation, the existing hydraulic infrastructure proves insufficient to meet all the essential needs of local communities. Despite the presence of hydraulic systems such as boreholes, wells, and water tanks, more than 80% of the localities in the Wilaya of Adrar remain without adequate access to drinking water. Furthermore, infrastructure for watering livestock is limited to only three water points, creating excessive pressure on existing resources, causing tensions between users, and hindering economic development. This includes the construction or rehabilitation of at least 40 hydraulic infrastructures, as well as the establishment of at least 20 new water points for livestock.

121. This activity aims not only to strengthen access to water but also to improve the survival conditions of populations by increasing their resilience to climate and socio-economic challenges. Based on the results of the assessment conducted in **Activity 1.2.1.1**, the construction and rehabilitation of hydraulic structures adapted to domestic, agricultural, and pastoral needs will be carried out. This will include the installation of new boreholes, modernization of existing infrastructure, expansion and improvement of storage capacities, and the establishment of more efficient water distribution networks and mechanisms. Additionally, the creation of new water points for livestock watering will not only reduce tensions on existing infrastructure but also strengthen the ability of herders to cope with periods of drought. At least 20 new water points for livestock will be established. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

122. **Activity 1.2.1.3: Create and equip protected water sources and storage infrastructures for drinking water:** This activity aims to construct and equip new protected water sources, as well as install storage infrastructure such as drinking water tanks, to meet the water needs of local populations. Based on the assessments conducted in **Activity 1.2.1.1**, water collection systems, such as community wells, will be established or renovated to ensure reliable and efficient access to drinking water. It should be noted that the access rate to water at the departmental level is not as significant as that in rural areas, due to urban population growth exceeding all forecasts. Moreover, access to water in schools remains limited, as few schools are connected to a potable water supply network.

123. The water collection system models will be specifically designed to meet the unique needs of each community, while considering criteria such as accessibility, sustainability, and water quality. This activity will include the design and selection of the most appropriate technologies and materials to ensure proper construction techniques. Maintenance protocols will also be established to guarantee the long-term functionality of the infrastructure and equipment, with a focus on Operations and Maintenance (O&M). 100 protected water sources will be created/rehabilitated and 80 drinking water storage infrastructures will be installed. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability.

124. The project area experiences prolonged drought, land degradation, desertification and loss of agricultural biodiversity lowering the resilience of Adrar ecosystem making it more vulnerable to shocks of climate change. This situation represents a challenge to achieving food security in this marginal region. In addition to the natural constraints of high temperatures, wind erosion, silting and sand dune movement, these areas are subject to inappropriate and costly agricultural and water management practices, which lead to soil deterioration, reduced crop productivity and income livelihood. In addition, there is a lack of knowledge, technologies and experiences that correspond to the current situation.

125. In that purpose and to ensure its existence and capacity to sustain the increasing needs of the communities, component 2 focuses on building the resilience of the oases and agropastoral eco-systems to CC impacts and improving community adaptive capacities. This will be achieved through appropriate and concrete solutions in agriculture, pastoralism, and land Management fields, critical sectors to food security and livelihoods in the target regions.

Outcome 2.1: SLM Practices promoted and operationalized

126. Outcome 2.1 aims to propose and innovate new approaches to adapt to CC effects through the rehabilitation of the oases ecosystem in project area by promoting local agricultural practices adapted to the climate region and by preserving oases agro-system biodiversity. This will be through Sustainable land management (SLM) which opens up major opportunities for both the environment and the people who depend on it. SLM enables the communities to intensify existing land more sustainably, enhancing productivity without degrading land resources. It also ensures improved management of agro-ecosystem services across production systems, reduces pressure on natural resources and helps improve and sustain economic productivity and environmental sustainability. This outcome will include USPS as identified in some of the activities as exampled in 2.1.2.1.

Output 2.1.1 Adaptive practices adopted for rehabilitation and preservation of ecosystems.

127. The project will promote improved cropping practices and techniques for better soil management, leading to more fertile soils and better water retention capacity, contributing to increased resilience towards the effects of CC on agriculture. Trainings will be provided and demonstrated on the field schools established. The practices will include crop rotation, improved planning of planting seasons, multiplication of local threatened species and cultivated varieties and the introduction of intercropping techniques.

128. This output aims to propose and innovate new approaches in order to enhance the adaptive capacity of the local communities to these effects through the establishment of Climate Adaptation and Innovation Center (CAIC) and the promotion of agro-sylvo-pastoral practices.

129. **Activity 2.1.1.1: Develop climate adaptation action plans for Adrar communities:** This activity aims to closely collaborate with local stakeholders, particularly the communities of the Oases of Adrar, to develop an adaptation action plan specific to the various sectors affected by climate change. These plans will address key local challenges such as prolonged droughts, land degradation, water management, and the loss of agricultural biodiversity. The process will be participatory, supported by a consulting firm, and will involve the mobilization of key stakeholders, including community representatives, farmers, local authorities, youth, and women, to identify intervention priorities. The action plans will integrate catchment development and protection measures to mitigate erosion, enhance water availability, and rehabilitate degraded zones.

130. The plans developed will take into account traditional knowledge, local agricultural practices, and will align with government policies and strategies, while integrating innovations in sustainable natural resource management. The action plans will aim not only to strengthen the resilience of communities to the impacts of climate change but also to promote inclusive and sustainable development by supporting local economic initiatives such as oases agriculture and eco-tourism. Furthermore, monitoring and evaluation mechanisms will be established to adjust the strategies based on the results achieved and the evolving needs of the communities. These plans will thus serve as a roadmap for the implementation of targeted initiatives, integrating innovative approaches and nature-based solutions to ensure better adaptation to future climatic conditions and to strengthen food and water security in the region.

131. **Activity 2.1.1.2: Setup of a Center of Excellence for Climate Adaptation and Innovation Center (CAIC):** This activity aims to establish a Climate Adaptation and Innovation Center (CAIC) in Atar, which will serve as a central platform for knowledge exchange, training, and innovation in climate adaptation and resilience building. The center will play a key role in promoting innovative practices tailored to arid zones. The goals and mission of the CAIC include:

- ***Agricultural Development:*** The center will support the development of oases and arid agriculture through adapted techniques, such as dryland agriculture, sustainable water management, the introduction of drought-resistant crops, the use of optimized cropping systems for arid conditions, and the introduction of innovative agroecological practices.
- ***Natural Resource Conservation:*** It will contribute to the protection of natural resources, particularly soil and water management, while strengthening efforts to combat desertification, land degradation, and the sustainable management of rainwater.
- ***Capacity Building:*** The center will train technicians and specialists in dryland agriculture, pastoralism, and desertification control, in order to develop sustainable local expertise capable of adopting sustainable solutions while supporting regional economic development.
- ***Dissemination and Outreach:*** The center will play a role in technical guidance and the promotion of best agricultural practices among local communities by providing resources, workshops, and targeted technical support. Demonstration and experimental plots will be set up, under **Activity 2.1.1.3,** in beneficiary areas to bring information and innovations closer to local populations. The center will also facilitate access to information on climate policies and funding opportunities to support local adaptation initiatives.

132. The CAIC will train trainers from the various regions benefiting from the project, who will become local intermediaries within their communities. These trainers, supported by the center, will provide local training, enabling wide dissemination of climate adaptation strategies.

133. The establishment of the CAIC will be carried out in close consultation with centers from other countries with similar contexts, such as the Center for Arid Regions in Tunisia and the Desert Research Center in Egypt. Partnership agreements will be facilitated to enhance the exchange of experiences and best practices, as well as to benefit from the technical and scientific support of these institutions. The project will ensure that the center is equipped with the necessary resources for its operationalization and day-to-day management. The exact location of the center will be determined during the project launch phase, considering accessibility and proximity to key stakeholders.

134. **Activity 2.1.1.3: Set up and manage demonstration plots to test and adopt sustainable agropastoral and land management practices:** As part of this activity, 40 demonstration plots will be created to serve as relays for the Climate Adaptation

and Innovation Center (CAIC). These plots will play a key role in disseminating sustainable land management (SLM) practices, identified in the Community Adaptation Action Plans developed under **Activity 2.1.1.1**, in order to scale them up.

135. The implementation will involve close collaboration with local stakeholders, including community leaders and farmers, to select appropriate sites and gain their support. The necessary inputs (seeds, fertilizers, tools, etc.) will be acquired and managed under the supervision of the Project Management Unit (PMU) and implementing partners.

136. These plots will serve as practical learning laboratories where farmers can observe and adopt innovative techniques aimed at mitigating the effects of climate change and improving agricultural productivity. The demonstrations will include practices such as efficient water management, the use of drought-resistant crops, soil conservation, and pasture management to better mitigate the effects of climate change, improve soil quality, and optimize agricultural yields. Additionally, they will serve as models for communities to replicate these practices on their own land, thus strengthening the resilience and sustainability of local agricultural systems. At least 500 farmers will be trained. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

137. **Activity 2.1.1.4: Identify and create Producer Clubs to apply and scale up Sustainable Land Management (SLM) practices, with women's active participation:** This activity aims to identify, organize, and establish 40 Producer Groups (PGs) dedicated to the application of sustainable land management (SLM) techniques. The goal is to create platforms that allow farmers to collaborate, share their experiences, and receive training on the implementation of SLM practices adapted to their specific contexts.

138. The project will work closely with local communities to identify potential members and strengthen or establish PGs in target areas. The PGs will be strategically formed based on the climatic and agricultural challenges unique to each community. These groups will focus on practical solutions to problems such as soil erosion and improving soil fertility. The activity will include training sessions and workshops to assist in the structuring and proper functioning of the PGs. These training sessions will cover the governance of the groups as well as the specific SLM practices to be applied, ensuring that farmers have the skills and tools necessary to adopt sustainable practices. A rigorous selection criterion will be applied to ensure that the PGs are well-structured and operational in a sustainable and inclusive manner.

139. Each Producer Group will consist of 2 to 3 lead farmers, pioneers in adopting new practices. These leaders will play a vital role in providing support to other members and serving as contact points for Trainer of Trainers (ToTs) and agricultural extension agents. They will become local champions of SLM practices, ensuring the continuity and sustainability of these practices within the communities, even after the project ends.

140. The establishment of the Producer Groups will be inspired by the experience accumulated by the Regional Implementation Entity and the Executing Entity (EE), as well as the Producer Group Model (PGM) developed by the Food and Agriculture Organization of the United Nations (FAO). This model, successfully deployed in over 330 projects across Africa, Asia, and Latin America, aims to support the creation of smallholder networks and promote peer learning. All interventions within this activity will be coordinated with the CAIC and aligned with the demonstrations conducted at the demonstration plots, ensuring coherence and optimal integration of efforts to promote SLM.

141. As part of this activity, specific support will be provided to strengthen the Producer Clubs through the distribution of appropriate materials and equipment. This reinforcement aims to:

- Facilitate the effective adoption of SLM practices, by providing relevant tools and equipment (e.g. digging tools, composting bags, pH meters, etc.).
- Enhance the logistical capacity of the groups, particularly for organizing training sessions, managing inputs collectively, and maintaining demonstration plots.
- Encourage the active participation of women, by providing kits tailored to their specific roles and needs in land management.

This material support will help anchor the PGs in their communities, consolidate their role as local platforms for sustainable practices, and ensure the institutional sustainability of the initiatives supported by the project.

Output 2.1.2: Agro-Pastoral Ecosystem Practices Enhanced Adopted and Effectively Implemented

142. Sustainable Land Management (SLM) is essential for strengthening the resilience of agro-pastoral ecosystems and meeting the needs of local populations. This output aims to enhance environmental sustainability and land productivity by optimizing resource use. By promoting best agro-pastoral practices, the project will facilitate conservation and adaptation to climate change with the support of extension services. Activities will include a needs assessment to align interventions with local realities. The protection of oases and agricultural lands will be ensured through the establishment of green belts, which will act as barriers against sand encroachment and reduce sedimentation. Afforestation and reforestation efforts using local species will also help restore degraded areas and regenerate soils.

143. The valorisation of local SLM practices will be central to this output, along with the improvement of livestock practices and access to veterinary services. These measures aim to address challenges in livestock management, such as low genetic quality and reproductive management, which are exacerbated by harsh climatic conditions. Additionally, the creation of grazing reserves will support balanced natural resource management.

144. By involving local stakeholders from the outset, this project will contribute to food security and ecosystem resilience. Special attention will be given to training and engaging stakeholders in planning and decision-making processes to ensure the sustainable adoption of practices. The Climate Adaptation and Innovation Center (CAIC) will play a key role in disseminating best practices and advancing animal genetics, soil conservation, and sustainable resource management, thereby enhancing the effectiveness of agro-pastoral initiatives.

145. **Activity 2.1.2.1: Protect oases and agricultural lands through the establishment or strengthening of green belts (using mechanical and biological methods):** This activity aims to establish green belts using mechanical and biological methods to stabilize sand dune movement and the project aims to fix 400 Ha in its intervention area. These green belts serve as protective barriers against sand encroachment, safeguarding communities and agricultural lands from the adverse effects of desertification. The dune stabilization process is carried out in two successive steps: first, mechanical stabilization (fencing), followed by biological stabilization.

146. **Mechanical methods** will include, but are not limited to, constructing physical barriers and structures to prevent the movement of sand dunes, such as fences, windbreaks, or other engineered solutions designed to mitigate the impact of wind on sand mobility.

147. **Biological methods** focus on introducing specific vegetation, preferably native species, with robust root systems that anchor the soil, gradually reducing sand movement. Locally adapted species will be planted depending on the zones targeted for stabilization. For instance:
    - On highly mobile interior dunes, species such as *Parkinsonia aculeata, Balanites aegyptiaca, Nitraria retusa, Tamarix aphylla, Tamarix senegalensis, Atriplex halimus, Aristida pungens, and Zygophyllum spp*. will be introduced to permanently halt sand advancement.
    - For deflation zones, where sand is subject to erosion, plants like *Leptadenia pyrotechnica*, *Aristida pungens*, and *Panicum turgidum* will be prioritized.
    - In more stable areas, woody species such as *Acacia raddiana*, *Balanites aegyptiaca*, and *Euphorbia balsamifera* will be utilized.

148. By incorporating tree planting and other vegetation into agricultural fields and open spaces, biological methods not only stabilize dunes but also contribute to biodiversity conservation and the overall health of regional ecosystems. The selected biological methods will leverage the establishment of nurseries to supply viable tree species, which will also support the microclimate of Adrar. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

149. **Activity 2.1.2.2: Promotion of Reforestation and Afforestation Practices in Degraded Areas and Creation of Pastoral Spaces:** The initiative primarily aims to reforest and restore degraded areas using tree species adapted to local conditions, capable of withstanding climatic constraints and regenerating soils. These reforestation efforts will help curb erosion and revitalize the land by integrating species with strong soil-retention capabilities, essential for reducing vulnerability to recurrent droughts. These trees, planted across approximately 400 hectares of communal lands spread across 13 villages, will create sustainable forested areas, providing local communities with a source of wood while alleviating pressure on often overexploited existing natural resources.

150. In parallel with reforestation, this activity will protect certain pastoral areas to allow for their regeneration. These temporarily protected zones will serve as pastoral reserves during forage deficit periods, ensuring local and cost-effective access to quality grazing lands. This will address the needs of livestock herders, strengthen economic stability, and contribute to social cohesion during lean periods. The reforested and protected areas will be managed by village committees, which will enforce simple yet strict rules to ensure sustainable use. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth

151. Consultations with communities and field visits to potential project implementation areas have revealed significant youth migration in the Adrar region. Most men and young people have migrated to mining areas, leading to a progressive abandonment of activities, particularly agriculture, year after year. Many villages remain deserted for most of the year, with populations returning only during the harvest season.

152. To address this, this component aims to strengthen the resilience of communities in the Adrar oases by diversifying livelihoods through the implementation of Income-Generating Activities (IGAs) and adding value to production chains. In a context where the majority of communities live below the poverty line, it is crucial to address vulnerabilities, particularly those of women and youth, in the face of the impacts of climate change.

Outcome 3.1 Enhanced adaptive capacities and sources of income for communities' resilience through adoption of IGA

153. An innovative approach will be adopted to transform the traditional economic landscape by integrating new sources of income. This includes the development of non-agricultural activities such as handicrafts and eco-tourism, which provide additional economic opportunities. In parallel, the value-addition component aims to enhance local products and services, creating a positive ripple effect across various sectors while promoting sustainable and equitable development.

154. Training sessions on identified topics will be delivered by specialists, extension agents, and project staff, with a focus on empowering young people and women aspiring to develop small businesses. This holistic approach not only enhances the economic potential of the oases and increases community members' incomes but also fosters pride and ownership of cultural offerings while preserving the rich heritage of the Adrar oases.

155. By integrating traditional practices into new IGAs and value chains, economic development is aligned with cultural preservation, leading to a resilient community that draws strength from its roots while adapting to modern dynamics. Diversifying livelihoods through IGAs thus represents a visionary step toward building a more resilient, self-reliant, and sustainable community, redefining economic prosperity through environmental consciousness, cultural pride, and collective resilience.

Output 3.1.1 Adaptative agriculture practices enhanced

156. Oases are precious ecosystems where social and climatic vulnerability are ever-present. Even slight environmental changes can significantly impact water supply and local food security. In this context, traditional agricultural practices, often inadequate to cope with increasing pressures from drought and soil degradation, further expose rural populations to climate risks. The low resilience of these agricultural systems limits their capacity to adapt, endangering not only food production but also the sustainability of available natural resources.

157. Communities rely on inherited farming methods that are not always suited to current climatic conditions, while the lack of training and technical support hinders the adoption of innovative practices. Additionally, the poverty of farming households restricts investments in more resilient techniques, preventing farmers from diversifying their production and improving yields.

158. This output aims to strengthen adaptive capacities by promoting improved and climate-adapted agricultural practices, thereby supporting the productivity and sustainability of oases agricultural systems. By encouraging water management techniques, sustainable farming systems, and the rational use of natural resources, it contributes to more resilient agriculture capable of addressing climate challenges and safeguarding the livelihoods of local communities.

159. **Activity 3.1.1.1: Create and develop pastoral areas to improve forage resources for livestock farmers:** This activity aims to create and develop dedicated 400 pastoral spaces to improve the availability and quality of forage resources for livestock farmers, while contributing to the sustainability of pastoral systems in the Adrar region. The project will focus on the rehabilitation of degraded land and the management of grazing areas to maximize forage production, while preserving local ecosystems and meeting the growing needs of livestock farmers for feed resources under **Activity 2.1.2.1** and **Activity 2.1.2.2**

160. The proposed actions include the planting of forage species adapted to the region's arid climate, such as the introduction of *Pennisetum purpureum (Maralfalfa)*, a drought and heat-resistant grass. In addition to *Pennisetum purpureum*, other species like *Panicum maximum*, Forage cowpea, Angolan peas, and Dolichos beans can also be cultivated to diversify livestock feed and enhance the resilience of local pastoral systems to climate challenges. These forage crop initiatives aim to strengthen the sustainability of pastoral resources, improve animal feed quality, and ensure food security in areas with high pastoral pressure. To enhance the effectiveness of reforestation under **Activity 2.1.2.2** and increase forage production, the project will introduce half-moon (demi-lune) structures and zai pits within the half-moons. These soil and water conservation techniques will improve water retention, reduce runoff, and create favorable micro-environments for plant growth. These combined techniques will increase the survival rate of planted trees, enhance fodder availability, and contribute to land restoration at a lower cost. The project will also incorporate sustainable grazing management practices, such as rotational grazing, the establishment of rest areas to allow soil regeneration, and the prevention of overgrazing.

161. To ensure the sustainability of these pastoral areas, community-based management committees will be established. These committees, composed of representatives from local communities, will be responsible for overseeing the rational use of pastoral resources, enforcing grazing regulations, and maintaining the infrastructure put in place (such as water conservation structures and forage plantations). The selection of committee members will be carried out through a participatory and inclusive process, taking into account criteria such as community engagement, knowledge of local pastoral practices, and representation of different groups (herders, women, youth, etc.). Tailored training will also be provided to strengthen their capacities in governance, conflict management related to resource use, and monitoring and evaluation of activities. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

162. **Activity 3.1.1.2: Reinforce livestock breeding, animal health and pastoral management systems for sustainable and resilient livestock production:** Livestock farming, primarily of camelids, is a vital resource for the agricultural communities of the Adrar oases, ensuring food security and essential income. However, several challenges hinder animal productivity, including rising temperatures, genetic deficiencies, inadequate nutrition, insufficient reproductive management, and the high prevalence of diseases. This integrated activity aims to address these obstacles by introducing practical and tailored solutions to improve animal production. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy. Three priority areas are planned as part of this activity:

163. **Support for Access to Veterinary Services:** Improved access to veterinary care is crucial for ensuring livestock health and resilience. Two mobile veterinary units will be deployed and made fully operational to serve remote and isolated communities, offering on-site consultations and treatments. Additionally, the CAIC will provide capacity-building training for 10 extension agents and coordinate with government institutions to strengthen technical support. These veterinary services will be designed with sustainability and institutional integration in mind.

164. **Improvement of Pasture Management Systems and Livestock Practices:** Better management of pastures and improved livestock practices are essential to maintain productivity under increasingly challenging environmental conditions. Eight pasture management systems will be introduced and implemented, incorporating sustainable techniques such as rotational grazing, optimized herd mobility, and enhancement of local forage production. By diversifying and improving livestock feed sources, the intervention aims to reduce dependency on external inputs and enhance long-term resilience of pastoral systems.

165. **Activity 3.1.1.3: Develop an innovative oasis farming model (multi-storey farming (palm, tree, market gardening), hydroponics, etc.):** This activity aims to develop an innovative oasis farming model by combining several agricultural practices adapted to the region's climatic conditions while maximizing the use of available resources. The proposed model includes multi-layered farming, which combines date palm cultivation, fruit trees, and vegetable farming on the same plot. This technique makes use of vertical space, thus reducing pressure on the soil while diversifying agricultural production.

166. Furthermore, the introduction of techniques like hydroponics in the oases would optimize water usage by reducing evaporation and targeting the plant roots directly. This system would allow the cultivation of vegetables and herbs without requiring large amounts of soil, which is particularly suitable for arid areas where the land is often sterile or fragile.

167. The CAIC, as a key player, will play a central role in training farmers and local communities in new agricultural techniques, providing technical support, and facilitating access to resources necessary for the implementation of these innovative systems.

168. This farming model aims to be resilient in the face of climatic challenges, enhancing the productivity of oases while minimizing negative environmental impacts. It will also promote the diversification of income sources for local communities through more varied production and better utilization of available spaces. Moreover, this integrated system will support the conservation of natural resources by preserving water and soil, while increasing the profitability of agricultural operations. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

169. **Activity 3.1.1.4: Promote the production and use of compost to improve soil quality**: This activity aims to promote the use of compost to enrich soils in response to the extreme soil poverty in this region. Without proper intervention, soil degradation compromises their ability to be cultivated. Compost thus becomes a key element in reversing this trend, allowing for the restoration of fertility and the preservation of soils for sustainable farming. By valorising local by-products, such as those from date palms, as well as other residues available in the region, the project establishes a sustainable resource management approach by transforming them into compost. This compost, produced through techniques that combine traditional knowledge and innovation, helps improve soil quality, ensures moisture retention, therefor enhances the resilience of agricultural lands against the impacts of climate change.

170. As part of this activity, 8 community compost units will be created to facilitate local-scale compost production. These units will be supervised and managed by extension services, in partnership with the Climate Adaptation and Innovation Center (CAIC), to ensure effective technical guidance and the sustainability of this initiative.

171. Training sessions will be held at the CAIC as well as within local communities. These sessions will enable farmers to master all stages of compost production and application, from the collection of raw materials to the fabrication and optimized use of this organic amendment. The trained communities will also receive specific equipment, such as compost turners, mixers, and containers, to facilitate the preparation and management of compost. 8 community composting units will be established and made operational throughout the region. These units will serve as production hubs where local by-products will be processed into compost. Managed by local extension services in collaboration with the Communities, each unit will receive technical support to ensure efficiency and sustainability.

172. By integrating compost into agricultural practices, this initiative reduces reliance on chemical inputs, supports soil health, fosters biodiversity, and contributes to the sustainability of agricultural production in the Adrar oases. By restoring and enriching the soils, compost becomes an essential solution to ensure productive and environmentally-friendly agriculture in this region with fragile soils. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

Output 3.1.2 Source of income diversified through IGAs

173. Insufficient income and rural poverty hinder small-scale private household investments, thus limiting the diversification of livelihoods at the local level. Additionally, the growing lack of skills and capacities further paralyzes the economic development of the oases.

174. The multiple functions that oases agricultural ecosystems can offer remain largely untapped. Landscapes and agricultural products are not valorized, and key economic sectors—mainly food, tourism, and handicrafts—are underdeveloped. To reverse this trend, it is essential to attract new investments and promote profitable activities through skills enhancement.

175. The most important aspect of this diversification will come from IGAs, which will focus on activities such as vegetable farming, fishing, livestock raising, non-timber forest product processing, ecotourism, and beekeeping. These initiatives will specifically target women and youth, providing them with economic opportunities while also strengthening their resilience to climate challenges.

176. To enable beneficiaries to engage in IGAs in a sustainable and holistic way, support will be provided in the selection, planning, and management of these activities. Potential IGAs will be chosen from those where beneficiaries (women and youth) can not only utilize but also enhance the skills they already possess. The focus will be on orienting these activities toward providing commercial services, moving beyond a welfare-based approach. Communities will also be supported through the provision of inputs and simple tools adapted to the identified IGAs, such as value-added oases products, handicrafts, and beekeeping. This integrated approach will promote the development of a dynamic economic ecosystem while strengthening the resilience of communities against the impacts of climate change.

177. **Activity 3.1.2.1: Implement community Income-Generating Activities to boost the local economy, with a particular focus on creating opportunities for women and youth:** This activity aims to strengthen the economic resilience of local communities through the implementation of diversified IGAs, tailored to local contexts. Community consultations revealed a strong and urgent demand for sustainable income sources, particularly among women and youth, who are often marginalized from mainstream economic channels.

178. Communities expressed interest in activities that capitalize on their local resources and cultural assets. These include the transformation of oases products, camel milk valorisation, small ruminant breeding, extraction of essential oils, traditional handicrafts, beekeeping, and innovative techniques such as hydroponic farming. Hydroponics, in particular, offers a high-potential solution in arid environments by enabling food production with minimal water use directly contributing to food security and economic diversification.

179. To operationalize this intervention, the project will begin with a comprehensive market assessment to identify viable IGA opportunities in the target areas. This assessment will analyse market trends, existing competition, pricing structures, and consumer preferences at both local and national levels, with the aim of identifying the most profitable and sustainable sectors. Following the market analysis, tailored support will be provided to community groups. Each group will receive assistance in developing detailed business plans covering all aspects required for launching and sustaining successful IGAs. These business plans will include: business vision and objectives, product positioning, marketing strategies, production processes, value chain analysis, financial forecasts, and risk mitigation strategies. 80 IGAs will be established.

180. Capacity-building will be a cornerstone of the approach. Community members will benefit from training in entrepreneurship, business development, financial literacy, and technical skills specific to their chosen activities. This training will ensure that participants are equipped not only to launch but also to grow their ventures in a competitive and climate-resilient manner.

181. In parallel, the project will promote short-cycle livestock production as a key adaptation strategy. Given the limited natural resources and harsh climatic conditions, short-cycle species such as poultry and small ruminants offer a faster return on investment and can contribute significantly to both nutrition and income. Breeding units will be established to identify and promote locally adapted breeds, and targeted training will be provided in breeding and animal husbandry, in collaboration with relevant technical ministries.

182. To support the sustainability and scalability of these activities, the project will also supply essential equipment to community groups. This includes beehives for apiculture, materials for artisanal production, and hydroponic farming systems. These investments will provide immediate means of production and reinforce the capacity of local families to engage in new livelihood pathways.

183. Ultimately, this activity contributes to broader development goals by fostering inclusive economic growth, enhancing food security, and building the adaptive capacity of vulnerable populations. It creates tangible opportunities for empowerment, particularly for women and youth, while anchoring interventions in environmentally sustainable and socially cohesive models of local development. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

184. **Activity 3.1.2.2: Promote local tourism through the creation of ecotourism itineraries, accommodation facilities and marketing of local products:** This activity is designed to promote local and sustainable tourism by offering community members the opportunity to engage actively in ecotourism projects. By highlighting the rich natural, cultural, and agricultural heritage of oases regions, the initiative aims not only to diversify income sources but also to support environmental conservation and cultural preservation.

185. During community consultations, this activity emerged as the top priority, particularly among young people. Many youths expressed a strong desire to organize themselves into groups to establish community guesthouses and other tourism-related ventures. They acknowledged the significant tourism potential of the region, especially during the "Guetna" season the annual date harvest held in July and August which is both a cultural highlight and a potential tourism magnet.

186. Beyond its economic and cultural value, this initiative also addresses a critical social and demographic challenge: the increasing out-migration of young people from oases areas to other regions, often in search of informal and environmentally destructive livelihoods such as artisanal gold mining. By providing viable local employment opportunities, particularly in a sector with long-term potential like ecotourism, this activity serves as a practical solution to stabilize and retain local populations. It promotes a form of adaptation that is both sustainable and rooted in local identity, helping to strengthen the socio-economic fabric of oases communities.

187. The project will focus on designing ecotourism circuits that allow visitors to explore the natural beauty of the oases, engage with local agricultural practices, and take part in cultural traditions. These experiences will be supported by the development of sustainable, community-run accommodations, adapted to the local context using eco-friendly construction techniques and traditional architectural styles.

188. To ensure the success and sustainability of these initiatives, the project will include comprehensive training for local stakeholders in, hospitality and guesthouse management, marketing of local crafts and agricultural products, tourism entrepreneurship and customer service, environmental education and storytelling for tour guiding, etc.

189. This approach will empower youth and women, enhance economic self-reliance, and foster a deeper understanding of the value of local ecosystems and heritage.

190. By anchoring tourism in community-led practices and local traditions, the project will:

- Generate stable income sources and reduce economic vulnerability
- Contribute to youth employment and discourage risky migration
- Preserve cultural identity and ecological integrity
- Stimulate the local economy while encouraging environmental stewardship

191. Ultimately, the initiative represents a holistic, locally anchored adaptation strategy that supports the sustainable development of oases regions, ensuring they remain vibrant, resilient, and attractive places to live, especially for the younger generations. This activity will be executed through Unidentified Sub-Projects (USPs) to be defined during project implementation, in line with AF's USP policy.

192. **Activity 3.1.2.3: Develop and strengthen community-market links along the value chain, promoting equitable access to resources and economic opportunities**: This activity aims to strengthen the links between rural communities and local, regional, and international markets by improving connectivity throughout the agricultural and natural resource value chains. It will focus on creating mechanisms that allow local producers to access lucrative markets, while ensuring that both women and men have

equitable access to resources and economic opportunities. The main goal is to develop partnerships between communities and private sector actors, particularly buyers, traders, processors, and financial service providers. Decisions related to Public-Private Partnerships (PPPs) will be made in a participatory manner, involving community representatives, farmers, and local businesses to address the needs and interests of all parties. The project will support this initiative by organizing regular meetings between producers and private sector actors, offering networking services, facilitating negotiations, and establishing contracts or agreements that are beneficial for all, while ensuring the protection of farmers' rights. Consultations with agricultural unions and local agricultural departments will also be integrated to ensure a harmonized and sustainable approach.

193. In Mauritania, especially in rural areas, small-scale trade is a common practice. The project foresees two main sub-activities to support this sector: (i) organizing meetings between local agricultural stakeholders (local governments, community representatives, private sector) to encourage the emergence of new initiatives, and (ii) facilitating the creation of PPPs between producers, small traders, input suppliers, and buyers to strengthen farmers' groups and commercial ties.

194. Recent value chain and market analyses in the Adrar region indicate significant tourism potential. In addition to agricultural products, tourists are interested in products generated through climate-resilient IGAs, such as honey and dates. Farmers, organized into groups, will be better prepared to meet this growing demand and will be able to negotiate competitive prices and advantageous contracts with local businesses. The project will facilitate these collaborations by providing a participatory framework to jointly decide which products to bring to the market.

Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels

195. Component 4 aims at addressing the gaps in capacities regarding CC adaptation at various levels in the project target zone. Moreover, it will provide means to ensure dissemination of lessons learned through capacity building, communication and training. This will further contribute to the creation of a solid information framework and network that integrates adaptation to climate change. Capacity building will enable the development and transfer of skills and abilities that will enable the communities to take decisions and actions for themselves, while the lessons learned and best practices that will come from the implementation of this project will be an essential aspect and deserve to be documented and disseminated combine policy-making and public engagement. This fourth component is structure under two outputs where the first one is addressing the capacity building needs and the second one will focus on disseminating the lessons learnt and sharing the best practices.

Outcome 4.1 Stakeholders are mobilized and sensitized through communication and capacity building activities

196. From the start of the project, a knowledge management strategy will be implemented to leverage and capitalize on existing climate-related information. This strategy will facilitate the exchange of information between stakeholders and ensure effective dissemination of project results. Customized knowledge materials will be developed and distributed to meet the specific needs and requirements of various stakeholders. Additionally, opportunities for knowledge sharing, interaction, and the exchange of best practices will be organized during regional, national, and international events such as conferences, symposia, workshops, and meetings.

197. In the targeted areas, it is essential to better understand the local impacts of climate change and establish robust adaptation solutions. Stakeholder participation is a key element to ensure accountability and the quality of decision-making in adaptation efforts.

198. Online platforms and sharing networks will be created, providing stakeholders with ongoing access to resources and real-time feedback. A participatory monitoring and evaluation process will also be implemented, enabling local actors to track the effectiveness and impact of actions. Technical capacity-building programs and leadership development within communities will be prioritized, particularly for youth and women. These initiatives will help build a strong foundation of knowledge and skills for sustainable and inclusive adaptation actions.

Output 4.1.1 Practitioners, technicians, decision-makers and communities are sensitized and trained on CC issues and the integration of Climate Change Adaptation into planning processes

199. A communication strategy will be adopted to strengthen capacities, facilitate the exchange of information among stakeholders, and disseminate project results. Educational materials will be developed, distributed, and made available to meet the specific needs and requests of various stakeholder groups.

200. Thematic training sessions, workshops, and awareness meetings will be organized for the relevant actors (technicians, decision-makers, etc.) to promote the integration of climate change challenges into planning processes. In this context, a capacity-building plan will be developed, including plans and modules for all training and skill development sessions related to project activities, including agriculture, small animal husbandry, water management, etc.

201. Climate change introduces increased uncertainty into development trajectories, requiring more flexibility than conventional practices. Stakeholder engagement remains a key leverage point to ensure ownership and the quality of decision-making in adaptation efforts. This transfer of knowledge aims to enhance the long-term sustainability and ownership of climate change adaptation interventions. This output aligns with AF core indicators 1 and 5.

202. **Activity 4.1.1.1: Conduct an assessment of project intervention sites, capacities and stakeholder practices to inform climate adaptation interventions:** This activity involves conducting a comprehensive assessment of assets, institutional and technical capacities, and community-level knowledge, attitudes, and practices (KAP) across the project's intervention sites. The goal is to ensure that the proposed adaptation actions are contextually appropriate, responsive to stakeholder needs, and aligned with

local realities. The assessment will include two KAP surveys and a Capacity Needs Assessment (CNA) targeting all relevant stakeholders at the community, local government, and national levels.

203. The KAP surveys will provide a detailed understanding of stakeholders' awareness, values, behaviors, and perceptions regarding climate change risks and adaptation strategies. These surveys will also identify behavioral enablers and barriers to the adoption of climate-resilient practices. They will use both quantitative and qualitative methods, such as structured questionnaires and focus group discussions, and will be guided by a predefined set of behavioral change variables. Concurrently, the CNA will highlight critical training needs, institutional gaps, and resource constraints to support capacity-building strategies across stakeholder levels.

204. To ensure coherence and efficiency, this assessment will be conducted in synergy with the project's baseline study led by a consultant recruited by OSS. As both efforts target the same geographical areas and stakeholders, they will be implemented simultaneously, promoting harmonized data collection and reducing duplication.

205. The Monitoring and Evaluation (M&E) expert from the Project Management Unit (PMU) will oversee the entire process, including the design of survey tools, training of enumerators, data collection, processing, storage, and the preparation of analytical reports. The insights gained will serve as a robust foundation to measure project progress, inform adaptive management, and refine interventions in response to identified needs.

206. Furthermore, Memorandums of Understanding (MoUs) will be established with partners from the public and private sectors, as well as civil society organizations (CSOs), to formalize collaboration throughout project execution. This multi-stakeholder engagement strategy is expected to enhance ownership and ensure the sustainability of the project's outcomes and impacts.

207. **Activity 4.1.1.2: Strengthen the capacities of practitioners, technicians, and decision-makers in climate adaptation planning, including support for local communities and institutional capacity-building of S.O.S-OASIS** This activity is designed to enhance the capacities of practitioners, technicians, and policymakers involved in climate change adaptation planning, with a particular emphasis on extension service agents. The core objective is to deliver targeted training and workshops that build the knowledge and skills of these actors, enabling them to more effectively support local communities in implementing concrete adaptation measures.

208. A key aspect of this activity involves reinforcing the capacities of the NGO S.O.S-OASIS, the project's executing entity. A comprehensive institutional assessment conducted during the project development phase revealed several areas needing improvement in fiduciary, administrative, and technical functions. Strengthening these domains is vital to ensure the NGO can align with the standards and compliance requirements of international financing institutions, particularly in relation to financial management, procurement processes, and internal control systems.

209. To address these needs, a tailored capacity-building plan will be rolled out through the support of OSS as requested by the MEDD. It will include training modules on fiduciary and operational management, alongside the deployment of financial and procurement systems that meet international best practices. Furthermore, a monitoring and evaluation (M&E) framework will be established to support effective implementation and ensure accountability.

210. In line with the recommendations from Mauritanian national authorities, this institutional strengthening will enable S.O.S-OASIS to progressively develop the systems and competencies required for sustained engagement in climate and development programming. Beyond the immediate goals of the PRAGOA project, this effort is intended to build long-term capacities and position the NGO as a key actor in future climate adaptation and sustainable development initiatives in the country.

211. **Activity 4.1.1.3: Develop a communication and awareness-raising strategy on climate change, integrating adapted communication formats for different groups (men, women, youth) with key messages that meet the specific needs of each group:** This activity involves designing and developing an inclusive, targeted, and effective communication strategy for all social groups within local communities. The strategy is accompanied by an action plan and support materials such as brochures, posters, and leaflets. The communication strategy will define key messages on climate change adaptation and ways to disseminate them to stakeholders, while considering cultural, economic, and gender differences in the development of specific messages and materials, ensuring broad awareness and understanding. These visual materials will reinforce the messages and encourage local stakeholders' engagement in the adaptation process. Effective communication is crucial to foster stakeholder engagement, promote ownership, and facilitate informed decision-making on climate change adaptation.

212. **Activity 4.1.1.4: disseminate project results and share lessons learned with national and international stakeholders, to integrate new approaches into local and regional planning:** This activity focuses on sharing the results and lessons learned from the project with a wide audience, including national and international stakeholders. It includes disseminating the results through various channels and platforms, such as conferences, workshops, and publications, with the aim of integrating new climate change adaptation approaches into local and regional planning processes.

Output 4.1.2: Community awareness and understanding of climate change adaptation strategies significantly increased

213. This output aims to strengthen the awareness and capacity of communities regarding climate change adaptation. The proposed activities will help establish a solid information framework that integrates climate change adaptation. It is essential that communities are informed about risks, gain knowledge of available options, and become empowered to take action. Effective public engagement is therefore crucial for the success of climate change adaptation planning.

214. **Activity 4.1.2.1: Develop training and awareness materials adapted to local communities:** Based on the need's analysis in terms of capacity building, the project document, and existing data, a detailed training plan will be developed. This plan will include

modules for all training and capacity-building activities related to the project, particularly in the areas of agricultural cultivation, small animal husbandry, and water management. The objective is to provide effective educational tools that enable a better understanding of climate change challenges and natural resource management, while also promoting the appropriation of knowledge by community members.

215. **Activity 4.1.2.2: Build the capacity of beneficiary communities, particularly women and local civil society organizations, in sustainable and climate-resilient livelihood practices:** The community-led resilient planning approach ensures that vulnerable communities actively participate in creating solutions tailored to their specific challenges. This project includes comprehensive training sessions for community members, particularly women, CSOs, and stakeholders, on climate resilience, enabling them to better cope with the impacts of climate change and fostering stronger, more adaptive communities.

216. **Activity 4.1.2.3: Conduct community awareness campaigns on climate change, water management and health:** The project aims to enhance knowledge about the impacts of climate change on human and animal health, as well as the degradation of water resources, to foster more climate-resilient behaviours. Building on assessments and the KAP survey, community members will gain a better understanding of how climate change affects health and the actions they can take to mitigate these impacts. More climate-resilient practices will be adopted, leading to improved health outcomes and an increased community capacity to address the health impacts of climate change. In the framework of community-based awareness activities, the project will proactively engage local press and media outlets, including radio, television, print media, and digital platforms to amplify key messages related to climate change, sustainable water management, and public and animal health. This outreach strategy will ensure that information reaches audiences beyond direct beneficiaries, contributes to informed public debate, and promotes greater accountability and policy attention to climate risks.

217. **Activity 4.1.2.4: Organization of study tours and national and international exchanges to share best practices in oases ecosystems:** To promote climate change adaptation and sustainable development in oases areas, this activity will focus on organizing study and exchange visits for community representatives, local leaders, and actors from farmers' organizations. These exchanges, conducted at national and international levels, will enable participants to discover innovative and proven practices for sustainable natural resource management, economic activity diversification, and the resilience of oases ecosystems.

218. The study visits will include tours of benchmark sites where successful practices in community-based ecotourism, sustainable agriculture, water management are implemented. Participants will have the opportunity to meet with experts, farmers, artisans, and project managers to exchange insights on techniques, challenges, and applied solutions. Reflection and knowledge-sharing sessions will be organized following each visit to document best practices and adapt the learnings to local contexts. These exchanges will strengthen the capacities of local actors, inspire similar initiatives, and encourage the adoption of sustainable practices in oases areas.

B. Economic, Social and Environmental Benefits

219. The PRAGOA project will generate, through its' diverse range of planned project activities, significant economic, social, and environmental benefits at both local and national levels, with a strong emphasis on empowering vulnerable communities and promoting gender inclusivity throughout the project's implementation.

220. ***Economic co-benefits:*** The project will directly contribute to improving the populations' livelihood through innovative approaches and measures and income-generating activities. In fact, component 3 will directly contribute to enhance livelihoods of population in the targeted areas leading to the diversification of women's income through the development of income-generating activities and the promotion of alternative productions (market gardening, poultry farming, handicrafts and valorisation of agro-pastoral by-products, etc.). Component 2 will contribute to setting up new innovative approaches to adapt to the effects of CC through sustainable land management (SLM) enabling communities to exploit existing land more sustainably and improve the productivity of crops without degrading land resources. It will also help to ensure better management of agro-ecosystem services in all production systems, reduce pressure on natural resources and contribute to improving and maintaining economic productivity and environmental sustainability. This will be facilitated by better access to water for irrigation and better management of water resources under component 1. The project, under component 4 will enhance awareness on CC, which will lead to better informed decision-making for production and for the protection of assets. Enhanced planning capacities, and the development of local adaptation plans will allow a better livelihood resilience. Additionally, the active participation of farmers and communities in vulnerability assessments and adaptation planning will strengthen the cohesion of communities and the coordination and integration between stakeholders.

221. ***Social co-benefits:*** The number of persons benefiting from the project in the region is estimated at 15,000. Capacity building activities will improve the skills, knowledge and operational capacities of about 5,000 farmers and breeders (50% women). These efforts will strengthen community organizations by enhancing their technical and organizational capacities, facilitating the institutionalization of local groups, and fostering collaboration, learning, and social skills among community members. The project will set up local water resource management committees to ensure sustainable use and equitable distribution of resources. Through awareness-raising, training and education initiatives, the project will change the perceptions of local communities and other actors on how their actions can improve livelihoods, while also making oases activities economically attractive. By empowering communities to actively participate in the design and implementation of climate change adaptation measures, and by tailoring these activities to align with local needs, cultural contexts, and traditions, the project promotes greater acceptance and ownership of solutions within the community. A major benefit of this project will be the added social stability that it will bring to the region. The restoration of the oases' landscapes will be vital for supplementing governments' budgets and contributing to food security, hence reducing the burden on women as well. By equipping communities with the tools and knowledge to address climate challenges, the project fosters resilience at both the household and community levels, while promoting social cohesion, economic viability, and sustainability.

222. ***Gender-sensitive development impact****:* Based on the gender assessment and action plan (Annex 3), it has been recognized that beyond structural social inequalities, women in Mauritania play a fundamental role in the education of children and in socio-economic development. They also act as key relays of information within households, helping to shape attitudes and practices that support community wellbeing and resilience.

223. In the specific intervention zones of the project, women's contribution is even more significant. Due to the frequent and prolonged absence of men, who often migrate or engage in seasonal work outside the region, women are primarily responsible for agricultural production and the majority of livelihood activities throughout the year. This central role positions them as both the most active agents of change and the most exposed to the effects of climate change.

224. Recognizing this, the integration of gender considerations in the implementation of project activities is not only essential, but strategic. Ensuring that gender is mainstreamed across all components will be key to effectively strengthening household and community resilience. In response to one of the main recommendations made during the approval of the concept note, a comprehensive gender assessment, including a Gender Action Plan (GAP), was undertaken during the full proposal stage. This assessment explored gender-specific vulnerabilities and opportunities and provided concrete, actionable strategies to ensure equitable participation and benefit-sharing.

225. The project will implement capacity-building and awareness-raising activities on climate risk adaptation practices that are inclusive of both men and women, as well as marginalized and vulnerable groups. The proposed solutions will not only address the impacts of climate change but will also help consolidate and operationalize an enabling and transformative gender-responsive environment that reduces differentiated vulnerabilities especially those faced by women, girls, and children.

226. Specifically, the project will contribute to:

- Promoting economic opportunities for women, including improved access to employment, productive assets, financial services, and other key resources;
- Enhancing women's voice, autonomy, and representation through:
- Leadership development and support for women's participation in local decision-making bodies and cooperatives;
- Advocacy campaigns focused on gender equality and the rights of women and girls, aimed at changing harmful norms and promoting inclusive governance.

227. This gender-responsive approach will be embedded in all project components to ensure that women are not only beneficiaries, but also active drivers of climate adaptation efforts. By recognizing and reinforcing their existing roles while addressing gender-based disparities, the project will contribute to more equitable, sustainable, and resilient development outcomes.

228. ***Environmental co-benefits:*** (i)Sustainable management of water resources - This project will entail the implementation of adaptation measures such as; Disseminating and adopting modern, water-saving irrigation techniques, rehabilitation and proposal for improvements to traditional irrigation systems, highlighting relevant traditional practices in terms of water management and saving, preserving environmental water resources and ensuring water availability for irrigation, drinking, and livestock. (ii)Improvement or conservation of soil quality - Within the project activities, soil conservation and restoration are major actions to be undertaken for the enhancement of the oases ecosystem. Measures will be taken to reduce silting up and erosion through soil recovery techniques as well as community-based dunes stabilization. In addition, actions aiming at regenerating the oases cover by means of the reintroduction of local, indigenous plants, and afforestation with local species, which are more resilient to climate change, are planned in the framework of component 2, and maintaining agricultural land fertility through optimized management practices.

C. Cost-effectiveness of the proposed project

229. The PRAGOA project, designed to strengthen climate resilience in vulnerable agropastoral and oases zones of Mauritania, demonstrates strong cost-effectiveness across all components. From the initial phase, the project incorporates a detailed Cost-Effectiveness Analysis (CEA) methodology to ensure that every intervention is both impactful and economically justified.

230. This analysis begins with a clear definition of the project's objectives boosting food security, improving access to water, restoring degraded ecosystems, and supporting sustainable livelihoods, especially for women and youth. The next step identifies the specific interventions, such as distributing seeds and tools, providing training on improved farming techniques, constructing small-scale irrigation systems, reforesting degraded lands, and promoting Income-Generating Activities (IGAs). For each intervention, both direct and indirect costs are estimated, including materials, labor, and administrative overheads. Expected benefits are then projected, such as increased crop yields, reduced malnutrition, improved incomes, and long-term environmental gains. These costs and benefits are synthesized into a cost-effectiveness ratio (CER), which allows for comparison across interventions and against alternative approaches.

231. Without the PRAGOA project, resilience-building efforts in the region would continue in a fragmented and uncoordinated way. Budget limitations and institutional weaknesses would hinder effective ecosystem restoration, leaving priority community needs unmet. This scenario would lead to further land degradation, increased poverty especially among women and youth and rising climate-induced migration to urban centers.

232. In contrast, with the PRAGOA project in place, targeted interventions provide immediate and long-term benefits for over 10,000 people. These include the prevention of land and asset losses through climate-resilient infrastructure, and improved food and nutritional security. Women are expected to constitute at least 47% of the beneficiaries, with activities actively supporting their participation in cooperatives, access to markets, and decision-making platforms. The project's structure organized into four components ensures a comprehensive response to climate challenges.

233. Component 1, which focuses on improving access to water and resource governance, stands out with a CER of 2.51. An investment of 2.68 million yields 6.7 million in returns, thanks to enhancements like solar irrigation, hydraulic infrastructure, and water management systems. Direct beneficiaries gain an average of 802, and indirect ones 403.

234. Component 2 addresses ecosystem resilience and sustainable livelihoods. It demonstrates a CER of 1.85, translating 2.18 million into 4.03 million in benefits. Reforestation and land rehabilitation are central here investments that, while slower to yield returns, build vital long-term resilience. Average gains per beneficiary are 367 (direct) and 185 (indirect).

235. Component 3, targeting economic diversification via IGAs such as ecotourism, livestock processing, and microenterprises, delivers the strongest return with a CER of 4.73. An investment of 2.84 million generates 13.4 million in returns. Women and youth play central roles in this success, with direct beneficiaries gaining over 2,100 and indirect ones 1,059.

236. Component 4, dedicated to capacity building and knowledge dissemination, yields a CER of 3.57 despite being a non-infrastructure-focused intervention. With a budget of 751,455, it produces 2.69 million in returns by strengthening institutions and enabling long-term coordination across all sectors. This component is essential to sustaining the project's gains over time.

237. Financial analysis confirms the PRAGOA project's economic viability. Over the four-year implementation period, the total cost is 9.24 million, with projected benefits reaching 26.86 million, resulting in a strong overall CER of 2.91. The Net Present Value (NPV) stands at 17.62 million, and the Internal Rate of Return (IRR) is 25%, exceeding international benchmarks for development projects.

Table 10: Financial Analysis

Component / Indicator	Year 1	Year 2	Year 3	Year 4	Total
Component 1 (USD)	956,088	1,150,088	360,088	210,088	2,676,350
Component 2 (USD)	811,809	556,809	450,754	360,754	2,180,125
Component 3 (USD)	651,330	923,580	823,580	443,580	2,842,070
Component 4 (USD)	205,728	195,728	155,000	195,000	751,455
Execution costs (management units) (USD)	237,000	197,500	158,000	197,500	790,000
Total costs (A) (USD)	2,861,954	3,023,704	1,947,421	1,406,921	9,240,000
Total financial benefits (B) (USD)	4,319,371	5,776,663	6,883,548	9,883 ,040	26,862,621
Cash flow (B − A)	1,457,417	2,752,959	4,936,127	8,476,119	17,622,621
Cost-Effectiveness Rate (CER) (%)	1.51	1.91	3.53	7.02	2.91
Net Present Value (NPV) (USD)	4.8				18,994,716
Internal Rate of Return (IRR) (%)					25%

238. Cash flow projections remain positive, peaking in Year 4 when major infrastructure is operational and income activities mature. In that year alone, the CER climbs to 7.02, underscoring the sound investment strategy of early infrastructure and capacity building.

239. Beyond the implementation phase, the project is designed to deliver sustained returns. The durability of infrastructure, strengthened institutions, and self-sustaining livelihood activities ensure long-term impacts. IRR projections confirm this, with the overall project IRR rising from 25% at Year 4 to 35% by Year 15. At the intervention level, the Three-Layer Cropping System and the Integrated Crop-Livestock System each stabilize around 51% IRR by Year 20, while the Ecotourism Model leads with 59% IRR, driven by community-led services and eco-lodge infrastructure. Compared to a "no-project" scenario, the PRAGOA initiative significantly enhances economic outcomes:

Table 11: comparison between the baseline scenario (without the project) and with the PRAGOA Project

Item	Without the PRAGOA Project (base line scenario)	With the PRAGOA project
Benefit Cost Ratio (B/A) (%)	1.47	2.91
Net Present Value (NPV) (USD)	288,589.14	18,994,376.43
Benefits for Direct Beneficiaries (USD)	678.89	3,500.02
Benefits for indirect beneficiaries (USD)	341.82	1,762.26

240. The PRAGOA project, therefore, not only presents a solid economic case but also represents a transformative model for building resilience in arid regions. Through its integrated approach linking water access, ecosystem restoration, income diversification, and institutional empowerment it offers a replicable solution for similar dryland and climate-vulnerable contexts across Mauritania and the Sahel.

Table 12: Summary of the CEA of all the project and for each component

Metric	All the Project	Component 1	Component 2	Component 3	Component 4
Total Cost (USD)	9,240,000	2,676,350.40	2,180,123.84	2,842,070.76	751,455
Total Estimated Return (USD)	26,862,621.11	6,715,655.28	4,029,393.17	13,431,310.56	2,686,262.11
Net Benefit (USD)	17,621,329.11	4,039,304.88	1849269.32	10,589,239.80	1,934,807.11
Cost-Effectiveness Ratio (CER) (%)	2.91	2.51	1.85	4.73	3.57
Benefits for Direct Beneficiaries (USD)	3,499.77	802.25	367.28	2103.13	384.27
Benefits for indirect beneficiaries (USD)	1,762.13	403.93	184.93	1,058.92	193.48

D. Consistency with development strategies

241. Mauritania ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 2017, the Kyoto Protocol in 2005 and the Paris Agreement on climate in 2017. The project also aligns with various pillars and objectives identified in Mauritania under

a National Strategy and Action Plan for 2000-2004, along with subsequent reports on the country's progress. In addition, a new ministerial department responsible for the environment, the Direction de la Protection de la Nature has been established. The project is aligned with several strategic documents and policies such as the Mauritania's NDC (2021 – 2030), which aims to improve its adaptation to climate change through the protection and conservation of ecosystems, agriculture and food security. It is also directly linked to the country's climate change adaptation strategy to prevent and reduce the impacts of climate change affecting 'economic and social growth and development.

242. The table below lists the key development strategies/plans in Mauritania, their purpose and presents the project's consistency with the pillars of these documents.

Table 13: Consistency with national development strategies and plans

Strategy/Plan	Project's Consistency with the Pillars and Objectives of Mauritania's Framework Documents
Nationally Determined Contribution (NDC, 2015 revised in 2021)	The project is in line with the priorities of the revised NDC aiming at promoting climate-resilient development and creating sustainable green jobs. Specifically, the activities proposed under this NDC contribute directly to the following objectives stipulated by the project for the achievement of these priorities: i) adoption of Climate Resilient Agricultural practices (Output 2.1.1), ii). Development of sustainable green belts to limit sand dune movements and ensure the proper conduct of agricultural activities (Output 2.1.2), iii) Improvement of livestock production practices to increase the most vulnerable livelihoods' sources (Output 2.2.1)
National Action Program to Combat Desertification (PAN-LCD 2018-2020)	The PAN-LCD 2018-2030 serves as Mauritania's strategic framework for combating land degradation and desertification in line with the UNCCD 2018–2030 Strategic Framework and SDG 15, particularly Target 15.3 on land degradation neutrality. It promotes sustainable land management, the restoration of degraded ecosystems, and the enhancement of the resilience of agro-ecosystems and rural communities to climate change. These priorities are perfectly consistent with the project's *Output 2.1.2*, which aims to strengthen agro-pastoral ecosystem practices through sustainable land management (SLM), reforestation, and the protection of oases and agricultural lands. The establishment of green belts, the creation of pastoral reserves, and the adoption of afforestation and soil-conservation measures directly support the PAN-LCD's **Orientation P1** ("Ecosystems and agrosystems that are sustainable and whose productive potential is protected and improved to achieve land degradation neutrality") and **Orientation P2** ("Ecosystems and agrosystems less vulnerable and more resilient to climate change")
President's Expanded Priority Program (PROPEP 2020-2023)	The Project addresses the program pillars focused on: The allocation of funds towards reforestation and sustainable forest management efforts as well as the creation of green jobs (Output 2.2.1). This program aims also to restore and ensure sustainable management of forest areas and degraded lands (Output 2.1.2) with a view to improving the livelihoods of local populations. In addition, it contributes to better pollution management and the promotion of waste recovery channels capable of creating sustainable jobs, especially for young people. These objectives are in perfect agreement with output Improvement of livestock production practices to increase the most vulnerable livelihoods' sources (Output 2.2.1)
Strategy for Accelerated Growth and Shared Prosperity - SAGSP (2016-2030)	The SAGSP promotes strong, inclusive and sustainable growth through fighting against environmental threats, climate change impacts, and the sustainable management of natural resources. These objectives are in perfect agreement with the project's component 1 that aims to adopt a better management and an eco-friendly water use, and component 2 which purpose is to improve the resilience of the oases' population through concrete adaptive agricultural activities and SLM practices.
National Food Security Strategy (NFSS) and its action plan (PNIA/SA)	The Project addresses the strategy pillars focused on ensuring a more balanced distribution of rural activities among the country's agro-ecological zones. The climate change dimension is included in its programme 1, which aims to combat the effects of climate change through the restoration/maintenance of soil fertility (Outcome 2.1).
National Strategy for Sustainable Access to Water and Sanitation (SNADEA, 2016) for 2030	The Project addresses the strategy pillars focused on ensuring (i) knowledge, monitoring and protection of water resources; (ii) access to drinking water for as many people as possible (Output 1.2.2); (iii) improved access to water for agriculture and livestock (Output 1.2.1); (iv) improved access to liquid sanitation and hygiene and (v) improved governance of the sector (Output 3.1.1).
National Biodiversity Strategy of Mauritania (SNB 2022-2030)	The NBS 2030 emphasizes the restoration and sustainable management of terrestrial ecosystems through actions that enhance biodiversity, soil fertility, and ecosystem resilience in the face of climate change. It promotes integrated approaches combining conservation, sustainable land use, and community participation, particularly in agro-pastoral landscapes. These priorities are fully aligned not only with the project's *Output 2.1.2*, which focuses on strengthening agro-pastoral ecosystem practices through sustainable land management (SLM), reforestation, and the protection of oases and agricultural lands, but also with the objectives of the UN Convention on Biological Diversity (UNCBD), notably the conservation of biological diversity and the sustainable use of its components. By promoting afforestation, dune stabilization, and the creation of pastoral reserves, the project directly contributes to the strategic objectives of the NBS 2030 and to the implementation of the UNCBD, particularly in terms of restoring degraded areas, conserving biodiversity, and supporting the livelihoods of local communities.
Rural Sector Development Strategy for 2025	The Project's component 2 address the pillars of the Rural Sector Development Strategy that focuses on promoting sustainable agriculture that contributes to the economic and social development of the rural sector; the protection and rehabilitation of agricultural land; local development with the involvement of the population, particularly young people and women.

National Strategy for Sustainable Development (NSSD)	The project is aligned with the NSSD pillars, as follow: The strategy builds on a common vision of a long-term sustainable development in the country through a strategic approach that integrates social, economic and environmental considerations. Its five priority pillars are: (i) strengthening institutional and political capabilities as well as effective management of environment and natural resources, (ii) provision of sustainable access to basic services as a strategic means to fight against poverty, (iii) support an integrated and participatory management for efficient use of natural resources, (iv) management of local and global environment in line with international conventions obligations (v) development and implementation of funding mechanism for its National Environmental and Sustainable Development Action Plan.
Fourth National Communication (2019)	The project is directly linked to the country's climate change adaptation strategy to prevent and reduce the impacts of climate change affecting 'economic and social growth and development. More specifically, the project responds to the objectives of the 4th National Communication, which aims to (i) support populations to adapt to climate change impacts, in particular vulnerable groups, (ii) improve the resilience of actors to climate change risks and (iii) promote rational sustainable management of natural resources.
Nationally Determined Contribution – NDC (2021 - 2030)	The project is aligned with Mauritania's NDC (2021 – 2030), as follow: Through the NDC Mauritania aims to improve its adaptation to climate change through the protection and conservation of ecosystems, including wetlands, sustainable pasture management, biodiversity conservation, fisheries and aquaculture, housing and urban planning, agriculture and food security, including genetic improvement, health, water, coastal management, prevention of extreme weather events, and the development of a sustainable energy system (Component 1 and 2).
National Action Plan for Adaptation (NAPA, 2004)	The NAPA identifies, among other things, the establishment of, a sustainable and equitable management of natural resources and the improvement of cultural techniques as priority adaptation actions. In this context, the various interventions proposed by this project related to improving agricultural techniques for climate change resilient production directly contribute to several objectives of this pillar, namely the objectives of: i) increasing water mobilization and storage capacities to improve farmers' agricultural productivity (component 1), ii) adopting Climate Resilient Agricultural practices and Sustainable Land Management Practices to ensure a better quality and quantity of agricultural products (Component 2 and Component 3).
National Environmental Action Plan – NEAP (2004)	The Project addresses the NEAP (2004) pillars focused on the monitoring of environmental problems and challenges such as pollution and combating the effects of climate change.
National Agricultural Development Plan (NADP)	The Project addresses the NADP pillars focused on promoting modern, competitive and sustainable agriculture through the development of plant sectors with high growth potential (Component 2). The climate change dimension is included in programme 1, with the aim of intensifying and diversifying agricultural production; The programme 2 focuses on natural resources sustainable management.

E. Alignment with national technical standards

243. During the implementation of the project, the implementing entity (OSS) and the other executing entities must comply with the Adaptation Fund standards and policies such as the Environmental and Social Policy and the Gender Policy.

244. The project complies with the various laws relevant to the implementation of the project activities, such as environmental, agricultural and water resources laws.

245. The table below lists the relevant national technical standards in Mauritania, their scope and their relevance to the AF principles as well as the project components.

Table 14: Alignment with national technical standards

Relevant national technical standards	Scope and relevance to the Project
Water Code (Law 2005-030) of 2005	• Scope: Defines the legal regime of continental surface and underground waters excluding sea water, and in particular the rules related to the planning, use and preservation of water, and those related to the organization and operation of the public water service • Relevant to Components 1 (Outputs 1.1.1, 1.2.1, 1.2.2), focused on monitoring of water resources. *Relevant to AF Principles 1 and 12.*
Law No. 2000-45 of July 2000, Framework Law on the Environment	• Scope: Serves as a basis for harmonizing ecological imperatives with the requirements of sustainable economic and social development. In particular, it is a matter of guaranteeing 1) the conservation of biological diversity and the rational use of natural resources, 2) the fight against desertification, 3) the fight against pollution and nuisances, 4) the improvement and protection of the living environment, 5) the harmonization of development with the protection of the natural environment. • Relevant to Components 2 focused on adopting concrete actions to improve adaptation to CC impacts and to ensure the protection and the sustainability of natural resources. *Relevant to AF Principles 1, 12, 11 and 15.*
Law 2007-055 of 18 September 2007, Forestry Code repealing and replacing Law No. 97-007 of January 20, 1997 on the Forest Code.	• Scope: Composed of 84 articles divided into eleven (11) titles. It provides rules concerning the development of forests (Title II) forests clearing: organization and places of clearing (Title III). • Relevant to Components 2 focused on SLM practices aiming to improve the quality and the fertility of soil as well as the protection of crops. *Relevant to AF Principles 1,6,11 and 12.*
Agropastoral Orientation Law (LOAP) of 2012	• Scope: This law is an institutional framework conducive to agricultural sector development with a view to diversifying the national economy.

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	• Relevant to Components 2 focused on implementing agricultural practices adapted to CC risks as well as Component 3 focused on IGAs and supporting populations to increase and diversify their income sources. *Relevant to AF Principles 1,5, 7 and 12.*
Law No. 97-006 of January 20, 1997 Repealing and Replacing Law No. 75-003 of January 1975 on the Code of Hunting and the Conservation of Nature.	• Scope: Defines natural resources conservation rules especially the fauna conservation and the management of protected areas. • Relevant to Component 1 (Output 1.2.1) focused on the creation and rehabilitation of hydraulic infrastructures in targeted areas to address communities' domestic, agricultural, and pastoral needs, including the development of new water points for livestock, modernization of existing systems, and expansion of storage capacities to enhance resilience to climate and socio-economic challenges, and Component 2 (output 2.1.2) aiming to develop Sustainable Green belts that will protect agricultural areas. *Relevant to AF Principles 1,9,10 and 11.*
Law No. 2000-042 of July 26, 2000 on plant protection	• Scope: Defines the legal rules related to plants conservation in particular those concerning: i) phytosanitary protection of the national territory, ii) phytosanitary control of imports and exports, iii) control of the distribution and use of phytopharmaceutical products for the treatment of organisms harmful to plants and animals. • Relevant to Component 2 focused on using eco-friendly products (natural pesticides, re-use of oases waste, etc.) to ameliorate the agricultural sector products. *Relevant to AF Principles 1,10,11 and 15.*
Orientation Law No. 2010-001 of January 7, 2010 on land use planning	• Scope: Defines Land Use Planning Tools and Land Use Planning Structures. • Relevant to Component 2 focused on SLM practices to ensure the sustainability of a good quality soil resilient to CC effects such as dryness, water stress, etc. *Relevant to AF Principles 1, 5 and 15.*
Law No. 2000-044 of July 26, 2000 on the Pastoral Code	• Scope: Defines the concepts and principles of the pastoral space rational management and rules to govern all aspects of the pastoral activity in order to ensure the preservation and the promotion of pastoralism. • Relevant to output 2.2.1 focused on the improvement of livestock production and pastoralism practices. *Relevant to AF Principles 1, 2, 3,4, 5 and 15.*
Law No. 2004-024 of July 13, 2004 on the Livestock Code	• Scope: Defines rules for activities related to veterinary public health, animal health and production. • Relevant to output 3.1.1 focused on the improvement of breeding conditions and increasing access to veterinary services, especially for those where access is difficult. *Relevant to AF Principles 1, 2,3,4 and 5.*
Law No. 2010-042 of July 21, 2010 on the Hygiene Code	• Scope: Defines public hygiene rules: drinking water, environmental sanitation, waste management, special provisions relating to foodstuffs, hygiene of the premises, milk and dairy products, foods of plant origin, foods of animal origin, Relevant to all components and all outputs. • Relevant to all components and all outputs. *Relevant to AF Principles 1, 2,3,4 and 5.*

F. Project duplication with other funding sources

246. The project has an integrated scope with activities covering several sectors, namely water, environment, land, biodiversity, agriculture, etc. The project will therefore involve stakeholders from these different sectors in its implementation. Therefore, the project will clearly have impacts and complementarities but no duplication with ongoing projects/programs and initiatives in the region.

247. The table below lists potential projects (past and ongoing) in Mauritania, their purpose and possible synergies with this project.

Table 15: Synergies with national projects/programmes

Project/program	Objectives	Status	Funding source	Lessons learned/Possible synergies with the proposed project
Enhancing Resilience of Communities to the Adverse Effects of Climate Change on Food Security Project. Implementing Agency: World Food Programme Budget: 7,800,000 USD Duration: 2014-2019	- The objective of the project is to enhance the resilience of vulnerable communities to the effects of climate change on food security	Closed	Adaptation Fund	**Complementarity.** The proposed project will build on good practices and lessons learned in terms of adaptation measures targeting combating land degradation, water and soil conservation, and improving the livelihoods of vulnerable communities through the implementation of income-generating activities. The AF project has developed a technical package of adaptation measures considered as a technical benchmark for the Ministry of Environment and Sustainable Development (MoESD) and other initiatives in the country, combining activities for ecosystems protection and the improvement of the livelihoods of poor and vulnerable populations. These measures include dune fixation techniques, reforestation, establishment and management of grazing areas, water and soil conservation, promotion of semi-intensive poultry farming, development of community market gardening, diversification of income-generating activities, mobilization and management of water resources, use of solar energy, introduction of family tree farming, etc. The proposed project can also build on the successful experience of the AF project by relying on local NGOs as executing partners to carry out the whole process related to the identification and implementation of IGAs as well as sensitization and monitoring of project activities at local level.
Improving Climate Resilience of Water Sector Investments with Appropriate Climate Adaptive Activities for Pastoral and Forestry Resources in Southern Mauritania (REVUWI) Implementing Agency: African Development Bank Budget: 20,930,000 USD Duration: 2014-2021	- The objective of the project is to build climate resilience in vulnerable pastoral and forest areas by providing support for planning, financing and implementing both as appropriate (an ecosystem and sectoral approach) to climate change adaptation through effective knowledge and technology transfer mechanisms including capacity building, knowledge support and concrete, on-the-ground demonstration in arid/semi-arid ecosystems" in the southern Wilayas of Mauritania	Closed	Least Developed Countries Fund	**Complementarity**. The proposed project can build on the REVUWI project, particularly under Component 1, with regard to the achievements in terms of setting up water infrastructure and water mobilization as well as water and soil conservation techniques.
Oases Sustainable Development Programme in Mauritania (PDDO). Budget: 38,660,000 USD	- The programme inherited a large body of knowledge and experience from the Oases Development Project phases I and II, on which it based its own actions for oases development and the empowerment of oases communities –	Closed	IFAD	**Complementarity.** The proposed project will build on the integrated approach developed under the PDDO, combining improved water and energy solutions with capacity building for the promotion of date palm cultivation, which forms the basis of the oases' economies. The PDDO has inherited an important base of knowledge and experience on which its interventions have been built, including i) the promotion of the effective participation of oases populations, especially

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Duration: 2003-2014	particularly by improving livelihoods and production conditions. The key to achieving this result was the implementation of a participatory approach to encourage beneficiaries to build their own planning and management capacities.			women and youth, organised into Association for the participatory management of oases (APGOs), in the community and local development process; ii) the strengthening of the institutional framework at the oases level; iii) the promotion of the sustainable exploitation of the productive potential of the oases; and iv) the development of a network of privately managed local financial services. The proposed project will build on these achievements and rely on the APGO to implement the planned activities in the project area. It will also build on the PDDO initiative, which has led to the establishment of a microfinance facility tailored to the needs of the poor and the creation of a Community Investment Fund (CIF) that has provided concrete financial support to actions arising from the local participatory planning process.
Climate change adaptation and livelihoods in three arid regions of Mauritania **Implementing Agency: UNEP** **Budget: 18,136,584 USD** **Duration: 2021 - 2026**	- The objective of the project is to strengthen the adaptive capacity and ultimately climate-resilience of communities and government in the arid Mauritanian Wilayas of Adrar, Inchiri and Trarza through the introduction of ecosystem-based adaptation (EbA) approaches. The project will focus on improving the management of water and other natural resources in the climate-vulnerable target communities. Climate impacts on these natural resource-dependent communities will be disrupted using a suite of innovative on-the-ground interventions implemented at the plot and community levels.	Under implementation	GEF	**Complementarity.** The two projects will be complementary. The GEF project will work with existing institutional structures within the Ministry of Environment and Sustainable Development (MoESD) at the central and regional levels to increase their capacity for climate change adaptation, particularly ecosystem-based adaptation (EbA) in arid zones, building on synergies with government agencies dealing with dryland issues. The proposed project will scale up the ecosystem-based adaptation approach and innovation techniques for the benefit of the communities in the project area and create the necessary synergies with the GEF project especially with regard to capacity building activities of the component 4, targeting government technical departments at different levels to better target funding and beneficiaries.
Mauritania and Niger - Second Regional Sahel Pastoral Support Project (PRAPS II): Additional Financing **Implementing Agency: Ministry of Livestock and Animal Production, Islamic Republic of Mauritania** **Budget: 42,000,000 USD (Mauritania)** **Duration: 2021 - 2027**	- This project aims to scale up emergency investments in food security and resilience interventions in response to food security crises facing pastoralists and agropastoralists in several regions of both countries Mauritania and Niger. Building on the achievements of the first phase of PRAPS (PRAPS-I, 2015–2021), PRAPS-II is one of the core regional operations addressing the drivers of fragility and conflict in the Sahel while bolstering the livelihoods of a vulnerable population.	Under implementation	The World Bank	**Complementarity.** In Mauritania, the project will focus on the intensification of immediate and medium-term activities within the framework of PRAPS-II objectives, giving priority to the southern areas of the four Wilayas bordering Mali: Guidimakha, Assaba, Hodh el Gharbi and Hodh el Chergui, which implies that there will be no duplication with the proposed project. However, given the long experience of the first phase of PRAPS and the results achieved in terms of sustainable management of landscapes, improvement of the economic and social inclusion of women and young people, sustainable management of hydraulic infrastructures, production fodder and the promotion of income-generating activities in pastoral areas, the proposed project could create the necessary synergies in order to scale up proven good practices in the project intervention area in Adrar.
Strengthening the resilience of ecosystems and populations in four regional hubs in northern Mauritania **Budget: 33,500,000 USD**	The goal of the proposed project is to enhance the resilience of communities and ecosystems in northern Mauritania against the impacts of climate change. This will be achieved by investing in land rehabilitation and sand-dune fixation, water resources management, climate-resilient agriculture and livelihood	Under implementation	GCF	Implemented by UNEP in collaboration with the Ministry of Environment and Sustainable Development. While the GCF project focuses primarily on enhancing food security and climate resilience in agro-pastoral zones through large-scale rural infrastructure, value chain development, and support for productive cooperatives in six Wilayas, the Adaptation Fund project targets more fragile oases ecosystems and marginalized communities in Ziyara and Dhaya, within the Adrar region. This project builds on the institutional coordination frameworks established under the GCF project, while addressing adaptation priorities in

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Duration: 2025 - 2031	diversification in four rural-urban hubs: Aoujeft (in the Adrar Wilayah), Rachid (in the Tagant Wilaya), Tamcheket (in the Hodh El Gharbi Wilaya) and Nema (in the Hodh El Chergui Wilaya).			oases restoration, integrated water resource management, and the empowerment of women and youth through nature-based solutions and micro-entrepreneurship. Together, both projects form a coherent adaptation investment framework that strengthens national resilience through complementary geographic, institutional, and thematic approaches.
Strengthening Rural Resilience in Mauritania through Water Resource Management and Development for Domestic, Productive and Ecological Purposes (3R-Water Project) **Budget: 20,000,000 USD** **Duration: 2025 - 2029**	Improve access to safe water and sanitation in rural areas (Adrar, Brakna, Tagant); enhance water resource management and climate resilience.	Implementation planned for 2025–2029.	AfDB	Demonstrates successful integration of water and sanitation measures with climate resilience; potential to replicate participatory water-management approaches in oases and agro-pastoral zones.
National Integrated Rural Water and Sanitation Project (PNISER) **Budget: 10,000,000 Euro**	Expand rural access to clean water and basic sanitation; construct latrines in 140 rural localities	Ongoing (2022–2026).	AfDB, African Development Fund (ADF), Rural Water Supply and Sanitation Initiative (RWSSI)	Showed that community participation and household contribution models accelerate sanitation coverage—lessons applicable for local engagement in the proposed project.
ADDOA – Support for the Sustainable Development of the Adrar Oases in Mauritania **Budget: 400,000 Euro**	Support sustainable development of oases ecosystems and enhance local actors' capacity in resource management and value-chain promotion.	Launched 2024; expected completion 2027.	CARI (France), Tenmiya Mauritania, EU co-financing.	Demonstrates the effectiveness of empowering local associations and cooperatives; synergy through shared objectives on oases preservation, reforestation, and economic diversification.

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G. Learning and knowledge management component to capture and disseminate lessons learned

248. The PRAGOA project recognizes that successful climate change adaptation is fundamentally rooted in knowledge; its generation, dissemination, and practical application. To this end, a dedicated component, component 4, has been established to ensure that knowledge management and learning are fully embedded in the project's design and implementation.

249. This component serves as a strategic axis to capture, document, and share experiences, results, and innovations emerging from all project activities. It supports the creation of a dynamic learning environment among stakeholders, ranging from local communities and civil society to governmental bodies, research institutions, and private sector actors. Through tailored capacity-building activities, training sessions, study tours, and awareness campaigns, the project aims to strengthen both individual and institutional capacities for climate resilience.

250. A flagship initiative under the component 2 is the establishment of the Climate Adaptation and Innovation Center (CAIC). The CAIC will function as a regional hub for knowledge exchange, innovation, and training. It will promote best practices tailored to arid zones, and empower local actors to become drivers of climate-smart solutions. Moreover, Community Adaptation Action Plans (CAAPs), producer clubs, and demonstration sites will serve as living laboratories for participatory learning.

251. The project also integrates a robust Monitoring, Evaluation, and Learning (MEL) system, designed to track progress, assess impacts, and ensure the adaptive management of interventions. This includes participatory M&E processes, capacity building for enumerators, and the regular production of evidence-based reports. These outputs will inform not only the ongoing implementation but also guide future strategies, policies, and replication efforts.

252. A strong emphasis is placed on knowledge dissemination through appropriate Information, Education and Communication (IEC) materials and platforms. Messages and training content will be adapted to the needs of men, women, and youth to ensure inclusive access to information. The project will also leverage digital tools, traditional media, and social networks to reach diverse audiences.

253. To broaden the impact, lessons learned and best practices from PRAGOA will be shared with other regions facing similar environmental and socio-economic challenges. The project will actively participate in **regional and international forums**, such as COPs, Adaptation Futures, and regional climate weeks providing a platform for South-South cooperation and visibility.

254. In short, Component 4 ensures that knowledge is not merely an output of the project but a central resource for enhancing the resilience of Ziyara and Dhaya's ecosystems and communities. By transforming information into action and fostering a culture of continuous learning, the project lays the foundation for long-term sustainability and adaptation beyond its lifespan.

H. Consultative process.

255. The project led by SOS OASIS Mauritania, with the support of the Ministry of Environment and Sustainable Development (MEDD), is the result of a rigorous and inclusive participatory approach. From the emergence of the initial idea, through the development of the concept note, to the finalization of the Full Proposal, a progressive consultative process was successfully carried out, involving a wide range of stakeholders at all levels—national, regional, and local.

256. From the outset, OSS, MEDD, and SOS OASIS experts built the project around a structured dialogue with beneficiaries and stakeholders. This process engaged various categories of actors: officials from sectoral ministries (environment, agriculture, livestock, social affairs, tourism…), regional and municipal authorities (delegates, mayors, governors), as well as representatives from civil society, local NGOs, youth and women's associations.

257. The consultations included field visits, working meetings, validation workshops, and other forms of dialogue such as focus groups. This approach was reinforced by the implementation of various thematic studies, such as vulnerability analysis, economic profitability, and gender integration.

Concept Note Phase

258. August 2019 – A First Strategic Impulse: The first milestone took place in August 2019 during the mid-term review of the SCAPP (Strategy for Accelerated Growth and Shared Prosperity), through a thematic workshop organized in Atar by the SCAPP Directorate in collaboration with the Wilaya of Adrar. This workshop allowed:
- Assessment of existing vulnerabilities;
- Mapping of key sectors for regional development;
- Identification of the most vulnerable areas, notably the Dhaya and Ziyara hubs, prioritized for resilience interventions.

259. August 2022 – Concept Note Review and Local Anchoring. A new consultation phase was held in Atar and the Dhaya and Ziyara hubs. This step enabled a revision of the concept note, discussed across various levels of government to ensure alignment with national policies and feasibility. Consultations included:
- Institutional meeting in Atar chaired by the Wali of Adrar, bringing together relevant regional technical services (agriculture, environment, livestock, water…);
- Meeting with the deputy mayor of Tawaz and members of the Municipal Consultation Committee;
- Field visits and community meetings in the villages of Dhaya and Ziyara.

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260. These sessions brought forth local environmental, social, and economic issues, assessed community engagement and implementation capacities, and outlined concrete actions to address climate change impacts.

Full Proposal Phase

261. Consultation Mission (October 17–21, 2023). This mission, conducted by the Sahara and Sahel Observatory (OSS) in partnership with MEDD and SOS OASIS, took place in the heart of the Adrar region, with strong mobilization from local authorities. From the beginning, the Wali of Adrar expressed his political support for the project, emphasizing the need to focus efforts on the most vulnerable populations.Similarly, the Hakem of Atar pledged to provide logistical support through decentralized state services, ensuring practical implementation conditions. Exchanges with regional technical services revealed several major challenges, including:
    - lack of reliable water resource data,
    - increasing pressure on pastoral resources,
    - limited agricultural diversification,
    - lack of structured veterinary services,
    - rich but underutilized tourism potential.

262. Field visits, especially to Ziyara and Dhaya, exposed visible effects of land degradation, water scarcity, and rural exodus, revealing an urgent need for basic infrastructure rehabilitation. A visit to the palm tree laboratory in Atar showed satisfactory technical equipment but highlighted the need to strengthen the human and technical capacities of the team. The regional tourism office expressed strong interest in developing ecotourism and cultural circuits. The regional delegation of social affairs raised persistent issues such as malnutrition and poverty affecting vulnerable population groups. Community consultations in the villages brought to light urgent local needs: better access to water, training opportunities, youth employment, and the promotion of innovative agricultural practices adapted to local climatic conditions. The mission concluded with a feedback meeting where findings were shared with stakeholders, followed by an institutional capacity assessment of SOS OASIS to define appropriate support for effective project implementation.

263. ESIA/ESMP Consultations (December 11–16, 2023). As part of the Environmental and Social Impact Assessment and Management Plan (ESIA/ESMP), a series of consultations were organized in key locations: Nouakchott, Atar, Tawaz, and the two development hubs, Dhaya and Ziyara. A total of 80 people weas consulted, including 30 women, ensuring gender-balanced representation. Activities included:
    - internal meetings with the project coordination unit in Nouakchott to lay technical groundwork and plan stakeholder mobilization;
    - interviews with key ministries, including Agriculture and Environment, to gather institutional perspectives on territorial priorities, synergies with ongoing initiatives, and implementation conditions;
    - field visits and community meetings in Dhaya and Ziyara to identify local needs and assess community ownership and engagement potential.

264. Gender Analysis Consultations (December 11–23, 2023). An inclusive consultation process engaged key stakeholders, including government institutions, the University of Nouakchott, INEM, development projects, partner NGOs, and local communities. Particular attention was paid to vulnerable groups, especially women and youth, to ensure their voices were heard in the project design and implementation. The localities of Ziyara (Eguemoune and Ziyara) and Dhaya (Tezegrez and Dhaya) were central to these discussions. Consultations identified specific concerns of women, who put forward concrete proposals for a more equitable and gender-sensitive approach. These discussions led to inclusive action pathways that reflected local aspirations as relevant intervention levers. A total of 128 people was consulted, 58% of whom were women, demonstrating a strong commitment to balanced and meaningful community dialogue.

265. Economic Profitability Study. Questionnaires were distributed and virtual meetings held with stakeholders to gather the necessary data for the profitability analysis.

266. Tripartite Meetings and Institutional Arrangement. Regular meetings between OSS, MEDD, and SOS OASIS were held to discuss institutional organization. Some included the Minister of Environment and the OSS Executive Secretary, enabling final validation of the proposed arrangement.

267. National Validation Workshop (April 23, 2024). A validation workshop took place in Nouakchott, bringing together a diverse group of stakeholders involved in the PRAGOA project. Participants included representatives from central and local administrations, researchers, NGOs, and community members from Ziyara and Dhaya. The primary objective was to collectively validate the final project document. It also served as a platform to thoroughly examine results from earlier community consultations and preparatory studies. Participants helped refine intervention axes focusing on water access, economic diversification, and local capacity building. The participatory approach adopted throughout the process was widely praised for strengthening the legitimacy of strategic choices and generating broad consensus on identified priorities. Participants unanimously recommended a rapid launch of activities, prioritizing urgent water recovery and management actions. They also emphasized the need for continued dialogue with local communities throughout implementation to ensure consistency, effectiveness, and local ownership of field interventions.

268. This entire consultative process was guided by a fundamental principle: co-create a realistic, relevant, and sustainable project aligned with beneficiary expectations. Thanks to continuous stakeholder involvement and heightened sensitivity to gender and vulnerability issues, the project is anchored in an inclusive territorial resilience dynamic.

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Table 16: Consultation process summary

Location and Date	Consultation topics	List of attendees	Consultation Outcomes
Atar 10-12/08/2019	***SCAPP Consultation process workshop*** ***Objective:*** prioritizing the most vulnerable areas to climate change in the Adrar region. • Update the diagnosis of the most important sectors for the Wilaya; namely agriculture, livestock, environment, and water resources; Identify the most vulnerable areas to shocks in order to propose projects to improve the resilience of populations for better adaptation to climate change	• Representatives from central public services, regional/local public services, regional/local elected officials, civil society (CS) representatives from local communities, private sector representatives from the Wilaya • 60 participants (49 men and 11 women).	• Identification of the Ziyara and Dhaya clusters as the most vulnerable areas of the Atar Moughataa in terms of food and nutrition insecurity, the state of the environment and their dependence on water and soil resources.
Atar, 8 August 2022	***Institutional meeting in Atar:*** • Provide stakeholders with information on the project development process. • Present the economic, environmental, and social assessment process, including its contribution to building the resilience to climate change of the communities in the 2 poles; • Identify the main concerns and expectations of the project's stakeholders in order to initiate ownership for sustainability. • Identify the most appropriate means of communication to facilitate stakeholder involvement in later stages of the process. • Identify and collect existing data of interest to the process	• Representatives from the Wilaya, the region, and technical services (MoAgri, MoESD, M. of Livestock, M. Of Hydraulics and Sanitation, other departments) • 18 participants (14 men and 04 women)	• Stakeholders are informed about the project development process. • The first results of the economic, environmental and social assessment of the intervention areas and communities are presented, • Ownership of the project by the regional authorities is ensured • Stakeholder engagement for full involvement in the later stages of the project development process • Commitment to facilitate contacts for the collection of existing data relevant to the project development process.
Municipality of Tawaz, 9 August 2022	***Institutional meeting in the municipality of Tawaz*** • Presentation and discussion of the environmental, economic and social diagnosis potentially linked to climate change on which the intervention of this project is expected. • Feedback from stakeholders on their concerns • Identify solutions to (i) strengthen the adaptive capacities of populations; (ii) improve the resilience of oases agro-ecosystems and sustainably address the challenges of structural and cyclical poverty in the project areas.	• Deputy Mayor of Tawaz, councillors and technical services members of the Tawaz Community Consultation Committee (CCC). • 11 participants (07 men and 04 women)	• Identification of environmental, economic and social issues related to climate change • Synthesis of the concerns of different stakeholders • Proposal of a set of solutions to improve the resilience of oases agro-ecosystems and vulnerable communities in the two poles of Ziyara and Dhaya.
Ziyara, August 10th 2022	***Focus group consultation meeting*** • Presentation and discussion of the environmental, economic and social diagnosis potentially linked to climate change on which the intervention of this project is expected. • Feedback from communities' members, particularly women, on their concerns • Identify solutions to (i) strengthen the adaptive capacities of populations; (ii) improve the resilience of oases agro-ecosystems and sustainably address the challenges of structural and cyclical poverty in the project areas.	• Traditional chief, President of the cluster, and representatives of the populations of Ziyara coming from the villages of Mintevaa, Jreiv, Eguemoun, Nguermellil, Loudeyatt and Oueinet rvayeg villages • 23 participants (8 men and 15 women)	• The main problems and concerns of community representatives, especially women, are identified and prioritised • Areas of project support are identified • A list of solutions to the problems posed is drawn up and proposed for consideration in the project design • A full commitment from the communities to participate in the next stages of project design and subsequent implementation
Ziret Elhella,(Dhaya cluster) August 12th 2022	***Focus group consultation meeting*** • Presentation and discussion of the environmental, economic and social diagnosis potentially linked to climate change on which the intervention of this project is expected. • Feedback from communities' members, particularly women on their concerns • Identify solutions to (i) strengthen the adaptive capacities of populations; (ii) improve the resilience of oases agro-ecosystems and sustainably address the challenges of structural and cyclical poverty in the project areas.	• President of the Dhaya cluster and representatives of the populations of the villages of Dhaya, Tizegrez, Ziret Elhella, Taryouvet, Doubai, Rkeina • 21 participants (5 men and 16 women)	• The main problems and concerns of community representatives, especially women, are identified and prioritised • Areas of project support are identified • A list of solutions to the problems posed is drawn up and proposed for consideration in the project design • A full commitment from the communities to participate in the next stages of project design and subsequent implementation

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Adrar region, October 17–21, 2023	**Full Proposal Phase Consultation Mission** Institutional and political engagement- Field observations and technical exchanges- Community consultations	• OSS, MEDD, SOS OASIS, Wali of Adrar, Hakem of Atar, regional technical services, regional tourism office, regional delegation of social affairs, community members from Ziyara and Dhaya	• Strong political and logistical support from regional authorities- Identified challenges: water data gaps, pastoral pressure, limited agri-diversification, underdeveloped tourism, land degradation- Community needs: water access, youth training/jobs, adapted agricultural practices- Institutional assessment of SOS OASIS initiated
Nouakchott, Atar, Tawaz, Dhaya, ZiyaraDece	**ESIA/ESMP Consultations** Technical groundwork with coordination unit- Ministry-level interviews- Community-level engagement	• 80 participants (30 women), project coordination unit, Ministries of Agriculture & Environment, local communities in Dhaya and Ziyara	• Territorial priorities and synergies assessed- Field engagement confirmed community ownership potential- Gender representation ensured in stakeholder consultations
Ziyara (Eguemoune, Ziyara) and Dhaya	**Gender Analysis Consultations** Inclusive consultations with women, youth, institutions, and NGOs	• 128 participants (58% women), local communities, University of Nouakchott, INEM, partner NGOs, development projects, government institutions	• Specific gender-sensitive concerns and proposals documented- Inclusive intervention strategies co-designed with community members- Strong focus on local aspirations and vulnerabilities
Virtual and various dates	**Economic Profitability Study** Questionnaire distribution- Virtual interviews	• Project stakeholders	• Data gathered to inform profitability assessment
Regular virtual/in-person meetings	**Tripartite Institutional Arrangement Discussions**	• OSS, MEDD, SOS OASIS, Minister of Environment, OSS Executive Secretary	• Institutional setup validated- Coordination and roles clarified among key partners
Nouakchott, April 23, 2024	**National Validation Workshop** Presentation of final project document- Review of consultation and study results- Final validation	• Central and local administration reps, researchers, NGOs, community members from Ziyara and Dhaya	• Final project validated with consensus- Priority focus on water access, diversification, capacity-building- Call for rapid implementation and continued local engagement

Further details of each mission, consultation, and study are available in the annexed reports.

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

269. Mauritania is particularly vulnerable due to its geographical location as a Sahelo-Saharan country. The country is subject to high climate variability and increasingly frequent and intense climate extremes. The main contributors to GDP, namely agriculture and livestock, are affected by these climatic hazards. All these factors expose Mauritania to an even higher level of vulnerability as it belongs to the group of Least Developed Countries (LDCs). Farmers and herders, who constitute the majority group, suffer considerable damage during droughts and floods. These multiple challenges are considerable and complex. The multiplicity of challenges means that the resources needed for Mauritania to cope with these climate hazards are largely insufficient. Indeed, Mauritania's financial needs, which are estimated in the INDC at several billion dollars, exceed the country's capacities.

270. Therefore, to achieve the objectives set out in the NDC, Mauritania expects a lot from its external partners. This is why the unconditional share of the NDC covered by own resources is so low, particularly the part reserved for the water sector in the area. In this context, the resources of the AF are crucial to overcome the obstacles that hinder the Government of Mauritania's ability to increase resilience to the impacts of climate change in the Oases holistically.

271. The justification for funding requested can be broken down according to project components as follows:

Component 1: Improved water resources access and management for local communities

Baseline Scenario:

272. With longer dry seasons and increasingly erratic weather patterns in the region, there is a growing need to adopt water-efficient and climate-resilient practices. Access to technologies such as irrigation, water infrastructure, processing equipment and storage is highly limited, inhibiting food processing and storage capacity, which is a constraint that is amplified by CC impacts.

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Additionality (with AF Funds):

273. With the support of AF funds, the project will enable the introduction of concrete and innovative adaptation interventions, such as: creation and improvement of water infrastructure, including rainwater harvesting, promotion of solar water pumps and small-scale irrigation systems, creation and/or strengthening of water management and storage facilities that will serve to better manage and conserve water and related infrastructure. In addition to these tangible benefits, the establishment of community structures will strengthen social cohesion and the effectiveness of extension services.

Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability

Baseline Scenario:

274. Smallholder farmers and communities face reduced agricultural production as the frequency and magnitude of CC impacts increase. They have limited access to new climate-resilient practices, insufficient and inadequate access to new information, training or extension services that focus on climate resilient agriculture inputs and results. Extension services in target areas are understaffed and have limited capacity in Climate Change Adaptation (CCA) practices related to agricultural options and inputs.

Additionality (with AF Funds):

275. With the support of AF funds, the project intends to undertake an assessment of the impacts of climate change on agricultural sector. The main results will be used to improve the national and sub-national agricultural strategies and practices by integrating the climate change dimension and indicating possible climate adaptation solutions.

276. To this end, best practices will directly be scaled-up in farmers' fields, by providing direct technical assistance to farmers, by sharing high-quality knowledge on biological processes and practices with farmers, by encouraging participatory development of locally adapted practices with farmers and experience exchange among farmers, and by providing access to tools and equipment. Training modules will be provided through practical and theoretical lessons within multiple workshops that bring together stakeholders, technicians and farmers, these workshops will cover mainly the promotion of afforestation and reforestation practices of degraded areas, the promotion of local SLM practices and techniques, the enhancement of adapted animal husbandry practices and access to veterinary services, etc.

Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth

Baseline Scenario:

277. Smallholders have no or limited access to credits or grants, nor have sufficient capacities to manage those. Communities and farmers are not organized to collectively tackle the challenges ahead. While challenges in the target area are similar, a large extent resources are shared and co-intervention on the different steps of the value chain can improve the productivity, the quality of products and the revenues of many farmers at the same time, there is very limited coordination and cooperation which could benefit the population groups. Although initiatives are taken, by the government to mainstream efficient conservation agricultural products, the reach remains limited.

Additionality (with AF Funds):

278. With the support of the AF funding, the project will establish cooperative associations which will strengthen their organizational and technical capacities of farmers and stallholders. These organizations will provide farmers with benefits such as collective gains from aggregated input purchases, organized processing and storage, and collective marketing of products. They will also benefit from the administrative and legal capacity to access credit, and an organizational structure that allows for effective extension services.

279. The project will increase opportunities for farmers to participate in different types of economic activities of the agricultural value-chain. For this, it will support the establishment of associations and cooperatives, so that, farmers will be able to improve cost/benefit aspects of their products (e.g. through equipment access). This approach to integrate project activities along the value-chain will create new synergies of collaboration and ownership, which will contribute not only to the sustainability of the project results but also improve the profitability of agricultural value chain.

Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels

Baseline Scenario:

280. Awareness on CC and its impacts is very low, and there is lacking correct understanding and interpretation of CC messages and data. National and sub-national level authorities have limited staff, capacity or financial means to mainstream CC information to its populations. In Mauritania, curriculums in schools don't include sufficient CC education. Local authorities have limited capacities and knowledge on CC impacts, assessing vulnerabilities and developing appropriate adaptation interventions. Population groups face the same challenges, have similar socio-economic situations, access the same natural resources and their declining services, and experience impacts of CC equally, especially affecting their agricultural production, and the interrelated food security. People in the target area, share cultures, habits, productions and income options, and they share markets, especially food-related markets. However, there is limited interchange of experiences between, nor coordination of interventions that can address issues that affect the different population groups. CC impacts have no borders,

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and certain phenomena require a coordinated response, such as increasing transhumance and increased frequency of drought periods. It can be expected to take years if not longer for communities within the target areas to be reached with sufficient knowledge and awareness for populations undertake the necessary actions to adapt to the changing conditions.

Additionality (with AF Funds):

281. With support of the AF, this project will improve the development, strengthening and institutionalization of CC awareness and adaptation capacities through the establishment CEEMA that will be strategically established in the target area, and which will be a permanent structure for coordinating awareness raising, capacity building, adaptation planning and learning and knowledge management. The project will support the capacity development of the center staff, local authorities and communities in CC awareness raising, vulnerability assessment and participatory planning of CCA interventions. The project is aiming to reach all communities through a combination of CC awareness process. This will be ensured through the development of training modules on CC adaptation planning for practitioners, technicians, decision-makers and communities as well as a communication and awareness strategy supported by the necessary materials (leaflets, posters, flyers) on CC issues and means of adaptation, taking into account indigenous knowledge.

282. Awareness will further be raised by community awareness campaigns, face-to-face and through mass media as well as effective dissemination of project objectives and achievements, lessons learned and best practices from project interventions. Moreover, initiatives will be focused not only on theoretical understanding, but on practical solutions, showcasing examples in a participatory manner and continuous CCA developments at the CEEMA.

J. In conclusion, it is essential to mention that the objectives of this project can be achieved solely using the funds allocated by the Adaptation Fund and there will be no need for additional funding from other donors. Sustainability of the project outcomes

283. The sustainability of the project stems from the participatory approach promoted throughout all project activities, that allow local communities and authorities to build ownership of the project and help ensure lasting results. The proposed project was designed with the intention to build the foundations for scaling up the interventions and for replication in other areas of the country with similar agro-ecological and climate conditions and vulnerabilities, and similar socio-economic conditions and needs. The project innovation lies in the use of climate-resilient agricultural techniques, including for oases, soil and water conservation and the introduction of solar pumping systems. These environmentally sustainable practices will contribute ensure social stability for the vulnerable population of Adrar region by creating incentives for oases rehabilitation and soil conservation, as well as diversification of sources of income. Specifically, activities such as Activity 1.1.1.3 (establishment of Local Water Resource Management Committees – LWMCs) and Activity 1.1.1.4 (capacity building of LWMCs in water management and governance) will institutionalize community-based management structures to ensure the sustainability of water resources and infrastructure well beyond the project's lifetime.

284. The project benefits from strong governmental and civil society endorsement and support, in the sense that the proposed project is designed through consultations and involvement of NGOs to promote ownership of the project and the effectiveness of its results, and by aligning with national strategies, the project further reinforces its long-term sustainability. Furthermore, the legal recognition of LWMCs under Activity 1.1.1.2 will facilitate their integration into national water governance frameworks and ensure their recognition by financial and government institutions. This formalization process, combined with continued collaboration with the Ministry of Environment and Sustainable Development, will anchor the project's results in national policies and institutional mandates, ensuring continuity of interventions post-project.

285. Project sustainability will also be strengthened through the training and knowledge transfer programs implemented under Component 4. These capacity development efforts, combined with field demonstrations and peer learning mechanisms, will create a foundation for long-term resilience. For instance, through Activity 2.1.1.4 (identification and creation of Producer Clubs for Sustainable Land Management – SLM), farmers will be organized into functional and inclusive groups capable of adopting and disseminating good practices autonomously. These Producer Groups will serve as local platforms for peer-to-peer learning, ensuring continued innovation and knowledge sharing after project completion. The project will also support the creation of "training hubs" and local demonstration sites that will continue to operate in partnership with vocational institutions, contributing to sustained community-based capacity building.

286. *Environmental Sustainability -* The project is strategically designed to significantly enhance and strengthen the environmental resilience of oases ecosystems while securing critical natural resources and local livelihoods. It aims to reduce the vulnerability of oases ecosystems through the implementation of targeted adaptation measures. These include the mobilization of the surface and subsurface water and promotion of water efficient water saving technologies in oasian zones. Within the project activities soil conservation and restoration are major actions to be undertaken for the enhancement of the oases's ecosystem. Measures will be taken to reduce silting up and erosion as well as dunes stabilization. In addition, actions aiming at regenerating the oases cover by means of the reintroduction of local, indigenous plants, and afforestation with local species, which are more resilient to climate change. These efforts, planned under the framework of Component 2, aim to build resilience of the oasian and agropastoral ecosystem against the impacts of climate change.

287. *Institutional Sustainability -* The Ministry of Environment and Sustainable Development, which will support the implementation of the project, has already benefited from capacity building in several areas related to climate change from a number of projects and initiatives benefiting the country. SOS Oases, which will be directly responsible for the implementation of the project, with its experience of more than 20 years in the region together with other NGOs operating in the Adrar region will

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benefit from a capacity building program through component 4 which will enable them to put in place adequate strategies to ensure the sustainability of the project results and the scaling up of good practices resulting from the project implementation. The government institutions and NGO staff will ensure the sustainability of the project's results beyond its life cycle, as they are permanent. The project will facilitate and support leadership at the community level, which will be encouraged to organize itself into Associations according to the model set by the PDDO project, and to obtain political support from local authorities and traditional leaders so that community members see the value of the project's interventions, thus enabling them to take ownership and support the project.

288. *Social Sustainability -* Awareness-raising, training and education will help change the perceptions of local communities and other actors on how their actions can improve livelihoods, while also making oases activities economically attractive. A major benefit of this project will be the added social stability that it will bring to these regions. The restoration of the oases' landscapes will be vital for supplementing government health budgets and contributing to food security, hence reducing the burden on women as well. Activity 1.1.2.4 (community awareness campaigns on safe water use and water demand management) will play a critical role in promoting behavioural change at community level, particularly among women and youth. These campaigns, implemented by the LWMCs, will enhance community understanding of hygiene, equitable water use, and collective resource management, strengthening social cohesion and resilience.

289. *Economic and Financial Sustainability -* The project promotes long term economic and financial sustainability by strengthening community-based organisations, producer groups, and local institutions to ensure the adaptation benefits persist beyond the project's lifetime, particularly for smallholder farmers, pastoralists, women, and youth. During implementation, targeted investments and capacity-building efforts will support income-generating activities, value chain development, and climate resilient agriculture and livestock systems, while ensuring equitable access to resources, markets, and productive assets. To avoid risks of maladaptation associated with inadequate operation and maintenance (O&M), the project adopts a lifecycle approach to financial sustainability. O&M requirements for productive and natural resources-related assets will be clearly defined during implementation, with communities trained in routine maintenance, governance, and financial management through producer Clubs, Local Water Management Committees, and pastoral management Committees. Where relevant and socially appropriate, and based on the experience of the former Adaptation Fund in Mauritania (PARSACC), project community-based cost-recovery mechanisms (e.g. user contributions, saving cooperatives linked to IGAs) will be established to finance routine maintenance and minor repairs, reducing dependence on external financing. Post-project financial sustainability will be ensured through: (i) the integration of recurrent O&M needs and adaptation priorities into communal and regional development plans, consistent with the mandates of local authorities; (ii) the consolidation of economically viable IGAs (including agro-processing, ecotourism, livestock-related activities, and diversified oases agriculture) capable of generating surplus income to sustain productive assets and services; and (iii) sustained technical support through national extension services and the Climate Adaptation and Innovation Center (CAIC), which will continue to provide training, innovation dissemination, and advisory services beyond project closure.

K. Environmental and social impacts and risks identified as being relevant to the project.

290. *This* project was developed in compliance with the 15 environmental and social (E&S) principles of the Environmental and Social Policy of the Adaptation Fund. A preliminary E&S assessment was conducted indicating that the project is likely to be classified under Category B of risk. The results are presented in the table below. Some project activities are classified as USPs. The main risks associated with these USPs relate to environmental and social compliance, community engagement, and the sustainability of project outcomes. These risks will be managed through the application of the Adaptation Fund's and OSS Environmental and Social Policy (ESP) screening procedures and Gender Policy, as well as through rigorous monitoring by the implementing entity (OSS).

291. A prior verification and validation of the proposed execution approach for these activities will be carried out by the OSS, in its capacity as the project's implementing entity, to ensure compliance with the technical, environmental, and social requirements of AF and OSS.

Table 17: Preliminary E&S assessment

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		Low risk: Continuous monitoring of national and international legal compliance. The project will ensure that all required permits and authorizations are obtained prior to implementation.
Access and Equity		Low risk: The project will take a number of transparent steps that will help ensure that the benefits of the project are being distributed fairly with no discrimination nor favouritism. Project targeting will comprise targeting criteria based on gender and age quotas. The project will advertise broadly through the mass media (radio, social media, town hall and village meetings, workshops etc.) for the implementation of activities.
Marginalized and Vulnerable Groups		Medium risk: Marginalized and vulnerable groups including internally displaced people and refugees,

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		women and youth will be consulted during the proposal development process to ensure that their identified threats, priorities and mitigation measures are reflected. The project will empower vulnerable groups to make decisions on concrete adaptation actions, valuing their traditional and local knowledge. This project will encourage women, and youth to choose adaptation activities in a transparent and participatory manner. Additionally, this project will respect land, property and customary rights.
Human Rights		Medium risk: Continuous verification that all project activities respect international human rights and the FPIC principle. GRM and awareness sessions will prevent discrimination and protect rights
Gender Equity and Women's Empowerment		Low risk: A comprehensive gender analysis was conducted during the preparation of the full project proposal. The project's targeting strategy incorporates gender quotas and promote women leadership in public spaces as well as their participation in decision-making processes related to climate change adaptation. During project formulation women were consulted at national and local levels to ensure their perspectives and priorities were fully integrated. A detailed Gender Assessment and Action Plan were also developed, providing a framework for addressing gender-specific risks and ensuring compliance with the ESP 5 on Gender Equality and Women's Empowerment.
Core Labour Rights		Medium risk: Inequality in remuneration between men and women as well as child labour are risks that could occur and thus have impact the proper execution of the project. The project will ensure that labour laws are considered during the project implementation. The country labour laws and regulations will be followed. Child labour and inequity in remuneration between men and women will be forbidden. National labour laws and ILO conventions respected; zero tolerance for child or forced labour; equal pay and occupational health and safety standards enforced.
Indigenous Peoples	**X**	**Reasons for the absence of such risks:** the communities benefiting from the project do not include indigenous peoples as defined by the United Nations, but the project will make sure that activities do not violate traditional customs and practices.
Involuntary Resettlement	**X**	**Reasons for the absence of such risks:** Project activities will be implemented with communities in their own localities and on their own lands. The project intervention do not involve any resettlement and will not generate any displacement even provisional as it will develop a participatory action plan for the implementation of the various activities with the community involvement taking into account the seasonal patterns.
Protection of Natural Habitats	**X**	**Reasons for the absence of such risks:** The project aims to make farmers and agro-pastoralists more resilient to climate shocks and reduce pressure on the natural environment, thereby contributing to the protection of natural habitats. The non-existence of classified forests in or near the project areas is to be considered.
Conservation of Biological Diversity	**X**	**Reasons for the absence of such risks:** The project aims to make farmers more resilient to climate shocks and reduce pressure on the natural environment, particularly in oases areas, thereby contributing to the conservation of biodiversity. The project aims to strengthen the conservation efforts of palm species currently threatened with extinction within the intervention area. To this end, a partnership will be established with a community gene bank to ensure the preservation and promotion of endangered date palm varieties. This action will be implemented as part of the

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		activities related to the establishment of new plots, through the integration of threatened local varieties into plantation programs.
Climate Change	**X**	**Reasons for the absence of such risks:** The project activities will be developed to improve the resilience of ecosystems and populations to climate change by focusing on adaptation to their negative impacts in the targeted areas.
Pollution Prevention and Resource Efficiency	**X**	**Reasons for the absence of such risks:** The activities will be executed in a highly localized manner, with strong mobilization of local labor through High Labor-Intensive (HLI) approaches that minimize the use of heavy machinery. Furthermore, no chemical inputs, such as synthetic fertilizers or pesticides, are envisaged. All agricultural practices promoted under the project will be based on organic and agroecological methods, prioritizing sustainable and environmentally sound techniques over conventional approaches.
Public Health	**X**	**Reasons for the absence of such risks:** The project activities promote the health of the beneficiaries. The provision of various equipment aims to foster field work and diversify the supply of basic products. Similarly, building the financial capacity of the beneficiaries will help them meet health expenses).
Physical and Cultural Heritage	**X**	**Reasons for the absence of such risks:** None of the project activities have any impact on the physical and cultural heritage of humanity.
Lands and Soil Conservation	**X**	**Reasons for the absence of such risks:** The project's planned interventions in the area of Soil and Water Conservation (SWC) will significantly contribute to the restoration and sustainable improvement of degraded soils. The programmed actions will have a positive impact by enhancing soil water retention, reducing runoff, and limiting both water and wind erosion processes. Dune stabilization activities will help secure vulnerable soils, curb the silting of agricultural land and infrastructure, and protect local ecosystems from progressive degradation.

292. In accordance with Adaptation Fund guidance, ESP Principles 1 (Compliance with the Law), 4 (Human Rights), and 6 (Core Labour Rights) always require further assessment and ongoing monitoring during project implementation. All Unidentified Sub-Projects (USPs) will undergo screening under the Environmental and Social Management Framework (ESMF) using the Environmental and Social Screening Form (ESSF), and, where risks are moderate, site-specific and activity Environmental and Social Management Plans (ESMPs) will be prepared.

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PART III IMPLEMENTATION ARRANGEMENTS

A. Project implementation and management arrangements

293. Figure 9 below illustrates the institutional arrangements for the implementation of the PRAGOA project, showing the relationships and reporting lines between the Regional Implementing Entity (OSS), the National Executing Entity (SOS OASIS), the National Steering Committee (NSC), and other governance structures. The figure also highlights how coordination and decision-making mechanisms ensure accountability, transparency, and gender-responsive implementation.

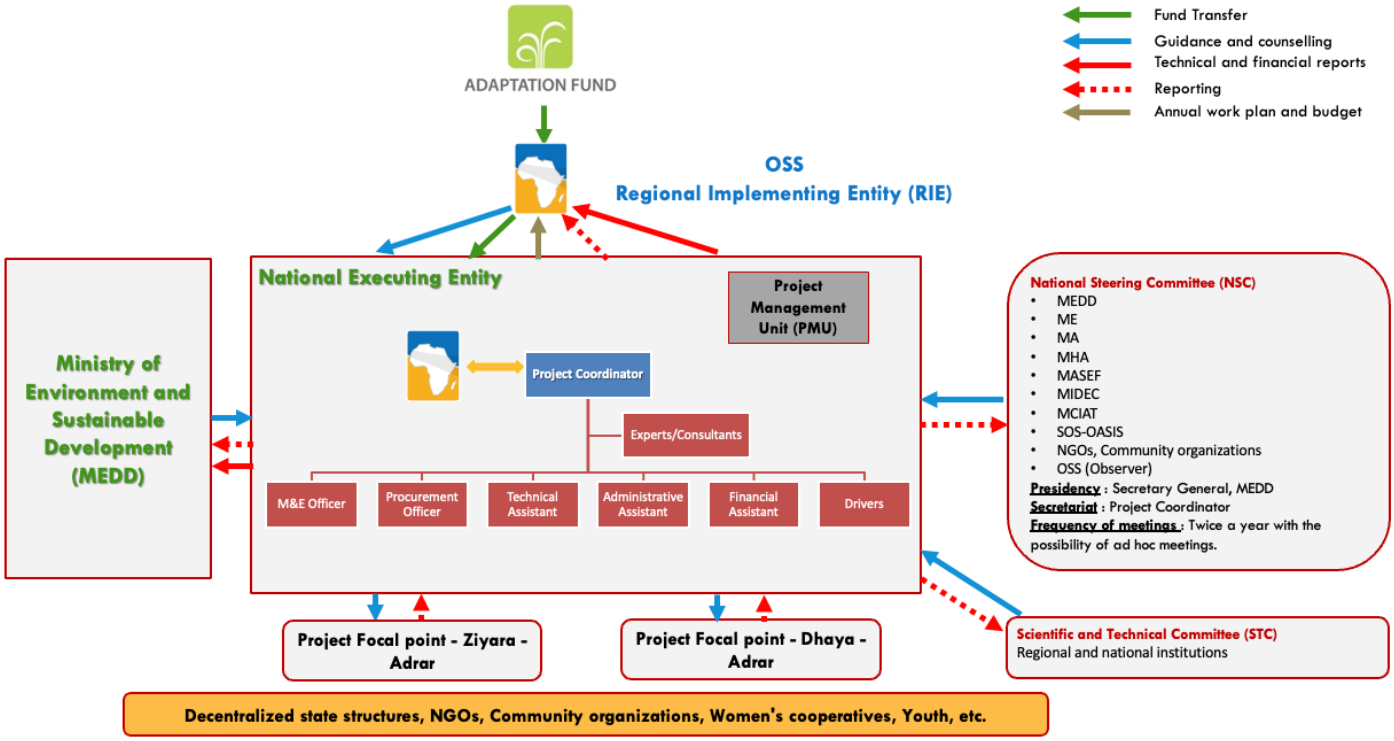

Figure 9: Institutional Arrangement of the PRAGOA Project

294. The Sahara and Sahel Observatory (OSS) as the accredited Regional Implementing Entity (RIE) for the Adaptation Fund (AF), holds overall responsibility for the fiduciary management, compliance oversight, and effective supervision of the PRAGOA project. This includes overseeing all financial, administrative, and legal aspects of project implementation, as well as carrying out monitoring, auditing, and supervisory activities. OSS is also responsible for ensuring timely annual reporting to the Adaptation Fund. OSS will ensure that project activities align with the Fund's Environmental, Social, and Gender Policies, and will monitor the application of the Environmental and Social Management Plan (ESMP). It will support the establishment and effective functioning of a grievance redress mechanism that is accessible, transparent, impartial, confidential, and predictable for potential complainants. Additionally, OSS will provide technical and managerial assistance to the National Executing Entity (SOS OASIS) and may directly implement specific activities particularly those related to capacity building when necessary. To effectively fulfil its mandate, OSS will set up an internal support team dedicated to ensuring the quality and integrity of project execution in full compliance with Adaptation Fund standards. OSS will apply the Adaptation Fund's *Direct Project Support (DPS)* approach to reinforce country ownership and strengthen institutional capacities for effective project delivery. The DPS mechanism provides an added layer of technical and operational assistance, particularly valuable when the executing entities are non-governmental organizations requiring tailored capacity support. In the case of the PRAGOA project, this approach is especially relevant, as the national executing entity is an NGO whose engagement is central to the project's community-based adaptation objectives. Through DPS, OSS can accompany the NGO in strengthening its project management, fiduciary, and monitoring capacities, ensuring compliance with Adaptation Fund standards while fostering sustainable institutional growth. This model not only enhances the project's effectiveness and accountability but also aligns closely with Mauritania's national strategy to empower and reinforce civil society's role in climate action and sustainable development.

295. The National Executing Entity (NEE): SOS OASIS which is an NGO with recognized experience in community development and environmental management, has been designated by the Government of Mauritania through the Ministry of Environment and Sustainable Development (MEDD), the National Designated Authority (NDA) for the Adaptation Fund as the main National Executing Entity (NEE) for the PRAGOA project. As the NEE, SOS OASIS will serve as the primary entity responsible for the day-to-day execution of project activities. This includes coordinating interventions at the community level, engaging stakeholders, promoting participatory planning processes, and ensuring the integration of gender equality and social inclusion principles. SOS OASIS will also lead efforts to promote local ownership and long-term sustainability of project outcomes. To carry out its mandate, SOS OASIS will establish and manage a Project Management Unit (PMU), appointing a Project Coordinator and recruiting a

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dedicated team that includes at least :(i) a Technical Assistant, (ii) a Monitoring, Evaluation and Gender Officer, (iii) an Administrative and Financial Officer, (iv) a Procurement Officer, and (v) two drivers. Team composition may be adjusted based on project needs, and Terms of Reference (ToRs) for all positions will be developed and submitted to OSS for prior approval. The recruitment process will be conducted in collaboration with both the MEDD and OSS to ensure transparency and alignment with project standards. SOS OASIS will also be responsible for data collection and consolidation from project sites, as well as the preparation and submission of regular technical and financial reports to OSS. Moreover, it will facilitate the establishment of formal partnerships with regional, national, and local institutions through MoUs or partnership agreements, as appropriate to the context of each intervention. By leveraging existing initiatives and establishing the necessary tools and mechanisms, SOS OASIS will work to ensure the effective execution of the project and the sustainability of its impacts.

296. The National Steering Committee (NSC) will serve as the highest governance and decision-making body for the PRAGOA project, providing overall strategic direction, oversight, and coordination at both national and local levels. The NSC is chaired by the Secretary General of the Ministry of Environment and Sustainable Development (MEDD) and includes representatives from key sectoral ministries (e.g., Agriculture, Livestock, Water and Sanitation, Tourism, Social Affairs), regional and local authorities, technical and development partners, and community stakeholders, particularly from the Adrar Wilaya. The NSC will convene twice a year, with the possibility of holding extraordinary sessions at the request of the Chair or one-third of its members. Its core responsibilities include reviewing and approving: (i) Annual Work Plans and Budgets (AWPB), (ii) Procurement Plans (PP), and other operational documents. In doing so, the Committee ensures that project activities are aligned with national development priorities, sectoral policies, and relevant government programs. The National Executing Entity (SOS OASIS) will serve as the Secretariat of the NSC, responsible for organizing meetings, preparing documentation, and drafting meeting minutes. Specific Terms of Reference (ToRs) will be developed to define the composition, roles, and responsibilities of the NSC, while detailed operating procedures will be established through formal agreements between MEDD, OSS, and SOS OASIS. To ensure local ownership and responsiveness to community needs, representatives from local / national project partners, and local leaders will be invited to participate in NSC meetings when required. Additionally, coordination structures at the local level will be defined during the project's inception phase to support the effective implementation of project activities on the ground.

297. Project Management Unit (PMU): The PMU is the operational core of PRAGOA, tasked with ensuring effective day-to-day management and coordination of project activities. It will be led by a Project Coordinator working full-time on the project. The coordinator will be supported by a multidisciplinary team, including experts in finance, procurement, environmental and social safeguards, monitoring and evaluation, gender, administration, and logistics. The PMU will be hosted by SOS OASIS. Regardless of location, the PMU will be responsible for executing activities, ensuring compliance with AF, OSS and national procedures, and maintaining internal coherence across the different project components. Its structure will be adapted as needed throughout the project life cycle.

298. Local Coordination: The project implementation team will work closely with local government structures to carry out project activities in accordance with the planning guidelines developed by the National Executing Entity and approved by the National Steering Committee (NSC). It is important to emphasize that the PRAGOA project requires strong involvement from local communities, especially as several activities will be implemented directly by them. A Project Zone Focal Point (PZFP) will be designated for each intervention area to coordinate and oversee project activities within their respective zones. regular based project zone meetings, organized by the PZFP and involving local representatives and community members — including women, youth, and vulnerable groups — will be held to assess the activities of the current year (n) and plan those for the following year (n+1). The reports from these meetings will be used by the NEE to prepare the Annual Work Plan (AWP) to be submitted to the National Steering Committee (NSC).

299. Technical and Scientific Committee (TSC) will be established as an advisory body to support the PRAGOA project with scientific and technical expertise. The TSC will consist of national and regional experts, as well as representatives from institutions and initiatives with advanced experience in climate change adaptation, oases ecosystem management, and sustainable development. Its purpose is to strengthen the scientific rigor and technical quality of the project, ensuring that interventions are evidence-based and aligned with broader regional resilience strategies. The TSC will be established after the project's inception and will draw on a network of stakeholders operating in similar agroecological contexts, including ongoing initiatives and research institutions. The committee will play a key role in: (i) Identifying and promoting good practices, (ii) Enhancing synergies with related projects, (iii) Providing recommendations to improve project implementation, (iv) Supporting the establishment of strategic partnerships between PRAGOA and other relevant actors in the region. Specific Terms of Reference (ToRs) will be developed to define the committee's composition, roles, responsibilities, and operational procedures. By drawing on diverse scientific and technical knowledge, the STC will help ensure that PRAGOA remains at the forefront of innovation and relevance in addressing the complex challenges of climate adaptation and oases resilience in the Sahel.

300. A tripartite grant agreement will be signed between OSS, the Ministry of Environment and Sustainable Development, and the NGO SOS Oasis, as part of this project. This agreement will define the fund management mechanisms as well as the respective implementation responsibilities of the various stakeholders. In response to the recommendations of the Project and Programme Review Committee, as outlined in Decision B.40/30, which call for a more detailed analysis of institutional capacities and the means to ensure the sustainability of project outcomes, it was agreed in consultation with Ministry officials to strengthen the management capacities of the NGO SOS Oasis. This support is planned under Activity 4.1.1.2.

301. The need for this capacity strengthening was identified following a due diligence assessment of the NGO's management capacities, conducted during the project preparation phase.

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302. The roles and responsibilities of the different stakeholders are detailed in the table below.

Table 18: Institutions/entities roles and responsibilities

Institution/Entity	Responsible Body	Roles and responsibilities
Regional Implementing Entity (RIE)	OSS (Sahara and Sahel Observatory)	- Oversee the financial, administrative, and legal implementation of the PRAGOA project in accordance with the approved project document and donor requirements; - Ensure full compliance with environmental and social safeguards, gender equality principles, and fiduciary standards; - Review and approve the project's Annual Work Plan and Budget (AWPB), as well as Annual Progress Reports and Project Completion Reports; - Provide strategic direction and contribute to management decision-making to support effective project delivery; - Monitor the implementation of recommendations issued by oversight bodies, audits, and mid-term or final evaluations; - Implement and monitor a transparent, accessible, and functional grievance redress mechanism to ensure accountability to affected stakeholders; - Lead or support capacity-building activities, and, where necessary, directly implement selected technical components of the project; - Ensure overall project effectiveness, quality assurance, and alignment with donor expectations and performance standards.
National Executing Entity (NEE)	SOS OASIS (Mauritanian NGO)	- Ensure the operational management of the project, including coordination of all day-to-day implementation activities at national and local levels; - Recruit, supervise, and manage the Project Management Unit (PMU), including technical experts, administrative staff, and support personnel; - Identify and allocate technical resources, including personnel, equipment, and materials necessary for effective project execution; - Develop and manage detailed project implementation schedules, ensuring alignment with the overall timeline and key milestones; - Act as a central coordination hub, facilitating communication between project stakeholders, including government agencies, community-based organizations, and other implementing partners; - Implement quality control measures to ensure that all project outputs meet established technical, environmental, and social standards; - Monitor and manage the project budget, ensuring the efficient use of financial resources and compliance with donor and fiduciary requirements; - Oversee the procurement of goods, services, and equipment, ensuring transparency and compliance with relevant procedures; - Ensure that all project activities comply with applicable environmental, health, safety, and regulatory standards; - Promote inclusive participation and community ownership by engaging local actors, integrating traditional knowledge, and ensuring gender equity throughout the project cycle; - Consolidate and submit technical and financial reports to the Regional Implementing Entity (OSS), and contribute to learning and knowledge sharing; - Establish and maintain formal partnerships with regional, national, and local institutions through Memoranda of Understanding (MoUs) or other appropriate agreements.
National Steering committee (NSC)	Ministry of Environment and Sustainable Development (MEDD)	- Provide strategic oversight and ensure the project's alignment with national development priorities and sectoral policies; - Review and approve the Annual Work Plan and Budget (AWPB), procurement plans, and other key procedural and operational documents; - Validate annual progress reports, ensuring consistency with expected results and alignment with national and donor requirements; - Guide decision-making on the implementation of the program and resolve strategic or cross-institutional issues as needed; - Conduct continuous consultations with relevant stakeholders, including government entities, local authorities, development partners, and community representatives; - Promote the integration of project outcomes into national policies and planning frameworks to enhance sustainability and impact; - Monitor project performance indicators and provide high-level guidance to improve effectiveness and accountability; - Convene regular and, if needed, extraordinary sessions to assess implementation progress and address emerging challenges; - Support coordination across ministries, agencies, and partners to foster coherence and synergies throughout project implementation.

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Project Management Unit (PMU)	SOS OASIS	- Develop the project's Operations Plan and the Annual Work Plan and Budget (AWPB), in coordination with the National Executing Entity (NEE) and OSS; - Coordinate the day-to-day implementation of project activities across all components, ensuring technical, financial, and administrative compliance with donor and institutional requirements; - Ensure the effective execution and follow-up of the Operations Plan and AWPB, and flag any deviations or risks to the Project Steering Committee and OSS; - Design and implement tools for data collection, treatment, analysis, and dissemination, in support of project monitoring and reporting; - Coordinate the collection and processing of relevant technical and financial data, ensuring consistency, accuracy, and timeliness; - Prepare and consolidate technical progress reports, annual activity reports, and the Project Completion Report, and submit them to OSS and relevant oversight bodies; - Disseminate monitoring and evaluation findings, including lessons learned, performance indicators, and corrective actions taken; - Support the implementation of decisions and recommendations from the Steering Committee, OSS, and project evaluations; - Ensure quality assurance and timely delivery of outputs and services in accordance with agreed standards and deadlines; - Contribute to institutional learning by documenting and sharing innovations, success stories, and lessons learned from project execution; - Coordinate with sectoral experts within the PMU (finance, procurement, M&E, gender, etc.) to ensure an integrated and multidisciplinary approach to implementation.
Local Coordination	Designated by NEE (SOS OASIS)	- Serve as critical liaisons between the project team and target communities; - Be assigned to a specific intervention zone; - coordinate field-level implementation, engage local stakeholders, and facilitate participatory planning and reporting processes; - Play a vital role in ensuring that community voices are heard, particularly those of women, youth, and marginalized groups; - Document findings and relay them to the ENE to inform the preparation of the Annual Work Plan and Budget.
Local actors (local governments, community structures	Designated by NEE (SOS OASIS)	- Create a conducive environment for the program execution, especially by mobilizing communities and technical experts at the local levels - Provide support for extension agents involved in the climate resilient practices dissemination and training for the benefit of communities - Provide political support and advocacy - Ensure ownership and sustainability - Key partners and implementers of the program at the local level - Labor and local material contribution for project activities (in-kind contribution to the project) - Ownership and sustainability by establishing community management structures
Scientific and Technical Committee (CTS)	Regional and national institutions coordinated by OSS	- Knowledge-share and advisory body; - Draw on expertise from regional and national institutions with demonstrated experience in oases ecosystem management and climate resilience; - Provide ongoing technical and scientific inputs to inform implementation strategies, assess innovation opportunities, and ensure that interventions are based on best practices and robust evidence; - Promote partnerships between PRAGOA stakeholders and similar initiatives in the region, enhancing synergies and improving the overall impact and sustainability of project outcomes; - Terms of Reference will clearly define its composition, role, and operating modalities.

B. Measures for financial and project risk management

303. The PRAGOA project integrates a continuous process for identifying, assessing, and managing financial, operational, and institutional risks throughout implementation. Risk mitigation strategies are embedded in the project design to support timely execution, transparency, and long-term sustainability. The table below summarizes the main risks and corresponding mitigation measures:

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Table 19: main risks and corresponding mitigation measures

Risk	Likelihood	Response / Mitigation Measures
Exchange rate fluctuations affecting available budget	Medium	The Project Management Unit (PMU), in collaboration with the OSS Financial Division, will monitor exchange rate trends. Where necessary, budget reallocations will be submitted to the Steering Committee for review and adjustment to safeguard critical project activities.
Delays in fund disbursement and procurement procedures	Medium	A comprehensive procurement plan and timeline will be developed. Close coordination with national authorities (Ministries of Environment and Finance) and OSS will help expedite approvals. Pre-qualified suppliers and framework contracts will reduce procurement delays.
Weak financial management at local level	Low	OSS will provide technical and managerial support to the National Executing Entity (SOS Oasis) and may directly implement specific activities, particularly those related to capacity building. It will also oversee and manage the project budget to ensure the efficient use of resources and full compliance with fiduciary standards and donor requirements.
Limited institutional capacity for implementation	Medium	The project includes extensive capacity-building interventions, including the establishment and operationalization of the CAIC. Support to local governance structures and technical units will reinforce delivery capacity across components.
Low involvement of vulnerable groups (especially women and youth)	Low	PRAGOA adopts an inclusive, participatory approach from the outset. Gender-sensitive tools, youth engagement strategies, and local consultation processes will promote equitable participation and benefit-sharing.
Poor performance or delays by partner NGOs or contractors	Medium	Partner performance will be managed through performance-based contracts and regular monitoring. In the event of underperformance, the project has contingency plans, including reassignment to alternative partners.
Environmental degradation from project activities	Low	All land and water-related interventions will undergo environmental screening. Sustainable practices such as agroecology, drip irrigation, and reforestation will be promoted to safeguard natural resources.
Climate shocks (e.g., prolonged drought, flash floods)	High	The project design incorporates climate-resilient infrastructure (e.g., water retention systems), diversified cropping systems (e.g., ICLS, three-layer farming), and dissemination of local early warning information via the CAIC.
Social tensions from perceived inequalities in benefit distribution	Medium	Transparent beneficiary selection, participatory planning, and a grievance redress mechanism will be implemented. The project will ensure inclusive coverage of the communities in Dhaya and Ziyara.
Political or policy shifts affecting institutional support	Low	Strong alignment with national policies and engagement with key institutions particularly the Ministry of Environment will be maintained through active representation in the steering committee.

C. Environmental and social risk management, in line with the ESP and Gender Policy of the AF.

304. As part of the implementation of the PRAGOA project, special attention has been paid to integrating the principles of environmental sustainability and social equity. From the design phase, the project aligned itself with the Environmental and Social Policy (ESP) and the Gender Policy of the Adaptation Fund. This strategic orientation reflects a strong commitment to preventing risks while ensuring fair and inclusive benefits for vulnerable agropastoral populations in the Adrar region especially women, youth, and marginalized groups.

305. Given the multiple environmental challenges facing the region including over-extraction of groundwater, soil erosion, encroaching sand dunes, and agricultural pollution the project has developed a detailed Environmental and Social Management Plan (ESMP). This plan serves as a guiding framework for managing risks across all project components. It includes measures such as the promotion of sustainable irrigation practices, the ecological restoration of degraded oases using native plant species, and the establishment of green belts for dune stabilization.

306. On the social side, the ESMP identifies critical risks such as inequitable access to resources, potential conflicts between farmers and herders, and threats to labor rights. To mitigate these, the project enforces national labor laws, engages local NGOs to monitor working conditions, and establishes inclusive local governance mechanisms with at least 30% women's

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representation. A dedicated Gender Action Plan (GAP) is also implemented to reduce gender-based disparities in resource access and decision-making.

307. Cultural heritage protection is also an integral part of the approach. Site-specific assessments will be conducted in consultation with local communities to safeguard sacred and culturally significant areas. In the same spirit of transparency and accountability, a robust and culturally appropriate Grievance Redress Mechanism (GRM) will be put in place. This mechanism, jointly managed by OSS and SOS OASIS, will ensure that all project stakeholders can voice concerns safely and confidentially. Community-level focal points will be designated, and multiple communication channels including anonymous ones will be provided to guarantee timely and equitable grievance resolution.

308. Institutional roles and responsibilities are clearly delineated. OSS is responsible for overall ESP compliance, periodic audits, and validation of safeguard reports. SOS OASIS will lead the day-to-day implementation of the ESMP, including training, capacity building, and reporting. Local committees will monitor risk mitigation efforts and ensure effective feedback loops with the communities. Monitoring indicators such as groundwater levels, reforestation success, and grievance resolution rates will be tracked through annual audits and routine reporting.

309. The project also anticipates potential cumulative impacts arising from simultaneous interventions whether through multiple PRAGOA sub-projects or interactions with other ongoing external initiatives. These cumulative effects can amplify environmental degradation, social tensions, and gender-based violence if not properly managed. In response, the project foresees joint planning and coordination meetings, awareness-raising campaigns, dissemination of signed codes of conduct by all implementing entities, and the rollout of a comprehensive action plan to combat sexual exploitation, harassment, and child labor.

310. A detailed study, including the Environmental and Social Impact Assessment (ESIA) and the Environmental and Social Management Plan (ESMP), has been carried out and is attached in the annex to provide a thorough analysis of the identified risks and corresponding mitigation measures.

311. Through this integrated and participatory approach, the PRAGOA project demonstrates its commitment to fostering resilient, equitable, and environmentally responsible development in the Adrar region. The environmental and social risk management mechanisms form a core pillar of this commitment, ensuring that both ecosystems and human rights are safeguarded throughout the project lifecycle.

Unidentified Sub-Projects (USP)

Compliance with AF Policies

312. All activities carried out within the framework of the USP modality in this project will strictly adhere to the AF Policies applicable to it. These policies encompass: i) *The Adaptation Fund Environmental and Social Policy* (AF ESP). This policy delineates the obligations for Implementing Entities (IEs) to evaluate and manage environmental and social risks during project execution. It outlines the E&S Principles that govern AF projects, emphasizing the necessity for IEs to implement measures to either prevent, minimize, or mitigate such risks throughout the project lifecycle. The development of the current Policy on USPs aligns with these principles; ii) Any USP identified and integrated into the PRAGOA project must fully align with the E&S Principles outlined in the AF ESP. There are no exceptions to this requirement; and iii) the *AF Gender Policy and Action Plan*, (AF GP) updated in 2022, establishes the objectives and principles that AF-funded projects must adhere to in order to safeguard women's rights as fundamental human rights and to promote gender equality. The USP Policy for PRAGOA is further shaped by the AF Guidance Document, issued in February 2019, titled *"Updated guidance for implementing entities on the use of unidentified sub-projects" adopted at the AF board thirty-ninth meeting (Decision B.39/52).*

Compliance with OSS ESP safeguards

313. The Environmental and Social Policy (ESP) within the PRAGOA project, including those for the USPs, are upheld through OSS policies and procedures, which are modelled on the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability. This sustainability framework ensures a continuous process of identifying, mitigating, and monitoring potential risks and impacts throughout the project's lifecycle.

314. The management of environmental and social risks involves two primary stages: i) Preliminary Risk Screening: This stage, conducted during project preparation, assesses the project's adherence to the ten Performance Standards (PS) outlined in the OSS E&S policy. It categorizes the project based on its level of risk; and ii) Ongoing Risk Screening: Throughout the implementation phase, project interventions undergo continuous risk assessment. Activity-specific risk management follows OSS' procedure, aligning with internationally recognized standards such as ISO 31000:2009, which provides principles and guidelines for risk management. Operational procedures will be established to ensure that all project activities and interventions undergo continuous screening for the identification of emerging risks and impacts.

315. The Environmental and Social Policy (ESP) of the PRAGOA project, as well as for the Unidentified Sub Projects (USPs), are guaranteed through the implementation of OSS policies and procedures. These are grounded in the International Finance Corporation (IFC) Environmental and Social Sustainability Framework.

316. This framework ensures a systematic approach to identifying, mitigating, and monitoring potential risks and impacts throughout the project's life cycle. The management of environmental and social risks involves two primary stages: i)

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Preliminary Risk Screening: This stage, conducted during project preparation, involves assessing the project against the ten Performance Standards (PS) outlined in OSS E&S policy.

317. This categorizes the project based on its level of risk; and ii) On-going Risk Screening: Throughout the implementation phase, continuous assessment of project interventions is conducted. This activity-wise risk management is governed by OSS' risk management procedure, which aligns with internationally recognized standards, particularly ISO 31000:2009, "Risk Management — Principles and Guidelines." Operational procedures will ensure ongoing screening of all project activities and interventions to identify emerging risks and impacts.

Unidentified Sub-Projects (USPs) in the PRAGOA Project

318. The USP policy applies to activities that have been identified as USPs, and of which the detailed scale, scope and location, and other technical aspects are not yet fully identified at the time of full proposal development. For this project, the USP policy will be applied to: (a) all activities related to the water management (activities under outcome 1.1 & 1.2); (b) all activities related to the promotion and implementation of SLM and agro-sylvo-pastoral practices (activities under outcome 2.1) and (c) all activities related to the implementation of the IGAs (activities under outcome 3.1).

319. **Criteria for the selection and justification of USPs :** The identification and selection of USP sites will follow clear and transparent criteria, including: (i) technical feasibility and environmental suitability based on the Water Resources Management Plan (Activity 1.1.1.1); (ii) climate vulnerability and exposure to risks such as drought, erosion, and land degradation; (iii) community readiness and existence of functional local governance structures such as LWMCs (Activities 1.1.1.3–1.1.1.4) or Producer Clubs (Activity 2.1.1.4); (iv) inclusiveness and gender participation ensuring equitable benefit-sharing among women, youth, and marginalized groups; and (v) long-term sustainability potential, including accessibility and maintenance capacity. These criteria will ensure that USP interventions are prioritized in the most vulnerable and high-impact areas. The USP modality is justified as it allows flexibility to target final sites based on detailed feasibility studies, participatory consultations, and technical specific assessments to be completed during activity inception (hydrological study, topographical assessment, land cover, socio-economic set up analysis, etc).

320. Once the necessary clarifications and details related to the implementation of the activities identified as USPs have been provided, the EE will conduct a specific and detailed environmental, social and gender assessment moving forward. This assessment will be done in accordance with national regulations and standards for conducting an assessment such as an EIA and under the supervision of OSS to ensure compliance with OSS and AF safeguards. The costs related to the environmental, social and gender assessment will be charged on the budget line of each activity as stated in the project detailed budget. This assessment will include:(i) the identification of potential environmental and social risks, such as temporary land disturbance, water use conflicts, or occupational safety risks; (ii) the evaluation of cumulative impacts, including effects on biodiversity, soil, and water resources; and(iii) the assessment of potential gender and inclusion gaps. Based on the screening results, site-specific Environmental and Social Management Plans (ESMPs) will be developed where moderate risks are identified.

321. The USPs will be managed in accordance with the Adaptation Fund's Updated Guidance on USPs (May 2021). A screening and approval process will be established to ensure that each USP complies with the Fund's Environmental and Social Policy (ESP) and Gender Policy. Before the execution of each activity identified as a USP, the Executing Entity will submit a detailed implementation plan outlining the various steps of the activity. This plan will be reviewed by the OSS to ensure that the proposed approach is consistent with the USP policy. In addition, USP-related activities will be identified in annual planning documents such as the AWPB and PP. A dedicated training and awareness session will also be organized to strengthen understanding of the implementation, management, and reporting approach for activities identified as USPs.

322. **Measures for risk prevention, mitigation, and management:** Each USP will undergo environmental and social screening using the OSS's Environmental and Social Screening Form (ESSF) included in the ES Policy and part of ESMF. The screening will determine the risk category and the need for additional assessment. Mitigation measures will include: (i) implementation of site-specific ESMPs; (ii) enforcement of occupational health and safety protocols for contractors; (iii) adherence to national environmental permitting requirements; (iv) community-level consultations and disclosure prior to activity launch; and (v) integration of a Grievance Redress Mechanism (GRM) accessible to all project beneficiaries.

323. These measures will ensure compliance with the Adaptation Fund's Environmental and Social Policy (ESP), the OSS E&S Safeguards, and the Gender Policy. Continuous monitoring will be carried out by the PMU and validated by OSS through regular supervision missions and reporting.

324. All activities classified as USPs have been identified in Part II A (Outputs and Activities) of the project description. This will facilitate early identification and advance planning, as these activities need to be initiated and prepared beforehand. In addition, in the Project Implementation Manual (PIM), these activities will be clearly defined and an Action Plan will be developed to treat them as USPs. Furthermore, in the reporting templates and guidance, activities identified as USPs will be subject to specific reporting requirements, ensuring close monitoring of their implementation and compliance with the Adaptation Fund's safeguards.

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Project Grievance Mechanism

325. The proposed project will utilize the existing OSS grievance mechanism to allow affected populations to raise concerns that are not complying with its social and environmental policies or commitments.

326. OSS has established a grievance mechanism through its procedures, which is an independent mechanism whereby a matter, resulting from a project financed or implemented by OSS may file a complaint. The grievance mechanism, which is made available to stakeholders in OSS website, is part of the environmental and social policy to address compliance as well as lodging USPs identified and grievance cases that may arise during implementation by OSS where a public guideline defines the complaint resolution mechanism.

327. It aims to establish an effective dialogue between those affected by the projects' it finances and all interested parties, to resolve the problem(s) the origin of a request, without seeking to assign responsibility or fault to any of these parties.

328. At the OSS (RIE) level: the grievance mechanism is coordinated and managed by OSS Environmental and Social Committee (OESC). Communities and other stakeholders which will be affected by the project can submit complaints to OSS, the IE of the present project by: mail, email, fax or phone to the address indicated. Complainants may also refer the matter to the Ad hoc Complaint Handing Mechanism (ACHM) of the Adaptation Fund if the IE is not responsive or are not content with the outcome of their complaint.

Sahara and Sahel Observatory Boulevard du Leader Yasser Arafat BP 31 Tunis Carthage 1080 Tunisia Tel: (+216) 71 206 633/634 Fax: (+216) 71 206 636 Email: doleances@oss.org.tn or boc@oss.org.tn	**Adaptation Fund Board Secretariat Mail: MSN P-4-4400 1818 H Street NW Washington DC 20433 USA Tel: 001-202-478-7347 Email: afbsec@adaptation-fund.org**

329. At the project level: The NEEs are the contact point for any project-related complaints from stakeholders. The National project management should respond promptly and appropriately. Where the complaint cannot be managed at the project level, the NEE will direct the complainants to OSS for further action. The complainants will provide complete information in the form for proper assessment of the complaint(s). It will be the responsibility of the NEE, under the control of OSS, to ensure that all relevant stakeholders are adequately informed about the grievance mechanism through awareness and sensitization campaigns highlighting the issue of potential USPs and how to address them. This mechanism will be made available and widely diffused during the launching workshops and the meetings and trainings. The guideline of grievance mechanism will be made available on the project and the national executing entity website. The procedures on how to submit the complaint are available on the website of the OSS or directly at Guide traitement doleances. If the OESC finds that a complaint is eligible, the OESC composes internal and/or external experts' team to investigate the case and proposes options for the complainant to consider.

330. Complaint Handling Process – Filling-in a complaint: Individuals or communities affected by project activities can submit complaints or claims through various forms and channels. To ensure accessibility, the methods for filing complaints will be diversified according to the context: At the national level: Complaints can be directed to OSS or the AF through the contacts provided, including via social media platforms. At the local level: Complaints can be submitted to local authorities or the NEE. The NEE's contact information will be made publicly available at the start of the project execution.

331. The mechanism will utilize all possible means and channels (both traditional and modern) to receive complaints or claims, whether anonymous or identified. These channels include, but are not limited to: telephone calls (widely used in the target area), self-referrals during supervision missions, observations made during meetings or field visits, social networks (e.g., WhatsApp), the project website, the project's email address, the OSS website, and mail via complaint boxes placed in the localities impacted by the project.

332. Receipt and registration of complaints: The NEE is responsible for ensuring the receipt and management of all complaints related to the project's activities and impacts. Upon receipt, complaints will be recorded, and a traceability procedure will be established. Complaints will generally be classified into two categories: (a) Non-sensitive complaints related to the implementation process, such as choices, methods, or results achieved; and (b) Sensitive complaints, which typically involve personal misconduct, including corruption, sexual abuse, or discrimination.

333. The NEE will formally acknowledge receipt of the complaint (via email or letter) within a maximum of one week. This acknowledgment will inform the complainant of the next steps and, if necessary, request clarifications or additional information to facilitate a better understanding of the issue.

334. Complaint handling: This process involves assessing the eligibility of a complaint to ensure that it is related to the project's activities or commitments. The goal is to establish a clear link between the issues raised and the project's impacts. The eligibility assessment will also determine whether the complaint should be addressed through the project-specific grievance mechanism or referred to other relevant mechanisms (e.g., whistleblowing channels).

335. In cases where complaints are unfounded, it is crucial to conduct thorough investigations to protect the project's reputation. This responsibility falls to the National Executing Entity (NEE). Unfounded complaints may include those lacking sufficient information, or those based on rumours or malicious intent, which could disrupt the project's progress. Public complaints or

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accusations made to a wider audience that are deemed unfounded will be handled jointly by the Implementing Entity (IE) and NEE, potentially resulting in a formal statement.

336. For well-founded complaints, two types of responses are possible: (i) a direct response and action to resolve the issue, or (ii) a comprehensive audit, involving joint investigations, dialogues, and negotiations to reach a meaningful resolution. This may require expanding the team to include national and local experts.

337. Following the audit and investigations, a contextually appropriate and formal response will be provided to the complainant. This response should outline the procedures the NEE will follow to address the complaint or suggest the appropriate authorities to contact if the matter falls outside the NEE's responsibilities.

338. The diagram provides a schematic representation of the grievance mechanism process.

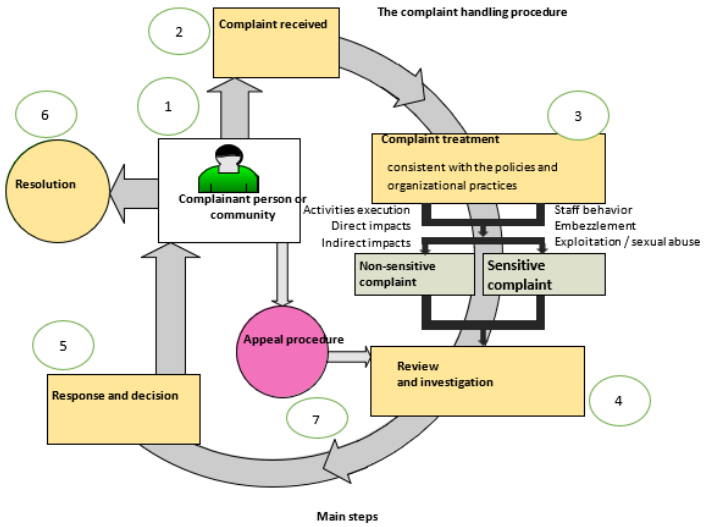

Figure 10: Grievance mechanism process

D. Monitoring and evaluation arrangements and budgeted M&E plan

339. The Monitoring and Evaluation (M&E) framework for the PRAGOA project is designed to ensure systematic tracking of project activities, timely assessment of progress, and comprehensive evaluation of outcomes. This framework supports adaptive management by providing continuous feedback, enabling the project to make informed decisions and adjustments to enhance effectiveness and achieve its objectives.

340. The M&E framework will track the entire lifecycle of the project, from input delivery and work schedule adherence to the achievement of outputs and long-term impacts. It is structured to provide stakeholders with regular updates and facilitate evidence-based decision-making. This framework shall be developed by the EE with OSS support to support in the project execution and it will include: a) Systematic Data Collection - Regular and structured data collection will be conducted to monitor progress across all project components. Data will be gathered from a variety of sources, including field reports, stakeholder consultations, and surveys; b) Data Analysis and Reporting - Collected data will be analysed to assess project performance against the established targets and indicators. Findings will be reported to partners, stakeholders, and funders to maintain transparency and facilitate accountability; and c) Evaluation Mechanisms - Evaluation will be conducted at various stages of the project to objectively assess the design, implementation, and outcomes. This includes assessments of the project's relevance, effectiveness, efficiency, impact, and sustainability. Table below further breaks down budget of Monitoring and Evaluation Plan.

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Table 20: M&E Plan Budget Breakdown

Task	Responsible	Estimated Budget	Timeline														Observation
			Y1				Y2				Y3				Y4		
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Initial Workshop (IW)	PMU and OSS	25000																	@25,000 from PEC/Project Inception &Launch budget line
Baseline study	OSS	60000																	@60,000 from IE/Evaluation and Audit budget line
Design of Project M&E System and Monitoring (*)	PMU	20000																	@20,000 from PEC/M&E budget line
Quarterly Field Visits and Reporting (*)	PMU & Community Focal Points	60000																	@60,000 from PEC/M&E budget line
Semi-annual Field Visits (*)	OSS	90000																	@90,000 from IE/Operating Costs budget line
Monthly and Quarterly Monitoring and Reports (*)	PMU	30000																	@30,000 from PEC/M&E budget line
Annual Reports	PMU	10000																	@10,000 from PEC/Project Coordination and Management fees budget line
Meetings of the Project Steering Committee (PSC)	PMU	25000																	@25,000 from PEC/Operating Costs budget line
Mid-term Evaluation (*)	OSS – External Evaluator	25000																	@25,000 from IE/Evaluation and Audit budget line
Final Evaluation and Project Report (*)	OSS – External Evaluator	25000																	@25,000 from IE/Evaluation and Audit budget line
Project Closure and Field Verification Visits (*)	OSS	15000																	@15,000 from IE/Evaluation and Audit budget line
Project audits	OSS – External Auditor	35000																	@35,000 from IE/Evaluation and Audit budget line
Total		**420000**																	

(*) Includes budget for E&S Committee operations and ESMP/GRM monitoring activities.

341. This budget is structured to ensure that all necessary M&E activities are funded and executed in a timely manner, with clear allocation of responsibilities and time frames to facilitate effective project management and accountability.

342. **Inception Phase Activities:** Within the first month of project implementation, an Initial Workshop will be held with the participation of all executing parties. The workshop will establish execution and implementation mechanisms, finalize agreements, and ensure that all stakeholders are aligned with the project's objectives and methodologies. During the workshop, an action plan for the first twelve months of the project will be developed and this plan will include key activities such as assessment (Ac.4.1.1.1), baseline and capacity needs assessments, Knowledge, Attitudes, and Practices (KAP) surveys, and the design of the M&E system which will be the first actions to be undertaken in the operationalization of the project.

343. **Baseline Study**: A comprehensive baseline study, will be conducted to establish initial conditions and reference points for key project indicators such as community awareness of climate risks (KAP index), institutional capacity levels, access to climate resilient agricultural practices and gender disaggregated participation data which will serve as benchmarks for measuring progress and evaluating impact. In parallel, as part of the community's capacity building activities (Ac. 4.1.1.1.), a capacity needs assessment and KAP survey, will diagnose institutional, technical, and behavioural gaps to inform implementation strategies and targeted capacity-building. While the baseline provides the foundation for monitoring and evaluation, the assessment offers critical insights into stakeholder needs and adaptive capacities, ensuring that the project is both evidence-based and demand-driven.

344. **Ongoing Monitoring and Evaluation:** Regular monthly coordination meetings between the PMU and Ministry of Environment in Nouakchott will be held to review on-the-ground progress, discuss challenges, and plan upcoming activities. These meetings will ensure continuous alignment between field operations and overall project management.

345. **Quarterly and Annual Reporting**: Quarterly progress reports will be prepared to provide updates on activities, resource utilization, and outcomes. These reports will be shared with stakeholders to maintain transparency and accountability.

346. **Annual Reports:** Comprehensive annual reports will summarize the year's achievements, challenges, and lessons learned. These reports will also include financial summaries and audit results, ensuring strong financial accountability.

347. **Mid-Term Evaluation:** A mid-term evaluation will be conducted to assess the project's progress, identify any necessary adjustments, and make recommendations for the remaining implementation period.

348. **Project Completion Summary:** will be prepared in accordance with the Adaptation Fund's mandatory reporting requirements

349. **Final Evaluation:** At the project's conclusion, a final evaluation will assess the overall impact, sustainability of results, and the achievement of project objectives. This evaluation will inform future initiatives and provide insights for scaling up successful practices.

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350. **Field Monitoring and Community Engagement:** Regular field visits will be conducted by the PMU and Ministry of Environment to monitor project implementation at the ground level. These visits will ensure that activities are being carried out as planned and that targets are being met according the workplans developed.

351. **Focus Group Discussions and In-Depth Interviews:** Field visits will include focus group discussions and in-depth interviews (KAP surveys) with key stakeholders, including community members, to gather qualitative data on project impact and identify potential obstacles.

352. **Gender-Inclusive Monitoring:** Special efforts will be made to ensure that both women and men are equally consulted during monitoring activities. Female monitors will be mobilized where necessary taking into account the cultural aspects experienced in Ziyara and Dhaya to engage with women in the community, ensuring their perspectives and needs are adequately represented in the project's evaluation.

Monitoring of the ESMP

353. The Environmental and Social Management Plan (ESMP) includes a monitoring program with specific indicators to track the effectiveness of mitigation and improvement measures.

354. **Integration of USPs:** Since the Project incorporates USPs, the Monitoring and Evaluation (M&E) system will be designed and implemented with these USPs in mind. This system will adhere to guidelines developed in line with the Adaptation Fund's standards for USPs to effectively monitor and address related risks and impacts. A participatory, bottom-up approach will be used, involving beneficiaries in the selection and execution of activities. Monitoring will involve the following key actors:

355. **Implementing Entity (OSS):** The Environmental and Social (E&S) monitoring activities will be overseen by the E&S committee of the implementing entity, OSS. This committee will be responsible for submitting monitoring reports to the Adaptation Fund. In compliance with the Adaptation Fund's ES policy, OSS will ensure that all identified environmental and social risks and impacts are considered in project monitoring and evaluation. OSS will conduct monitoring and evaluation missions, ensuring that the project adheres to its schedule and that funds are appropriately allocated to planned activities.

356. **Grievance Management:** In the event of grievances, the E&S Committee (ESCO) will address the issues and seek appropriate solutions. The annual reports from OSS to the Adaptation Fund will include updates on the implementation status of the ESMP and measures taken to avoid, minimize, or mitigate E&S risks and impacts. These reports will also describe any corrective actions taken. Additionally, mid-term and final evaluation reports will assess the project's performance in managing E&S risks and handling grievances.

357. **National Executing Entity (NEE)- SOS Oasis:** The NEE will oversee ESMP monitoring at the local level and will be responsible for submitting the ESMP report to OSS. This report will align with the 15 principles of the Adaptation Fund and include details on grievance management.

358. **Quarterly Reporting and Field Visits:** As part of the supervision missions, the NEE will compile and review reports on a quarterly basis, incorporating feedback from local communities into the Project Management Unit (PMU). Regular field visits will be conducted to inspect and verify the effectiveness of mitigation measures and assess the extent of anticipated impacts. Both the NEE and the Regional Implementing Entity (RIE) will carry out these field missions to closely monitor risks, impacts, and mitigation measures, ensuring adherence to established principles. Effective monitoring will require the active involvement of both the implementing and executing entities, with community support, to ensure robust local and national oversight of mitigation measures. The ESMP report will be submitted to OSS annually.

359. **Project Management Unit (PMU):** The PMU in SOS Oasis will coordinate and oversee the monitoring of environmental and social indicators. It will be responsible for analysing data, managing local information systems, and establishing baseline data at the project's start. The PMU will prepare quarterly reports.

360. **Local Communities:** The ESIA monitoring will incorporate a community-based approach. The project plans to provide training and capacity-building sessions for local agents and communities to enhance their skills in data collection and monitoring. Communities will be informed about the risks associated with activities and will be actively involved in the implementation and monitoring of mitigation measures.

Table 21: Roles and Responsibilities in ESMP Monitoring and Evaluation

Responsible	Role
Implementing Entity (OSS)	OSS will be committed to adherence to AF standards and ESP principles and will implement mitigation measures as part of the ESMP.
Ministry of Environment	Guarantee the proper application of the ESMP at the national level, in accordance with OSS and AF guidelines. It will oversee compliance with national regulations, monitor the implementation of mitigation measures, and ensure alignment with international standards.
National Executing Entity SOS Oasis	Monitor and disseminate the ESIA / ESMP, in particular its grievance mechanism, among relevant stakeholders and beneficiaries. Ensure that the implementation of the project complies with applicable national and standard regulatory frameworks. Monitor the implementation of ESMP activities and evaluate the effectiveness of the mitigation measures put in place.
Project Management Unit	Ensure the day-to-day execution of the project and ensure regular monitoring, identifying any new potential risks for society and/or the environment during the project implementation, so that measures of support and appropriate attenuation can be implemented and adopted in a timely manner.
Local Communities	Provide information on potential new social / environmental risks that may arise during the implementation of the project activities. Assist in the implementation and monitoring of mitigation measures based on their local expertise.

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361. The Environmental and Social Management Plan (ESMP) is integrated into the project's framework to ensure that all activities comply with environmental and social safeguards of the AF and OSS. While specific budget allocations for ESMP implementation are not detailed in the available documents, the IE fees under operating cost budget line and EE Project Execution Cost under M&E will encompass expenses related to ESMP activities, including monitoring, compliance, and mitigation measures.

Funds Flow Arrangement

362. **Disbursement from the Adaptation Fund to OSS (Implementing Entity):** Upon approval of the project proposal, the Fund disburses the initial tranche of funds to OSS according to the agreed-upon disbursement schedule. The disbursement schedule is based on project milestones, timelines, and financial needs. Subsequent disbursements are contingent upon the submission of satisfactory progress and financial reports by OSS and the achievement of specified project milestones.

363. **Disbursement from OSS to the National Executing Entity/SOS Oasis:** OSS will proceed with the transfer of funds to the dedicated bank account opened by SOS Oasis in the name of the project. The Ministry of Environment and Sustainable Development (MEDD) will ensure the overall supervision and monitoring of the project's execution at the national level. Fund transfers will be made in tranches, in accordance with the Annual Work Plan and Budget (AWPB) and the semi-annual Procurement Plan (PP), and based on the submitted financial and progress reports. SOS OASIS shall submit these reports to OSS, after prior validation by MEDD, providing detailed information on the use of funds and the achievement of the project's key milestones. OSS will review the reports received and, upon verification of their compliance with the established requirements, will authorize the disbursement of the next tranche.

364. **Financial Reporting and Accountability:** A detailed financial record, including receipts, invoices, and contracts, and submits periodic financial reports will be submitted to OSS. These reports should detail expenditures, activities completed, and any deviations from the budget. OSS will consolidate financial and progress reports and submits them to the Fund. OSS is responsible for ensuring the accuracy and completeness of these reports.

365. **Annual Audits:** Annual audits will be conducted by independent auditors to verify the accuracy of financial reports and the integrity of financial management systems. Audit findings will be shared with all relevant stakeholders to maintain accountability.

366. **Alignment with Partner Guidelines:** The M&E procedures will align with the guidelines and standards of OSS, Adaptation Fund, and relevant International Financial Institutions (IFIs). This alignment ensures consistency in reporting and compliance with international best practices.

367. **M&E System Development:** A comprehensive M&E system will be developed, managed by the PMU, to collect, synthesize, and interpret data effectively. This system will support optimal monitoring by providing timely and accurate information for decision-making.

368. **Capacity Building Workshops:** Regular capacity-building workshops will be conducted to enhance the skills of project staff and stakeholders in M&E practices. These workshops will ensure that all involved parties are equipped to contribute effectively to the project's monitoring and evaluation efforts. By maintaining a rigorous and responsive M&E framework, the project will be well-positioned to achieve its goals, demonstrate impact, and contribute valuable insights to the broader field of climate adaptation in arid regions.

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E. Project results framework including milestones, targets and indicators.

Result	Indicators	Baseline	Milestones (after 2 years)	End of the project targets	Means of verification	Responsible Parties	Risks and Assumptions
Global Objective							
To strengthen the resilience of communities (women and youth) of Ziyara and Dhaya oases ecosystems, to climate change impacts through sustainable soil and water and management techniques as well as natural resources and related agrosystems.	**Number of vulnerable community members in Adrar Oases with increased capacity to implement adaptation projects that address risks to extreme environmental hazards.**	**40%**	**At least 55% (2770 people)**	**At least 70% (3525 people)**	**M&E reports**	**OSS and SOS Oasis Mauritania**	**Risks:** **Rural communities suffer from other shocks during the project life, which affects their ability to adopt the proposed mechanisms.** **Assumption:** **New facets of climate risks emerge during the project life.**
Component 1: Improved water resources access and management for local communities							
Outcome 1.1 Strengthened capacity on water management and increased adoption of best practices in integrated water resources management (IWRM)	Number of Integrated Water Resource Management Plans developed/updated	0	1 WRMP document developed or updated	1 WRMP document developed or updated	M&E reports.	OSS and SOS Oasis Mauritania.	**Risks:** Prolonged droughts or excessive rainfall may hinder water retention efforts or damage infrastructure. Climate change impacts could exacerbate water scarcity or increase extreme weather events. Weak coordination among stakeholders may delay IWRM adoption. Resistance to change among farmers or communities due to traditional practices or mistrust. Low participation from community members, especially women, due to cultural or logistical barriers. Disengagement from trained community members due to migration or competing priorities. - Poor-quality construction or maintenance of infrastructure may reduce functionality over time.
	Number of stakeholders trained on Integrated Water Resources Management	0	200 people (40% women).	200 people (40% women)			

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	Number of water infrastructure managed sustainably.	0	120 water infrastructures, managed sustainably	240 water infrastructures, managed sustainably			Logistical delays or resource shortages in implementing water management infrastructure. Limited retention or application of knowledge gained through training sessions. Disparities in access to resources or financing required to implement improved practices. **Assumptions:** Local authorities, community leaders, and institutions will actively engage in all project phases. Community members will adopt IWRM practices and participate in training sessions and workshops. Adequate funding, expertise, and materials will be available for infrastructure and capacity-building activities. Environmental conditions will remain stable enough to support effective implementation. Institutions will commit to collaboration and revising water management policies. Training sessions and knowledge-sharing initiatives will lead to measurable improvements in practices. Awareness campaigns will influence behaviour changes, particularly in water use efficiency and hygiene.
	Number of Local Water Management Committees improved governance of water management	0	40 LWMCs established (*50% women led)*	40 LWMCs established (*50% women led)*			
Output 1.1.1: Integrated Water Resources Management Plans developed or updated	Number of status report of surface and groundwater resources	0	1 status report	1 status report	M&E report, activities report, fields report, workshop reports, participants record.	OSS and SOS Oasis Mauritania.	**Risks:** Climate variability (e.g., droughts or heavy rains) may impact water resource assessments, leading to potential inaccuracies in the reports. Conflicts over water resource access and usage could disrupt the planning and implementation of the management plans. Limited community trust in institutional processes may result in low engagement, especially in areas with historical tensions regarding resource management. Political or administrative changes may affect the continuity of water resource management initiatives. Resistance from stakeholders due to conflicting
	WRMP document developed or updated based on findings from the assessments in Activity 1.1.1.1.	0	1 WRMP document developed or updated	1 WRMP document developed or updated			

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	Number of Local Water Management Committees (LWMCs) that actively include women established	0	40 LWMCs established (*50% women led)*	40 LWMCs established and operate autonomously (*50% women led)*			interests or lack of clarity in water management priorities. **Assumptions:** Sufficient financial and human resources will be allocated to complete comprehensive assessments and update the management plans effectively. Local stakeholders, including communities and institutions, will cooperate in the development of the water resources management plan. Data collection processes will be accurate and will provide a solid basis for effective planning and decision-making. Institutions will be open to adopting new practices and will support the implementation of the updated management plan. Environmental conditions will allow for effective monitoring and management of water resources in the long term.
	Number of beneficiaries of the training sessions conducted on IWRM.	0	200 people (40% women)	200 people (40% women)			
Output 1.1.2: Improved and rational use of available water through implementation of water resources management infrastructures	Area (ha) covered by newly constructed or reinforced earth bunds, disaggregated by strategic zones.	0	200 ha of bunds are built and/ or updated	500 ha of bunds are built and/ or updated	Consultation reports, training reports, participants record. Field visits, before and after photos.	OSS and SOS Oasis Mauritania.	**Risks:** Institutional weaknesses may hinder the effectiveness of LWMCs and the adoption of water management practices. Lack of alignment or coordination with local governments may delay the implementation of infrastructure and capacity-building activities. Logistical challenges or insufficient resources could delay the development and delivery of training modules for LWMCs. High turnover of trained individuals in local institutions may lead to a loss of skills and institutional continuity in water management efforts. Community resistance due to past negative experiences or distrust in institutional initiatives. Cultural, linguistic, or logistical barriers may reduce the effectiveness of training and community outreach programs. **Assumptions:** Local institutions, including LWMCs, will be committed to improving their capacity for water management and will actively participate in training programs. Adequate funding will be available to ensure timely development of training modules and capacity-building initiatives. Communities will be receptive to new water management practices and will integrate these into their daily activities. Collaboration between national, regional, and local authorities will support capacity-building and institutional strengthening initiatives. Effective monitoring systems will allow for timely adjustments to management practices based on project feedback and environmental conditions.
	Number of existing but non-functional water management infrastructures rehabilitated during the project period.	0	30% of non-functional water management infrastructures rehabilitated	100% of non-functional water management infrastructures rehabilitated	Consultation reports, Field visits reports		
	Length (in kilometres) of irrigation system channels installed in palm groves and market gardens.	0	15 kilometres of irrigation system channels installed	30 kilometres of irrigation system channels installed	Field visits reports, before and after photos.		
	Length (in kilometres) of drainage systems installed in palm groves and market gardens.	0	5 kilometres of drainage systems installed	20 kilometres of drainage systems installed			
	Number of training sessions conducted on flood-recession cropping techniques.	0	4 training sessions	8 training sessions	Trainings reports, participants record.		
	Number of exchange visits organized for farmers to observe practical practices in other regions.	0	3 exchange visits	6 exchange visits	Field visits reports, participants record.		
	Number of awareness campaigns conducted on safe water use and water demand management.	0	10 awareness campaigns conducted	20 awareness campaigns conducted	Awareness campaigns support		

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Outcome 1.2: Water resources access improved for target communities	Number of households with increased access to climate-resilient water supply	0	625 (25%) households increased access to climate resilient water supply	1250 (50%) households increased access to climate resilient water supply	M&E reports.	OSS and SOS Oasis Mauritania.	**Risks:** Unpredictable climate variability affecting water availability despite infrastructure improvements. Insufficient maintenance of water infrastructure leading to early deterioration. Uneven distribution of water access, leaving some localities underserved. Limited institutional capacity to monitor and sustain improved water systems. Conflicts arising from unequal access or disputes over water usage. Population growth outpacing infrastructure development, reducing the effectiveness of improvements. Dependency on external funding for long-term sustainability of water infrastructure. **Assumptions:** Local authorities and communities are committed to supporting and maintaining infrastructure. Improved water access directly translates to increased arable land and grazing areas. Reliable assessments and data inform accurate planning and resource allocation. Stable environmental conditions allow improved water infrastructure to function optimally. Communities adopt sustainable water-use practices to maximize infrastructure benefits.
	Volume (m^3) of water mobilized through project-supported systems	0	At least 10,000m^3 of increase in water storage capacity.	At least 20,000m^3 of increase in water storage capacity.			
Output 1.2.1: Water resources mobilization infrastructures created or rehabilitated	Number of comprehensive assessment reports produced on the current status of surface and groundwater resources in the targeted areas of Adrar.	0	1 report produced	1 report produced	M&E report, field visits reports, before and after photos	OSS and SOS Oasis Mauritania.	**Risks:** Inadequate technical capacity for construction or rehabilitation of hydraulic infrastructures. Delays in construction due to procurement, permitting, or site conditions. Insufficient community participation in infrastructure maintenance and management. Environmental degradation due to water infrastructure construction. Inadequate or delayed funding affecting project activities. Climate variability impacting water resources and infrastructure effectiveness. Operational and maintenance issues post-construction. **Assumptions:** Availability of skilled labour and contractors. Sufficient government support for permits, approvals, and coordination. Community willingness to participate in water management activities. Reliable data from comprehensive assessments to guide infrastructure planning. Access to adequate materials and resources for construction. Sustained funding throughout the project lifecycle.
	Number of hydraulic infrastructures constructed or rehabilitated (e.g., boreholes, wells, reservoirs).	0	At least 20 hydraulic infrastructures constructed or rehabilitated	At least 40 hydraulic infrastructures constructed or rehabilitated			
	Number of new water points for livestock established.	0	At least 10 new water points for livestock established	At least 20 new water points for livestock established			
	Number of protected water sources created or rehabilitated.	0	50 protected water sources created or rehabilitated.	100 protected water sources created or rehabilitated.			
	Number of drinking water storage infrastructure installed (e.g., tanks, reservoirs).		40 drinking water storage infrastructures installed	80 drinking water storage infrastructures installed			

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							Positive climate conditions ensuring water resource availability.
Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability.							
Outcome 2.1: SLM Practices promoted and operationalized	% of farmers adopting SLM practices	0	At least 25% (250 farmers 15% women) of targeted farmers adopting improved SLM practices.	At least 60% (600 farmers 25% women) of targeted farmers adopt improved SLM practices.	M&E reports	OSS and SOS Oasis Mauritania.	**Risks:** Extreme weather events (droughts, heavy rains) could disrupt reforestation and green belt initiatives. Lack of sustained interest or active participation by local communities, including women and youth. Inadequate financial or technical resources could delay implementation of activities. Flora used in reforestation may fail to thrive in the targeted environments. Competing demands for agricultural or pastoral land may delay the establishment of green belts and pastoral zones. **Assumptions:** No major climate shocks disrupt project implementation. Communities, including women, youth, and local authorities, remain committed and actively participate in all project activities. Adequate financial and technical resources are available throughout the project lifecycle. Flora species selected for reforestation are suitable for the local environment and grow successfully. Local policies and authorities continue supporting biodiversity and sustainable land management initiatives.
	Ha of degraded land restored through SLM practices	0	At least 10% (~500 ha equivalent) reduction in pressure on water and soil resources due to promoted practices.	At least 30% (~1500ha equivalent) reduction in pressure on natural resources.			
	% of reduction in soil erosion in targeted degraded areas.	0	At least 10% (250ha) reduction in soil erosion.	At least 30% (750ha) reduction in soil erosion			
Output 2.1.1 Adaptive practices adopted for rehabilitation and preservation of ecosystems.	Number of climate adaptation action plans developed.	0	1 climate adaptation action plan developed	1 climate adaptation action plan developed	Climate adaptation action plan report	OSS and SOS Oasis Mauritania.	**Risks:** Community representatives, local authorities, youth, and women might not fully participate due to conflicting priorities or lack of awareness. Unpredictable climate events, such as droughts or floods, could hinder the establishment of demonstration plots and implementation of action plans. Limited adoption of adaptive practices by farmers due to scepticism, traditional practices, or lack of incentives. **Assumptions:** Key stakeholders, including community members, local authorities, and farmers, remain engaged and actively participate in project activities. No severe climate disruptions will occur that could derail demonstration plots or rehabilitation efforts. Adequate financial, technical, and material resources will be available throughout the project's duration.
	Number of CAICs established	0	1 CAIC established	1 CAIC established	Field visits, before and after photos.		
	Number of partnerships established with international centers and organizations.	0	At least 2 partnerships	At least 2 partnerships	M&E reports.		
	Number of master trainers trained	0	At least 10 master Trainers	At least 10 master Trainers	Training materials, participants record.		
	Number of demonstration plots established and operational.	0	40 demonstration plots	40 demonstration plots	Training materials, field visits, participants record.		
	Number of farmers trained at demonstration plots	0	500 (200 women) farmers trained	500 (200 women) farmers trained	Training materials, participants record.		
	Number of Producer Groups (PG) created or strengthened.	0	40 PG established	40 PG established	M&E reports, members records.		
Output 2.1.2: Agro-Pastoral Ecosystem Practices Enhanced Adopted and Effectively Implemented	Area in hectares of sand dune stabilized through establishment of mechanical and biological green belts	0	100 ha sand dune stabilized	400 ha sand dune stabilized	Report on the establishment of green belts, sand movement including maps, infrastructure data, and impact assessments on		
	Area in hectares of communal lands reforested with adapted species.	0	200 ha of communal lands reforested	400 ha of communal lands reforested			

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					sand dune stabilization.		
Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth							
Outcome 3.1 Enhanced adaptive capacities and sources of income for communities' resilience through adoption of IGA	% of increase in crop yields in areas adopting adaptive agricultural practices.	0	At least 15% (0.2t/ha) increase in crop yields.	At least 30% (0.5t/ha) increase in crop yields.	M&E reports,	OSS and SOS Oasis Mauritania.	**Risks:** Unpredictable climatic conditions (e.g., droughts, floods) could limit agricultural productivity and livestock survival. Limited adoption of new agricultural and livestock management practices due to resistance to change or lack of awareness. Insufficient access to inputs (e.g., compost, seeds, veterinary services) might hinder progress. Economic shocks or market fluctuations could reduce household income and viability of IGAs. Institutional or technical capacity gaps among implementing agencies could delay project activities. **Assumptions:** Communities are willing to adopt climate-adaptive agricultural and livestock practices. Adequate technical and financial resources are available to deliver training, inputs, and services. Targeted interventions are contextually appropriate, accessible, and affordable for local communities. The local market will support increased agricultural production and diversified income activities. Women and youth will actively engage in IGAs and have access to necessary resources and training.
	% of agricultural land adopting climate-adaptive practices (e.g., multi-storey farming, hydroponics).	0	At least 25% (1250ha) of targeted agricultural land adopting adaptive practices.	At least 50% (200ha) of targeted agricultural land adopting adaptive practices.	M&E reports,		
	Area of land protected against uncontrolled grazing	0	200 ha protected against uncontrolled grazing.	400 ha protected against uncontrolled grazing.	M&E reports,		
	% increase in household income from diversified livelihood activities (disaggregated by gender and youth).	0	At least 20% increase in household income.	At least 40% increase in household income.	M&E reports,		
	% of women and youth participating in IGAs.	0	At least 40% of participants are women and youth.	At least 60% of participants are women and youth.	M&E reports,		
Output 3.1.1 Adaptative agriculture practices enhanced	Area in hectares of pastoral zones established and area covered.	0	200 ha of pastoral zones established and area covered.	400 ha of pastoral zones established and area covered.	M&E reports, field visits, before and after photos.	OSS and SOS Oasis Mauritania.	**Risks:** Delays in establishing pastoral zones and veterinary units due to logistical challenges. Lack of technical expertise among extension agents and farmers to apply training effectively. Overgrazing and mismanagement of rotational grazing systems may persist despite interventions. Farmers may lack financial resources to transition to multi-storey farming or short-cycle livestock species. Training sessions may fail to reach the target audience due to cultural, logistical, or language barriers. **Assumptions:** Adequate land is available for establishing pastoral zones and composting units. Trained extension agents will effectively support farmers and livestock keepers. Farmers will recognize the benefits of adopting new
	Number of veterinary units deployed and operational.	0	1 veterinary unit deployed and operational.	2 veterinary units deployed and operational.			
	Number of extension agents trained to provide veterinary services	0	10 extension agents	10 extension agents	Training materials, trainees' records		
	Number of Pasture Management Systems and Livestock Practices	0	3 Pasture Management Systems and Livestock Practices	8 Pasture Management Systems and Livestock Practices	Training materials, participants record.		
	Number workshops on rotational grazing systems and multi-storey farming established.	0	2 workshops	6 workshops	Workshop reports, participants record.		

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	Number of farmers adopting multi-storey farming practices.		20 farmers adopting multi-storey farming practices.	50 farmers adopting multi-storey farming practices.	M&E reports		practices (e.g., short-cycle livestock, composting). Infrastructure for veterinary services and breeding units will be operational and accessible. Awareness campaigns and workshops will encourage community-wide participation.
	Number of compost units established and operational.	0	4 compost units established and operational.	8 compost units established and operational.	M&E reports, field visits, before and after photos.		
	Number of training session held on composting benefits and techniques	0	2 training sessions conducted	6 training sessions conducted	Training materials, participants record.		
Output 3.1.2 Source of income diversified through IGAs	Number of persons benefiting from IGAs	0	100 Beneficiaries (60% women)	4000 Beneficiaries (60% women)	Beneficiary records, program materials, training materials, participant records, M&E reports, field visit reports.	OSS and SOS Oasis Mauritania.	**Risks:** Limited availability of funding or financial services to support business plans and IGAs. Difficulty in sustaining mentorship programs due to resource or capacity constraints. Limited market demand for ecotourism services, handmade crafts, and agricultural products. Challenges in establishing PPPs (Public-Private Partnerships) due to lack of trust or incentives. Competition among beneficiaries for limited resources or market opportunities. **Assumptions:** Community members are motivated to engage in IGAs and diversify their income sources. Markets exist for ecotourism and locally produced agricultural and handmade products. Private sector actors are willing to engage in PPPs and support local initiatives. Mentorship programs will provide sustainable and effective guidance for IGA management. Training sessions and workshops will equip participants with practical skills and knowledge to succeed.
	Number of IGAs successfully established and operational.	0	20 IGAs successfully established	80 IGAs successfully established			
	Number of ecotourism itineraries created and operational.	0	1 ecotourism circuit created and operational.	1 ecotourism circuit created and operational.			
	Number of guest houses established	0	0	2 guest houses established			
	Number of PPPs established between producers and private sector actors.	0	2 partnership established	4 partnership established			
	Number of beneficiaries profiting from the ecotourism circuit through marketing of local products	0	300 beneficiaries (40% women).	600 beneficiaries (40% women).			
Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels							
Outcome 4.1 Stakeholders are mobilized and sensitized through communication and capacity building activities	% of participants demonstrating increased knowledge of climate change adaptation concepts after training (disaggregated by women and youth).	0	At least 50% (150) (40% women and youth) of participants demonstrate increased knowledge of climate change adaptation concepts after training.	At least 80% ((240) 40% women and youth) of participants demonstrate increased knowledge of climate change adaptation concepts after training.	M&E reports,	OSS and SOS Oasis Mauritania.	**Risks:** Some stakeholders may not fully engage in the capacity-building activities or communication efforts, affecting the expected outcomes. There may be insufficient resources (financial, human, or material) to effectively conduct the planned communication and capacity-building activities. Community members or stakeholders may be resistant to change, hindering the adoption of climate change adaptation strategies. **Assumptions:** Stakeholders are open to participating in the mobilization and sensitization activities. The communication and capacity-building methods will be designed to address local contexts and will be accessible to the target populations. Stakeholders, including local governments, will
	% of trained stakeholders integrating climate change adaptation into planning processes within their respective domains.	0	At least 30% (90) of trained stakeholders integrate climate change adaptation into planning processes within their respective domains.	At least 60% (180) of trained stakeholders integrate climate change adaptation into planning processes within their respective domains.			
	% of community members reached through communication and awareness-raising activities (disaggregated by women and youth).	0	At least 60% (3300) (30% women and youth) of community members are reached through communication and awareness-raising activities.	At least 90% (4900) (45% women and youth) of community members are reached through communication and awareness-raising activities.			

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	% of households adopting sustainable and climate-resilient practices (e.g., water management, diversified livelihoods).	0	At least 25% (625 households) of households adopt sustainable and climate-resilient practices (e.g., water management, diversified livelihoods).	At least 50% (1250 households) of households adopt sustainable and climate-resilient practices (e.g., water management, diversified livelihoods).			support and integrate climate change adaptation into their planning processes.
Output 4.1.1 Practitioners, technicians, decision-makers and communities are sensitized and trained on CC issues and the integration of Climate Change Adaptation into planning processes	Capacity Need Assessment and of KAP surveys conducted at baseline and final stages.	0	1 Capacity needs assessment 1 KAP survey conducted	1 Capacity needs assessment 2 KAP survey conducted	CAN and KAP reports	OSS and SOS Oasis Mauritania.	**Risks:** Training sessions may not adequately address the capacity needs of practitioners, technicians, or communities, resulting in limited skill development. Challenges in organizing workshops and training sessions may delay the completion of activities. There may be a lack of follow-up activities to ensure the integration of climate change adaptation into planning processes. **Assumptions:** Qualified trainers and experts will be available to deliver effective workshops and training sessions. Practitioners, technicians, and decision-makers are motivated to integrate climate change adaptation into their planning processes. Activities related to capacity building will be conducted according to the planned timeline, with no significant delays.
	Number beneficiaries of capacity-building sessions conducted (e.g., workshops, thematic training).	0	150 beneficiaries	300 beneficiaries	Training materials, workshops report, participants record.		
	Number of communication strategies developed and implemented.	0	1 communication strategy developed	1 communication strategy developed	Strategy report		
	Number of community members sensitized on CC issues	0	3300 (30% women and youth) of community members sensitized on climate change issues	4900 (30% women and youth) of community members sensitized on climate change issues	M&E reports Participants records		
	Number of conferences and workshops held for result sharing.	0	1 result sharing forums. 1 webinar conducted.	4 results sharing forums. 4 webinars conducted to disseminate the results for a wider audience	Conferences, workshops and webinars reports.		
Output 4.1.2: Community awareness and understanding of climate change adaptation strategies significantly increased	Number of detailed training plan and modules developed for CBT.	0	1 detailed training plan. 6 training modules.	1 detailed training plan. 6 training modules.	Workshop and training reports, training plan, training modules, participants record, campaign plan and materials, photos.	OSS and SOS Oasis Mauritania.	**Risks:** The community may not fully participate in the awareness campaigns and training sessions, limiting the overall impact. The messages and communication strategies may not be effective in reaching all segments of the community, especially the most vulnerable. There may be cultural or traditional barriers that prevent the community from adopting new climate adaptation strategies. **Assumptions:** The community will actively engage in awareness campaigns and training sessions. The training and communication materials will be developed in a culturally sensitive and context-specific manner to ensure maximum understanding. Local leaders and influential community members will support the awareness efforts, ensuring broader community buy-in.
	Number of training sessions conducted on climate resilience and sustainable livelihoods	0	10 training sessions conducted on climate resilience and sustainable livelihoods.	20 training sessions conducted on climate resilience and sustainable livelihoods.	Training reports, training plan, training modules, participants record, campaign plan and materials, photos.		
	Number of community awareness campaigns conducted on climate change, water management, and health	0	5 community awareness campaigns conducted on climate change, water management, and health.	10 community awareness campaigns conducted on climate change, water management, and health.	Press release , audio and video recordings of broadcast programmes, campaign materials, and photographic documentation.		
	Number of study tours and exchange visits organized at national and international levels	0	2 study tours and exchange visits organized at national and international levels.	5 study tours and exchange visits organized at national and international levels.	Tours materials, attendance records, photos.		

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Adaptation Fund Core Indicators for the PRAGOA Project

369. The Adaption Fund Core Indicators will be monitored for the project as per below and based on the AF core indicators and related to table 21 on the results framework

Table 22 : AF core indicators for the project

	Baseline	Target at project completion
Direct beneficiaries supported by the project	0	**5,035**
Female direct beneficiaries	0	2,660 (52.8%)
Youth direct beneficiaries	0	605 (12%)
Indirect beneficiaries supported by the project	0	**10,000**
Female indirect beneficiaries	0	4,000 (40%)
Youth indirect beneficiaries	0	1,200(12%)
	Baseline	**Target at project approval**
Sector Climate change adaptation actions		
Targeted Assets 1) Health and Social Infrastructure *(developed/improved)* i) *IGAs* ii) *Provision of Small competitive grants* 2) Physical assets *(produced/improved/strengthened)* *i) Innovative water harvesting and storage infrastructure produced* *ii) Mini-irrigation and delivery system produced* *iii) Water wells improved* iv) *Groundwater sources improved* v) *Agrosilvopastoral system improved* 3) Natural Assets *(produced/improved/strengthened)* *i) Degraded land restored* *ii) Reforested/afforested areas* *iii) Pastoral zones improved* *iv) Oases systems rehabilitated* *v) Vegetation cover enhanced*	0	**1) Health and Social Infrastructure (developed/improved)** **i) *IGAs*** a) 80 IGAs established to women and youth entrepreneurs (e.g., transformation of oases products, camel milk valorisation, small ruminant breeding, extraction of essential oils, traditional handicrafts, beekeeping, and innovative techniques such as hydroponic farming…) b) Establishment of two guest houses, creation and operationalization of one ecotourism itinerary, and establishment and upgrading of one Climate Adaptation and Innovation Center (CAIC). ***ii) Provision of Small Competitive Grants*** Procurement of equipment and inputs for community-led climate adaptation initiatives **2)Physical Asset (produced/improved/strengthened)** ***i) Innovative water harvesting and storage infrastructure produced*** Installation or rehabilitation of 100 protected water sources and installation of 80 drinking water storage facilities. **ii) Mini-Irrigation and Delivery System Produced** Establishment of 30 km irrigation systems and 40 demonstration plots. ***iii)Water Wells Improved*** Construction or upgrading of 40 hydraulic infrastructures ***iv) Groundwater Sources Improved*** Strengthening groundwater access through enhanced water infrastructure based on assessments to implement groundwater recharge activities, with 500 ha of bunds constructed and/or rehabilitated. ***v) Agro-sylvo-pastoral System Improved*** Establishment of: 8 community compost production units fully operational 1 breeding center Setup and equipped 2 mobile veterinary units **3)Natural Asset (produced/improved/strengthened)** ***i) Degraded land restored*** a) 400 ha of rehabilitation of degraded oases and agropastoral lands through bunds, contour dikes, assisted natural regeneration, and controlled grazing

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		b) 350ha of reforestation of communal lands and stabilization of sand dunes using native species (palm, acacia, tamarix) ***ii) Pastoral zones improved*** a) 400ha of establishment of rotational grazing systems and reseeded rangelands b) 500 ha of bunds constructed or rehabilitated ***iii) Oases systems rehabilitated*** 400ha of integrated restoration of palm groves and associated agroforestry plots in Ziyara and Dhaya oases ***iv) Vegetation cover enhanced*** 100ha of development of green belts and shelterbelts around communities to reduce wind erosion
Changes in Asset *(Quantitative or qualitative depending on the asset)* **i)** Health and Social Infrastructure *(developed/improved)* **ii)** *IGAs developed and credits provided* 2) Physical asset *(produced/improved/strengthened)* i) Innovative water harvesting and storage infrastructure produced ii) Mini-irrigation and delivery system produced iii) Water wells improved iv) Groundwater sources improved **v)** Agro-sylvo-pastoral system improved vi) Climate smart agricultural infrastructure produced	Management of Groundwater and Wells: Overexploitation, lack of local management. Management of wastewater infrastructure Obsolete, non-functional, lack of local management. Strengthening Water Management Bodies: Weak local governance, usage conflicts. Management plans: Outdated plans, climate impact not considered. Rehabilitation of Livestock and Grazing Areas: Land degradation, overgrazing, user conflicts. Access to Veterinary Services and Agricultural Technologies: Limited access, traditional practices, climate vulnerability.	Management of Groundwater and Wells: Enhanced access, protection, and sustainable management of water resources by communities, coupled with improved water quality. Management of wastewater infrastructure: Upgrading of drainage canals, establishment of new canals, and sustainable management by communities. Establishment of CAIC model water and agriculture systems for demonstration. CSA improved and managed: Establishment and strengthening of Producer Groups (PGs). Strengthening Water Management Bodies: Establishment of Local Water Management Committees (LWMCs) for better collective management, and reduced conflicts. Management Plans: Updated plans incorporating climate change, sustainable management, enhanced biodiversity protection. Community Adaptation Action plan developed at local level Rehabilitation of Livestock and Grazing Areas: Rehabilitated corridors and grazing areas, sustainable management, conflict reduction. Access to Veterinary Services and Agricultural Technologies: Improved access to veterinary services, adoption of climate-smart agricultural technologies, introduction of short life cycle animals, and enhanced resilience and food security.
	Baseline	**Target at project completion**
Household income targets: i) Total number of households ii) Number of households with increase in income	0 0	2,500 2,500
Number of households i) Total number of households targeted with trainings and adaptation action	0	840

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F. Alignment with the Results Framework of the Adaptation Fund

370. The project objectives and outcomes are aligned to the AF Strategic Results Framework and directly contribute to the Fund's overall objective and outcomes.

Table 23: Alignment with the AF' results framework

Project Objective(s)	Project Objective Indicator(s)	Adaptation Fund Outcome	Adaptation Fund Outcome Indicator	Grant Amount (USD)
Objective: to strengthen the resilience of communities (women and youth) of Ziyara and Dhaya oases ecosystems, to climate change impacts through sustainable soil and water and management techniques as well as natural resources and related agrosystems.	• % of households with improved access to climate-resilient water supply • Ha of oases land under improved water-use efficiency	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	• 2.1 Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	1,426,350
	• No. of functional solar-powered boreholes and rehabilitated wells	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	• 4.2 Physical infrastructure improved to withstand climate change and variability-induced stress	1,250,000
	• Ha of oases and surrounding rangelands restored or reforested • % reduction in erosion and sediment inflow • No. of vegetation plots under assisted natural regeneration	Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	• 5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	2,180,125
	• % of households with diversified and climate-resilient income sources • No. of women/youth engaged in green enterprises • % increase in agricultural productivity in project zones	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in target areas	• 6.1 Percentage of households and communities having more secure access to livelihood assets	2,842,070
	• % of population demonstrating improved awareness and adaptive practices	Outcome 3: Strengthened awareness and ownership of adaptation and climate-risk reduction processes at local level	• 3.1 Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	441,455
	• No. of local institutions integrating climate-risk management into plans • No. of technicians and extension agents trained	Outcome 3: Strengthened awareness and ownership of adaptation and climate-risk reduction processes at local level	• 3.2 Percentage of targeted population applying appropriate adaptation responses	310,000
Total outcome level grant amount				8,450,000
Project Outcome(s)	**Project Outcome Indicator(s)**	**Adaptation Fund Output**	**Adaptation Fund Output Indicator**	**Grant Amount (USD)**
Outcome 1.1: Strengthened capacity on water management and increased adoption of best practices in IWRM	• No. of Integrated Water Resource Management Plans developed/updated • No. of stakeholders trained on IWRM • No. of water infrastructure managed sustainably	Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	• 2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	1,426,350
Outcome 1.2: Water resources access improved for target communities	• No. of households with increased access to climate-resilient water supply • Volume (m^3) of water mobilized annually through project-supported systems	Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	• 4.1.2 No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	1,250,000
Outcome 2.1: SLM practices promoted and operationalized	• Ha of degraded land restored through SLM practices • % reduction in erosion and sediment inflow to oases	Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	• 5.1 No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	2,180,125
Outcome 3.1: Enhanced adaptive capacities and sources of income for communities' resilience through adoption of IGAs	• No. of beneficiaries (women/youth) engaged in new IGAs • % increase in household income from climate-resilient enterprises	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	• 6.1.1 No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	2,842,070
Outcome 4.1: Stakeholders are mobilized and capacity built to address CC impacts activities	• % of community members reached through communication and awareness-raising activities (disaggregated by women and youth). • No. of practitioners and community leaders trained • No. of institutions integrating CCA into planning frameworks	Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities	• 3.1 No. of news outlets in the local press and media that have covered the topic	441,455
		Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	• 3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge	120,000
			• 3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	190,000
Total output level grant amount				8,450,000

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G. Detailed budget (US$)

Table 24 : PRAGOA project detailed budget

Activities	Total Budget	Annual Budget				Budget Notes
		Year 1	Year 2	Year 3	Year 4	
Component 1 Improved water resources access and management for local communities	**2,676,350**	**956,088**	**1,150,088**	**360,088**	**210,086**	
Outcome 1.1 Strengthened capacity on water management and increased adoption of best practices in integrated water resources management (IWRM)	**1,426,350**	**531,088**	**675,088**	**135,088**	**85,086**	
Output 1.1.1 Integrated Water Resources Management Plans developed or updated	**400,000**	**187,500**	**87,500**	**77,500**	**47,500**	
Activity 1.1.1.1 Develop and update the Water Resources Management Plan (WRMP) at watershed level	**60,000**	**60,000**				Consultancy @ 40,000 Stakeholder engagements and consultations @16,000 + other costs @500 GAAP monitoring and application @3,500
Activity 1.1.1.2 Capacity building on IWRM best practices for sustainable water resources management	**100,000**	**10,000**	**40,000**	**40,000**	**10,000**	Institutional reforms @30,000 (consultancy @22,000 + validation workshop @8,000) 5 Trainings and Capacity Building workshops @35,000 (5*7,000/workshop) + other costs @5,000 Monitoring Systems and Associated Infrastructure @30,000
Activity 1.1.1.3 Identify and set up Local Water Resource Management Committees	**90,000**	**80,000**	**10,000**			Establishing LWRM committees @20,000 Equip LWRM @30,000 Recruitment of local agents @40,000
Activity 1.1.1.4 Capacity building and development of Local Water Management Committees in terms of water management and governance	**150,000**	**37,500**	**37,500**	**37,500**	**37,500**	Trainings and Capacity Building workshops @35,000 Equipment @ 60,000 O&M @20,000 Awareness @30,000 GAAP monitoring and application @3,500 Other costs @1,500
Output 1.1.2 Improved and rational use of available water through implementation of water resources management infrastructures	**1,026,350**	**343,588**	**587,588**	**57,588**	**37,586**	
Activity 1.1.2.1 Build or reinforce bunds to control runoff, promote infiltration and reduce soil erosion	**520,000**	**250,000**	**250,000**	**20,000**		Consultancy for site identification @40,000 Bunds installation and rehabilitation @410,000 O&M @50,000 ESMP monitoring and application @10,000 GAAP monitoring and application @2,500 Transportation of materials and site supervision @7,500
Activity 1.1.2.2 Install suitable irrigation and drainage systems to better distribute water in palm groves and market gardens in the oasis	**356,000**	**56,000**	**300,000**			Consultancy @40,000 Equipment @260,000 O&M@40,000 ESMP monitoring and application @10,000 Transportation of materials and site supervision @6,000
Activity 1.1.2.3 Improve farmers' skills in flood-recession cropping techniques, optimizing the use of residual soil humidity after floods	**70,350**	**17,588**	**17,588**	**17,588**	**17,586**	Trainings and Capacity Building workshops @40,000 Awareness @25,000 Community mobilization costs, @5,350
	80,000	**20,000**	**20,000**	**20,000**	**20,000**	Awareness @30,000

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Activity 1.1.2.4 Conduct community awareness campaigns on the safe use and demand management of water						Development of Dissemination Materials @30,000 Community mobilization costs @ 15,000 **GAAP monitoring and application @2,500** Other costs @2,500
Outcome 1.2 Water resources access improved for target communities	**1,250,000**	**425,000**	**475,000**	**225,000**	**125,000**	
Output 1.2.1: Water resources mobilization infrastructures created or rehabilitated	**1,250,000**	**425,000**	**475,000**	**225,000**	**125,000**	
Activity 1.2.1.1 Assess and identify the situation of surface and groundwater resources and hydraulic infrastructures in target areas and propose an action plan for their creation or restoration/rehabilitation	**50,000**	**50,000**				Consultancy for studies @38,000 Validation workshop @10,000 GAAP monitoring and application @2,000
Activity 1.2.1.2 Creation and rehabilitation of hydraulic infrastructures in targeted areas to address communities' needs	**700,000**	**250,000**	**350,000**	**100,000**		Consultancy @60,000 Infrastructure development @573,000 O&M @40,000 ESMP monitoring and application @22,000 Local stakeholder engagement costs @5,000
Activity 1.2.1.3 Create and equip protected water sources and storage infrastructures for drinking water	**500,000**	**125,000**	**125,000**	**125,000**	**125,000**	Consultancy @40,000 Equipment @120,000 Infrastructure development @300,000 O&M @26,000 ESMP monitoring and application @10,000 GAAP monitoring and application @2,000 Local stakeholder engagement costs @2,000
Component 2 Improved resilience of ecosystems and livelihoods to climate change and variability	**2,180,125**	**811,809**	**556,809**	**450,754**	**360,753**	
Outcome 2.1 SLM Practices promoted and operationalized	**2,180,125**	**811,809**	**556,809**	**450,754**	**360,753**	
Output 2.1.1 Adaptive practices adopted for rehabilitation and preservation of ecosystems	**992,890**	**515,000**	**260,000**	**153,945**	**63,945**	
Activity 2.1.1.1 Develop climate adaptation action plans for Adrar communities	**25,000**	**25,000**				Consultancy @16,000 Validation workshop @7,500 GAAP monitoring and application @1,500
Activity 2.1.1.2 Setup of a Center of Excellence for Climate Change Adaptation and Innovation (CAIC)	**480,000**	**300,000**	**100,000**	**80,000**		Construction @260,000 Trainings and Capacity Building workshops @35,000 Development of Dissemination Materials @30,000 Platforms @38,000 Equipment @ 60,000 O&M @20,000 Awareness @30,000 ESMP monitoring and application @5,000 Supervision and technical control @2,000
Activity 2.1.1.3 Set up and manage demonstration plots to test and adopt sustainable agropastoral and land management practices	**100,000**	**50,000**	**20,000**	**20,000**	**10,000**	Trainings and Capacity Building workshops @35,000 Development of Dissemination Materials @15,000 Equipment @ 45,000 ESMP monitoring and application @5,000
Activity 2.1.1.4 Identify and create Producer Clubs to apply and scale up Sustainable Land Management (SLM) practices, with women's active participation	**387,890**	**140,000**	**140,000**	**53,945**	**53,945**	Consultancy and Set up Producer Clubs @170,000 Trainings and Capacity Building workshops @80,000 Development of Dissemination Materials @30,000 Equipment @ 100,000 GAAP monitoring and application @1,500 Direct activity support costs @6,390

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Output 2.1.2 Agro-Pastoral Ecosystem Practices Enhanced Adopted and Effectively Implemented	**1,187,235**	**296,809**	**296,809**	**296,809**	**296,808**	
Activity 2.1.2.1 Protect oases and agricultural lands through the establishment or strengthening of green belts (using mechanical and biological methods)	**774,000**	**193,500**	**193,500**	**193,500**	**193,500**	Consultancy for Site Selection @60,000 Materials for Mechanical Methods @350,000 Biological Methods @300,000 Trainings and Capacity Building workshops @37,000 O&M @14,000 GAAP monitoring and application @1,000 ESMP monitoring and application @ 12,000
Activity 2.1.2.2 Promotion of Reforestation and Afforestation Practices in Degraded Areas and Creation of Pastoral Spaces	**413,235**	**103,309**	**103,309**	**103,309**	**103,308**	Consultancy for Site Selection @40,000 Materials @330,000 Trainings and Capacity Building workshops @30,235 GAAP monitoring and application @1,000 ESMP monitoring and application @ 12,000
Component 3 Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth	**2,842,070**	**651,330**	**923,580**	**823,580**	**443,580**	
Outcome 3.1 Enhanced adaptive capacities and sources of income for communities' resilience through adoption of IGA	**2,842,070**	**651,330**	**923,580**	**823,580**	**443,580**	
Output 3.1.1 Adaptative agriculture practices enhanced	**1,594,320**	**398,580**	**398,580**	**398,580**	**398,580**	
Activity 3.1.1.1 Create and develop pastoral areas to improve forage resources for livestock farmers	**600,000**	**150,000**	**150,000**	**150,000**	**150,000**	Soil infrastructure development (zai, halfmoon...)@ 250,000 Equipment @265,000 Setup committees @ 30,000 Trainings and Capacity Building workshops @30,000 O&M @14,000 GAAP monitoring and application @1,000 ESMP monitoring and application @10,000
Activity 3.1.1.2 Reinforce livestock breeding, animal health and pastoral management systems for sustainable and resilient livestock production	**200,000**	**50,000**	**50,000**	**50,000**	**50,000**	Cost of establishing mobile veterinary unites @100,000 extension agents @45,000 Implement pasture management systems @20,000 Trainings and Capacity Building workshops @24,000 O&M @2,000 GAAP monitoring and application @1,000 ESMP monitoring and application @8,000
Activity 3.1.1.3 Develop an innovative oasis farming model (multi-storey farming (palm, tree, market gardening), hydroponics, etc.)	**710,000**	**177,500**	**177,500**	**177,500**	**177,500**	Consultations @40,000 Equipment @ 590,000 Trainings and Capacity Building workshops @40,000 Development of Dissemination Materials @29,000 GAAP monitoring and application @1,000 ESMP monitoring and application @10,000
Activity 3.1.1.4 Promote the production and use of compost to improve soil quality and others similar practices	**84,320**	**21,080**	**21,080**	**21,080**	**21,080**	Equipment @ 45,000 Trainings and Capacity Building workshops @27,000 Development of Dissemination Materials @11,320 GAAP monitoring and application @1,000 ESMP monitoring and application @7,000
Output 3.1.2 Source of income diversified through IGAs	**1,247,750**	**252,750**	**525,000**	**425,000**	**45,000**	
Activity 3.1.2.1 Implement community Income-Generating Activities to boost the local economy, with a particular focus on creating opportunities for women and youth	**652,750**	**52,750**	**300,000**	**300,000**		Community consultations @15,000 Market assessment consultancy @15,000 Training and support @90,750 Establishment of breeding units @150,000 Initial capital to support viable IGAs businesses@367,000

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						GAAP monitoring and application @5,000 ESMP monitoring and application@10,000
Activity 3.1.2.2 Promote local tourism through the creation of ecotourism itineraries, accommodation facilities and marketing of local products	**520,000**	**200,000**	**200,000**	**100,000**	**20,000**	Community consultations@45,000 Establishment of ecotourism itineraries and guest houses @425,000 Trainings and Capacity Building workshops @40,000 Development of Dissemination Materials @10,000
Activity 3.1.2.3 Develop and strengthen community-market links along the value chain, promoting equitable access to resources and economic opportunities	**75,000**		**25,000**	**25,000**	**25,000**	Organizing meetings @30,000 Consultations @ 32,000 GAAP monitoring and application @5,000 Community mobilization costs @8,000
Component 4 Capacity building, knowledge sharing, Communication and awareness raising of stakeholders and beneficiaries at different levels	**751,455**	**245,728**	**195,727**	**155,000**	**155,000**	
Outcome 4.1 Stakeholders are mobilized and sensitized through communication and capacity building activities	**751,455**	**245,728**	**195,727**	**155,000**	**155,000**	
Output 4.1.1 Practitioners, technicians, decision-makers and communities are sensitized and trained on CC issues and the integration of Climate Change Adaptation into planning processes	**310,000**	**115,000**	**65,000**	**65,000**	**65,000**	
Activity 4.1.1.1 Conduct Knowledge, Attitudes and Practices (KAP) surveys	**40,000**	**20,000**			**20,000**	Consultancy @32,000 GAAP monitoring and application @1,500 Field data collection costs, @6,500
Activity 4.1.1.2: Strengthen the capacities of practitioners, technicians, and decision-makers in climate adaptation planning, including support for local communities and institutional capacity-building of S.O.S-OASIS	**120,000**	**50,000**	**30,000**	**30,000**	**10,000**	Trainings and Capacity Building workshops @40,000 Development of training Materials @20,000 Equipment @30,000 Technical Expertise @30,000
Activity 4.1.1.3 Develop a communication and awareness-raising strategy on climate change, integrating adapted communication formats for different groups (men, women, youth) with key messages that meet the specific needs of each group	**10,000**	**10,000**				Consultancy @10,000
Activity 4.1.1.4 disseminate project results and share lessons learned with national and international stakeholders, to integrate new approaches into local and regional planning	**140,000**	**35,000**	**35,000**	**35,000**	**35,000**	Development of Dissemination Materials (including media and communication channels) @40,000 Conferences and Workshops @80,000 Online Dissemination and Webinars @ 18,500 GAAP monitoring and application @1,500
Output 4.1.2 Community awareness and understanding of climate change adaptation strategies significantly increased	**441,455**	**130,728**	**130,727**	**90,000**	**90,000**	
Activity 4.1.2.1 Develop training and awareness materials adapted to local communities	**81,455**	**40,728**	**40,727**			Consultancy training plan and materials @74,000 Data collection and reporting @7,455
Activity 4.1.2.2 Build the capacity of beneficiary communities, particularly women and local civil society organizations, in sustainable and climate-resilient livelihood practices	**60,000**	**15,000**	**15,000**	**15,000**	**15,000**	Trainings and Capacity Building workshops @51,000 GAAP monitoring and application @2,000 Local stakeholder engagement costs @7,000
Activity 4.1.2.3 Conduct community awareness campaigns on climate change, water management and health	**50,000**	**12,500**	**12,500**	**12,500**	**12,500**	Campaign development plan @ 8,000 Community workshops/ seminars @ 35,000 Equipment @ 15,000 Field data collection costs @2,000
Activity 4.1.2.4 Organization of study tours and national and international exchanges to share best practices in oasis ecosystems	**250,000**	**62,500**	**62,500**	**62,500**	**62,500**	Organization of study visits @ 240,000 Community mobilization costs @10,000
Activities budget (A)	**8,450,000**	**2,664,955**	**2,826,204**	**1,789,422**	**1,169,419**	

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Project Inception and launch	25,000	25,000				Project launch and related activities i.e., Setting up of PMU, Steering Committee first meeting…
Project coordination and Management Fees	420,000	105,000	105,000	105,000	105,000	Execution and Coordination Management Fees: salaries, daily management, reporting, communication & KM, project cycle management, Administration, finance, accountability, procurement, legal, financial management and quality insurance……
Operating costs	120,000	30,000	30,000	30,000	30,000	Travel expenses for monitoring: Costs of missions, participation in steering committee meetings, and participation in workshops…
Equipment	25,000	20,000	5,000			Costs associated with the provision of equipment to the secretariat including computers, associated peripherals and monitoring tools Printing, photocopying, telecoms and other costs related to office operations…
Monitoring and reporting	200,000	50,000	50,000	50,000	50,000	Technical monitoring, ESMP monitoring, Gender Action Plan monitoring, M&E missions, field visits and reporting
Project Execution cost (B)	**790,000**	**230,000**	**190,000**	**185,000**	**185,000**	
Total Project Cost (A+B)	**9,240,000**	**2,894,955**	**3,016,204**	**1,974,422**	**1,354,419**	
Project coordination and Management Fees: Project management, Reporting, Outreach and knowledge sharing	345,000	85,000	85,000	85,000	90,000	Implementation and Coordination Management Fees: salaries and fees of experts in charge of the project for planning, daily management, reporting, communication& KM, project cycle management…
Operating costs	100,000	25,000	25,000	25,000	25,000	Supervision and travel expenses for monitoring: Costs of supervision missions, participation in steering committee meetings, and participation in workshops, M&E and ESMP monitoring
Equipment including infrastructure	35,000	25,000	10,000			Costs associated with the provision of equipment to the secretariat including computers, associated peripherals and monitoring tools Printing, photocopying, telecoms and other costs related to office operations…
Evaluations and Audit	160,000	60,000	42,500		57,500	Baseline @60,000, External audits @35,000, Mid-term and final evaluation @50,000, Project completion @15,000
Fiduciary aspects	120,000	30,000	30,000	30,000	30,000	Administration, finance, accountability, procurement, legal, financial management and quality insurance…
Management Fee charged by the Implementing Entity (C)	**760,000**	**225,000**	**192,500**	**140,000**	**202,500**	
Total (A+B+C)	**10,000,000**	**3,119,955**	**3,208,704**	**2,114,422**	**1,556,919**	

H. Disbursement schedule with time-bound milestones

Table 25 : PRAGOA project disbursement schedule with time-bound milestones

	Upon Agreement signature (USD)	End of Y 1 (USD)	End of Y 2 (USD)	End of Y 3 (USD)	Totals (USD)
Scheduled date	***June,2026***	***June,2027***	***June,2028***	***June,2028***	
Project Funds	2,894,955	3,016,204	1,974,422	1,354,419	**9,240,000**
Implementing Entity Fee	225,000	192,500	140,000	202,500	**760,000**
Total	**3,119,955**	**3,208,704**	**2,114,422**	**1,556,919**	**10,000,000**

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PART IV ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government

Sidi Mohamed OULD EL WAVI, Charge de Mission (1er Conseiller du Ministre), Coordonnateur de la Cellule Nationale Changement Climatique	Date*: October 31st , 2025*

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans of the Government of Mauritania and subject to the approval by the Adaptation Fund Board, commit to implementing the project in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project.	
Mr. Nabil BEN KHATRA – Executive Secretary of the Sahara and Sahel Observatory (OSS) as the Implementing Entity	
Date: March 11, 2026	Tel: (+216) 71 206 633 *Email: boc@oss.org.tn*
Project Contact Person: Mrs. Khaoula JAOUI	
Tel. and Email: (+216) 71 206 633; *Khaoula.jaoui@oss.org.tn*	

Annexes

Annex 1: Endorsement letter

République Islamique de Mauritanie
Honneur - Fraternité - Justice
Ministère de l'Environnement et du Développement Durable

الجمهورية الإسلامية الموريتانية
شرف - إخاء - عدل
وزارة البيئة والتنمية المستدامة

N° 006 / MEDD/CM

Nouakchott, le 31/10/2025 انواكشوط في

Le Chargé de Mission المكلف بمهمة

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

Subject: Endorsement for "Enhancing the resilience of communities of agropastoral and oasis ecosystems of Ziyara and Dhaya to the adverse effects of climate change in the Adrar region in Mauritania" Project

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

Accordingly, I am pleased to endorse the above grant proposal with support from the Adaptation Fund. If approved, the project will be implemented by the Sahara and Sahel Observatory (OSS) and executed by the non-governmental organization SOS-Oasis, collaboration with the Ministry of Environment and Sustainable Development of Mauritania.

Sincerely,

Mr. Sidi Mohamed Ould El Wavi
Chargé de Mission
NDA AFB - Mauritania

Chargé de Mission

Copy :
- MEDD
- OSS
- SOS Oasis

BP. 170 – Tél : + (222) 45 24 31 39 – Fax : + (222) 45 24 31 39 –Rue 21-185 N° 834 - Nouakchott – Mauritanie

Annex 2: ESIA and ESMP Studies

I. Project description

1. Background and rationale

The Islamic Republic of Mauritania is preparing, with the Adaptation Fund support, the "Improving the resilience of communities in agro-pastoral and oases ecosystems of Ziyara and Dhaya to the harmful effects of climate change in the Adrar region of Mauritania – PRAGOA project", by contributing to the development of activities at the level of two agro-pastoral development poles of Ziyara and Dhaya, which are all located in the commune of Tawaz - Moughataa of Atar, Wilaya of Adrar. This project was submitted to the Adaptation Fund (AF), and following its two-stage approval process, the Concept Note was approved by the Fund's Executive Board in June 2023. The next step involves developing the full project proposal, to be submitted to the AF in 2024 for funding consideration. At this stage, all detailed information must be provided, considering the comments and recommendations from the concept note evaluation (Annex). This proposed project will be implemented by the Sahara and Sahel Observatory (OSS) in its capacity as a Regional Implementing Entity accredited by the AF and executed at the national level by the national NGO SOS-Oasis in partnership with the Ministry of the Environment of Mauritania.

Indeed, the Wilaya of Adrar faces significant challenges, including a declining population, driven by factors such as drought, limited basic services, and economic hardships. Agriculture, livestock, tourism and trade are the main activities in the region. However, agricultural activities depend on climate and edaphic conditions. Over the years and with the perverse effects of climate change, this has compromised agricultural production. This situation limits the performance of the agricultural sector which is called upon to provide basic food products to a population with strong demographic growth. The key facts include: (i) the decline in agricultural yields resulting from the decline in soil fertility, irregular rainfall, difficulties in mobilizing water for irrigation; (ii) poverty which increasingly affects the populations, particularly rural populations; (iii) child malnutrition, the deterioration of the living conditions of the populations; (iv) the establishment of food insecurity.

This project is classified in category B for environmental and social studies (Cf. Decree 2007-105 dated April 13, 2007). However, the project implementation, although very important for the populations with the multiple positive impacts expected, will also bring minor negative impacts on the biophysical, human environment and also socio-economic activities of the insertion zone. Thus, in accordance with the recommendations of the Full Project and the aforementioned regulations, this Environmental and Social Impact Notice (ESIN) is prepared with a view to mitigating and/or compensating for the environmental and social impacts and risks related to the project implementation. In addition to the impact identification and assessment, the measures necessary to avoid, prevent, mitigate or compensate for significant negative impacts and improve beneficial impacts have also been included. Reference is made to plans for monitoring, managing and evaluating the implementation of mitigation measures and the performance of sub-projects in terms of basic environmental and social conditions.

2. Objectives

NB: The objectives of the project are thoroughly outlined in the main proposal document. Please refer to Part 1, Section [2], titled "Project Objectives," for detailed information on the project's objectives and activities.

3. Project components, results and activities

NB: the components and activities of the project are comprehensively described in the main proposal document. Refer to Part 2, Section [A], titled "Description of Project Components," for further details on the project's components and activities.

4. Environmental categorization of the project

Based on the list of potential sub-projects to be carried out within the framework of the project, it is classified in Category B and therefore subject to an Environmental and Social Impact Notice (ESIN), in accordance with current Mauritanian regulations (Decree No. 2004-094 dated November 4, 2004 amended and supplemented by Decree 2007-105 dated April 13, 2007 relating to environmental impact studies). Below is the categorization of potential activities by sectors of activity likely to be financed by the project. This categorization occurs after an environmental and social screening of said project which consisted in determining:

- The nature of the sub-project and the planned activities/works;
- The potential environmental and social issues;
- The specific tasks having particular risks and impacts on the environment or the social and requiring appropriate mitigation measures;
- The relevant environmental and social standards;
- Based on the level of environmental and social risks, which environmental and/or social assessment instrument is required, in accordance with the provisions of Decree 2007-105 and the standards of the partners.

The screening identified that the following Adaptation Fund principles relate to all sub-projects and to: compliance, access and equity, marginalized and vulnerable groups, human rights, gender equality and women's empowerment, fundamental labor rights and public health. These principles are therefore systematically considered for the preparation of this standard Environmental and Social Impact Notice.

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Table 26 : E&S Categorization of the activities by sector

Sector of activity	Category B Subject to environmental impact notice
1. Water	o Small dams and water reservoirs (dike height between 3 and 10m). o Drinking water supply to semi-urban centers. o Irrigation and drainage (less than 200ha areas). o Water development and management master plan. o Water development and management plan. o Water/Action Plan. o Lowland and alluvial plain development works with partial water control
4. Agriculture	o Rain-fed agriculture. Any crop.
5. Animal resources	o Farms: EDI class 3. o Hides and skins: EDI. - o Class 3. Milk: EDI class 3.

Table 27 : Sub-project screening supplement

AF Principle	Questions asked	Response	
		Yes	No
Climate Change	1.1. Does the project contribute to a significant increase in greenhouse gas emissions or other factors of climate change through the significant destruction of vegetation cover?		X
Pollution prevention and resource efficiency	2.1. Does the project area experience an increased frequency of crop pest attacks to require the use of large amounts of pesticides?		X
	2.2. Is the project site close to a river and/or other surface water resource that could be polluted by the project activities?		X
	2.3. Is there a risk of poisoning by inhaling or consuming water or food contaminated by pesticides or fertilizers?	X	
Land and soil conservation	3.1. Could the project contribute to the intensification of land degradation if poorly managed?		X
	3.2. Can the project activities cause soil quality degradation if poorly managed?	X	
	3.3. Are the soils of the project sites so poor that increased use of fertilizers, particularly chemical ones, is required?		X

The Environmental and Social Impact Notice was prepared to address these aspects, considering the elements covered above to design the adapted Environmental and Social Management Plan (ESMP).

5. Objectives of the environmental and social impact notice

The purpose of this Environmental and Social Impact Notice is to provide decision-makers with sufficient information to justify, from an environmental and social point of view, according to the Adaptation Fund Principles and the Mauritanian legislation, the acceptance or modification, or even the rejection of this project. In other words, the purpose of the study is to propose adequate measures for the significant impacts and risks that will be identified in order to ensure the sustainability of the project. In the same sense, here are the objectives pursued:

- Identifying the positive and negative impacts of the sub-project as well as the risks related thereto;
- Analyzing these impacts and risks;
- Proposing avoidance, mitigation and compensation measures for negative impacts, improvement measures for positive impacts and prevention and risk management measures for the project;
- Developing an environmental and social management plan and a risk management plan;
- Proposing an environmental monitoring and follow-up program, and an environmental control and monitoring program for the project.

II. Political, legal and institutional framework

It is important to clearly define the political, legal, regulatory and administrative framework, since it will constitute a benchmark for establishing the ESIN, in the same way as the environmental and social standards applicable to the project and the safety and health guidelines. This framework will be presented as an exhaustive summary of the national environmental protection policy, resulting from an analysis of key documents on environmental policy and the strategies recommended by the Mauritanian Government.

The political, legal and administrative framework developed by the Islamic Republic of Mauritania aims to guide and supervise all socio-economic development activities in the country. It is a set of rules and directives that aim to ensure sustainable economic growth while protecting the environment and social interests.

More specifically, the political, legislative and institutional framework makes it possible to better supervise economic and social activities, particularly in the areas of environmental management, employment, education, health and safety. It also aims to promote trade, encourage investment and improve the quality of life of the Mauritanian population.

The development and implementation of this policy and legislative framework contribute to improving socio-economic development in Mauritania by ensuring sustainable economic growth and protecting social and environmental interests.

It will be supplemented by a reminder of the environmental and social policy as well as the performance standards of the OSS and the Adaptation Fund.

1. Political framework

The Environmental and Social Policy is defined within the framework of the guidelines of the Strategy for Accelerated Growth and Shared Prosperity (SAGSP) 2016-2030 in Mauritania. This strategy is reflected in the sectoral policies, which are translated

into the strategies of the various ministerial departments. By 2030, the vision of the environment as advocated in the SAGSP is: "A preserved environment for sustainable development".

National strategy for accelerated growth and shared prosperity: 2016-2030

The SAGSP aims to accelerate economic growth in Mauritania while promoting a fair distribution of the benefits of this growth. It also plans to implement positive discriminatory public policies for the most vulnerable populations in order to reduce social inequalities. This Strategy contributes to sustainable development in Mauritania by helping preserve the environment while promoting sustainable and fair socio-economic development for all.
It is broken down into three (3) strategic components, each corresponding to one of the main selected orientations:

- Component 1: promoting strong, sustainable and inclusive growth;
- Component 2: developing human capital and access to basic social services;
- Component 3: strengthening all aspects of governance.

The SAGSP places particular emphasis on the following strategic elements:

- The establishment of hydraulic and sanitation works;
- The need to improve hygiene (drinking water, latrines, food security, management of corpses);
- Particular emphasis on improving hygiene, particularly in conflict situations and population displacements;
- The preservation of natural resources such as waterways, flora, soil, fauna and the marine environment;
- The popularization of good hygiene and health practices to prevent illnesses and work accidents;
- The preservation of the living environment of the populations and refugees;
- The integration of all stakeholders in the implementation of sub-projects while respecting the national decentralization policy;
- Projects must be implemented in accordance with the provisions of the NSIG, particularly with regard to gender systematic integration and the implementation of specific measures and positive actions targeting women (or men) as a catch-up exercise to correct the distortions which give rise to these gaps.

The developments and achievements must be carried out in accordance with the spirit of the national land use planning policy.

Environmental policy

Since 2017, the environmental and sustainable development policy in Mauritania is defined by the National Strategy for Sustainable Development Environment (NSSDE) and its action plan, the NAPESD (2017-2021), which is implemented by the National Committee for the Environment and Sustainable Development (NCESD) under the authority of the Prime Minister. The Ministry of the Environment (ME) is responsible for defining national guidelines and strategies for environmental management and for legislating to this effect.
The obsolete nature of the action plan of the National Strategy for Sustainable Development Environment (NSSDE) in force since 2017 highlights the pressing need for an update or the implementation of new reforms. Since the adoption of the NSSDE, the environment and the challenges of sustainable development have evolved significantly, with the emergence of new issues and the need to adapt to current realities. Therefore, it becomes imperative to review and modernize the environmental and sustainable development policy in Mauritania, in order to effectively meet the current and future needs of the country in terms of environmental protection and the promotion of sustainable development. An update or the establishment of new reforms would make it possible to consider scientific advances, emerging environmental challenges, as well as international commitments and best practices, to ensure a more adapted, consistent and effective approach to environmental management and sustainability in the country.
The SAGSP integrates the basic principle of Sustainable Development by giving a central place to the preservation of the environment and natural resources as essential conditions for development.
By 2030, the strategy targets "A preserved environment for sustainable development".
The implementation of the National Strategy for Sustainable Development Environment (NSSDE) and its operational action plan, the National Action Plan for the Environment and Sustainable Development (NAPESD), is part of the existing national institutional frameworks that underpin the Government's own coordination mechanisms for monitoring environmental issues in Mauritania.
Government environmental action plans are important for coordination, but they become obsolete if they are not adapted to national challenges and international commitments. They define national orientations and strategies for environmental management, and lay the foundations for integrated and challenge-responsive environmental governance. (AS1)
The rest of the four strategic axes of the NSSDE and NAPESD include:

- AS2: integrated and sustainable management of natural resources and terrestrial biodiversity ('green' environment),
- AS3: sustainable management of the marine and coastal environment ('blue' environment),
- AS4: strengthening the prevention, management of pollution and anthropogenic threats ('grey' environment), as well as integrated and challenge-responsive environmental governance.

National gender policy - fight against gender-based violence

As part of this policy, the National Strategy for the Institutionalization of Gender (NSIG 2015) was adopted. It aims to ensure the success of the gender mainstreaming process into all development sectors with a view to promoting gender equality and equity and ensuring the advancement of women. It is part of the commitment to the promotion and defense of human rights and the fight against all forms of discrimination. Its basic principle is that women and men equality in rights and duties is both a condition and a means for sustainable human development. This strategy is in line with the recommendations of the various world summits, in particular the Beijing Platform for Action: human, sustainable and equitable development based on the principles of gender equity and equality.
The strategy is based on two main types of measures:
- The systematic gender integration in policies, laws, programs, budgets, structures and institutional cultures;

- The implementation of specific measures and positive actions that target women (or men) as a catch-up exercise to correct distortions that cause these gaps.

Discussions with certain stakeholders have shown that the implementation of this strategy still poses a problem given the socio-cultural context of the country.

Land use planning policy

This policy is defined through the orientation law No. 201/001 dated January 7, 2010 on Land Use Planning. It specifies the principles and strategic choices of land use planning in the IRM; sets out the major orientations of the land use planning policy; and defines the tools and structures for land use planning.

The land use planning policy aims to plan and organize the balanced development of infrastructure throughout the Mauritanian territory. With this in mind, it considers the needs for drinking water supply in national and regional development plans. These plans make it possible to identify deficit areas and prioritize water supply projects for populations in order to resolve territorial disparities in this area. They constitute essential planning tools for developing hydraulic infrastructure in a consistent and structured manner across the country. Thus, the land use planning policy provides an essential strategic framework for programming drinking water projects aimed at equitable access to this vital resource for all regions.

Updated Nationally Determined Contribution (NDC) 2021 - 2030

Mauritania belongs to one of the regions of the world most vulnerable to climate change, the effects of which already affect all sectors of its economy, its ecosystems and its populations, in particular, women and children.

Mauritania is fully committed to the implementation of the UNFCCC and the Paris Agreement to contribute to global efforts to reduce overall GHG emissions by making available to the world community all the mitigation potential available to the country. This potential is made up of the enormous deposit of clean energy production, wind and solar. Thus, Mauritania's updated NDC provides for a net reduction in economy-wide GHG emissions of 11% in 2030 compared to the reference scenario with the country's own means supported by international support comparable to that received until 2020.

With more substantial support, Mauritania could ensure its carbon neutrality, up to a conditional 92% reduction compared to the BAU.

In view of its extreme vulnerability, Mauritania has broadened its adaptation ambition to cover the following areas: protection and conservation of ecosystems including wetlands, sustainable rangeland management, biodiversity conservation, fisheries and aquaculture, housing and urban planning, agriculture and food security including genetic improvement, health, water, coastal management, prevention of extreme climate events, infrastructure and education. This broadening is based on the preparation program for access to the Green Climate Fund and the results of the first studies carried out as part of the country's National Adaptation Program (NAP) development process.

By harmonizing its development process with that of the SAGSP and drawing on the country's sectoral strategies and programs, the NDC defines the framework for the country's climate policy by 2030. It offers a framework for consultation and dialogue for all stakeholders to define transformative, integrated, inclusive, clean and sustainable programs.

Water and sanitation policy

The guidelines adopted by the SAGSP are based on the sectoral objectives supported by the National Strategy for Sustainable Access to Water and Sanitation (NSSAWS) 2016-2030. The NSSAWS is based on a comprehensive analysis of the sector situation (State of Play), this strategy is currently being updated and is divided into 5 lines:

- Line 1: Knowing, monitoring and protecting water resources;
- Line 2: Improving access to drinking water;
- Line 3: Improving access to water for agriculture and livestock;
- Line 4: Improving access to sanitation and hygiene;
- Line 5: Improving governance of the sector.

Speaking of water, the SAGSP is aligned with the SDGs and aims to ensure:

i. Universal and equitable access to drinking water, at an affordable cost. More concretely, action in this area will target, as a priority, a faster upgrading of infrastructure, to significantly expand access through private connections, particularly for poor populations;
ii. Improved water quality by reducing pollution, eliminating dumping of waste and minimizing emissions of chemicals and hazardous materials;
iii. Sustainable management, knowledge and protection of water resources, in a context of climate change.

Health and environmental hygiene policy

The health policy in Mauritania is based on Primary Health Care (PHC). Its implementation by the health department relates to the Ministry of Health (MH) at the central level and the Regional Departments and their decentralized structures at the regional level.

The Ministry pays particular attention to health and hygiene by emphasizing the need to eliminate excreta and biomedical waste, to raise awareness among communities on the benefits of good environmental hygiene, to promote low-cost sanitation solutions as well as the dissemination and enforcement of hygiene rules.

This policy aims to reduce waterborne diseases such as cholera, typhoid or hepatitis A, which represent a major cause of mortality in the country due to limited access to drinking water and sanitation. This policy sets objectives for improving drinking water and sanitation infrastructure as well as raising awareness on individual and collective hygiene measures. Its implementation should make it possible to significantly reduce these diseases linked to the lack of access to clean water, which mainly affect the most deprived and vulnerable populations.

Decentralization policy

The Mauritanian authorities have undertaken a major process of decentralization and disengagement of the State for local authorities. The gradual devolution of State services to municipalities, according to the principle of subsidiarity as territorial authorities with public legal personality and financial autonomy, was institutionalized by Ordinance 87-289. The municipalities are territorial authorities under public law and by Ordinance No. 90-002 on the organization of the territorial administration. In April 2010, the government adopted a policy statement on decentralization and local development. In December 2018, the government adopted the National Strategy for Decentralization and Local Development and institutionalized the Regions, as territorial authorities, governed by a Regional Council elected by direct universal suffrage.
Since it was implemented in the 2000s, the decentralization policy has granted increased powers to local authorities, particularly in the management of essential infrastructure and services such as drinking water. Municipalities are now responsible for planning, financing and managing water supply networks in their territory in coordination with public operators. This decentralization fosters the consideration of local needs and the involvement of populations to ensure the sustainability of the structures. It also makes it possible to mobilize more funding from development partners to increase access to drinking water through projects adapted to the context of each locality. Thus, the decentralization policy strengthens the autonomy and means of action of local authorities to carry out drinking water supply projects as close as possible to the field realities.

OSS environmental and social policy

As the project implementing entity, OSS ensures that all its projects adhere to its environmental and social policy. The E&S Policy describes the principles and procedures to assess environmental, social impacts and gender equality (or “gender”) related impacts.
The policy is part of the Environmental and Social Risk Management System (ESMS), and builds on existing policies, operating procedures and project cycles at the OSS. In this context, the policy aims to:
The policy applies to all projects receiving funds

- From the World Bank Group;
- From the African Development Bank Group;
- From the Global Environment Facility;
    - From the Green Climate Fund;
    - From the Adaptation Fund.

All projects or programs supported by the OSS are designed and implemented to meet the ten Environmental and Social Performance Standards (PSs).
For more details, refer to the full policy available on the OSS website: Politique Environnementale et Sociale .

2. Legal framework for environmental and social management

National texts governing environmental and social management

- **The Environmental Code and its implementing texts**

Law No. 2000-045 on the framework law on the environment was adopted on July 26, 2000, with the aim of "establishing the general principles that must lay the foundations of the national policy on environmental protection and serve as a basis for aligning ecological imperatives with the requirements of sustainable economic and social development" (Article 1). This is therefore the law governing environmental issues in all sectors of development. It exclusively identifies the Ministry in charge of the environment as the authority responsible for the precautionary measures necessary to protect the environment. However, to do so, it must consult the various relevant institutions.
The implementing texts of the framework law on the environment are: Decree No. 2004–094 dated November 4, 2004 relating to the Environmental Impact Study, and Decree No. 2007-105 dated April 13, 2007 which modifies and supplements certain provisions of the first Decree. These texts describe, from a new perspective better adapted to sustainable development, the ESIA procedure for development projects and activities in Mauritania. They define in particular the project categories: Category A, activities subject to an EIA; and Category B, activities subject to an Environmental Impact Notice (EIN) (see Article 4 (new) of Decree 2007-105).

- **The Pastoral Code**

Law No. 2000-044 on the Pastoral Code in Mauritania aims to define the concepts and principles of rational management of pastoral land and to determine the precise rules that must govern all aspects of pastoral activity, in order to ensure the preservation and promotion of pastoralism within the framework of a harmonious evolution of rural development. It defines pastoral lands as those that contain pastoral resources as well as migratory corridors allowing animals to access these resources. It states that no development is possible on these lands if the vital interests of livestock breeders are affected or if access to pastoral resources is reduced and that water resources and soils, in particular, are of public interest and must be protected.
• The Forest Code
Law No. 2007 - 055 on the Forest Code constitutes the reference framework for forest management.
• The Hunting Code
Law 97-006 dated January 20, 1997 on the Hunting and Nature Protection Code.
• Law No. 2000-042 dated November 15, 2000 on the protection of plants:
Defines the rules relating to the protection of vegetation on the national territory, as well as the import and export of living plants and seeds.
• Framework law on the protection of tangible cultural heritage

Framework law 2005-46 dated July 25, 2005 on the protection of tangible cultural heritage defines tangible cultural heritage as any construction or product of the interaction between man and nature that may have a historical, archaeological, scientific, artistic or aesthetic value justifying its preservation and transmission to future generations.

- **Land legislation**

Today's land legislation in Mauritania is governed by Ordinance 83-127 dated June 5, 1983, on the reorganization of land and property and its implementing decree No. 2010-080 dated March 31, 2010. This Ordinance was designed as a national integration measure to enable the State to undertake agricultural development projects without being blocked by the landowners' reluctance. It also aims to eradicate unequal social relations and provide access to land ownership for all, without discrimination. To this end, the State has taken vacant and ownerless land, while recognizing customary land rights and has introduced and clarified procedures for access to land.

- **National environmental and social assessment procedure**

According to Decree No. 2007-105, which amends and supplements certain provisions of Decree 2004-094 dated November 4, 2004 relating to the Environmental and Social Impact Study, the procedure for carrying out EIAs and EINs is defined. The details of this procedure are given in the Guide to Technical and Administrative Procedures for Environmental Impact Assessments. The total cost of carrying out the EIA or EIN, including the costs of field visits, analyses and surveys, drafting of the study report, publication of the notice, are entirely the responsibility of the Promoter, in accordance with Article 10 of Decree 2004-094. The advertising costs during the public inquiry are also the responsibility of the Promoter, according to Article 20 paragraph 2 of the same decree.

Table 28 : Chronological stages of the procedure for carrying out EIA or ESIN

Steps/Activities	Entities
1. Project classification	EACD/ME
2. Preparation of the Project ToRs	Consultant paid by the Promoter
3. Framing of the ToRs	EACD
4. Choice of the approved consultant	Promoter
5. Preparation of the EIA or EIN	Consultant paid by the Promoter
6. Review of the EIA report	Validation Committee
7. Public consultation	Validation Committee
8. Opening of a register for complaints with the relevant Hakem	DEC (after the supervision of each public consultation meeting, organized by the Promoter and led by its Consultant)
9. Preparation of a notice to the MEV	Validation Committee
10. Public inquiry	Investigators appointed by the MEV
11. Publication of the call	Promoter
12. Environmental permit or environmental certificate of conformity	MEV (on the EACD advice)
13. Environmental compliance monitoring	MEV (EACD)

P.N: some steps are not required for development.

International conventions

The implementation of the subproject requires compliance with Mauritania's commitments through compliance with ratified international conventions, the main ones of which are described in the table below:

Table 29 : Summary of International Conventions applicable to the project

International conventions	Year of conclusion	Ratification dates	Aspects of the agreement related to the project
Convention on Biological Diversity	1992	August 7, 1996	The implementation of the subprojects involves the use of existing quarries for the supply of materials. In accordance with the provisions of the Convention on Biological Diversity, ratified by the country, and compliant with the Environmental and Social Standard on the preservation of biodiversity, measures will be taken to mitigate environmental impacts and restore these sites after their use. In addition, the subprojects must strictly comply with measures for the conservation of fauna and flora, avoiding the exploitation of quarries present in delicate natural habitats.
United Nations Framework Convention on Climate Change	1992	January 20, 1994	The establishment of a water table monitoring system by the NWRC in a context of increased pumping in order to meet the needs of local populations. The systems/works to be carried out must contribute to national efforts to reduce GHG emissions in the water and sanitation sector.
Ramsar Convention on International Wetlands	1971	February 22, 1983	Within the framework of the subprojects, the environment must be respected, in particular, there shall be no discharge of substances of used oils, fuel, other toxic waste or other solid waste in watercourses, lowlands and on the ground for the different phases of the subprojects. The Ramsar Convention, which aims to preserve vital areas for biodiversity and ecosystem services, and the Environmental and Social Standard, which highlights the importance of maintaining biodiversity while ensuring sustainable resource use, will guide the implementation of the subprojects, aligning them with national and international conservation efforts in a sustainable development context.

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	1986	January 2005	Improving access to water will allow some rural communities and small villages to set up market gardening areas. The use of chemicals and pesticides in the fight against crop enemies and pests may lead to the purchase of these substances.
Bamako Convention	1997	June 20, 1999	The Bamako Convention ratified by Mauritania, which prohibits the importation of hazardous waste and promotes environmentally friendly management of locally produced waste, is highly relevant to the country's drinking water supply subprojects. It provides a framework to ensure the use of uncontaminated equipment and materials, responsible management of construction site debris, the choice of clean technologies, and raising awareness among the populations about waste-related risks. It thus ensures that these subprojects manage their waste in a way that protects the environment and the health of the populations, in accordance with Mauritania's international commitments.

Environmental and Social Standards of the Adaptation Fund

In view of the environmental and social impacts and risks identified as relevant to the project/program and in accordance with the Adaptation Fund's environmental and social policy, this project must enhance the positive and social benefits of its activities and avoid or mitigate environmental and social risks and impacts. The management of these risks is essential to the success of the project.

The provisions of Decree 2007-105 dated April 13, 2007, governing environmental assessment in Mauritania, have made it possible to specify above that the project activities are subject to the environmental impact notice procedure at most.

Indeed, speaking of agricultural development, no small farmer in the project area owns more than 10 hectares. In addition, no communal, community or private property that can benefit from the project's support for the planting of resilient trees exceeds 100 hectares.

As part of this ESIN, measures to mitigate negative risks or enhance positive risks will be integrated in accordance with the Adaptation Fund's environmental and social policy. These measures will also be documented in the Environmental and Social Management Plan (ESMP). The available information is used to complete Table 6 below of the 15 principles of the Adaptation Fund regarding environmental and social risks and impacts.

Table 30 : Analysis of E&S risks in relation to the adaptation fund principles

Checklist of E&S principles compliant with AF	No additional assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Respect of law	The proposed project has been developed in accordance with the provisions of the Multilateral Environmental Agreements and the applicable laws at the national level, in particular the Framework Law on the Environment, the relevant Laws/codes on CC, biodiversity, Laws and regulations relating to food security, health, soil management, water, etc. During the project, consistency with the texts linked to this entire legislative framework will be rigorously respected.	Risk: Low Potential impact: Low Most of the components and corresponding interventions/activities of the proposed project do not fall into the first category of projects requiring a full EIA.
Access and equity	The project provides equitable access to all targeted vulnerable groups in the beneficiary areas. In order to make sure that no one is left behind, depending on the composition of the communities, selection criteria will be developed and agreed after consultation.	However, some categories of people (orphans, disabled, displaced, affected by HIV/AIDS or Corona Virus, etc.) may be excluded due to their status. Specific awareness-raising measures will be taken in the affected communities. Risk: Low Potential impact: Low Project activities will be equally accessible to target communities, without discrimination.
Marginalized and vulnerable groups	The project prioritizes the most vulnerable farmers and agro-pastoralists, particularly men and women whose livelihoods have significantly deteriorated due to climate shocks.	However, some target illiterate populations may not benefit from some of the benefits. Similarly, populations without radios or mobile phones may not benefit from climate information. This risk will be overcome by using traditional means of communication (ceremonies, etc.) Risk: Low Potential impact: Low

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	The project makes sure that the rights of direct beneficiaries, i.e. men, women, youth and children, are respected, based on their involvement in the implementation. Stakeholder consultation was part of this logic.	Risk: Low Potential impact: Low The project will be implemented using existing government structures at local, regional and national levels and respect for human rights is essential.
Gender equality and women's empowerment	In its design, this project fundamentally considers gender equality and women's empowerment. Components 2 and 3 propose various activities for women's empowerment.	Risk: Low Potential Impact: Low The project places particular emphasis on women and youth groups, especially for income-generating activities and grants, to make sure that they fully participate and benefit from the project. Also, women's participation will be promoted in pilot/field school experiences.
Fundamental labour rights	In rural areas, work remains largely informal.	Risk: medium Potential impact: medium Remuneration inequalities and child labor are risks that could impact the proper execution of the activities. The project will ensure compliance with the applicable Labor in Mauritania. Particular attention will be paid to the elimination of child labor.
Indigenous populations	The communities benefiting from the project do not include indigenous peoples as defined by the United Nations, but the project will make sure that activities do not violate traditional customs and practices.	Risk: Low Potential impact: low
Involuntary resettlement	Project activities will be implemented with communities in their own localities and on their own lands. There will be no resettlement.	Risk: Low Potential impact: low
Protection of natural habitats	The project aims to make farmers and agro-pastoralists more resilient to climate shocks and reduce pressure on the natural environment, thereby contributing to the protection of natural habitats. The non-existence of classified forests in or near the project areas is to be considered.	Risk: Low Potential impact: low
Conservation of biology and diversity	The project aims to make farmers more resilient to climate shocks and reduce pressure on the natural environment, particularly in oases areas, thereby contributing to the conservation of biodiversity.	Risk: Medium Potential Impact: Low Medium The project has many environmental benefits, including: improved soil health and water conservation.
Climate change	The project is undertaken to strengthen the resilience of smallholder farmers and agro-pastoralists to CC. It also proposes to strengthen the local governance framework and management of adaptation to CC.	Risk: medium Potential impact: medium The project activities will be developed to improve the resilience of ecosystems and populations to climate change by focusing on adaptation to their negative impacts in the targeted areas.
Pollution prevention and resource efficiency	The project will contribute to sustainable land management, water use efficiency and prevention of water pollution.	Risk: Low Potential impact: low
Public health	The project activities promote the health of the beneficiaries. The provision of various equipment aims to foster field work and diversify the supply of basic products. Similarly, building the financial capacity of the beneficiaries will help them meet health expenses).	Risk: Low Potential impact: low
Tangible and intangible assets of cultural heritage	None of the project activities have any impact on the physical and cultural heritage of humanity.	Risk: Low Potential impact: low

Institutional framework

Here follow the main institutions involved in the project implementation:

The Ministry of the Environment: It is the main institution in charge of the environment and natural resources. Its general mission is to design and implement, with the various relevant stakeholders, the Government's policy for the Environment and the management of natural resources. It ensures the integration of environmental imperatives into the various socio-economic development processes of the country. The MEV is made up of several central technical departments; they work to implement the objectives and prerogatives of the Ministry. The MEV relies on the Department of Environmental Assessment and Control (DEC), which is the direct body for implementing the environmental assessment policy in Mauritania. Its mission is also to ensure the enforcement of the provisions relating to ESIAs. It prepares, for the Minister of the Environment, the opinions and decisions relating to ESIAs. As part of this project, the EACD will be able to rely on the regional environmental delegation (RED), whose capacities will need to be strengthened for this purpose. For greater efficiency, the EACD will also be able to

rely on certain MEV departments. Within the framework of the project, other institutions are involved in this process and are listed below:

The Ministry of Agriculture: Generally speaking, the Ministry of Agriculture is responsible for designing, executing, monitoring and evaluating the Government's policies on agricultural development. It is also responsible for providing technical support to producers, supplying improved or quality seeds, combating crop pests using chemical or biological technical means, training and extension. It may be called upon, in the event of pollution of water bodies by the project, to propose appropriate measures to protect these plans in collaboration with the Ministry of the Environment.

The Ministry of Livestock: Due to the use of biomedical products for animal health, is also an important player in the management of these products through the Department of Veterinary Services, which includes the Livestock Input Supply Center (LISC).

The Ministry of Health: The Public Hygiene Department houses a unit in charge of vector control that organizes spraying campaigns against different vectors of disease transmission such as malaria and dengue fever. In addition, chemicals and even radioactive products are used by health structures and analysis and research laboratories. The Ministry of Health will be involved in raising awareness, providing information and caring for accident victims and also victims of gender-based violence.

The Ministry of Water and Sanitation: Even if pesticides and chemicals play an important role in cleaning up the living environment and fighting diseases, their negative impacts on health and the environment constitute a major drawback. This is why the Ministry of the Environment also has a central role to play.

The Ministry of Civil Service, Labor: It makes sure that the project applies the provisions according to the law on the labor code of the IRM;

The Ministry of Youth and Sports

It must ensure the employability of youth in order to keep young people in their homeland;

The Ministry of Social Affairs, Children and Family: Through its decentralized services, will ensure the supervision of women's Organizations, the monitoring of GBV and CV victims, management of complaints and for questioning the project on child labor;

The Ministry of Finance: It will have a word in the financing procedures.

The Ministry of the Interior and Decentralization: It will have a say in the management of municipal activities and will ensure the safety of service providers in the framework of the project. The Ordinances establishing and organizing local authorities and administrative districts assign powers to local authorities with regard to the management of their environment (Ordinance No. 87.289 dated October 20, 1987 repealing and superseding Ordinance No. 86.134 dated August 13, 1986 establishing municipalities, amended by Ordinance No. 90.025 dated October 29, 1990, Law No. 93.31 dated July 18, 1993, Law No. 98.020 dated December 14, 1998 and Law No. 2001.27 dated February 7, 2001 and the Hygiene Code No. 03.04 dated January 20, 2003). The local authorities have been assigned the following environmental powers:

- Vector control and, in particular, all forms of disinfestation;
- Protection of classified sites installed in local entities as well as that of monuments;
- Raising awareness among the population of environmental hygiene problems;
- Issuing operating and control permits for dangerous, unsanitary and inconvenient establishments;
- Drainage and cleaning of wastewater collectors and sewers;
- Cleaning, collection and disposal of household waste and rubbish.

It is nevertheless necessary to note the weakness of the intervention capacities (resources and skills) and environmental and social management of these communities, particularly in terms of the project implementation monitoring.

The Ministry of Culture: It will act for the management of cultural heritage in the event of accidental discovery of cultural remains;

The municipality: The main municipality (Tawaz) benefiting from the infrastructure does not have the necessary skills in environmental and social assessment. They are facing financial and material difficulties in exercising their responsibilities aimed at improving the living conditions of the citizens and strengthening their socio-economic role in the absence of efficient technical services. (Ministry of Social Affairs, Children and Family, Ministry of Health).

NGOs, Community Associations: The project will use existing and active NGOs or associations for the implementation of the projects, awareness-raising and information on capacity building of the main actors, as well as in the environmental and social management of socio-economic infrastructure. In the project area, there are several national and international NGOs and networks working in the agricultural, environmental and livestock sectors, which could play a key role in monitoring the project implementation as local structures.

Construction companies and other service providers: They prepare and submit an ESMP-site, carry out the implementation of environmental and social measures and comply with the guidelines and other environmental requirements contained in the works contracts and the Call for Tender Files (CTFs).

Consultants responsible for monitoring: They must ensure local monitoring of the effectiveness and efficiency of the environmental and social measures implementation and compliance with the guidelines and other environmental requirements contained in the works contracts.

III. Description of the initial state of the environment

1. Physical environment

The Wilaya of Adrar extends over a 215,300 km^2 i.e. nearly 20.96% of the national territory. Its landform is dominated by the Majabat EL Koubra, a real, almost impermeable desert that covers 52% of the area with a 200 to 350m height. Lemreye and Ouarane, real dune fields, are the eastern and southern parts of the Majabat El Koubra. The Amsaga, a 100 to 200m high flat Saharan peneplain, extends to the west and southwest. There is also the Adrar plateau (western half) dominated by a multitude

of escarpments, the most important of which is the Dhar de Chinguitti (400 m) and several peaks including the Guelb Richatt (north of Ouadane) and hills to the northwest.
From a hydrogeological point of view, the Adrar region can be subdivided into two groups from west to east: i) The Mauritanides chain and the Reguibatt ridge to the west and northwest and ii) The Taoudenni basin to the center and east. The Reguibat ridge is made up of heavily, granitic and gneissic, eroded basement rocks. The surface alteration layer is poorly developed. The aquifers are therefore mainly linked to the fracture zones that are more or less connected to each other. The extension of the aquifers is necessarily very limited and the groundwater resource is very low. The alteration layer is too small to be hydro-geologically interesting. Climate in Adrar is of the Saharan sub-desert type, featuring a wet season from July to September and a dry season for the rest of the year. Drought that has set in for about thirty years has reduced the average annual rainfall. Administratively, the Wilaya is subdivided into four Moughataas, two districts and eleven communes.

Table 31 : Administrative divisions of the Wilaya

Moughataas	Districts	Communes
Aoujeft	N'Teiguent	**Aoujeft, Maeden, N'Terguent and El Medah**
Atar	Choum	**Atar, Aïn Ehel Taya, Tawaz and Choum**
Chinguetti		**Chinguetti and Aïn Savra**
Ouadane		**Ouadane**

Source: Administrative data

2. Demography

According to the GPHC 2013 data, the population of the Wilaya of Adrar amounted to 69,542 inhabitants in 2013. NASDEA projections for the year 2022 estimate a 60,843 population. This sharp decline in the population is the combined effect of several factors including drought, the low supply of basic services and the lack of economic opportunities. The spatial distribution of the population shows that 55% live in the Moughataa of Atar, 29% in Aoujeft, 10% in Chinguetti and 6% in Ouadane. The population density is 0.33 inhabitants per km², considered among the lowest in the country.

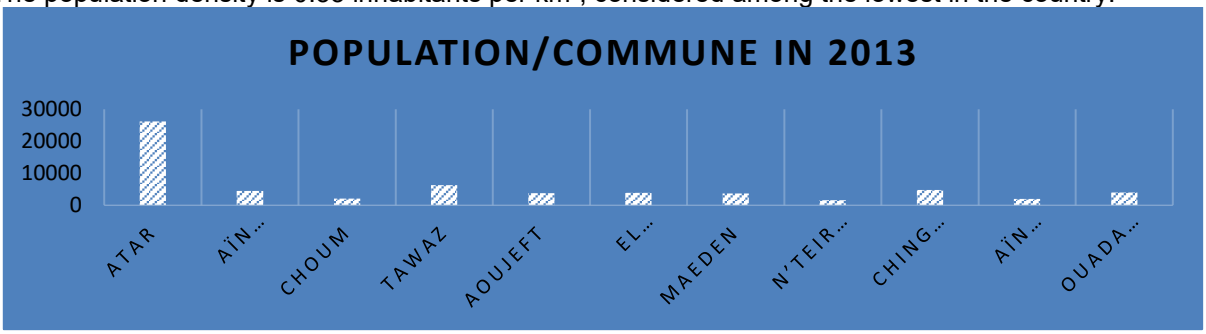


Figure 11 : Population distribution by municipality

Source: GPHC 2013
The lowest fertility rate at the national level according to the 2013 GPHC data is (3.8), while according to the 2019 EDSM, the total fertility rate is 4.2, still the lowest at the national level. The population of Adrar is composed of 51.9% women against 48.1% men. The distribution by five-year age groups highlights a relatively high proportion of the 45-50 age group. This probably reflects a strong emigration of younger adult age groups from 25 to 44 years old. Regarding the composition of the population according to the broad age groups, there is a high proportion of under-30s with 63.4% and a relatively low proportion of adults aged between 30 and 44, i.e. 15%. The oldest group represents 6.8% of the population of the Wilaya (graph below). The working-age population (15-64 years) represents 57.5%. The dependency ratio is 0.74.

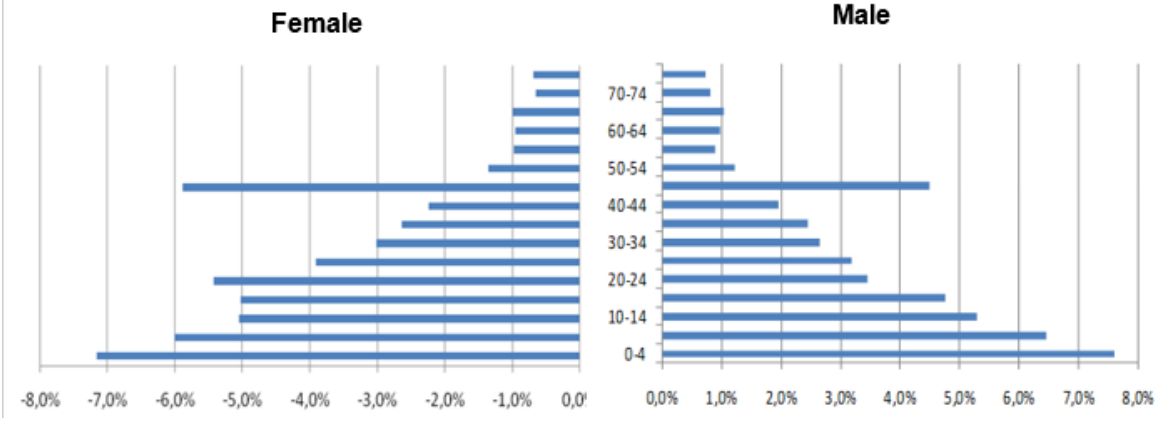


Figure 12 : Age pyramid of Adrar

3. Brief analysis of poverty

According to the 2019 Permanent Household Living Conditions Survey (PHLCS), the Wilaya of Adrar has the fifth highest prevalence rate of monetary poverty, after Guidimakha, Tagant, Brakna and Assaba, with 34.9% of households living below the poverty line, i.e. 6.7 points more than the national average (28.2%). More worryingly, Adrar registered, between 2014 and

2019, 0.8 points increase in the prevalence of poverty, while it declined to an average rate of 2.7 points at the national level and in all other Wilayas except Guidimakha, the poorest region in the country, where it increased by 0.6 points.
In Adrar, the prevalence of poverty is much higher among rural households (51.4%, i.e. 10.2 points higher than the national average) than among urban households (14.3%, i.e. slightly lower than the national average, 14.4%). The poverty rate of rural households, which is the highest after that of Guidimakhec(51.9%), is explained in particular by the absence of opportunities for income diversification. Indeed, these households derive most of their income from date palm cultivation and market gardening, which have been heavily penalized in recent years by low rainfall, or from tourism that sharply decreased between 2008 and 2021, halted due to security and then health risks (COVID-19 pandemic). The rate is also explained by the modest number of households benefiting from social transfers which are limited to those served within the framework of State-financed programs, specialized Organizations such as UNICEF and charitable Organizations not intervening in the Wilaya.

Table 32 : Prevalence of poverty in Adrar in 2014 and 2019 in %

Prevalence of poverty/Wilaya/Environment/Year		2014	2019
Adrar	Urban	35,6	14,3
	Rural	32,7	51,4
	Total	**34,1**	**34,9**
National	Urban	17,2	14.4
	Rural	43,8	41.2
	Total	**30,9**	**28,2**

Source: PHLCS 2019-2020 Data
It is striking to note that the decline in poverty between 2014 and 2019 in urban areas in Adrar was more than seven times greater than the national average (respectively 21.3 points and 2.8 points), while in rural areas, poverty increased by 18.4 points in Adrar, while at the national level, it declined by 2.6 points on average.
Although the figures are not available, it is possible to state, based in particular on the opinions of the various interviewees met during the thematic workshops and meetings held with public officials and private and associative actors, in the regional capital and the three capitals of Moughataa, that the proportion of poor households in Adrar headed by women is lower than poor households headed by men. This situation, which prevails in the other Wilayas of the country, can be explained in particular by the size of households (smaller among those headed by women than those headed by men), transfers received from parents and priority access to the various assistance programs implemented by public institutions (social safety nets and other programs). According to 2012 data, the proportion of households headed by women would be 30% in Adrar.
In Adrar, as elsewhere in Mauritania, the prevalence of monetary poverty varies, more or less significantly, depending on the Moughataa of residence of the head of household and, above all, their socio-economic group. The 2019 PHLCS does not provide data according to these criteria; it can however be stated that poverty is more prevalent in the two Moughataas of Ouadane and Chinguetti than in those of Aoujeft and Atar, and more so among agricultural and non-agricultural self-employed workers than among other socio-economic groups. In terms of depth and severity of poverty and according to the 2019 PHLCS data, Adrar displayed values close to the national averages, with respectively 7.3% (i.e. a decrease of 2.1 points compared to 2014 and 0.3 points less than the 7.6% national rate) and 2.3% (i.e. 0.8 points less than the national level and a decrease of 1.3 points compared to 2014). Naturally, the depth and severity of poverty are, as is its prevalence, much higher in rural areas than in urban areas.

Table 33 : Evolution of poverty indicators between 2014 and 2019 in Adrar according to place of residence in %

Wilaya/Environment		Prevalence (P0)		Depth (P1)		Severity (P2)	
		2014	2019	2014	2019	2014	2019
Adrar	Urban	35,6	14,3	9,1	2,2	3,5	0,5
	Rural	32,7	51,4	9,6	11,2	3,6	3,6
	Total	**34,1**	**34,9**	**9,4**	**7,3**	**3,6**	**2,3**
National	Urban	17,2	14,4	4,5	3,3	1,8	1,2
	Rural	43,8	41,2	13,7	11,7	6,1	4,8
	Total	**30,9**	**28,2**	**9,3**	**7,6**	**4,0**	**3,1**

Source: PHLCS 2019-2020 Data
In 2019, Adrar displayed extreme rates lower than the national averages as shown in the table below.

Table 34 : Evolution of extreme poverty indicators in Adrar between 2014 and 2019 in %

Wilaya/ Environment		Prevalence (P0)		Depth (P1)		Severity (P2)	
		2014	2019	2014	2019	2014	2019
Adrar	Urban	4,8	0,8	0,9	0,1	0,2	0,0
	Rural	31,6	29,0	8,8	7,4	3,8	2,5
	Total	**18,2**	**10,3**	**3,7**	**1,9**	**1,1**	**0,5**
National	Urban	7,9	4,5	1,9	1,1	0,7	0,5
	Rural	24,4	20.6	6,7	5.1	2,7	2.0
	Total	**16,4**	**12,8**	**4,4**	**3,2**	**1,8**	**1.3**

Source: PHLCS 2019-2020 Data
Between 2014 and 2019, extreme poverty in Adrar saw its prevalence decrease by almost 8 points, a rate more pronounced than the national average (3.6 points), while the decrease in its depth was 1.8 points, better than the national average regression (1.2 points) and that of its severity was, roughly, comparable to the national average (respectively 0.6 points and 0.5 points). In terms of inequalities, data show that Adrar is one of the Wilayas where inequality declined between 2014 and

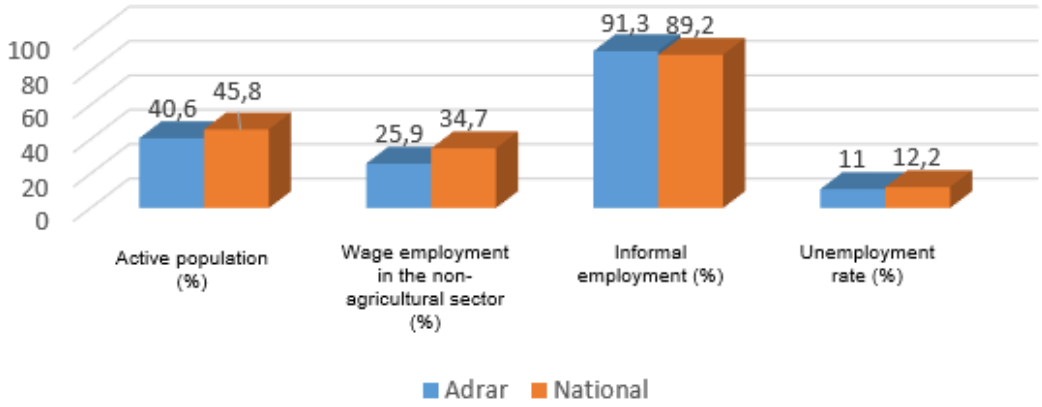
2019, with the Gini Index falling from 0.30 to 0.27, a 0.03-point decrease, slightly higher than the national average (0.02 points). Thus, the Wilaya of Adrar bordering 7 Wilayas, which makes it likely to be at a first-rate commercial crossroads and a road transport hub and having significant agricultural potential, particularly for date palm cultivation and market gardening and tourism, remains one of the poorest Wilayas in the country.

4. Employment and youth

According to the PHLCS 2019 data, the working-age population amounted to 44,618 people in the Wilaya of Adrar, i.e. 2% of the total working-age population, more than half (52.9%) live in rural areas and a majority of women. Among this working-age population, the active population of the moment, i.e. the persons fulfilling the conditions required to be included among the employed or unemployed (persons aged 14 to 64 inclusive, whether employed or unemployed) amounts to 40.6%, a participation rate 5.2 points lower than the national average.

This participation rate is higher in urban areas (44%) than in rural areas (38%) and much higher for men (59.8%) than for women (27.3%). According to the same data, the employment rate (ratio of employment/population aged 14-64) is 36.1% in Adrar, the fourth lowest rate after Trarza (22.7%), Tagant (26.1%) and Brakna (35.5%) and 4.1 points below the national average (40.2%); this ratio is much higher for men (54.7%) than for women (23.3%). The rate of paid job in the non-agricultural sector is 25.9%, 8.8 points below the national average (34.7%), while informal employment represents 91.3% of total employment, 2.1 points above the national average (89.2%), and is slightly more common among women (96.8%) than men (91.3%). According to the 2019 PHLCS, the unemployment rate in Adrar was 11%, i.e. 1.2 points lower than the national rate (12.2%) and is less pronounced in urban areas (10.1%) than in rural areas (11.9%), it affects men less (8.5%) than women (14.7%).

Graph 1 - Main indicators relating to employment in Adrar



Source: PHLCS 2019

The various interviewees met during the thematic workshops and working meetings in Atar, Ouadane, Chinguetti and Aoujeft estimate that the official unemployment rates are well below reality, which they believe exceeds 70%. They also emphasize that the jobs available in the Wilaya are, most often, informal jobs that are low-paid and very precarious. In Adrar, the population is quite young, with those under 30 representing 72.2% in 2020 according to NASDEA projections. These young people, faces challenges, including limited access to basic services, particularly health and education, as well as to opportunities for personal development, given the inadequacies in terms of sports and cultural infrastructure and in terms of resources intended to support youth associations. Employment opportunities are mainly informal, low-paying, and unstable, while self-employment programs, particularly through programs initiated by the Ministry of Employment, MSACF, FSC or the TAAZOUR Agency, remains insignificant, given the very limited number of young people who benefit therefrom and the sometimes-non-transparent methods for selecting the beneficiaries.

The young people of Adrar believe that the difficulties they encounter are exacerbated by the State's poor interventions in the Wilaya, with politicized actions that prioritize traditional leaders and local influential people over the needs of the population. Public investments, civil servant management, social services, and social transfers often lack equity, transparency, and efficiency.

5. Health

The analysis below of the health sector is based on the most recent statistical data and studies as well as on the information and assessments collected during the meetings organized with the central, regional and local structures and the half-day thematic workshop that focused on health.

These data, information and assessments were processed in order to establish the most accurate diagnosis of the health situation in the Wilaya and to infer the guidelines that should guide the interventions of the State, the Regional Council and the various other actors in the sector during the 2022-2026 period, in order to significantly improve health indicators in Adrar.

The number of health facilities (HEFAs) in Adrar is quite large, compared to other Wilayas: one regional hospital and two departmental hospitals, in Ouadane and Chinguetti, for 83,515 people, 6 health centers including one for 16,700 people and 22 health posts, including two non-functional in the Moughataa of Chinguetti, and with one health post for 3,800 people. These health facilities are distributed as follows between the four Moughataas of the Wilaya.

Table 35 : Distribution of health facilities in the Wilaya of Adrar

Moughataa	Regional hospital	Departmental hospital	Health center	Health post
Atar	1		2	7
Ouadane		1	1	2
Chinguetti		1	1	3
Aoujeft			1	10
Total	1	2	5	22

Source: Regional Health Directorate of Adrar, October 2022

The two departmental hospitals, run by doctors, are managed, within the framework of agreements with the State, by non-governmental Organizations, while health centers, all run by doctors, give maternal and child health care, provide vaccinations and the management of severe and acute malnutrition, etc.

6. Social protection

Social protection consists of all the support mechanisms that enable each individual or household to cope, throughout their lives, with the consequences of the occurrence of a risk or social need. The national social protection strategy in Mauritania, developed with the assistance of UNICEF and adopted in 2013, considers that the concept encompasses "a whole set of public, formal and informal, investments and initiatives, likely to directly address risks, vulnerability and chronic poverty".

The main factors of vulnerability in ADRAR

Adrar faces a number of constraints that make it one of the most vulnerable Wilayas in the country, as evidenced in particular by the prevalence rate of monetary poverty, 39.9%, which placed it fifth after Guidimakha, Tagant, Brakna and Assaba according to the PHLCS 2019. Indeed, climate change, overexploitation of natural resources, poor access to basic social services and social protection schemes, the mountainous nature of the region and the isolation of certain areas are all factors that increase the vulnerability of the Adrar populations. In recent years, these factors have been compounded by security and health risks that have significantly reduced tourist flows and therefore increased the vulnerability of several thousand households that derived a substantial portion of their income from tourism-related activities. The climate changes that Adrar has experienced have had the major consequence of insufficient and irregular rainfall, thus leading to a disruption in the balance of agricultural and pastoral systems and the worsening of desertification, rural exodus, food and nutritional crises throughout the Wilaya, where a significant drop in the level of water tables and a significant increase in sand encroachment have been recorded. This has resulted in the loss of several tens of thousands of date palms and a widening of the Wilaya's cereal deficit, due to a very significant drop in the areas exploited in rain-fed agriculture, which is, with date palm cultivation, the dominant type of agriculture and whose productivity is low. Livestock farming, which is a source of income for a large part of the Wilaya's households, has been heavily impacted in recent years by the effects of climate change. Vulnerability is reflected in particular by recurring food insecurity. Thus, the forecasts of the Harmonized Framework for Monitoring the Food Situation for the June-August 2022 period, indicated that 9,741 people, i.e. 16% of the Wilaya's population, will face a food crisis (Phase 3-Phase 5), half a point more than the national average. The PHLCS 2019 shows that, according to the experience-based food insecurity measurement scale (FIES), the prevalence of food insecurity amounts to 63.9% in Adrar, i.e. 20 points more than the national average. The rate of severe and moderate food insecurity in the Wilaya is respectively 7.2% and 56.7%, i.e. 0.2 points and 19.8 points more than the national average. The high prevalence of informal employment constitutes another factor of vulnerability for the populations of Adrar, whose economic activities are mainly date palm cultivation, livestock breeding, market gardening and tourism.

Vulnerable groups

In Adrar, as in the other Wilayas of the country, vulnerable groups are extremely poor households, working children and people with disabilities or living with a chronic disease. According to the 2019 PHLCS data, a little over a tenth of households in Adrar live in extreme poverty, the prevalence rate being 10.3% while the national level is 12.8%. These households are mainly composed of farmers, breeders and self-employed workers, whose precarious situation has been aggravated by the effects of climate change (scarcity of rain, desertification, etc.). Farmers and breeders of the two poles of Ziyara and Dhaya are a living proof thereof. Extreme poverty, and therefore vulnerability, is much more prevalent among households living in rural areas (16.6%) than those in urban areas (2.4%). The 2015 MICS survey showed that 21.7% of children work in difficult conditions, a rate nearly five points lower than the national average (26.3%). According to the General Population and Housing Census, GPHS 2013, people with disabilities represented nearly 0.7% of the population of the Wilaya of Adrar. This rate compared to the estimated population in 2022 gives a disabled population of 426 people. This number is estimated at 600 by the Adrar Disabled People's Association, while the Regional Department of Social Action emphasizes that the number is much higher and could reach 2,000. This category is mainly made of people with reduced mobility, multiple disabilities and mental disabilities. Furthermore, there are a few dozen people living with chronic diseases such as HIV, diabetes, heart disease, kidney failure, etc.

7. Agriculture

Agricultural potential of the region

In Adrar, agriculture mobilizes a large part of the active population and ranks first among socio-economic activities. The cropping systems present in the Wilaya are mainly date palm cultivation, market gardening and, to a lesser extent, crops in depression areas (Grara) and crops behind dams, dikes and bunds. According to estimates obtained from the agriculture services and the ODPP, the potential in date palm cultivation areas is around 7,000 hectares, while that of depression areas and crops behind dams, dikes and bunds is between 18,000 and 20,000 ha. Overall, the Wilaya has four (4) crop types including date palm cultivation, market gardening, crops in depression areas and crops behind dams, dikes and bunds.

Date palm cultivation in Adrar represents the first production activity. It is mainly located at the level of the oases, characterized by date palm cultivation alongside understory cereal crops (wheat, barley), vegetables (carrot, tomato, cabbage, etc.) and fodder (alfalfa) and henna shrubs (Lawsonia alba). There are, sometimes next to the oases, crops behind dams, dikes and bunds, crops in depression areas commonly called "Grara" located on sandy-silty soils. However, oases farmers struggle to access technologies that could enhance and secure their production due to insufficient technical and organizational support. The Wilaya has 145 oases in total, distributed by Moughataa and commune as shown in the table below.

Table 36 : Distribution of the oases of the Moughataa of Atar by commune

Commune	Number of oases
Atar	19
Tawaz	16
Ain Ehel Taya	18
Choum	4
Total Moughataas	57

Source: ODPP /2022

According to the 2020 survey carried out by the ODPP, more than half (51.25%) of the national production, estimated at 24,836.61 tons per year, is produced in the Wilaya of Adrar (12,729 tons). This production is obtained on a 5,759-ha area representing more than 45% of the areas occupied by the date palm in the oases zone in Mauritania. Irrigation of the crop areas is ensured through the use of 7,564 traditional wells and 247 boreholes as well as pumping means consisting of 3,288 solar pumps and 2,703 motor pump sets (MPSs).

The production of dates in Adrar in these different palm groves mobilizes 10,110 producers who exploit 1,212,876 date palms including 702,755 productive palms, i.e. 57.9% of the Wilaya palms. In July 2020, the detailed situation of the palm groves of Adrar is presented according to the data appearing in the table below.

Table 37 : Situation of the Adrar palm groves in July 2020

No. of producers	No. of Zéribas	No. of Houvras	No. of palm trees	No. of productive palm trees	Production (T)	Surface area (ha)
10,110	10,211	242,080	1,212,876	702,755	12,729	5,759

Source: ODPP /2022

Yields per date palm remain very low. The average yield reaches only 18 kg/productive plant compared to 150 to 200 kg/plant in the countries of the sub-region. The low productivity is due to a series of factors, the main ones being the overexploitation of the water table following the intensive use of motor pumps (5,000 in 1993 compared to 9,500 in 2008), the poor condition of the palm trees, the salinity of the water and the lack of protection against sand, water and wind erosion of the soil and the wandering of livestock in the fields. The establishment of a palm laboratory (fight against Taka and red spider, pollination of palm trees, etc.), the installation and equipment of the Société Toumour de Mauritanie (STM) in Atar in addition to the good rainfall recorded during the 2022 wintering should help improve the difficult situation of the sector in the future.

Market gardening is mainly practiced in association with palm cultivation. Although precise statistics on the cultivated areas are unavailable, various sources estimate that it accounts for about half the area used for palm groves. The average yields of the underlying crops vary between 20 to 35 tons/ha of vegetables, 25 tons/ha of alfalfa and 3 tons/ha of cereals (wheat, barley). The cultivated crops include: carrot, okra, onion, potato, eggplant, cabbage, tomato, beetroot, turnip, pepper, watermelon and cucumber. The new Toumour de Mauritanie Company, which is starting to buy the harvested market garden products, particularly carrots that were difficult to sale for producers, should contribute to seriously alleviating the suffering of poor producers and especially to the development of this type of crop, which is widely used to combat food and nutritional insecurity among the citizens of the Wilaya and other Wilayas in the country.

Crops behind dams, **dikes and bunds**: the cultivable potential is estimated at more than 8,000 ha in terms of areas behind dams, dikes and bunds. The areas developed annually depend on the extent and duration of the annual flood. During the last agricultural campaigns, the crop areas, at the level of this type of crop, averaged 16 ha varying between a maximum of 19 ha (2020-21) and a minimum of 14 ha (2021-22). Compared to previous years, these figures seem to be ridiculously low. Indeed, in 2007 the crop area behind the dam and dike amounted to 789 ha. The effects of the drought that the Wilaya has experienced over the last ten years add to the lack of technical supervision, agricultural inputs and labor.

The main crops grown are sorghum, corn, wheat and barley, with occasional supplementary crops such as cowpea and watermelons. Sorghum and corn recorded no production, while it reached an average of 4.3 tons/ha, ranging from a minimum of 1 ton/ha (2021-22) to a maximum of 6 tons/ha (2019-20) for wheat and barley. The yields obtained reached an average of 0.4 t/ha for wheat/barley, with a minimum of 0.2 t/ha (2021-22) and a maximum of 0.48 t/ha in 2019-20 (table 13).

Table 38 : Evolution of areas, productions and yields of crops behind dams, dikes and bunds during the last 5 agricultural campaigns

Agricultural campaign	Areas (ha)				Gross production (tons)				Yields (t/ha)		
	Sorghum	Corn	Wheat/ barley	Total	Sorghum	Corn	Wheat/ barley	Total	Sorghum	Corn	Wheat/ barley
2017/18	-	-	-	-	-	-	-	-	-	-	-
2018/19	9,0	6,0	-	15,0	-	-	-	-	-	-	-
2019/20	4	-	12	16	-	-	6	6	-	-	0,48
2020/21	5	1	13	19	-	-	6	6	-	-	0,47
2021/22	6	2	6	14	-	-	1	1	-	-	0,20
Average	6	3	10	16			4,3	4,3			0,4
Max.	9	6	13	19			6	6			0,48
Mini.	4	1	6	14			1	1			0,2

Source: DSSIA/MA/2022

The operational dams, dikes and bunds during 2022, cover a 480-ha total area. Among them, 8 structures covering a 300-ha area fall under the Moughataa of Atar and that of Ouadane which has a single functional structure covering a 180-ha area.

Table 39 : Distribution of dams, dikes and bunds by Moughataa

Moughataa	Number of dams	Total exploitable area (ha)
Atar	8	300
Ouadane	1	180
Total	9	480

Source: Regional delegation of agriculture of Adrar

Crops in depression zones: This type of crop is practiced in flood zones commonly called "Grara" located on sandy-silty soils. The potential of the areas covered by depression zones is estimated between 10,000 and 12,000 ha according to information collected from producers and technical services. In Adrar, the crops grown in depression zones are generally sorghum and corn.

Over the last 5 agricultural campaigns, the areas developed in depression zones have reached an average of 74 ha for sorghum, varying between a minimum of 24 ha (2017-2018) and a maximum of 100 ha (2020-2021).

The production resulting from the exploitation of these areas reached an average of 34.8 tons, ranging from a minimum of 3 tons (2017-2018) to a maximum of 74 tons (2021-2022). The areas used for growing corn were not developed due to the low rainfall recorded over the last 5 agricultural seasons; only sorghum produced low yields. The yields obtained from this crop averaged 0.25 t/ha with a minimum of 0.08 t/ha and a maximum of 0.42 t/ha (see table 15 below). Almost all of the production in the depression zones is self-consumed, particularly in these years of low harvests.

Table 40 : Evolution of crop areas, production and yields in depression zones during the last 5 agricultural campaigns

Agricultural camp.	Areas (ha)			Gross production (tons)			Yields (t/ha)	
	Sorghum	Corn	Total	Sorghum	Corn	Total	Sorghum	Corn
2017/18	24	-	24	3	-	3	0,13	-
2018/19	82	-	82	18	-	18	0,22	-
2019/20	90	-	90	38	-	38	0,42	-
2020/21	100	-	100	41	-	41	0,41	-
2021/22	74	-	74	74	-	74	0,08	-
Average	74		74	34,8		34,8	0,25	
Max.	100		100	74		74	0,42	
Min.	24		24	3		3	0,08	

Source: DSSIA/MA/2022

The main regional actors in agricultural development

In the context of sector governance, the Wilaya has only a few specialized support structures that maintain, according to the information collected, good coordination relations between them. The specialized support structures present in Adrar are as follows:

The Regional Delegation of the Ministry of Agriculture: In addition to monitoring the situation of producers and production all over the Wilaya, the regional delegation of agriculture provides periodic support for farmers during the agricultural campaign. This support often involves the supply of seeds and phytosanitary products that are very often late compared to the crop calendar.

This support also involves the mobilization of surface water (construction and rehabilitation of dams, dikes and bunds, etc.), through the central department of rural development. However, the regional delegation has only limited human and material resources to effectively accomplish its mission in the Wilaya.

At present, in addition to the regional delegate, the regional delegation staff includes only 2 rural economy works engineers, one of them is head of the rural development unit, the second is assigned by the PARIIS project to supervise its activities at the Wilaya level.

All 4 Moughataa have no departmental inspectors.

The Regional Union of Participatory Management Associations of Oases: The Regional Union of PMAOs of Adrar has the mission of organizing and supervising its members. Since 2010, it has carried out 3 types of activities: market gardening, the development of date palm cultivation and the mobilization of a popularization system for local technical supervision with a view to better implementation of irrigation infrastructures (new palm groves, solar pumps), the organization of pollination campaigns and the fight against Taka with the mobilization of solar pump and irrigation network repairing technicians throughout the Wilaya. In terms of market gardening, it operates through 20 intervention sites. During the 2020/2021 agricultural campaign, it organized and supervised the development of **127.22** ha of market garden crops benefiting 693 farmers including 24 cooperatives.

The Société Toumour de Mauritania (STM) located in Atar was created by decree n ° 2018-58 dated March 29, 2018. It represents the first national establishment specialized in the conservation and marketing of dates and vegetables in Mauritania. Its main objective is to improve the economic activity of the populations in the oases and use the local product to make a better profit and cover the needs of the national populations. For the time being, it has a packaging and conditioning plant for ripe dates comprising 4 cold rooms, 2 freezing rooms and workshops for sorting and processing dates installed on a 2,674 m^2 area. Its current annual capacity reaches 500 tons, but it is being expanded to reach 1000 tons per year.

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The date palm Phyto-biotechnology laboratory in Atar aims to disseminate the results of scientific research for the development of the oases sector in a simplified practical way in order to improve the productivity of the oases farmer. For this to happen, the laboratory carries out in vitro multiplication of palm trees, the biological control of the white cochineal through the breeding of ladybugs in cages, the biological control of the white cochineal through the breeding of ladybugs in the laboratory, the diagnosis of the palm trees condition and the identification of quality males.

The Regional Support Project for the Sahel Irrigation Initiative (PARIIS): The PARIIS project, with technical assistance of the World Bank and FAO, aims to improve the capacity of stakeholders to develop and manage irrigation and increase irrigated areas by following a regional approach focused on "solutions" in the Sahel countries. The project has three components, one for the modernization of the institutional framework, one for financing investments for irrigation and one for knowledge management and coordination. At the Adrar level, PARIIS has carried out actions to build gabion water slowdown thresholds to combat water erosion of batha and strengthen the water table; a program of pilot sites for market gardening, fodder and fruit crops.

8. Livestock breeding

Livestock breeding potential of the region

Livestock breeding is one of the main activities of the populations of Adrar. In addition to extensive livestock breeding, which is decreasingly practiced due to drought, the populations practice small ruminant breeding. Indeed, small ruminant breeding is practiced by all populations in both urban and rural areas. It constitutes an important source of food for the populations. In recent years, the number of livestock in the region has greatly reduced due to the recurring cycles of drought that the region had experienced. However, according to estimates collected from departmental livestock inspections in the Moughataa, livestock still numbers 67,120 camels, 122,457 small ruminants and 154 cattle. Besides, there are some 5,000 donkeys and horses. The distribution of these numbers by Moughataa is shown in the table below.

Table 41 : Distribution of livestock numbers by Moughataa of Adrar

Moughataa	Camels	Small ruminants	Cattle
Atar	31,670	52,657	102
Aoujeft	9,950	22,800	52
Chinguetti	18,000	35,000	0
Ouadane	7,500	12,000	0
Total	67,120	122,457	154

Source: Inspections of veterinary services in the Moughataa

According to the veterinary services in the region, the only measures that have been implemented in recent years for the benefit of livestock have been limited to the organization of annual vaccination campaigns against the main diseases and the availability of reduced amounts of livestock feed at subsidized prices during the lean season. Throughout the Wilaya, livestock infrastructure such as vaccination parks, pharmacies and veterinary warehouses, etc. are reduced. There are four animal slaughtering areas each installed at the level of the chief town of the Moughataa, in addition to 3 pastoral boreholes (two in the Moughataa of Aoujeft and one in Atar), in addition to a mixed borehole located in the central Moughataa of Atar. In the rest of the Wilaya, animals drink from the same water points where local populations feed.

Pastoral areas

Despite its low rainfall, the Adrar shelters significant pastoral potential, their development does not require much rainfall as in the southern Wilayas. Following a few tens of millimetres of annual rainfall, relatively rich and diversified pastures develop across the region. These are generally made up of two perennial grasses (Aristida pungens and Panicum turgidum) as well as shrub species such as Cassia italica, Ziziphus mauritania, Tamarix senegalensis, Acacia tortilis, Acacia radiana, Leptadenia pyrotechnica and Balanites aegyptiaca.

The fodder calendar in Adrar shows a long critical period that sometimes reaches several years, during which breeders are compelled to use agricultural residues and to purchase concentrated feed for sedentary animals. For the rest of the livestock, transhumance is the only condition available to the animals, often with food supplementation in the form of concentrated feed. Most of the pastoral areas of Adrar suffer from considerable water shortages. For this situation to be overcome, it is necessary to set up new water points in the pastoral areas and provide them with appropriate pumping facilities and watering troughs for their exploitation. Intervention in this area must imperatively be based on an optimal distribution of the water points in the rangelands to limit the degradation of very fragile natural resources.

Poultry farming

Poultry farming in Adrar is practiced in a small scale traditional (family) form, across the small towns of the Wilaya. It is intended, as a priority, to cover the consumption needs of rural areas and small urban areas. It is one of the sources of animal protein and represents an income-generating activity, particularly for rural women.

In the field of traditional poultry farming, there are several small farms whose contribution to the local food supply offers significant potential. It is estimated that the productivity of hens varies between 2 and 6 chickens in 5 months. In current conditions, traditional poultry farming is little valued and is extremely fragile. It nevertheless has significant potential to improve the food intake of the poorest households. Self-consumption, although modest, is appreciable for a poor family (10 to 40 eggs/family/year and 8 to 20 chickens/year). In addition, poultry is the household piggy bank for it makes it possible to sell one or two chickens and meet small urgent needs (medicines, food, etc.). Unfortunately, there have been no actions aimed at improving it.

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The traditional poultry sector appears to be very promising and its analysis reveals the following main opportunities: (i) a promising market expected to grow regularly and sustainably; (ii) the marked interest of some rural households to embark on new activities; (iii) an activity that is not very demanding in terms of investments; (iv) significant technical progress possibilities, particularly in terms of production; (v) opportunities to strengthen the role of breeder organizations within the sector; (vi) possibilities of establishing partnerships with private actors.

The main regional actors in the sector

Within the framework of the sector governance, the livestock support services at the Adrar level are very few. They consist of the following structures:

The Regional Livestock Delegation: It provides some support to breeders through vaccination campaigns, supervision and advice. It is also responsible for controlling the quality of the killing processes intended for local markets despite reduced staff. In addition to the regional delegate and a head of department of socio-professional organizations, there are only 2 veterinary nurses assigned as departmental livestock inspectors in the Moughataa of Atar and Aoujeft. The Moughataa of Chinguetti and Ouadane do not have any veterinary agents. In Atar, there are 4 veterinary assistants. According to the information collected, the equipment covers only part of the needs related to the activities of the structure and the regional delegation has only one car in very poor condition.

The PRAPS Project: This project, which aims at improving animal health, improving the management of natural resources, fostering access to markets and improving the management of pastoral crises, has not yet provided support to Adrar. However, according to the information collected on site, the project shall intervene in the Wilaya from the beginning of 2023.

The National Group of Associations of Agro-Sylvo-Pastoral Cooperatives (NGAPs): A dynamic association that advocates with public authorities and development partners for the promotion and development of livestock farming. The NGAP represents a privileged partner and a key player in the institutions responsible for the development of livestock farming. Since it was created in 1992, the NGAP marked public policies and strategies for the development of livestock farming.

The National Federation of Breeders (NFB): It is somehow the spokesperson for breeders throughout the country and is one of the privileged discussion partners of the public authorities for the implementation of livestock farming development policies and strategies. Its main objective is to defend and preserve the material and moral interests of its members. However, in Adrar, its structure has just been set up and does not yet have a headquarters. Its activities do not seem to have been started to date.

Valorization of by-products

Livestock trade is one of the widespread activities in Adrar and is the main source of income for a significant part of the local population. Livestock trade is carried out through three channels: i) sale for local consumption, ii) sale for urban centers in the Wilaya and iii) export to countries in the sub-region (Arab Maghreb countries). In this context, statistics on livestock flows are quite limited. However, according to the livestock statistics yearbook published in 2016 by the Department of Policies, Cooperation and Monitoring/Evaluation (DPCME) of the Ministry of Rural Development (MRD) for 12 months (January-December 2016), shipments from the Wilaya of Adrar reached: 2737 small ruminants and 146 camels.

According to data from the DPCME of the MRD, the production from controlled slaughtering was 26 bovine hides, 1,195 small ruminant hides, 2,759 camel hides in 2016.

The hides and leathers sector have great potential for development, if good awareness and appropriate training of local and national operators are carried out, on the products' collection and processing. They could even invest in the creation of a small hide processing unit, at the regional level, in order to promote the emergence of a local industry and the diversification of activities related to livestock farming.

However, current practices are largely artisanal, with quality issues stemming from (i) generally extensive and/or semi-extensive herds, free grazing; (ii) problems of branding with a hot iron, the practice is difficult to eradicate; (iii) problems of malnutrition, scars, various diseases, parasitism; (iv) problems of animal abuse, marks left by violent blows.

Speaking of **milk production**, it regularly changes according to seasons. It is high during the rainy season (July to September) and increasingly low from November to June. As everywhere else in Mauritania, in Adrar, seasonality shapes milk production according to the laws of supply and demand.

As for **red meats**, the daily hygiene and health control constitutes one of the main sovereign tasks of the Livestock services. In this context, Adrar has 4 livestock slaughtering areas, respectively, in the 4 Moughataas of the region where 26 cattle, 1,195 small ruminants and 2,759 camels were slaughtered in 2016. However, despite the importance of the production potential, red meat remains poorly valued. It is characterized by a significant dysfunction at both the technical and organizational levels throughout the value chain.

Thus, livestock markets lack infrastructure and regulatory oversight, while slaughterhouses operate under poor hygiene conditions with insufficient equipment, hindering meat export opportunities. This limits the valorization of surplus production, forcing reliance on live animal sales to neighboring countries. Additionally, butchers and the broader slaughtering sector operate in chaotic conditions, failing to meet essential health and hygiene standards.

9. Environmental resources

In the Adrar province, there used to be large areas of arable land that were being exploited and/or left fallow. These have now become almost non-existent due to the strong pressure exerted on them by urban and rural populations to meet their livelihoods needs. The protection measures implemented so far have been insufficient to save natural resources. The drought episodes that hit the Wilaya hard and human and animal pressure represent the main constraints to their regeneration. This overexploitation has had extreme and difficult to quantify consequences (silting up of oases and other crop land, intensification of hot winds, water erosion, reduction of gathering resources and exploitable land). The wildlife reserves, once flourishing, have shrunk to an almost irreparably level. They are currently limited to a few pockets of the wettest areas, in particular wadis surrounded by rocks.

In the Wilaya, firewood has become a rare commodity because the woody cover is mainly made up of shrub species. The product is, however, mainly used in the form of charcoal with a supplement often imported from the southern Wilayas through Nouakchott. For reasons of price and habits, charcoal is still a source of energy used in Adrar. Due to the advanced degradation and fragility of the woody cover in the Wilaya, charcoal obtained from existing forest areas should no longer be considered as part of the growth potential of the Wilaya. Reforestation and afforestation as practiced often aim to protect infrastructure. Regarding the modalities of reforestation, many questions remain unanswered regarding the types of development chosen, impact analysis, possibilities of sustainability, user rights over the resource, modes of participation and conflict management.
Despite the importance of desertification that threatens a large part of its territory, the Adrar includes a multitude of natural depressions (lowlands and other places of runoff water concentration) and oases which, due to their morphology, have hydrological characteristics that make them areas of high agricultural potential and great biological diversity. Despite the contrasting situation, the Adrar still hosts a fairly diverse floristic and faunal potential that can contribute, to a large extent, to its socio-economic development, if we pay serious and constant attention thereto. Nevertheless, the vegetation of the Wilaya remains essentially dependent on rainfall. The rare rains give rise to more or less dense herbaceous vegetation that represents pastures of choice for the dromedary and small wild fauna. This vegetation takes refuge in a few localized places: escarpments of the mountains, courses of the wadis, and along the oases. Two plant groups share the Adrar:

- The Stipagrostis pungens group occupies sandy regions, particularly Majabat El Koubra and Ouadane. This species is characterized by large tufts scattered over the dune fields.
- On superficial or sand-covered rocky soils, we can find rich courses of Panicum turgidun, Acacia flava and Ziziphus lotus.

In areas of water accumulation, the vegetation is alive: forests of Acacia tortilis, Capparis decidua, Tamarix senegalensis, Acacia flava and Acacia erembergiana.

The fauna

Despite the impact of the long drought that hit it hard, the Wilaya of Adrar is still home to a few species of fauna. These include turtledoves, birds of prey, swallows and other birds not recognized as preys that exist in large numbers. Rodents such as the ground squirrel (Euxerus erythropus), sand cats (Felis margarita), monkeys (Procavia capenis), reptiles (Dasypeltis scabra), insects, spiders and scorpions are also found in large amounts. Some hares are also spotted whenever a minimum of vegetation appears. The Wilaya of Adrar is also home to the Guelb Richatt Reserve, which is interesting beyond tourism but also contains remains of the region's natural resources. The Guelb Richatt Reserve is located in the Wilaya of Adrar, near the historic site of Ouadane. It covers a 20,000 km^2 area and features the following interesting points:

- The protection of Saharan fauna and flora;
- The protection of geological and geomorphological sites;
- Camel and goat pastoralism;
- The protection of historical and cultural sites;
- Tourism.

The fauna was abundant there. Saharan species such as the Dorcas Gazelle and Barbary Mouflons used to live there. It is a difficult-to-access area. Real gallery forests existed, mainly composed of thorny trees such as Acacia. The area has high tourist potential, particularly for Saharan hikes (Oases, palm groves, rocky environments, trucks, etc.). Currently, the fauna has been reduced to two rare and difficult to see relic species of (occasionally red-fronted) Dorcas gazelles and Barbary mouflons in the Adrar mountains, following the settlement of populations in what used to be prey-abundant areas.

Wetlands

The Adrar has two types of wetlands: on the one hand, the oases and on the other hand, the Grayer. As for the oases, there are a total of 145 oases in the region. As for the Grayer, according to the information collected, their number was once very large but with the worsening climate conditions, this number is increasingly reduced due, on the one hand, to the silting up of some of them and, on the other hand, the planting of others in palm groves. The main Grayers existing in the Wilaya are:

- The large grara of Yagrev, which is by far the largest in Adrar and extends over an area of several hundred hectares. It is the outlet of the main watershed of the Adrar, formed by Ouad Seguelil and its tributaries when they flow out of the cliffs of the Adrar at the exit of the steep gorges. The water flows in a very flat region along a ribbon of dunes that it once crossed about fifty kilometers to the South-west;
- A second very important set of grayer is formed to the South of the Ibi Mountains, on the one hand, between the plateau formed by this escarpment and the enormous dune stretch of Amatlis and on the other hand, at the outlet of the ravines that drain the waters of the plateau towards the plains of Aftout. The graret levras is the main grara, traditionally considered to be one of the oldest exploited in the Adrar. In a good rainfall year, it represents several hundred hectares of excellent clayey soils;
- To the south of the Adrar, still along the Amatlis mountain, there is a series of gräyr whose exploitation is much more irregular because they do not accumulate the waters of important watersheds and because, located in flatter and more sandy regions, they do not benefit from the same runoff;
- The grâra of Tagoug located between Tweyzikt and Tarwen, north of Atar, located between two large wadis with palm trees plantations;
- In the region of Toungad-Aoujeft, in that of Oued Timinit, most of the gräyr, located along the wadis are currently partly planted with palm trees;
- A large group of grãyer is made up of those located on the Dhar to the south of the Zarga Mountains. In this region of plateaus, the watersheds are smaller. Conversely, the intense runoff favors, in certain points, a significant concentration of water, as is the case of the large grâra of Digdig. Nearby, we also find those of el Ham, Tifrirt and Aguigi;
- The grãyr of the Ouadane region that current circumstances (drought, depopulation of the region, etc.) no longer allow their exploitation except very rarely;

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- The Guelta of Toungad: network of "gueltas" (ponds that remain after the flood in the beds of the wadis) of different capacities located at the foot of the cliff;
- The Guelta El Berbera: deep canyon with numerous seepages that feed a large and deep basin;
- The Guelta of Azougui: wadi most often forming three pockets of fresh to brackish water of varying size in the Oumm Lertiar canyon.

Risks related to climate change and human action

The Adrar region is facing many environmental challenges from climate change and human activity, impacting food security, agriculture, and livestock. Recurring droughts, biodiversity loss and silting up of oases and crop areas (Grayer) exacerbate these issues. Water scarcity, pasture degradation, and weak storage systems hinder productivity, while over 90% of the region's food needs in cereals are met through imports. Desertification, pest infestations (seed predator birds, locusts, Taka, white scale insect, date acariosis, etc.), and climate variability, including droughts and floods, further threaten agro-pastoral systems and date palm cultivation, the region's key crop.
In Adrar, the impact of climate change is clearly visible through:

- The advance of the desert, which threatens both residential areas and production areas and infrastructure.
- Water and wind erosion, which threatens roads, agro-pastoral areas, watercourse crossings and habitats built on the edge of ravines.
- The staggering and galloping drop in the water table in recent years and its harmful consequences on the production and productivity of date palms.
- New behaviors (anthropogenic actions) linked to climate change, reduced rainfall and pastures that affected the lives of the region's populations, giving rise to environmentally degrading practices: poor livestock farming practices, excessive tree felling, etc.

10. Hydraulic resources

Potential of the region

In addition to the rare rainfall, the annual level of which varies according to climate hazards, the potential water resources of the Adrar come from two main sources: surface and groundwater resources (ponds and hill reservoirs).
Groundwater resources: the Wilaya of Adrar is located on the edge of the vast sedimentary basin of Taoudenni, an enormous syncline that integrates the eastern edge of Guidimakha and the two Hodhs and extends into Mali. Groundwater resources are located:

- In Amsaga to the West on ancient granitic and gneissic basement formations;
- In the East on ancient sedimentary formations from the primary period, consisting of sandstone, limestone, pelitic and schistose rocks.
- In Amsaga, the ancient granitic and schistose basement is likely to contain only discontinuous water tables in areas of alteration or fracturing, of small extension, possibly fresh water but often non-perennial, of poor quality and delivering small flows;
- In the center (Atar, Aoujeft), the sedimentary formations that form the high landforms of the Dhar, are made up of a dominance of generally silicified and relatively impermeable sandstones. On the other hand, the structural position at the edge of the basin does not promote the existence of continuous captive water tables.
- In the South-East, we also find a set of schist-sandstone and greenstone metamorphic formations belonging to the Mauritanides Arc, in which in-depth studies are likely to locate freshwater resources but probably in low volumes.

Furthermore, the bed of the wadis filled with quaternary sandy gravelly alluvium and containing the Batha water tables, which can locally be extended to the underlying fractured limestone or sandstone substratum, appears to be highly important for the water supply and the regional economy. We find good quality water.
Surface water (wadis, hill reservoirs): The region is marked by the presence of wadis (temporary watercourses) which only function according to rainfall. The abrupt and irregular nature and the low level of rainfall give rise to low flows. In the Adrar mountains, a long anaclinal drainage network collects this water and forms depressions called "baten":

Key regional stakeholders

The actors in the field of hydraulics are limited at the regional level, comprising public institutions and a single private entity. Water access is a priority due to the unfavorable hydrogeological context. However, the lack of a regional coordination framework has led to uncoordinated investments, with actors operating independently of the Ministry of Hydraulics. This absence of planning results in misaligned priorities and inefficiencies during project implementation. The main players in the field of hydraulics at the regional level are:
The Regional Hydraulics and Sanitation Department (RHSD), responsible, at the Wilaya level, for planning and coordinating activities in the field of hydraulics and sanitation. This Department, like the other decentralized technical services of the State, falls short of the human and logistical resources to accomplish its mission. The data it has is incomplete and outdated to guide interventions in terms of investment in drinking water.
The National Water Distribution Company (NWDC), responsible for the production, transport and distribution of drinking water in urban areas, which manages the networks of the 3 chief towns of the Moughataas of Atar, Ouadane and Aoujeft. It should be noted that the NWDC representations only manage the commercial aspect, all development operations of the supply system are the responsibility of the central level.
The National Office of Rural Water Services (NORWS), responsible for the production, transport and distribution of drinking water in rural areas, is responsible for managing the infrastructure for the rural populations. Despite its importance, this structure has no means for monitoring the drinking water networks under its responsibility. The beneficiary localities have to ensure the maintenance of their networks is they can do so, otherwise they must wait several weeks or more to receive support from the institution. The supply of the city of Chinguetti is managed by **the municipality** which operates as a delegate. This management method was introduced as part of the sectoral policy aimed at ensuring sustainable access to water in rural

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areas. The contracts of these delegates are directly managed by the regulatory authority. Some existing development projects in the Wilaya, in particular the ODPP, focus on hydraulics.

The service offer

The supply of drinking water services in Adrar has evolved significantly compared to previous years. Indeed, the rate of access to drinking water increased from 62% in 2012 to 73.7% in 2019, according to the PHLCS 2019 data and 75% in 2022, according to the Ministry of Water and Sanitation. The number of households getting their water from unprotected wells was 6.4% in 2019. Compared to the national level, Adrar has a higher rate of access to drinking water than the national average of 62.6%, according to the 2019 PHLCS data. According to the MHA, there are 217 hydraulic infrastructures in the Wilaya of Adrar, divided between 57 drinking water supply networks (DWS), 70 modern wells, 44 boreholes and 45 water reservoirs. According to data from the Ministry of Water and Sanitation, in 2022, out of 342 localities in Adrar, only 57 localities have a drinking water network (DWS). These DWSs are distributed among the Moughataas as follows: Atar (27), Aoujeft (18), Chinguetti (4) and Ouadane (2). According to the National Water Resources Center (NWRC), the hydraulic infrastructures intended for watering livestock total 3 water points intended exclusively for livestock plus 1 mixed pastoral borehole, i.e. combining watering livestock and supplying local populations. All the remaining water points, i.e. 213 water points, are theoretically intended for water supply to local populations but in practice, serve to contribute to covering the watering needs of animals, particularly sedentary and semi-urban livestock. The flow rate of the water points in Adrar is relatively low. According to the NWRC, 41% of water points have a flow rate varying between 0.1 and 5 m^3/hour, 24% have a flow rate varying between 5.1 and 10 m^3/hour and 35% have a flow rate greater than 10 m^3/hour. In addition to all of these water points, there are surface water and water points used for irrigating date palms (7,564 wells – Laioun – and 247 boreholes) and water supplied by tankers and carts (18% and 1.3% respectively), which are often used as drinking water by a section of the population in the cities and villages. **Access to water in urban areas:** Urban areas are the departmental capitals whose drinking water supply system is managed by the NWDC. In urban areas, the concept of the service rate is more significant than that of the access rate in rural areas due to the increase in the urban population which exceeds all forecasts. In Adrar, the proportion of individuals with access to a drinking water source is 75% (urban and rural areas combined). The MHA services believe that since the overwhelming majority of the population lives in urban areas and in the absence of a master plan for water supply in rural areas, the available data do not distinguish between the two environments in terms of both access rates and drinking water service rates. This is how the service rate per Moughataa is given according to the table below:

Table 42 : Service rate by Moughataa in the region

Moughataa	Atar	Aoujeft	Chinguetti	Ouadane
Water supply rate (%)	87	47	68	65

Source: MHA/2022

Regarding the data collected at the Atar level, managed by the NWDC, the situation is as follows, the current water production is around 5000 to 6000 m^3/day. By relating this volume to the population covered by the network, the city's water needs are, in principle, largely covered because the number of subscribers amounts to 4300 subscribers. However, there are many difficulties with the state of the network which sometimes presents frequent leaks. Some neighborhoods are not sufficiently supplied with water. On the other hand, the very frequent power cuts in Atar pose major problems for water production because the boreholes are connected to the city's electricity network and each time there is an interruption of electricity, the city's water supply stops automatically.

Pastoral hydraulics: In Adrar, pastoral hydraulics are almost non-existent. According to the NWRC database, pastoral water points are limited to 3 water points intended exclusively for watering livestock and one mixed water point. The 3 pastoral points are distributed as follows: 2 in the Moughataa of Aoujeft in El Medah, and Tadreissa, and only one in that of Atar in Oued Lebyadh. The mixed borehole is located in Teyaret Chaab, commune of Ain Ehel Taya, Moughataa of Atar.

Water for agriculture: There are three main types of water-consuming crops in Adrar: crops behind dams, dikes and bunds or in depression areas, date palm cultivation and market gardening. Crops behind dams, dikes or bunds are practiced through the development of dams, dikes or bunds in areas with low or medium rainfall and favorable topography. These dams, dikes or bunds make it possible to retain water and store it in the soil during the winter season. This water is released later and/or withdraws by itself (recession) when preparations are made to develop the basins of these dams. Date palm cultivation and market gardening, require large amounts of water that are becoming increasingly difficult to find due to the demand for domestic needs and the groundwater drop observed in recent years. The continuously growing market gardening production in the Wilaya faces major constraints linked to the deficit in irrigation water.

Water in schools: Data from the RHSD reveals that few schools are connected to a drinking water supply, and nearly 80% lack latrines. This stems from societal attitudes that undervalue water and sanitation in schools, compounded by financial constraints, particularly the inability to cover water costs. Within the framework of two projects that will start soon, a number of schools shall have access to water and sanitation (one project financed by the AFD and another financed by ICESCO).

Water in the health environment: according to information collected from the regional hydraulics and sanitation department (RHSD), several health points were recently not connected to a drinking water supply network.

Maintenance and cleaning: The management of the 217 drinking water infrastructures is ensured according to the following distribution: in addition to the infrastructures present in the chief towns of the Moughataas of Atar, Ouadane and Aoujeft, and the commune of Chinguetti, all other infrastructures are managed by NORWS. Most of the infrastructures appear to be in good condition. However, according to the information collected, the infrastructures managed by NORWS pose serious problems for the relevant localities in terms of maintenance and/or repair in the event of a breakdown. Sometimes the breakdowns last several weeks or even several months before the relevant structure acts, causing suffering to the poor populations.

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Water quality: In terms of water quality, the information available does not cover the entire Wilaya. It is limited only to the Moughataa of Atar. According to the NWRC, 50% of water points have a conductivity greater than 1500µScm. The spatial distribution and type of use of the structures are as follows:

- The majority are located in the wadis of Tayaret, Seguelil, Tawaz and Tezegraz;
- Only a third is used for drinking water supply, either for the surrounding villages or as part of the Atar DWS (tank supply);
- In the Amder wadis around Atar, the water points are relatively salty.

The use of unprotected water sources poses a threat to the health of the populations of the Wilaya, particularly vulnerable groups. The use of surface water (ponds, canals, etc.) has not been highlighted, but there is no doubt that this is a common practice in areas where there are reservoirs. These data indicate the complexity of the quality issue of the water used by the people at the regional level and the health risks they face.

Service demand and prospects

The demand for water is expected to increase due to the change in lifestyle and the needs of agriculture. In urban areas, the increased demand has not been accompanied by the necessary investments to meet the needs of the populations of urban centers. In rural areas located on the dry wedge, demand will remain high, resorting to unprotected wells is the only solution as long as sufficient sources of drinking water have not been mobilized. Big expectations are placed on the implementation of drinking water supply projects such as:

- The drinking water network strengthening project of the city of Atar, which provides for the drilling of 5 new wells and a connection with a pumping station with a capacity ranging from 100 to 200 m3, a 100 m3 reservoir in the Teyaret Sder area, which will increase production from 2600 to 6000 m3 per day. It also provides for a network of 250 mm diameter pipes over 17 km from the source to the Ntarzaye pumping station, a station whose power will increase from 120 to 240 m3 per hour, in addition to a 5 km electrical extension and its equipment with generators and the creation of a 15 km transport and distribution network for the production to strengthen distribution in the high areas of the city and those located on the Atar-Nouakchott axis;
- The drinking water and sanitation access project in the Wilayas of the two Hodhs, Tagant and Adrar with funding from the French Development Agency (AFD) which provides, in addition to access to drinking water, the awareness of more than 120,000 people on hygiene and the construction of 191 blocks of latrines for the benefit of 20,000 students in public establishments in Tagant and Adrar;
- The ICESCO program for the improvement of water and sanitation services in several rural schools, in cooperation with the Mauritanian National Commission for Education, Science and Culture.

The new strategy for the hydraulic sector has clearly identified the various constraints of the sector, while proposing an approach that should improve intervention in this area. Its regional implementation must be a priority for a region such as Adrar where, according to the NWRC, it can be assumed that the context does not help significantly recharge the water table. The possibilities for recharging the water table are limited, on the one hand, to the modest runoff from the basement and sandstone outcrops and, on the other hand, to the minor bed of the Tayaret wadi which appears not to be very active.

11. Energy

The main actors involved in the field of energy are the Ministry in charge of Energy, which defines the general policy of the State and ensures its implementation, and the Multi-sector Regulatory Authority, which is responsible for the allocation and monitoring of licenses relating to the supply of energy. The supply of energy in urban areas is the responsibility of SOMELEC (Regional and Departmental Capitals), while in rural areas, the service delegates carry out this mission, there is no service delegate at the Wilaya level. The main financing in the field of energy comes from loans/donations taken out by the State from donors or from its own funds. The structures currently involved in this field are ADER, which is responsible for electrification projects in rural areas, and TAAZOUR, which finances several solar power plants in addition to a number of development projects.

There is no specific framework at the regional or even national level for the coordination of energy interventions. As is the case for most sectors, stakeholders act according to their own objectives that do not necessarily consider the priorities of the region.

The energy supply

The rate of access to energy in Adrar has seen a significant evolution from 52% in 2014 to 80.2% in 2019 (including 67.2% thermal and 13.9% solar), according to the PLHCS data. Adrar stands out compared to other regions by the significant share of solar energy 13.9% while the national average is 1.9%.

Table 43 : Main energy source used for lighting

Wilaya	Main energy source used for lighting			
	Electricity (network)	Torch	Solar energy	Total
Adrar	67,2%	18,8%	13,9%	100,0%

Source: PHLCS 2019

The total energy production across the four power plants of the Wilaya amounts to 6,850 Kw, including 2,000 Kw solar, i.e. 30%. The Atar power plant is by far the largest, it also supplies the locality of Ain Ehel Taya. The Chinguetti, Ouadane and Aoujeft power plants are small ones.

Table 44 : Number of SOMELEC subscribers per center

Center	Number of subscribers	Total available capacity (KW)
Atar	8222	5850
Chinguetti	1200	300
Aoujeft	725	300
Ouadane	800	400

Source: MMEP 2022

Energy for cooking: Gas is the main source of energy for cooking, 65.5% followed by wood 23% and coal 10.6%. The low density of wood resources is a main factor in the use of gas. However, even if the rate of use of wood is quite low, the overexploitation of wood resources is a challenge for the region facing desertification that is increasing year after year.

Table 45 : Main source of energy for cooking

		Main source of energy (fuel) used for cooking				
		Collected wood	Purchased wood	Charcoal	Gas	Total
Environment	Set	32,1%	2,5%	13,7%	49,8%	100,0%
	Adrar	21,0%	2,9%	10,6%	65,5%	100,0%

Source: PHLCS 2019

Fuel supply: The region's fuel supply is easily ensured by private stations installed in the chief towns of the Moughataas. Supply disruptions are rare. There is also a side market supplied by fuel from the northern part of the country.

The energy demand

Oases agriculture: the use of solar energy is widespread in Adrar, particularly for the needs of date palm agriculture. Indeed, this type of energy is well adapted to the context of the region in addition to the low maintenance cost and the control of maintenance operations by the populations. The demand for solar energy is expected to increase given the development of oases cultures and the existence of projects that finance the acquisition of solar pumping means.

Domestic needs: with the evolution of the lifestyle of the populations and the introduction of household appliances, the demand for energy has increased significantly in recent years in Adrar. It reaches its peak during the Guetna season, when the population of the Wilaya goes double. During this period, urban centers carry out power cuts in order to provide energy to the greatest number of households.

Hotel industry needs: the Wilaya is a destination for both foreign tourists and nationals. The large number of hotels and hostels increases the demand for energy. In Atar, there are 18 large consumers. These operators whose services depend on the availability of energy are facing difficulties due to the low supply, particularly in Atar.

Businesses' needs: distributors of fresh products, whose number continues to increase, are large consumers of energy. According to their representatives met during the thematic workshops, they record huge losses due to repeated power cuts in Atar. This situation slows down the investments and reduces the availability of certain products essential for consumers.

Quality of the service

The stakeholders met during the workshops and field visits expressed mixed opinions. In Atar, there is total disarray due to the power cuts and their consequences on the economic and domestic activities. In other Moughataas, the populations seem to be more or less satisfied with the service. However, problems were highlighted concerning the supply of peripheral districts, the under-sizing of the network which limits the power supplied, particularly during periods of high heat and the illegal connections which put the lives of the people in danger.

Prospects

The Ministry of Energy has launched a project for the transport of energy from Nouakchott to Zouerat (225 kV lines between Nouakchott and Zouerat and associated substations. Lot 1: 225 kV & 33 kV overhead lines, Lot 2: associated electrical substations). This line, the work of which has reached 80% completion, will supply the city of Atar.

12. Tourism

Underexploited potential

Tourism is one of the most important economic pillars of Adrar, which has a potential comparable, in many respects, to that of the major tourist destinations of the Sahara, offering a variety of tourist products and sites behind the attractiveness of the Wilaya. It is home to two ancient cities of the country, namely Chinguetti and Ouadane, who became internationally famous due to the role they played in the pre-colonial history of Mauritania. The remains of these cities and the surrounding landscapes, successions of mountains and wadis, offer spaces and monuments of inestimable value for tourists in search of tranquility and the discovery of the cultures of the Saharan populations. The manuscript heritage of the Wilaya is among the most important in the country (private libraries of renown throughout the Wilaya). At the level of the Moughataa of Atar, tourist products include cultural products in the museums of Amatil, the Museum of Toueizegt, the archaeological site of Azougui which houses a fortress built by the Almoravids in the 5th century of the Hegira. In the city of Atar, the district of Garn El Gasba, houses the oldest mosque in the country El Attigh (743 Hegira). In addition to cultural products, the Moughataa of Atar also provides a diversity of sites and natural landscapes including the Canyon of Amogjar, located in the pole of Ziyara, which houses the rock paintings of AGROUR discovered in 1936 by Theodore Monod dating back to 2000 years BC.

A demand that has been declining for a decade

Despite the lack of precise statistics on the number of tourists visiting the country, the available information allows us to identify some indicators that provide information on the evolution of tourism in Adrar. The history of tourism shows that the number of tourists increased significantly between the 1996-1997 season, the first year of the (Paris-Atar) charter operation organized from France, and the 2006-2007 season, increasing from 270 to 9,747 tourists. This dynamic recorded a sharp decline that resulted in a regression of the tourists' number falling back to 1,770 at a certain period and then stabilized around 1,000 to 1,200 on average during the last decade.

A declining offer

In terms of hotel infrastructure, there are several hotels and hostels spread across the three Moughataas of Atar, Ouadane and Chinguetti. With a total capacity of 623 beds, 80% are in the Moughataa of Atar. This capacity is far from sufficient in addition to the poor state of several structures abandoned by their managers due to lack of customers. In addition, the infrastructure no longer meets the requirements of tourists whose needs have changed significantly. Moreover, any resumption of tourist activities cannot be effective without an upgrade of the existing infrastructure.

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Table 46 : Distribution of the hotels by Moughataa

Moughataa	Welcoming infrastructure		Tourist potential
Atar	7 hotels and 44 hostels	505 Beds	Tourist sites, libraries and manuscripts, traditional cuisine, hiking, tourist guides, travel agencies
Ouadane	12 hostels	42 beds	World Heritage, archaeological sites (Richatt Dome), the Agweidir fort built by the Portuguese, the library of Ehel Abidine Sidi with its manuscripts, hiking tourist guides, travel agencies
Chinguetti	14 hostels,	76 beds	Chinguetti, listed as a UNESCO World Heritage Site, one-of-a-kind architecture, tourist sites, libraries and manuscripts, traditional gastronomy, hiking, tourist guides, travel agencies

Source: NTO 2022

The National Tourism Office has embarked on a new dynamic of promoting tourism products in Mauritania. In this context, it offers operators the opportunity to participate in international tourism events in order to promote their products and build relationships with international operators. It has also organized several events both in Mauritania and abroad.

13. Urban planning

An underpopulated Wilaya

The populations of Adrar settled, and developed according to economic, social and security considerations. The cities were created around water points where the populations had the possibility of carrying out agricultural activities. But the population growth and water scarcity compelled them to seek areas more suitable for agriculture and closer to urban centers with better access to social services.

Unlike most of the country's Wilayas, where anarchic settlement is predominant, in Adrar, this phenomenon remains limited due to underpopulation and the scarcity of water resources. However, the number of localities with fewer than 100 inhabitants is too high (45%). Adrar has 177 localities with more than 50 inhabitants.

A poor supply in terms of urban planning

Type of housing: The nature of the roof of the dwellings is an indicator of the sustainability of the housing. In Adrar, almost half of the dwellings have a straw roof (45.8%), while 23.1% have a concrete roof, wood (9.9%), metal sheets (7.7%) and zinc (6.3%). This shows the precariousness of housing and reflects the standard of living of the populations.

Table 47 : Main material of the housing roof

Earth Clay	Straw	Wood	Metal sheets	Zinc	Cement/concrete	Other	Total
3,7%	45,8%	9,9%	7,7%	6,3%	23,1%	3,5%	100,0%

Source: PLHCS 2019

14. Transport

In terms of governance, the Ministry of Equipment and Transport is the main actor in planning and project management of road investment projects. The skills of local authorities are theoretically limited to the maintenance of urban roads for municipalities, while for the region, it contributes to the definition of regional investment programs in the transport sector. It should be noted that at the Adrar level, the Ministry has no regional representative. The planning of road infrastructure follows the guidelines of the national road plan, which gives priority to infrastructure aimed at first connecting regional capitals to the national network, then departmental capitals, regions to each other and then opening up areas with high economic potential.

Furthermore, the maintenance of rural roads, which constitute most of the roads in the Wilaya, does not have its own entity. One-off actions are carried out from time to time on the Atar-Chinguetti axis, but their effect remains limited due to the maintenance methods used and the nature of the track.

A rather difficult landform

The Adrar landform, composed mainly of mountains and valleys, is characterized by a morphology that makes travel within the Wilaya difficult. Access to the main cities is made through fairly rough and poorly developed mountain passes. Efforts have been made to improve the accessibility of certain axes, however, most of the localities are located in more or less isolated areas.

A good connection with the surrounding regions

The inter-regional road network is quite developed. Indeed, the Wilaya is linked to Nouakchott by a 420 km asphalt road. It is also linked to Tagant by an asphalt road that passes through the Moughataa of Aoujeft and Tiris-zemmour via Choum. These roads have had a positive impact on the economic development of the Wilaya, whose position will be strengthened through the construction of the Tidjikja-Kiffa-Selibaby road.

The maintenance of these roads is pretty relevant, particularly due to the damage that occurred during last winter when entire structures were washed away by the rains. In addition, the Atar-Tidjikja road is invaded in some places by sand dunes that block the traffic of light vehicles and force off-roaders to make fairly long and difficult detours.

The Akjoujt-Atar road also shows damage that is likely to get worse, if rehabilitation measures are not taken quickly.

Inter-locality difficult travel

The road infrastructure within the Wilaya is in a bad condition with the exception of localities located on the Atar-Ain Sevra and Atar-Choum axis.

The Atar Airport: an infrastructure that contributes to the development of tourism

The existence of an airport in Atar, which is fairly well equipped, strengthens the region's capacities in terms of tourism. Despite the decline in tourism activity in recent years, Atar Airport is the entry point for European tourists. Thanks to this airport, charter flights are organized by tour operators between Europe and Atar, which is likely to reduce transport costs and therefore improve tourist numbers. The airport is managed by the Société des Aéroports de Mauritanie, which has recently rehabilitated it.

Landlockedness is a handicap for the development of services and economic exchanges

High transport costs: The difficult nature of the region's tracks increases the goods and services transport price. In some areas, which are difficult to access for trucks, the transport of materials is done by off-roaders, which considerably increases the cost of transport.

Difficult access to social services: the landlockedness of certain areas is one of the factors that limit the access of the populations of these areas to basic social services and lead to the migration of populations.

Difficult flow of agricultural production: The Adrar is an area of large market gardening production. Several years ago, it supplied the Nouakchott market with vegetables. The change in hydrological conditions has certainly contributed to the decline in production, but the difficulties of transporting products to urban centers, which requires more accessible tracks and suitable means of transport, are also one of the main causes.

High population migration: the underpopulation of the Wilaya is largely due to the difficulties of movement and the absence of transport and telecommunication infrastructures that have become indispensable today. It is noted that several localities have been abandoned by the populations because of their isolation, even though economic potential does exist.

15. New information technologies

Access to new information technologies has improved significantly in recent years thanks to the connection of the Wilaya to the national optical fiber network and the infrastructure, but large areas of the Wilaya are not covered by the network, and the access to the Internet is limited to large cities. It should be noted that the underpopulation of the Wilaya, the scattering of localities and the difficult travel, are all factors that have contributed to the weak offer in new information technologies.

Reduced access to mobile phones

All stakeholders interviewed highlighted the poor access to mobile phones and its absence in certain places.

Low flow rate and limited coverage

Access to the Internet remains limited to urban centers with often low speeds. This seriously hinders the development of the Wilaya whose economy is based on tourism. Indeed, access to the Internet is a determining factor in the tourist offer. Also, the development of economic activities requires Internet connections to foster exchanges between the operators. On the social level, the Internet has become a tool that all citizens use on a daily basis and therefore essential for interactions between members of the society.

Relatively good access to media

Access to national media is globally good in urban centers thanks to local radio and the existence of a regional TV station allowing better coverage of events in the Wilaya. In rural areas, access is made possible for households having solar energy.

16. Regional governance

Actors in the Adrar region are divided into four categories: i) the territorial administration which remains the key player, given the powers it has, ii) the local authorities (the municipalities and the regional council) which are struggling to find a place in the regional landscape, iii) the decentralized technical services and iv) the actors of civil society in their diversity. In addition, the Adrar Wilaya is characterized by the existence of a significant number of actors of civil society, both non-governmental Organizations (NGOs, such as SOS-OASIS), cooperatives and socio-professional Organizations. All actors of regional governance are characterized by a lack of human and financial resources, difficulties in coordination between them and with the central level.

IV. Environmental & social impacts and mitigation measures

The PRAGOA Project seeks to develop and protect natural resources, and increase agricultural productivity in the two targeted poles of Ziyara and Dhaya in Adrar, for the benefit of local communities and thus contribute to the national level. With 4 components, PRAGOA outlines a series of activities to be implemented at the level of the 2 aforementioned poles, as detailed in the main project full proposal.

1. Potential positive and negative environmental and social impacts

The assessment of the positive and negative impacts of the PRAGOA Project activities will be carried out based on the types of infrastructure and processes to be implemented for the conduct of the activities (see table 25 below).

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Table 48 : Positive and negative environmental impacts

Infrastructures	Activities	Potential Positive Impacts	Potential Negative Impacts
Water control infrastructure: dike, water supply system, valve	Hydraulic developments and works - Construction of water reservoirs on: - Lowlands, - Dikes - Bunds - Watersheds	- Improvement of food security - Creation of jobs, income and more generally economic activities - Creation of new business opportunities (supply of goods and services, etc.). - Better control of the resource - Optimal management of water resources - Extension of arable land - Optimal management and development of the resources - Gradual recovery and revegetation of degraded land - Reduction of the watercourses and ponds silting - Increase in developed areas and production - Better organization of space - Emergence of new socio-economic activities - Improvement of household income	- Pollution caused by accidental oil spills - Release of greenhouse gases linked to the possible destruction of vegetation - Changes in the hydrological regime due to the presence of the construction site and structures and by the flooding of reservoirs - Behavior of groundwater (which may become outcropping) - Risk of deterioration in the quality of water from reservoirs - Eutrophication - Risks of waterlogging/salinization - Carriers of waterborne diseases (malaria, bilharzia, onchocerciasis, etc.) - Erosion, sedimentation and changes in the topography of the land - Potential impacts on biodiversity (flora and fauna), cultural heritage, traffic, and the risk of drowning - Risk of increased promiscuity and cases of sexually transmitted diseases - Deterioration of air quality, potentially untreated wastewater discharge, deterioration of the sound environment - Accidents at work - Safety of local populations - Village-worker conflicts - Waste generation - Uncontrolled growth of invasive plants - Disruption of the initial flow of water - Flooding of areas located downstream of the works - Landform and landscape - Fluctuation of water table levels, limited sedimentation and siltation - Impact on traffic, living environment, etc. - Risk of loss of land and/or income for populations, farmers and breeders impacted by the developments - Risk of conflicts between breeders and farmers for access to the resources both during the works and the operation of the infrastructure - Failure to respect the customs and traditions of the communities hosting the project by construction site workers - Exploitation, abuse and sexual harassment as well as child labor - Risk of conflict due to inadequate compensation for the populations affected by the Project.
Drinking Water Supply (DWS) infrastructure and Pastoral Stations	- Drinking water, irrigation and watering networks	- Improvement of the living conditions and reduction of poverty - Improvement of food security. - Improvement of the drinking water, irrigation water, watering water availability, etc.	- Drop in water table levels - Drying up of water points - Social conflicts due to non-compliance with the customs and traditions of the communities hosting the project by construction site workers - Loss of land and income - Risk of gender-based violence (GBV), exploitation, abuse and sexual harassment as well as child labor - Water contamination and risk of diseases for the affected communities - Risk of soil erosion and pollution - Risk of spread of sexually transmitted diseases.

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Agricultural and plant production infrastructure	- Development/Rehabilitation - Protection of cropland and hydro-agricultural infrastructure - Development and extension of the crops - Creation of small market gardening areas - Organization of productive activities - Provision of fertilizers and improved seeds - Marketing of market garden products	- Increase in the degradation process (loss of soil fertility, increase in pollution, loss of biodiversity, etc.) - Rational management of soil resources - Preservation of environmental water resources - Maintenance of agricultural land fertility levels - Increase in agricultural areas and environmental productivity - Promotion of market gardening and fruit trees - Production of improved seeds - Increase in agricultural production and productivity - Improvement of the living conditions and reduction of poverty - Contribution to the food and nutritional security of the populations - Promotion of local production - More widespread supply of fresh products - Creation of jobs and income - Increase in family income - Diversification of local production - Satisfaction of basic needs (schooling of children, access to health care, establishment of community infrastructure, etc. - Promotion of productive agriculture (preservation of natural resources, rehabilitation of soil fertility, etc.) - Promotion, securing, valorization of local agricultural production (plant, animal) - Better conservation of the resources - Maintenance of biodiversity and protection of natural habitats - Increase in the need for chemical fertilizers and phytosanitary products - Promotion of sustainable development practices in agriculture through the use of putrescible materials	- Increased erosion phenomena, loss of soil fertility, drought - Increased soil salinity (salinization, alkalization and acidification) - Biological degradation of the soils (reduction of organic matter, microfauna and microflora) - Destruction of sensitive habitat - Clearing of wooded areas - Contamination of livestock by watering - Pollution of wells and water points by fertilizers and pesticides - Conflicts between breeders and farmers with the development and expansion of agriculture land - Pollution of groundwater, watercourses and water bodies with the use of large amounts of fertilizers, pesticides and herbicides - Risks of damage to producers' health after contamination by the pesticides and risks of diseases after the use of products treated with unapproved pesticides - Loss of land and income for affected populations - Risk of gender-based violence, exploitation and abuse, sexual harassment as well as child labor - Risk of conflict due to inadequate compensation for the populations affected by the project and a lack of an inclusive and participatory Grievance Mechanism - Water contamination and risk of diseases for the affected communities - Non-respect of the customs and traditions of communities hosting the project by construction site workers - Risk of spread of COVID19 and sexually transmitted diseases.
Processing units		- Promotion of local production - Limiting losses and good preservation of the products - Exploration of international markets - Industrial integration	- Lack of healthy packaging and processing - Risks of accidents at work - Alteration of the living environment due to poor waste management - Pollution of the environment by waste.
Storage and packaging		- Storage of crops, seeds and inputs - Increased shelf life - Good preservation of the products and promotion of local products - Access to the national and international market, more widespread supply of fresh products	- Hygiene and safety issues (work accidents) related to building construction work - Unhealthy packaging - Alteration of the living environment due to poor waste management - Pollution of the environment by waste. -
Infrastructure for opening up	- Works such as access roads	- Opening up production areas - Easy access to markets for producers and processors - Easy movement of the people and goods - Easy access to schools, health infrastructure, etc.	- Risk of accidents for the communities and livestock - Risk of rural exodus due to opening up - Risk of vandalism and robberies - Soil pollution - Degradation of fauna, flora and water resources during the works, if machines and vehicles are not well maintained - Air pollution - Soil erosion - Noise pollution - Risk of Gender-Based Violence, exploitation, abuse and sexual harassment and child labor

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			- Risk of conflict between migrant workers and locals - Non-respect of the customs and traditions of the communities hosting the project by construction site workers - Risk of contamination with STDs/HIV/AIDS/COVID-19.
Income Generating Activities (IGA)	- Support for the production, service, marketing and primary product processing links - Construction or modernization of basic primary and secondary irrigation facilities - Purchase or rental of machines, tools or equipment - Acquisition of inputs, barbed wire, fencing or crop protection barriers - Simple marketing or processing (such as drying, bagging or packaging, etc.) - Marketing or processing of agricultural products (fodder, horticultural products, sorghum, etc.)	- Improving access to financing for private developers - Diversification of activities (production, processing, trade, etc.) - Introduction of new activities - Reduction of youth unemployment - Consolidation of the living environment of the population.	- Risk of gender-based exclusion and discrimination with women exclusion - Social conflicts in the event of non-transparency and fairness in the IGAs allocation - Risks of unfair competition - Disruption of social cohesion in the affected communities or families (including disruptions of power dynamics within households that may increase the risks of domestic violence, SEA/SH) - Affection of customs and traditions as well as traditional knowledge and behaviors if populations are not prepared for both the positive and negative impacts of these activities - Risk to the health and safety of the beneficiaries if they do not have adequate training (safety measures in the use of equipment, wearing PPE, handling pesticides, etc.) - Loss of income and livelihoods if food crops are not maintained to ensure the resilience of beneficiaries - Risks of impacts on human health if the products do not meet hygiene standards and cause illnesses - Production of waste and risks of degradation of surface and groundwater.
Capacity building of producers and other stakeholders/ Transfer of know-how and exchanges	- Mobilization of local know-how - Experiments in adapted agricultural technologies - Dissemination of irrigation methods - Rational distribution of water - Development of modern and water-saving irrigation techniques - Development of techniques for soil recovery, combating land degradation, improving land tenure, managing water in basins and conserving water and soil	- Rational distribution of water - Development of modern and water-saving irrigation techniques - Development of techniques for soil recovery, combating land degradation, improving land tenure, managing water in floodplains and conserving water and soil - The dissemination of all adapted irrigation methods and rational distribution of water will help better manage soil and water resources by limiting their overexploitation and degradation - The development of modern and water-saving irrigation techniques will contribute to the preservation of water resources in the environment and reduce the risk of water table pollution - Promotion of techniques for optimizing mineral fertilization of the soils - Potential improvement of agricultural production levels - Development of techniques for soil recovery, combating land degradation, improving land tenure - Increase in agricultural areas and therefore in the productivity of the environment - Promotion of market gardening and fruit trees as well as the production of improved seeds - Diversification of agricultural production with a beneficiation of cultivation areas.	- Exclusion of vulnerable and minority groups - Ineffectiveness of training which can lead to the degradation of the natural environment - Rejection of these new techniques by farmers or breeders if awareness-raising and training are not well implemented in a participatory and inclusive manner - Inconsideration of traditional knowledge as well as the customs and traditions of local populations, especially nomadic breeders - Risk of conflict within the relevant communities or stakeholders by this capacity building if the yields are not the same for all beneficiaries - Risks of degradation of the quantity and quality of water and soils by uncontrolled intensive agriculture and/or livestock breeding

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2. Cumulative negative impacts of the project activities

Cumulative effects are changes to the environment and the socio-economic environment due to an action combined with other past, present and future human actions. There are two ways for them to manifest:

In the first case, these may be activities of the same nature carried out either simultaneously or successively but in large numbers. Individually, the negative impacts generated by these activities may be insignificant. When accumulated, these impacts may destroy the environment on which they are carried out.

In the second case, these activities, taken one-by-one, generate marginal negative impacts but whose combination generates major consequences on the environment.

The cumulative impacts and mitigation measures are presented as follows:

Table 49 : Cumulative impacts and mitigation measures

Case	Cumulative negative impacts	Mitigation measure
Two or more PRAGOA sub-projects running at the same time on a given site PRAGOA sub-project implemented concurrently with other ongoing projects at the same site	- Increased pollution and disturbances (waste production, noise, etc.) - Increased constraints related to the mobility of people in the vicinity of the works - Increased risks of accidents with the simultaneous opening of construction sites - Increased risks of social conflicts - Increased risks of social conflicts between the projects or the project workers and populations - Increased risks of gender-based violence, especially sexual exploitation and abuse, sexual harassment and risk of child labor - Increased risks of conflicts between breeders and farmers because of sub-projects - Increased complaints due to the impacts of the various activities of the sub-projects.	- Strengthening waste management resources - Strengthening means of improving traffic flow in the vicinity of the works - Strengthening means of preventing and managing construction site accidents - Raising awareness among local populations and workers on the CoC, the GM, but also SEA/SH in general, reminding in public areas at the construction site that GBV, SEA/SH is prohibited - Indication of the works - Coordination and monitoring of the works and compliance with the deadlines - Good consultation and inclusive and participatory awareness-raising with the various stakeholders, and considering the concerns of the main components in the project area without excluding vulnerable people and groups15; - Ensuring an inclusive and participatory complaint management mechanism that is transparent and fair to all the different stakeholders (SEA/SH sensitive including several channels that women know of, for filing complaints), that make up the sub-project areas (including groups of women who will be appropriately engaged in separate groups with a woman as facilitator to ensure a true participation and a safe public speaking) - Ensuring the creation of a dashboard of the (medical, legal and psychosocial) services for the management of any case of GBV - Developing and implementing an action plan to combat gender-based violence with a focus on SEA, sexual harassment and child labor - Making sure that the codes of conduct are signed and implemented by the project as well as the various companies and their staff working for the project. These codes of conduct will include clear language about SEA/SH-related behaviors that are prohibited and the penalties for non-compliance with these codes.
PRAGOA sub-project being carried out with other external projects to be completed at the given site	-	- Consultation and coordination meetings with the project managers - Joint information and awareness campaigns for local populations and workers - Coordination and monitoring of the works and compliance with the deadlines - Good consultation and inclusive and participatory awareness-raising with the various stakeholders and consideration of the main components' concerns in the project area without excluding vulnerable people and groups - Extensive awareness-raising campaigns on the risks related to sexual exploitation, abuse and sexual harassment with the establishment of local committees16. - Ensuring an inclusive and participatory complaint management mechanism that is transparent and fair to all the different stakeholders that make up the sub-project areas - Developing and implementing an action plan to combat gender-based violence, SEA, sexual harassment and child labor - Making sure that the codes of conduct are signed and implemented by the project as well as the various companies and their staff working for the project. These codes of conduct will include clear language about SEA/SH-related behaviors that are prohibited and the penalties for non-compliance with these codes.

3. Impacts of climate change

The predicted climate change (increase in extreme temperatures, increase in rainfall deficits and the violence of rainfall, greater instability in the distribution of rainfall), have potential consequences on the project area of intervention, which is based on all forms of agriculture and livestock farming.

Among the main economic sectors, agriculture and livestock farming are the most vulnerable to environmental degradation, for they rely directly on ecosystems and natural resources, including the climate.

Agricultural activity, is both responsible for and a victim of global warming. Drought, floods, and rising temperatures are all phenomena that affect agricultural production.

[15] Specific consultations dedicated to women should also serve to ask women about their preferred channels for filing complaints.

[16] To this end, the GBV specialist or the NGO recruited for the implementation of the GM will have to develop a training plan on GBV, SEA/SH, the CoC, the GM, in particular how to file a complaint, what are the entry points?

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In addition, agricultural activities generate a quarter of greenhouse gas emissions worldwide. Agriculture mainly releases methane, nitrous oxide and CO_2. Methane is due in particular to livestock excrement, cattle flatulence, irrigated rice farming, etc. CO_2 is emitted due to deforestation and nitrous oxide from synthetic fertilizer, but the most significant impact of climate change on the agricultural sector is undoubtedly land degradation.

Climate predictions show that in addition to temperature, climate change will significantly impact rainfall. As for temperature, all scenarios expect a +3°C increase by 2050. As for rain, climate change seems to have significant impacts a little later compared to those for temperature. These changes in temperature and rainfall will impact water resources, the environment and the living standard of the populations.

Such a situation is particularly likely to lead to an overall weakening of the ecosystems, a reduction in water resources, arable land and pastures, an increase in pastoral pressure, and increased risks of conflicts between agricultural and pastoral users of spaces and the resources in the project area. The increase in malnutrition problems and severe food insecurity, the increase in conflicts related to access to natural resources and the increase in the number of forced migrations (climate refugees), are also expected indirect consequences.

Climate change makes (rural) populations more vulnerable. Farmers lose their control over the seasonal calendar due to very disturbed rainfall. Overall, it is accepted that global warming will lead, on the one hand, to more severe low water levels, and on the other hand, to more significant floods. Annually speaking, the combination of these two aspects can result in contrasting effects ranging from decreased inputs to increased ones, including the status quo. In short, rainfall and temperature are the two climate parameters that have the greatest climate impact on the resources and the main sectors of activity due to their evolutionary trend and especially their interannual and intra-seasonal variability. The most expected negative effects are: the decrease and high variability of rainfall, the increase in temperatures will cause droughts, famines, floods, water-borne diseases, silting up can seriously affect the life and health of the populations, particularly the poorest and most vulnerable groups. Anthropogenic constraints greatly accentuate the climate action, particularly with regard to desertification and the loss of biodiversity. It is also the source of all pollution, water-borne diseases, eutrophication of the environment and the proliferation of invasive plants.

The resilience of ecosystems and species, as well as the living conditions of the communities that depend on them, are paying a heavy price for the continued degradation of the resources and the quantitative and qualitative erosion of the production base of the economy.

Huge challenges must be met. Indeed, the cross-cutting nature of the environment must be considered and national governance of sustainable development improved. The quality of the field-achievements, the monitoring-evaluation system and the surveillance of the environment need to be reinforced through the identification of relevant, operational and simplified indicators to be accessible to the populations of the project intervention area.

The ongoing environmental change processes in the project intervention area are reflected by the increasing climate variability, the accelerating frequency and severity of extreme climate events are exacerbating the pressure on the already-frail ecological and food systems, due to anthropogenic pressures associated with climate deterioration and the absence of permanent and operational monitoring.

Furthermore, such a situation calls for actions which are indispensable to reduce the impact of anthropogenic pressures and to improve the resilience of environments to face climate hazards (drought, flooding).

4. Summary of potential negative impacts

Potential negative environmental impacts: Installation phase, works phase and operating phase

- Deforestation, soil degradation by erosion.
- Destruction of sensitive habitats.
- Clearing of wooded areas.
- Erosion and loss of soil fertility.
- Salinization, alkalization and acidification of the soils through the intensification, diversification and organization of agricultural sectors.
- Pollution of groundwater, watercourses and water bodies with the use of significant amounts of fertilizers, pesticides and herbicides.
- Risks of local conflicts linked to intensive use of shared resources (surface and groundwater) or pollution of these resources.

Potential negative social impacts: works phase and operating phase

- Disturbances due to pesticides (health risks/poisoning; unapproved pesticides, poor management of packaging, etc.).
- Increase in waterborne diseases.
- Loss of arable land and pastures for the populations.
- Loss of income and livelihoods for local populations.
- Risk of accidents during the installation of hydro-agricultural works and access roads.
- Problem of access to land for minorities and vulnerable groups to develop income-generating activities.
- Potential land tensions within the communities and with transhumant breeders.
- Risk of exclusion of vulnerable groups and minorities in project support.
- Risk of Gender-Based Violence with an emphasis on Sexual Exploitation and Abuse, Sexual Harassment and child labor.
- Failure to observe traditional knowledge as well as the customs and traditions of the communities hosting the project by construction site workers.

V. Identification and description of E&S risks

1. General methodological reminder

The Environmental and Social Impact Notice (ESIN) was prepared in line with the Environmental and Social Policy of the Adaptation Fund, the OSS, and Mauritania's legal framework for environmental and public health protection, following the project Full Proposal recommendations.

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- The project's **Terms of Reference** relating to the environmental and social impact notice, as well as the technical document, were reviewed, to evaluate the project's scope and the required environmental and social aspects.
- **The documentary research** was conducted with several project structures, mainly decentralized, and resource persons. Information was also collected from previous studies in the field. That covered the project's context, environmental and social impact assessment methodologies, as well as the political, legal, and institutional framework
- The **field work** included visits were carried out to project areas and surroundings to document environmental and social components through:
  - Observation and description of the different components of the sub-project site environment
  - Institutional Stakeholders consultations (regional administrative authorities, municipalities, decentralized technical services), and the populations of the Ziyara and Dhaya poles, beneficiaries of the project.
  - The **Data processing**: Information from research, fieldwork, and stakeholder consultations was analyzed and prioritized based on relevance to the project, forming the basis of this report.

2. Methodology for impact identification and assessment

The identification and assessment of the environmental components affected by the project were carried out successively after having defined the activities to be carried out. The methodology adopted to identify the activities causing impacts and to assess the impacts is as follows:

Identification of the activities causing impacts

This mainly involves the definition of the different activities by project stage, likely to harm the biophysical and human components of the environment. The activities are subdivided according to the project phase: installation, operation and end of the project.

Identification of the environment likely to be affected by the project

It consists of clearly identifying the different biological, physical or human elements of the project area environment, that could be affected by any activity of the project. These are air, soil, water, fauna (micro-fauna and domestic fauna), flora, man and the different interactions between these components.

Vi.2.3 identification and description of the impacts

The identification of positive or negative impacts of the project execution is based on the analysis of the interactions between an affected environment and the different equipment or activities implemented. The analysis allows the establishment of a relationship between the sources of the impacts or activities of the project and the components of the different environments that could be affected. As such, within the framework of this project, the receivers are recorded in the following table:

Table 50 : Environmental components likely to be affected by the project

Environment	Receivers
Bio-physical	• air; • sound environment; • surface and groundwater; • soil; • vegetation/fauna and its habitat.
Socio-economic	• health and safety; • socio-economic activities; employment; • living conditions of the populations; • cultural and archaeological heritage; • land; • social cohesion; • vulnerable people (women, young girls, widows and children) who may be subject to GBV or CV.

The Leopold matrix below combines the project activities with the Adaptation Fund principles. Crossing the two parameters will allow us to identify the impact linked to the activity based on the principle considered (Table 28). In accordance with its effect, an impact can be positive or negative. A positive impact leads to an improvement in the affected environment component, while a negative impact will have it destroyed.

Table 51 : Interaction matrix of the project impact sources and receivers

PHASES	Designation	Biophysical environment						Socio-economic environment						
	Impact receivers / Impact sources	Air	Sound environment	Surface and groundwater	Soils	Vegetation/ Fauna and	Health and safety	Employment	Socio-economic	Cultural and	Land	Living conditions	Social cohesion	Vulnerable people
Preparatory	Installation of the base camp	N	N	N	N	N	N	P	P	O	O	N	N	N
	Technical studies	O	O	O	O	N	O	P	P	O	O	O	O	O
Construction	Site Preparation	N	N	N	N	N	N	P	P	N	O	N	N	N
	Assembly and installation of the equipment	N	N	N	N	N	N	P	P	O	O	O	O	O
	Testing and commissioning of the installations/equipment	N	N	N	N	N	N	P	P	O	O	O	O	O

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	Waste management	N	N	N	N	N	N	P	P	O	O	N	N	N
Operation	**Operation and daily monitoring of the investments**	N	N	N	N	N	O	P	P	O	O	N	O	O
	Preventive maintenance	N	O	N	N	O	O	P	P	O	O	P	O	O
	Curative maintenance	O	O	O	O	O	O	O	O	O	O	O	O	O
Closure and rehabilitation	**Closure and rehabilitation of the base camp site**	N	N	O	P	P	N	P	O	O	O	P	O	O
	Closure and rehabilitation of the sub-project site at the end	N	N	O	P	P	N	P	O	O	O	P	O	O

Legend- O: Insignificant, P: Positive, N: Negative

Impact assessment

The assessment of the significance of negative impacts is based on a methodology that integrates the parameters of duration, extent, intensity of the negative impact and the value of the affected component. Once these parameters have been assessed, the first three (duration, extent and intensity) are aggregated into a summary indicator to define the absolute significance of the impact. The fourth parameter, i.e. the value of the affected component, is added to the absolute significance of the impact to give the relative significance of the impact or its severity. The significance of an impact is therefore a summary indicator, a global and non-specific judgment of the effect underwent by a given element of the environment as a result of an activity in a given receiving environment. This analysis must consider the level of uncertainty that affects the assessment and the probability that the impact will occur. The FECTEAU assessment methodology defined the parameters of duration, extent and intensity and the value of the affected component. These parameters are outlined below:

Duration of the impact: The duration of the impact specifies the period of time during which the changes undergone by the environmental components will be felt. This factor is grouped into three sets:

- Short, when the effect of the impact is felt at a given moment, in a limited time, especially during the accomplishment of the action;
- Medium, when the effect of the impact is continuously felt but for a period of time, beyond the accomplishment of the activity;
- Long, when the effect of the impact is felt at a given moment and for a period of time equal to or longer than the project lifetime.

Extent of the impact: The extent is occasional, local, or regional; it expresses the scope or spatial radiation of the effects generated by an intervention on the environment. It refers either to a distance or an area over which the changes undergone by a component will be felt or to the proportion of a population that will be affected by these changes.

- It is occasional when the impacts are limited to any point on the project site;
- It is local when it extends over the entire extent of the site;
- It is regional when the impact extends outside the site.

Intensity of the impact: The intensity or degree of disturbance caused corresponds to the size of the changes that affect the internal dynamics and function of the affected environmental element. Generally, three degrees can be listed: strong, medium and weak. The following parameter is to be considered: the disturbance.

- It is strong when the impact deeply compromises the integrity of the affected element, very significantly alters its quality or significantly restricts its use or cancels any possibility of its use;
- It is medium when the impact somewhat compromises the use, quality or integrity of the affected element;
- It is weak when the impact does not clearly modify the integrity, quality or use of the affected element.

Value of the affected component: The value associated with an impact relates to the social, economic and/or cultural importance that the population attaches to a resource as well as the ecological importance of this resource in the dynamics of the affected ecosystem at the local, regional or national levels. This value will be considered low, medium and high.

- The value is low if the impact affects a resource that is abundant in all seasons, but not threatened with extinction;
- It is medium if the impact affects a resource whose regeneration and mutation time is relatively long (around five years);
- It is high if it affects a resource whose regeneration and mutation time is long, greater than five years, a sensitive area or a resource threatened with definitive extinction.

The determination of the absolute importance is made by crossing the intensity, extent and duration parameters.

3. Proposal of measures for prevention, mitigation and compensation of negative impacts

These measures have been identified based on a number of specific objectives related to the protection of the various environmental components. These specific objectives aim to:

- Significantly limit air, soil and water pollution;
- Limit the disruption of soil stability and its congestion;
- Reduce the destruction of biological diversity;
- Mitigate the generation of noise pollution;
- Prevent damage to the health and safety of the employees and populations;
- Ensure the safety and protect the health of the workers and the population;
- Increase the contribution of technicality and technology;
- Improve socio-economic benefits.

4. Proposal of an Environmental and Social Management Plan (ESMP)

The identification of measures to mitigate the negative impacts led to the development of an environmental and social management plan including:

- The phases of the project;
- The activities causing the impact;
- The generated impacts;
- The prevention, mitigation and compensation measures;
- The person responsible for implementing the measure;
- The responsibility for monitoring the implementation;
- The monitoring indicators;
- The source of verification;
- The cost of the measure.

5. Proposal of a monitoring, control and follow-up PRAGOA

It is actually about proposing a monitoring and follow-up program to be carried out by the relevant parties.

VI. Possible environmental and social impacts mitigation measures

Other technical measures, to be carried out both during the construction phase and during the operation period, are recorded as follows:

1. Measures to combat land and water resources degradation

- Identifying CC adaptation practices and watershed management and integrate them in the projects/ESMPs;
- Preparing wetland management plans that include biodiversity conservation measures and ecosystem services provided to communities;
- Selecting and using suitable crop, fodder and tree species;
- Managing pastures and avoiding the use of bush fires as a means of clearing and improving pastures;
- Maintaining plant cover through cover crops and recycling residues;
- Disseminating suitable agroforestry species, promoting erosion control and windbreak afforestation;
- Protecting and stabilizing the slopes through ridge cultivation and sustainable land management practices.
- Using efficient irrigation water harvesting techniques wherever possible;
- Maintaining drainage to prevent waterlogging and salinity build-up;
- Adopting crop rotation;
- Establishing local committees for the management of developed areas and water resources and building their technical and organizational capacities;
- Implementing integrated pest management and pesticide control measures;
- Health monitoring;
- Providing prevention equipment (mosquito nets, latrines, etc.);
- Consensual demarcation of croplands, pastures and transhumance corridors and livestock routes.
- Promoting the use of organic manure;
- Integrating perennial crops in vegetative strips;
- Rational management of surface water;
- Controlling discharges into watercourses;
- Transparent and equitable access to the resources;
- Fighting invasive plants.

2. Summary of mitigation measures and potential environmental and social risks

- Identification of relevant stakeholders and key actors;
- Definition of training themes in environmental and social safeguarding;
- Training of stakeholders in the use of sustainable techniques and technologies with low water or land consumption;
- Training of stakeholders in the rational use of fertilizers and pesticides;
- Consensual demarcation of croplands, pastures and transhumance corridors to avoid conflicts;
- Inclusion of local knowledge and traditional practices for landscape and resource management;
- Transparency and equity in access to resources to avoid conflicts in communities and within the families;
- Control and consultation of the stakeholders and populations before the extension of agricultural developments, making sure that vulnerable people and groups are considered;
- Gender consideration in the project allocation;
- Preservation of natural habitats;
- Protection of water points;
- Implementation of effective communication tools and participatory consultation mechanisms with the different stakeholders, including breeders and farmers and consideration of the concerns of the main components in the project area, without excluding vulnerable people and groups such as women who will be involved in women's groups (not mixed), with a female facilitator to guarantee their true commitment;
- Implementation of an inclusive Grievance Mechanism, adapted to sensitive complaints related to SEA/SH, and participatory which is transparent and fair towards all different stakeholders who make up the sub-project areas;
- Development and implementation of an action plan for the prevention and response to SEA/SH as well as child labor;

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- Making sure that the codes of conduct are signed and implemented (including sanctions in the event of non-compliance) by the project, as well as the different companies and their staff working for the project (including continuous training of the workers on topics relating the CoC);
- Consideration of the traditional knowledge of local communities in infrastructure management strategies as well as working techniques;
- Respect of the customs and traditions of local populations;
- Compensation or restoration of the loss of livelihoods and income due to development works following the loss of land, income or access to land;
- Monitoring and adequate implementation of the risk mitigation plan and responses to SEA/SH, fight against child labor and designation of the person who will implement this plan.

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1. Mitigation measures for the PRAGOA sub-projects

This section presents the negative impacts and risks associated with the PRAGOA sub-projects, as well as the various mitigation measures proposed.

Table 52 : Sub-projects, negative impacts and proposed mitigation measures

Sub-Projects	Negative impacts	Mitigation measures
During the construction phase		
Construction of surface water management and control infrastructure (water retention dams, lowlands, dikes and bunds for agriculture or for recharging the water table, development of watersheds, etc.).	Risks to human and livestock health from air pollution.	Reducing the emission and dispersion of atmospheric pollutants on construction sites and in the site surrounding areas;
		Streamlining vehicle and construction site support equipment traffic;
		Organizing all vehicles and construction site support equipment that operate in the open air (particularly if they use liquid fuels), in order to reduce air pollution and keep them as far away as possible from the facades of buildings near the construction site;
		Condition, cover and moisten, in particular on dry and windy days, construction materials and construction site waste, particularly if they are powdery or fine, to prevent them from falling and spreading on the public highway, during transport to the area affected by the construction site or to the final warehouse;
		Controlling gaseous pollutants by setting up a fleet of vehicles and machinery in good condition and that at certain wind speeds, work must be stopped;
		Providing corridors or access tracks to water points near the development sites;
		Raising awareness among the population and drivers about speed limits;
		Limiting speeds to 20 km per hour when approaching homes and grazing areas, transhumance corridors and access to drinking water;
		Watering the tracks near homes to reduce dust;
		Limiting vehicle and heavy machinery traffic;
		Banning the burning of brush clearing products;
		Training drivers in good driving rules.
	Impact on cultural heritage and risk of loss of land and income.	Exchanging with the communities to best manage this impact on cultural heritage.
	Land impact risks	Considering compensation and restoration in the event of loss of property, livelihoods and income or loss of access to land due to the works.
	Risks to human health resulting from soil and surface and groundwater pollution by liquid waste from the construction site.	In order to avoid any form of soil, surface and groundwater pollution, used oil from vehicles will be collected in appropriate recipients and then entrusted, on a contractual basis, to suppliers. Here follow the protective measures: - Development of areas dedicated to the vehicle fleet maintenance; - Installation of tanks for the collection and storage of used oils; - Installation of bins and funnels for handling liquid products; - Installation of fuel storage and supply tanks; - Development of watertight terraced car parks.
		In order to deal with accidental spills of contaminants, vehicles will be regularly checked to prevent fuel and oil leaks. Other actions will be carried out: - Development of an emergency plan including containment and recovery measures as well as employee training for implementation in the event of accidental contamination; - Careful verification of the good condition of the machinery to avoid leaks and spills of hazardous materials: hydrocarbons, lubricants, etc.; - Implementation of effective measures to avoid accidental spills when refueling transport vehicles and machinery on the work site, with a ban on such operations near waterways and biodiversity areas; - Prohibition of any dumping of soil and toxic materials in ditches or depressions; - Creation of a buffer zone between warehouses of soil, hazardous materials, waste and sensitive areas; - Wash water and other effluents from the construction site will be collected and sanitary water will be directed to septic tanks that will be periodically disinfected with lime; - The prohibition of any discharge or deposit of waste or any other polluting substance, directly or indirectly, on the ground or water lines, or in any other place that has not been previously authorized by the GM;

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		- Prevent potential contamination of the aquatic environment, by prohibiting the discharge of pollutants (bitumens, oils, lubricants, fuels, chemicals and other construction site waste) and by avoiding their accidental spillage, by placing them in the adequate containers, which will then be transported to the appropriate final destinations; - Remove waste produced during the works and place them in appropriate places; - All contamination prevention measures will be applied to avoid the discharge of pollutants (bitumens, oils, lubricants, fuels, chemicals) and other waste outside the appropriate areas.
	Risks of accidents linked to the construction site supply vehicles traffic.	The rotation of vehicles and trucks on construction sites could create risks of traffic accidents for people and their property (livestock, housing, etc.).
		This average impact could be minimized through:
		- Raising awareness among drivers and conductors;
		- Limiting speed and setting up effective road signs when crossing towns;
		- Raising awareness among the population;
		- Training the drivers in good driving rules;
	Risk of noise pollution	- Using vehicles and machinery that limit noise emissions
	Risks related to gender-based violence (GBV)/SEA/SH and child labor	- When implementing the sub-project activities or recruiting staff, SEA/SH risks may develop as a result of pressure on women or girls.
		This is a major negative impact that can be minimized through:
		Ensuring the monitoring and adequate implementation of the SEA/SH risk mitigation and response plan, including specific and adequate mitigation and response measures related to the project activities (such as signing Codes of Conduct, regular and adequate training for all stakeholders involved in the project, as well as raising awareness among local populations on the CoC signed by the project stakeholders, as well as SEA/SH-sensitive GM, specific consultations for women, led by a woman in safe and accessible places and project evaluations, etc.), and the fight against child labor;
		- Respecting the customs and traditions of local populations;
		- Good consultation and inclusive and participatory awareness raising with the various stakeholders, including breeders and farmers and considering the concerns of the main components in the project area without excluding vulnerable people and groups; develop awareness raising tools on the GM, the CoC;
		- Ensure the operationalization of the inclusive and participatory Grievance Mechanism, sensitive to SEA/SH which is transparent and fair to all various stakeholders who make up the sub-project areas;
		- Develop and implement an action plan to combat and mitigate the risks of gender-based violence, sexual harassment and child labor;
		- Map GBV (medical, legal, psychosocial) support services, acting in the project implementation area and develop a referral protocol;
	Frustrations of local populations and conflicts with construction companies	The companies in charge of the works, selected within the framework of the infrastructure construction sub-projects, as well as their subcontractors, must give priority to the recruitment of local labor;
		- If this recommendation is ruled out, local populations could be frustrated and could even lead to conflicts;
		- This is a medium risk and should be minimized, for the recruitment of local populations could be mentioned in the CTF as an integral part of the technical requirements;
		- Good consultation and inclusive and participatory awareness-raising with the different stakeholders, in particular breeders and farmers and considering the concerns of the main components in the project area, without excluding vulnerable people and groups;
		- Ensure an inclusive and participatory Grievance Mechanism, that is transparent and fair to all different stakeholders who make up the sub-project areas;
		- Ensure that the codes of conduct are signed and implemented by the project as well as the various companies and their staff working for the project;
		- Consider the traditional knowledge of local communities in infrastructure management strategies as well as working techniques;
		- Respect the customs and traditions of local populations;
		- Considering and compensation or restoration of the loss of livelihoods and income due to development work following the loss of land or access to land.
	Impacts on soils, flora and fauna	The negative environmental impacts of sub-projects resulting from the construction of hydraulic infrastructure, will mainly relate to soil degradation, loss of vegetation cover, alteration of habitats and loss of fauna.
		These medium to major impacts can be minimized by a:

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		- Rational management of wetlands and natural habitats;
		- Controlling the extension of agricultural developments;
		- Restoration of degraded soils and impacted natural habitats;
		- Raising awareness among workers/site staff;
		- Raising awareness and training of the producers;
		- Implementation of a compensatory reforestation program.
	Risk of accidental discovery of remains during search and excavation activities	- Carry out a heritage inventory before the works start-up;
		- If cultural remains are discovered, stop the works and inform the competent authorities.
During the operating phase		
Sub-Projects	**Negative impacts**	**Mitigation measures**
Start-up of surface water management and control infrastructure (water retention dikes and bunds for agriculture or watershed development, etc.).	Overexploitation of water resources	The construction of hydraulic infrastructures will lead to additional water consumption, which would lead to overexploitation of the water tables;
		This is a major impact that can be minimized by sizing the hydraulic structures so as to avoid abusive use of the resource;
		- Consultation between the breeders and farmers (conflict prevention and management mechanisms);
		- Demarcation of transhumance routes and pastures;
		- Awareness-raising among the stakeholders;
		- Protection of water points;
		- Considering vulnerable people and groups when sharing and operating infrastructures.
	Risks of increased incidence of waterborne diseases	- In the event of poor management of standpipes, basins/tanks and places where overflow from water towers is discharged, water could accumulate and stagnate around these sites, thus creating an appropriate environment for the development of microbes and epidemic agents and this will have a major impact on the health of local populations.
		This impact can be minimized by setting up a rigorous management system, based on cleanliness and rational management of water, which is a rare and vital resource.
	Proliferation of pathogens, hosts of disease carriers	- Stagnation of fresh water for a few months in dam areas, can lead to the proliferation of pathogens and disease carriers;
		- Risk of waterborne diseases for local populations;
		- Risk of diseases from mosquitoes that proliferate in stagnant water.
	Accumulation of chemical contaminants in the soil and agricultural products, due to the use of fertilizers, pesticides and herbicides in the intensification of agriculture	The intensive use of synthetic fertilizers (nitrates, phosphates, pesticides) and phytosanitary products (pesticides, etc.) constitute potential sources of pollution of soil quality;
		Synthetic fertilizers and phytosanitary products contain elements that are not all degradable. They can therefore remain in the soil or be carried by rain to groundwater or watercourses or be transferred to plants, animals and humans;
		Consequently, undesirable effects occur on the soil quality, with the various chemical (nitrates, phosphates, pesticides) and physical (solid suspensions) pollution, associated with anthropogenic pressures in the absence of permanent and operational monitoring of water quality;
		This medium to major impact can be minimized through close monitoring of the use of synthetic fertilizers (nitrates, phosphates, pesticides), and phytosanitary products (pesticides, etc.), the implementation of equipment and means of monitoring-surveillance of the main indicators of soil pollution.
	Pollution of surface water (ponds, lakes, tributaries, rivers, etc.) and groundwater by agricultural contaminants	The alteration of water quality is characterized by chemical pollution (effects of toxic chemicals such as phytosanitary products, pesticides and persistent organic pollutants) used in agriculture;
		These consequences represent a threat to ecological balances and to the maintenance of biodiversity, and all natural environments, with landscape, health, ecological and hydrogeological impacts;
		Reducing water pollution essentially involves the application of good practices by water users and aquatic environments throughout the basin. There can be multiple objectives: promoting the least polluting activities, improving uses to reduce the quantity of substances used or discharged, but also intercepting the flow of pollutants in the basin;
		Consequently, reducing the quantities of phytosanitary products used is the first way to combat diffuse water pollution. It is therefore necessary that the technical solutions that exist to reduce the use of pesticides be more widely mobilized: biological control (use of natural predators of pests), better anticipation of diseases and pest attacks, physical processes such as mechanical weeding, etc.), training on the proper use of pesticides classified according to the species they combat and their activity (herbicides against weeds, fungicides against

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		fungi, insecticides against insects; The security and stability of food resources are closely linked to the effectiveness of water quality control.
		The security and stability of food resources are closely linked to the effectiveness of water quality control.
	Risks of pollution and contamination of veterinary medical waste and biological products discharged as waste.	During various veterinary operations, discharges containing blood, secretions or excretions, body parts, tissues, substances or crop material, etc. present a danger of contamination and risks of spreading infectious agents.
		These are major impacts on humans that can be long-lasting and that can be minimized by implementing a management plan for this hazardous medical waste.
Opening up infrastructure	- Risk of accidents for communities and livestock; - Risk of rural exodus due to opening up; - Risk of vandalism and robberies; - Pollution of the soil, fauna, flora and water resources during the works, if machines and vehicles are not well maintained; - Risk of Gender-Based Violence, sexual exploitation, abuse and harassment as well as child labor by company workers; - Risk of conflict between migrant workers and locals; - Failure to respect the customs and traditions of the communities hosting the project by the construction site workers; - Risk of employment of minors who are not allowed to work on construction sites; - Risk of contamination with STDs/HIV/AIDS/COVID-19.	The rotation of vehicles and trucks on the construction sites could generate traffic accidents on people and their property (livestock, housing, etc.). This medium impact could be minimized through: - Raising awareness among drivers and conductors; - Limiting speed and setting up effective road signs when crossing towns; - Training drivers in good driving rules; - Raising awareness among the populations about the risks of accidents; for the ownership of the project infrastructure; - During the implementation of sub-project activities or recruitment of staff, risks of SEA/SH may develop as a result of pressures on women or young girls. This is a major negative impact that can be minimized through: -Ensuring the monitoring and adequate implementation of the SEA/SH risk mitigation and response plan, including specific and adequate risk mitigation and response measures related to the project activities (such as signing the Codes of Conduct, regular and adequate training for all actors involved in the project, SEA/SH adapted GM, proper involvement of women in the project consultations and evaluations, etc.), and the fight against child labor; - Respecting the customs and traditions of local populations; - Good consultation and inclusive and participatory awareness-raising with the various stakeholders, including breeders and farmers and considering the concerns of the main components in the project area, without excluding vulnerable people and groups; - Ensuring an inclusive and participatory Grievance Mechanism that is transparent and fair to all various stakeholders that make up the sub-project areas; - Developing and implementing an action plan to combat and mitigate the risks of gender-based violence, sexual harassment and child labor. The companies in charge of the sub-projects' works for the construction of hydraulic infrastructure as well as their subcontractors must give priority to the recruitment of local labor. - If this recommendation is ruled out, local populations could be frustrated and could even lead to conflicts. - This is a medium impact that should be minimized for the priority of recruitment of local populations in the construction sites could be mentioned in the CTF as an integral part of the technical requirements. -Good consultation and inclusive and participatory awareness-raising with the various stakeholders, in particular breeders and farmers, and considering the concerns of the main components in the project area without excluding vulnerable people and groups; - Ensuring an inclusive and participatory Grievance Mechanism that is transparent and fair to the different stakeholders that make up the sub-project areas; - Ensuring that codes of conduct are signed and implemented by the project, as well as the different companies and their staff; - Considering the traditional knowledge of local communities in infrastructure management strategies as well as working techniques; - Respecting the customs and traditions of local populations; - Considering and compensation or restoration of the loss of livelihoods and income due to development works following the loss of land or access to land.
Drinking water supply projects, implementation of IGAs and development of production tracks	- Encroachment on arable land (for new routes)	- Rational management of wetlands and natural habitats.
	- Risk of hindering the movement of people and animals	- Controlling the expansion of agricultural developments.
	- Obstruction of runoff paths	- Restoring degraded soils and impacted natural habitats.

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VII. Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP), is a program that allows the implementation and monitoring of planned measures to reduce the negative environmental and social impacts of a project. To do this, the PRAGOA must adopt a management plan that respects certain fundamental principles, such as the choice of relevant environmental and social indicators, the distribution of responsibilities between the promoter and the stakeholders.

1. Objectives of the ESMP

The Environmental and Social Management Plan (ESMP), is a key element of the environmental and social assessment of a project. It allows to link the project activities, the potential impacts, the environmental protection measures and the actors responsible for their implementation and monitoring. The ESMP is a guide to identify potential impacts and appropriate mitigation measures, to establish a plan for the accountability of the actors and to carry out environmental surveillance and environmental and social monitoring of the project. To be effective, the ESMP must be integrated into the overall management of the project during all its phases, with environmental and social surveillance activities during the preparation/construction phase and monitoring activities during the operation phase. The ESMP also describes the organization necessary to ensure the effective implementation of corrective measures, surveillance and monitoring, as well as the roles and responsibilities of the parties involved in the project. The ESMP must comply with the OSS and AF E&S Standards to ensure the sustainability of the project and the protection of the environment and communities.

2. Improvement program

The Positive Impact Improvement Program is a key element of the project's environmental and social impact notice. It aims to optimize the project's positive impacts on the environment and local communities, while minimizing negative impacts. This program is designed to be in line with the OSS and AF E&S Standards, which require an integrated and participatory approach to managing a project's environmental and social impacts. The Positive Impact Improvement Program includes measures to enhance positive impacts, as well as monitoring-evaluation activities to ensure the project sustainability.

Table 53 : Matrix for identifying and enhancing the positive impacts of the project

Project Phases	Activities causing impacts	Impact receiver	Description of the impact	Importance	Improvement measures
Phases: Preparation of the sites; Construction and installation of equipment/investments	Site preparation activities	Employment and sources of income	Increase in employment	Medium	Hire employees from the project area, for unskilled jobs and implement a gender-neutral recruitment policy. These measures aim to create employment opportunities for the local community, and ensure equal opportunities for all candidates, regardless of gender. Ensure collaboration with local leaders and delegations of the Ministry of Employment and Youth, and implement a recruitment procedure at the local level.
			Creation of wealth	Medium	Establish training and skills development programs for local workers, to promote their recruitment and capitalize on local know-how for future projects in the area.
			Improvement of the income of small traders, especially street vendors and market women	Medium	Employees are invited to buy from vendors (tea, bread and craft product vendors). There should also be public awareness on the importance for the local economy of gender equality. The project, in collaboration with the regional health department, can also assist in the health control of these street products during the construction phase.
			Increase in the economic capacity of the municipality and region operators	Medium	Prioritize local subcontractors when sourcing materials and equipment for construction sites would increase their economic and financial capacities, while strengthening the local economy and reducing transportation costs and greenhouse gas emissions.

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3. Mitigation program

This mitigation program aims to present the project negative environmental and social impacts mitigation measures.

Measure to mitigate negative social impacts

Table 54 : Matrix for identifying and evaluating the negative social impacts of the variant with the project

Project Phases	Activities causing impacts	Impact receiver	Description of the impact	Importance	Mitigation measures
Phases: Preparation of the sites	Staff recruitment	Construction site staff	Social conflicts between local populations and construction site staff following the non-recruitment of local populations	Minor	• Prioritize the recruitment of local populations for unskilled labor
	Transport of construction materials and construction machinery traffic	Traffic	Disruption of road traffic in the area	Minor	• Develop a traffic plan during the works • Encourage companies to carry out the works within the contractual deadlines
	Operation of machinery and construction site equipment traffic	Noise	Noise pollution	Minor	• Carry out works that cause a lot of noise outside of rest hours and recommend the use of quieter equipment • Prepare and implement a plan: Information, education and communication (IEC) for local populations
	Presence of company staff	Health, Safety, Hygiene	Risk of contamination of populations by STIs and HIV/AIDS	Medium	• Carry out (IEC) for populations and employees on the risks linked to sexually transmitted diseases (STIs/AIDS)
	Installation of investments	Conflicts, social acceptance	Social acceptance of the villages located in the sub-project areas	Major	• Actively involve local communities in the planning, design, implementation and management of sub-projects; • Provide clear and regular information on the sub-projects, including the objectives, costs, benefits and potential impacts; • Make sure that the sub-projects benefit all members of the community, including vulnerable and marginalized groups, such as women, children, the elderly and persons with disabilities; • Establish mechanisms to fairly and transparently resolve conflicts and grievances related to sub-projects; • Implement the stakeholder engagement plan and the Grievance Mechanism.
Operating phase	Implementation of the investments	Gender and vulnerability	Social exclusion	Major	• Actively involve women and vulnerable groups in all stages of the sub-projects; • Provide training and resources to strengthen the skills and knowledge of women and vulnerable groups in infrastructure management;

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					• Organize awareness campaigns and educational workshops specifically aimed at women and vulnerable groups to inform them about the importance of ecological agriculture, the benefits of sub-projects and their responsibilities as users; • Ensure that infrastructure is accessible and adapted to the needs of women and vulnerable groups including people with reduced mobility; • Ensure that benefits of sub-projects, such as employment opportunities, are distributed equitably among different groups in the community, including women and vulnerable people.
		Conflicts, social acceptance	Tensions and conflicts	Major	• Organize awareness campaigns and educational workshops to inform the communities about the importance of preserving the investments, the benefits of sub-projects and the responsibilities of users; Provide training and resources to build the capacities of local communities to manage and maintain infrastructure; • Conduct regular monitoring and assessment of the social and environmental impacts of the sub-projects to ensure that they meet the needs of the communities and do not lead to unforeseen negative effects.
	Periodic maintenance work	Health, Safety, Hygiene	Poor maintenance	Major	• Provide training and resources to strengthen the skills of local managers and operators in maintenance and management of facilities; • Establish a preventive maintenance plan for the network, by setting up appropriate pricing mechanisms and mobilizing external resources, such as grants or public-private partnerships.

Measure to mitigate negative environmental impacts

Table 55 : Matrix for identifying and evaluating the negative environmental impacts of the variant with the project

Project Phases	Activities causing impacts	Impact receiver	Description of the impact	Importance	Mitigation measures
Phases: Preparation of the sites; Construction and installation of equipment and investments	Earthmoving and stripping operations Machinery traffic	Soil	Risk of erosion and soil texture damage	Minor	• Plan and design earthmoving and stripping operations to minimize soil disturbance and preserve existing vegetation as much as possible. • Use soil stabilization techniques, such as mulching, geotextiles, or vegetation planting, to reduce erosion and protect soil texture during and after earthmoving and stripping operations. • Implement erosion and sedimentation control measures to manage runoff and minimize its impact on the soil. • Limit construction equipment traffic to designated areas and avoid sensitive areas, such as steep slopes or wetlands. • Use low-impact construction equipment, such as tracked vehicles, to reduce soil compaction. • Train workers and construction equipment operators in good soil management and erosion practices, and raise awareness of the potential impacts of their activities on the soil.
		Noise	Noise pollution	Minor	• Plan construction works to minimize noise impacts on residential and sensitive areas, avoiding peak hours and complying with local noise regulations. • Use low-noise construction equipment and machinery and make sure they are well maintained to reduce noise emissions.

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					• Raise awareness among workers and subcontractors about noise pollution issues and good practices to reduce noise emissions on the site.
		Air	Air pollution from exhaust emissions and dust particles	Minor	• Choose construction vehicles and equipment with low-emission engines. • Implement measures to control the spread of dust particles on the construction site. • Optimize the logistics of transporting materials and equipment to reduce unnecessary traffic and associated emissions. • Encourage the use of low-sulfur fuels and other clean fuels, such as natural gas or biofuels, to reduce emissions of polluting gases from construction vehicles and equipment. • Inform and raise awareness among workers about the impacts of air pollution and good practices to adopt to reduce emissions.
		Fauna	Risk of disturbance to animals and destruction of wildlife habitats	Minor	• During the works, the company in charge of transport operations, site preparation and construction site installation, will make sure that encroachment on sensitive areas in terms of biodiversity and vegetation cover, as identified in the project's ESIN, is avoided and minimized. Measures will be defined in the construction site ESMP to ensure the protection of these areas during the works phase, by adapting the location of temporary installations where appropriate. • Implement measures to protect wildlife habitats during construction, such as the creation of buffer zones around sensitive habitats, the installation of fences to limit animal access to the construction site and the restoration of degraded habitats after the works. • Prohibit animal poaching and hunting during construction works. • Keep a record (with photos) of wildlife observed on the subproject sites. • Make sure that waste and runoff from the construction site are properly managed, to avoid pollution of wildlife habitats and degradation of water quality.
		Flora	Loss of vegetation cover	Minor	• Conduct a preliminary environmental impact assessment of the subprojects to identify sensitive areas in terms of biodiversity and vegetation cover. • Design the route of subprojects to minimize encroachment on vegetated areas. • Avoid cutting down trees or destroying dense vegetation as much as possible, by favouring routes that follow existing roads or minimize impacts on ecosystems. • Provide ecological compensation measures for areas affected by the construction of subprojects. • Install protective barriers to prevent access of vehicles and construction equipment to sensitive vegetated areas. • Implement waste management measures on the construction site to avoid contamination of the soil and water by construction waste. • Raise awareness among workers on the importance of preserving vegetation cover and minimizing environmental impacts. Provide them with clear instructions on good practices to adopt to avoid unnecessary destruction of vegetation and promote biodiversity conservation.

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Operation phase	Permanent operation of the investments and the equipment	Soil	Soil pollution	Major	• Implement appropriate management and storage procedures and leak prevention measures for generator fuels and lubricating oils. • Educate and train the staff responsible for operating the drinking water supply system on good environmental practices and responsible soil management.
		Surface and groundwater	Leaks	Major	• Conduct regular inspections of the water network to detect leaks as soon as they occur. • Implement a preventive maintenance program for the water network, including activities such as checking joints, repairing defective parts and replacing aging components. • Regular maintenance helps prevent leaks and keeps the network in good working condition. • Use high-quality materials when building or repairing the water network. This includes leak-resistant pipes and high-quality joints to minimize the risk of long-term leaks. • Implement an investment monitoring and remote management system, that can quickly detect pressure variations or leaks and act quickly to repair them. • Train investment operation staff on good leak management practices, including early detection, repair techniques and the use of monitoring equipment. • Raise awareness among end users on the importance of reporting leaks and water network problems.
		Air	Greenhouse gas emissions	Major	• Encourage the use of renewable energy sources, such as solar or wind, to power facilities and pumps. • Implement efficient energy management practices, such as using variable speed drives for pumps, optimizing equipment operating schedules, and putting appliances on standby whenever possible. • Implement water loss management programs to minimize leaks and waste. • Educate staff and end users on greenhouse gas emissions issues and promote responsible practices.
	Periodic maintenance work	Soil and water	Pollution from oil spills and fuel leaks from the machines	Major	• Establish adequate containment systems, such as retention basins or containment pans to collect used oil and fuels in the event of an accidental spill or leak. • Educate and train staff on proper handling and storage practices for oil and fuels. • Ensure regular maintenance of the generators to reduce the risk of fuel leaks. • Store oil in appropriate, leak-proof containers, preferably in a dedicated, well-ventilated area • Encourage the use of cleaner, less polluting fuels, such as natural gas or biofuels. • Conduct regular inspections to detect signs of potential leaks or spills. • Develop an emergency and response plan to a fuel spill or leak.

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4. Surveillance and monitoring program

Environmental and social monitoring and surveillance are two important aspects when carrying out an Environmental and Social Impact Notice (ESIN) in compliance with the Mauritanian legislation (Decree 2007-105) and the OSS E&S Performance Standards. Although related, these two activities have slightly different objectives and approaches.

Environmental and social monitoring refers to the continuous process of assessing and documenting the environmental and social performance of a project throughout its life cycle. It aims to identify potential impacts, assess the effectiveness of mitigation measures and adjust environmental and social management plans accordingly. Monitoring typically involves the collection and analysis of data on relevant environmental and social indicators, and the comparison of the results with established objectives and standards.

The environmental and social monitoring will be made by the Environmental & Social and Gender Safeguards Expert of the PRAGOA PMU, who will ensure the regulatory compliance of the implementation. The technical services of local authorities will also have to actively participate in the monitoring, to ensure an effective and sustainable implementation of the mitigation measures and the environmental and social management plan.

Environmental and social surveillance is a more formal and structured process that aims to verify the project compliance with the applicable environmental and social standards.

Surveillance generally involves regular inspections, audits and assessments to make sure that mitigation measures and management plans are adequately implemented, and that environmental and social impacts are managed in accordance with regulatory requirements and best practices.

Environmental and social surveillance will have to be carried out by the Control Mission (CM) and by the company's environmental and/or HSE expert.

Table 56 : Program and indicators for monitoring social impacts

Activities causing impacts	Impact receiver	Description of the impact	Importance	Monitoring action	Monitoring indicators	Monitoring
Project phases : Preparation of the sites; Construction and installation of investments and equipment						
Staff recruitment	Construction site staff	Social conflicts between local populations and construction site staff following the non-recruitment of local populations	Minor	Track local recruitment	Number of employees recruited	PMU
Transport of construction materials and construction machinery traffic	Traffic	Disruption of road traffic in the area	Minor	Monitoring visits to the implementation of HSE measures	Number of staffs with PPE Number of accidents	PMU
Operation of machinery and construction site equipment traffic	Noise	Noise pollution	Minor	Establish mechanisms to resolve conflicts and grievances related to sub-projects in a fair and transparent manner Maintain a register of the complaints	Number of complaints registered	PMU
Presence of company staff	Health, Safety, Hygiene	Risk of contamination of the populations by STIs and HIV/AIDS	Medium	Carry out an (IEC) for the populations and employees on STIs/AIDS	Number of IEC sessions carried out	PMU
Investment and equipment installations	Conflicts, social acceptance	Social acceptance of the villages located in the sub-project areas	Majeure	Establish mechanisms to resolve conflicts and grievances related to sub-projects in a fair and transparent manner Maintain a register of the complaints	Number of complaints registered	PMU
Project Operation phase						
Commissioning	Gender and vulnerability	Social exclusion	Major	Periodically report on targeted gender and vulnerability actions Conduct socio-economic surveys during operation (satisfaction and expectations of these groups) Carry out targeted gender and vulnerability awareness actions	Number of awareness campaigns Monitoring report including gender and vulnerability aspects	PMU/ NWDC
	Conflicts, social acceptance	Tensions and conflicts	Major	Conduct targeted awareness-raising activities on the importance of ecological agricultural and livestock practices, the benefits of sub-projects and the responsibilities of users	Number of campaigns and workshops held	PMU/NWDC/NORWS

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Periodic maintenance work	Health, Safety, Hygiene	Poor maintenance	Major	Conduct workshops and training to build the capacity of local communities to manage and maintain infrastructure Establish clear procedures for managing water supply network incidents and emergencies, including communication with users, resource mobilization and response coordination Organize awareness campaigns and educational workshops to inform users about the importance of water supply network maintenance and good health, safety and hygiene practices Ensure sustainable financing for the maintenance and management of the supply network by establishing appropriate and socially acceptable pricing mechanisms	Number of awareness campaigns and training sessions held Number of water analyses and % of compliance with drinking water standards Number of accidents/incidents related to the operation of investments % of non-payment Number of complaints relating to water management	PMU
Project phases : Preparation of the sites; Construction and installation of pipeline systems						
Earthmoving and stripping operations Machinery traffic	Soil	Risk of erosion and soil texture damage	Minor	Implement erosion and sedimentation control measures (Protection against desertification of the wells and reservoirs by a plant fence). Raising awareness among companies and workers about the risks of erosion	Linear plant fence Number of training/awareness sessions	PMU/CM / Company
	Noise	Noise pollution	Minor	Use low-noise construction equipment and machinery and make sure they are well maintained to reduce noise emissions Raise awareness among workers and subcontractors about noise pollution issues and good practices to reduce noise emissions on the construction site	Number of complaints due to noise generated by the works Number of training/awareness sessions	PMU/CM / Company
	Air	Air pollution from exhaust emissions and dust particles	Minor	Choose construction vehicles and equipment with low-emission engines Implement measures to control the spread of dust particles on the construction site Optimize the logistics of transporting materials and equipment to reduce unnecessary traffic and associated emissions Encourage the use of low-sulfur fuels and other clean fuels, such as natural gas or biofuels, to reduce pollutant gas emissions from construction vehicles and equipment Inform and raise awareness among workers about the impacts of air pollution and good practices to adopt to reduce emissions	Number of complaints due to air pollution generated by the works Number of training/awareness sessions	PMU/CM / Company
	Fauna	Risk of disturbance to animals and destruction of wildlife habitats	Minor	Raise awareness among businesses, workers and local communities about biological wealth and how to preserve it	Number of complaints related to biodiversity (mortality, observation of hunting activity, etc.) Number of training/awareness sessions	PMU/CM / Company
	Flora	Loss of vegetation cover	Minor	Provide ecological compensation measures for areas affected by the construction of sub-projects Raise awareness among workers on the importance of preserving vegetation cover and on good practices to adopt to avoid unnecessary destruction of the vegetation	Area planted, number of plants planted, plant success rate.	PMU/CM / Company
Operation phase						
Permanent commissioning of the investments	Soil	Soil pollution	Major	Conduct monitoring visits and report on leaks of hydrocarbons and other maintenance products Place retention bins around generators and storage areas Educate end users on the importance of reporting leaks and investment-related issues	Number of bins set up for collecting leaks Number of awareness sessions	PMU/CM / Company
	Surface and	Network leaks	Major	Conduct regular inspections of the water network to detect leaks as soon as they occur	Monitoring protocol and number of monitoring reports per year	PMU/CM / Company

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	groundwater			Train staff responsible for operating the water network on good leak management practices, including early detection, repair techniques and the use of monitoring equipment Educate end users on the importance of reporting leaks and development issues	Number of awareness/training sessions	
	Air	Greenhouse gas emissions	Major	Encourage the use of renewable energy sources, such as solar or wind, to power facilities and pumps. Implement efficient energy management practices, such as using variable speed drives for pumps, optimizing equipment operating schedules, and putting appliances on standby when possible Implement water loss management programs to minimize leaks and waste Educate staff and end users on greenhouse gas emissions issues and promote responsible practices	Number of patients Number of awareness sessions	PMU/CM / Company
Periodic maintenance work	Soil and water	Pollution from oil spills and fuel leaks from generator sets	Major	Establish adequate containment systems such as drip bins or containment basins to collect used oil and fuels in the event of an accidental spill or leak Raise awareness and train staff on proper handling and storage practices for oil and fuels Ensure regular maintenance of generator sets to reduce the risk of fuel leaks Store oil in appropriate, leak-proof containers, preferably in a dedicated, well-ventilated area Promote the use of cleaner, less polluting fuels for generator sets, such as natural gas or biofuels Conduct regular inspections to detect signs of potential leaks or spills Develop an emergency and response plan to fuel spill or leak	Presence of the waste collection and management system	PMU/CM / Company

5. Emergency management or risk management plan

Table 57 : Emergency management plan

Sources of Danger	Risks	Preventive or mitigation measures	Responsibility	
			Surveillance	Monitoring
Preparation and construction phase				
Driver incompetence/Brake failure/Certain maneuvers, particularly reversing/Failure to wear "PPE"	Accidents related to the construction machinery and equipment traffic	Train and raise awareness among operators on good safety practices, plan and organize the work by defining traffic routes and areas, and ensure adequate signage on the site. Control access to the site, establish clear and effective communication between the stakeholders, carry out regular inspections and ensure equipment maintenance.	CM / Company	Contractors/ PMU
Constant exposure to very loud noise or very loud noise/impulsive noise/disturbance of verbal and telephone communication/Alarm signals obscured by ambient noise	Noise and vibration hazards	Assess potential sources of noise and vibration and design and plan the construction site by establishing buffer zones between construction activities and sensitive areas. It is also essential to select modern construction equipment and techniques that reduce noise and vibration levels, establish work schedules that consider rest hours and sensitive periods, raise awareness among the workers about noise and vibration risks and inform residents of nearby areas about planned works, work schedules and measures taken to minimize noise and vibration disturbances. Limit the duration of noisy works and vibration-generating activities. Implement the complaint management mechanism		Contractors/ PMU
Tools, materials or equipment falling from a height / lack of guardrails / improper use of personal protective equipment / poor management of cables and wires / failure to follow safety procedures	Risk of accidents due to falls (people and objects)	Training workers on fall hazards and prevention measures Use of personal protective equipment such as helmets, harnesses, safety shoes and gloves Installation of fall protection systems such as guardrails, safety nets and scaffolding Regular inspection of fall protection equipment Planning and organization of the work to minimize fall hazards		Contractors/ PMU

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Risks of water pollution/Risks of disease spread	Risks associated with lack of chemicals	Awareness-raising and training of the workers Installation of adequate water points and toilets Use of personal protective equipment Appropriate waste management Regular monitoring and control, and collaboration with local health authorities		
Operation phase				
Accidental chemical spills/Leaks or spills of fuel or oils/Poor waste management/Polluting air emissions/Disruption of ecosystems	Risques de pollution des ressources naturelles	Establish strict procedures for the storage, handling and disposal of chemicals Regular monitoring of storage tanks Implement appropriate waste management systems Choose environmentally friendly technologies in operation processes, such as the use of low-emission pumps and generators, and the use of renewable energy whenever possible Employee training and awareness	CM / Company	PMU
Failure of water pipe systems/Cracked or leaky pipes/Pollution of water sources/Acts of vandalism or sabotage/Human errors	Risks of water contamination in the new drinking water supply network	Regularly inspect and maintain treatment facilities and equipment to prevent leaks, cracks and failures Install pollution control devices, such as check valves, to prevent polluted water from entering the drinking water system Protect and monitor water sources, such as rivers, lakes and groundwater, to prevent pollution		

6. Capacity building plan and budgeting

Table 58 : Capacity building plan and budgeting

Stakeholders involved	Training themes	Entity	Number of training days	Number of participants	Budget (USD)
Municipality and local populations affected by the sub-projects	Information on the site, duration of the works: Awareness of E&S standards (OSS and AF) Surveillance of the works Conflict prevention and management Information on health and safety during the works Awareness of behaviors to avoid (robbery and vandalism)	Trainer / PMU	2	100	4,600
Construction company staff	Training and awareness on Health and Safety at Work on: Safety risks related to tasks and care; Personal protective equipment and operation of the machinery Enforcement of good practice measures at work Respect for customs at work	Trainer	5	40	6,500
Delegation of the Ministry of the Environment (Atar)	Awareness on E&S standards (OSS and AF)	PMU	2	5	1,400
Regional Delegation of Agriculture	Ecological irrigation techniques	Trainer / PMU	2	5	1,400
MASEF	Awareness raising on compliance with E&S standards, on GM and on social aspects	Trainer / PMU	2	5	1,400
Delegations of the Ministry of Livestock	Pasture management and forage cultivation	Trainer / PMU	2	5	1,400
Regional Department of the Ministry of Water and Sanitation (Atar)	Rational water management	Trainer / PMU	2	5	1,400
Training Budget (USD)					**18,100**

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7. Responsibility for the ESMP implementation

Table 59 : Role and responsibility for the ESMP implementation

Stakeholder	Environmental and social responsibility
EACD	• Appoint a Focal Point to support the sub-project implementation • Ensure compliance with the enforcement of national environmental regulations • Preserve the interests of local populations • Conduct periodic environmental and social checks on the site
PRAGOA-PMU	• Validate the ESMP-Construction and the E&S clauses in the CTFs; • Validate the Environmental and Social Monitoring Plan of the CM; • Submit the monthly reports on the implementation of environmental measures and the one on social measures of the sub-projects to the OSS for review and approval; • Prepare the ToRs and the report of the annual Environmental and Social Compliance Audit of the sub-projects that it submits to the OSS no later than the end of December of each year for review and approval
Construction company	• Recruit and mobilize an Environmental and Social Safeguarding Specialist with a good command of HSE issues, throughout the duration of the works • Prepare an ESMP-Construction and execute the related environmental and social measures • Prepare monthly reports on the ESMP-C implementation which it regularly submits to the CM for review and approval
Control Mission (CM)	• Recruit and mobilize an Environmental and Social Safeguarding Specialist with a good command of HSE issues, throughout the duration of the contract • Prepare an environmental and social monitoring plan and have it executed • Review and approve the ESMP-C implementation reports submitted by the construction company and submission to PRAGOA for validation • Prepare monthly E&S monitoring reports that it regularly submits to PRAGOA-PMU for review and approval
Commune	• Support the sub-projects • Participate in capacity building sessions • Provide mediation in the event of conflicts • Inform, educate and raise awareness among local populations
Local associations	• Inform, educate and raise awareness among stakeholders and the populations in the sub-projects' areas on the related environmental and social aspects
Riverside populations	• Be involved and committed to the ESMP implementation

8. Environmental and social risk management measures in line with the Environmental and Social Policy of the Adaptation Fund

The PRAGOA project environmental and social risks analysis indicate limited significant environmental or social impacts as per the Environmental and Social Policy of the Adaptation Fund. The impacts levels are evaluated to be low or medium risks; thus, the project is classified under Category B of risk. This means that the project activities have small-scale impacts, limited to the project area and easily mitigated through good environmental and social management practices.

Besides, the project will undertake environmental and social impact assessment reviews as applicable (depending on the scale of the project activities to be undertaken).

The Table Below is describe the possible negative impacts/risks of the PRAGOA project activities and the necessary mitigating measures in compliance with the 15 principles of the Adaptation Fund Environmental and Social Policies:

Table 60 : E&S impacts/risks of the PRAGOA project activities and the mitigating.

AF Principle	Possible Negative Impacts/Risks	Mitigating Measures
1. Compliance with the law	Risk of non-compliance with local and national regulations, leading to legal issues and project delays.	Ensure thorough review of all relevant laws and regulations. Conduct regular legal compliance audits and engage legal experts.
2. Access and equity	Risk of unequal access to project benefits, particularly for marginalized groups such as women, indigenous peoples, and the poor.	Implement inclusive engagement strategies, prioritize participation from all community sectors, and monitor equitable distribution of resources and benefits.
3. Marginalized and vulnerable groups	Risk of excluding vulnerable groups from project benefits and decision-making processes.	Conduct social impact assessments to identify vulnerable groups, involve them in planning and implementation, and tailor activities to meet their specific needs.
4. Human rights	Potential for human rights violations if project activities inadvertently infringe on local communities' rights.	Develop and implement a human rights policy, provide training on human rights for all project staff, and establish a grievance mechanism for affected communities.
5. Gender equality and women's empowerment	Risk of reinforcing existing gender inequalities if women are not adequately included in project activities.	Ensure gender-sensitive planning and implementation, promote women's participation and leadership in all project activities, and provide gender awareness training for staff and stakeholders.
6. Core labour rights	Risk of violating labour rights through unsafe working conditions or unfair labour practices.	Adhere to national and international labour standards, ensure safe working conditions, and provide fair wages and benefits. Establish a monitoring system for labour rights compliance.
7. Indigenous peoples	Risk of disregarding the rights and needs of indigenous peoples, leading to conflicts and loss of cultural heritage.	Engage with indigenous communities from the outset, respect their rights and traditional knowledge, and ensure their full participation in project activities. Include indigenous representatives in the decision-making process.
8. Involuntary resettlement	Risk of involuntary displacement of communities due to project activities.	Avoid resettlement wherever possible. If unavoidable, ensure that resettlement is voluntary and conducted with full consent and adequate compensation. Provide support for livelihood restoration.
9. Protection of natural habitats	Risk of degradation or destruction of natural habitats through project activities.	Conduct environmental impact assessments, implement habitat restoration and conservation measures, and monitor the ecological impacts of project activities.

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10. Conservation of biological diversity	Risk of negatively impacting local biodiversity through land use changes and introduction of non-native species.	Prioritize the use of native species in restoration efforts, implement biodiversity conservation plans, and regularly monitor biodiversity impacts.
11. Climate change	Risk of increased greenhouse gas emissions or reduced resilience to climate change impacts.	Promote low-carbon technologies and practices, integrate climate resilience into all project components, and monitor greenhouse gas emissions and climate impacts.
12. Pollution prevention and resource efficiency	Risk of pollution from project activities (e.g., use of pesticides) and inefficient use of natural resources.	Implement pollution prevention measures, promote resource-efficient technologies and practices, and regularly monitor pollution levels and resource use efficiency.
13. Public health	Risk of negative impacts on public health through water contamination, spread of diseases, or inadequate sanitation facilities.	Ensure access to clean water and sanitation, implement health and safety measures, and promote public health awareness campaigns. Conduct regular health impact assessments.
14. Physical and cultural heritage	Risk of damage to physical and cultural heritage sites through project activities.	Conduct heritage impact assessments, involve local communities in the protection of heritage sites, and implement measures to avoid or mitigate any adverse impacts on physical and cultural heritage.
15. Lands and soil conservation	Risk of soil degradation through unsustainable land use practices.	Promote sustainable land management practices, implement soil conservation measures, and monitor soil health regularly. Provide training on sustainable agricultural practices to local farmers and communities.

The table above provides an overview of potential negative impacts/risks and suggests appropriate mitigating measures for each principle to ensure that the PRAGOA project aligns with the Adaptation Fund's environmental and social policies.

5.1 Evaluating the potential environmental and social risks.

A table below is evaluating the potential environmental and social risks of the PRAGOA project activities, along with the positive impacts, mitigation measures, and predictions about the significance of residual impacts:

Table 61 : Evaluating environmental and social risks of the PRAGOA project

AF Principle	Potential Negative Impacts/Risks	Mitigating Measures	Positive Impacts	Residual Impact (Post-Mitigation)
1. Compliance with the law	Risk of non-compliance with local and national regulations.	Conduct thorough legal reviews, engage with legal experts, continuous monitoring for compliance.	Ensures legal compliance and smooth project execution.	Low
2. Access and equity	Unequal access to project benefits.	Implement inclusive engagement strategies, prioritize marginalized groups.	Equitable distribution of resources and benefits. Promotes social inclusion and equality.	Low
3. Marginalized and vulnerable groups	Exclusion of vulnerable groups from project benefits.	Conduct social impact assessments, involve vulnerable groups in planning, tailor activities to meet their needs.	Improved living conditions and empowerment of marginalized and vulnerable groups. Enhanced social cohesion and inclusivity.	Low
4. Human rights	Potential infringement on local communities' rights.	Develop and enforce a human rights policy, provide training, establish a grievance mechanism.	Upholding human rights, promoting fair treatment and justice.	Low
5. Gender equality and women's empowerment	Reinforcing existing gender inequalities.	Ensure gender-sensitive planning, promote women's participation and leadership, provide gender awareness training.	Enhanced gender equality and empowerment of women, leading to better socio-economic outcomes for women. Increased women's participation in decision-making processes.	Low
6. Core labour rights	Unsafe working conditions, unfair labour practices.	Adhere to labour standards, ensure safe working conditions, fair wages, establish monitoring system.	Improved labour conditions, better worker welfare and productivity.	Low
7. Indigenous peoples	Disregarding the rights and needs of indigenous peoples.	Engage with indigenous communities, respect their rights, ensure their participation.	Preservation of cultural heritage, improved relations and trust with indigenous communities.	Low
8. Involuntary resettlement	Involuntary displacement of communities.	Avoid resettlement, ensure voluntary and consensual resettlement, provide adequate compensation and support.	Voluntary resettlement improves living conditions and minimizes social disruption. Enhanced community satisfaction and trust in the project.	Low
9. Protection of natural habitats	Degradation or destruction of natural habitats.	Conduct environmental impact assessments, implement habitat restoration and conservation measures.	Preservation and enhancement of natural habitats, leading to improved biodiversity and ecosystem services.	Low
10. Conservation of biological diversity	Negative impacts on local biodiversity.	Use native species, implement biodiversity conservation plans, monitor biodiversity impacts.	Conservation of biodiversity, promotion of ecological balance.	Low
11. Climate change	Increased greenhouse gas emissions, reduced climate resilience.	Promote low-carbon technologies, integrate climate resilience, monitor emissions and climate impacts.	Enhanced climate resilience, reduction in greenhouse gas emissions, promotion of sustainable practices.	Low
12. Pollution prevention and resource efficiency	Pollution from project activities, inefficient resource use.	Implement pollution prevention measures, promote resource-efficient technologies,	Reduction in pollution levels, improved resource efficiency, and sustainable use of natural resources.	Low

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		monitor pollution and resource use efficiency.		
13. Public health	Negative impacts on public health (e.g., water contamination, disease spread).	Ensure access to clean water and sanitation, implement health and safety measures, promote public health awareness campaigns.	Improved public health outcomes, reduced disease incidence, better quality of life.	Low
14. Physical and cultural heritage	Damage to physical and cultural heritage sites.	Conduct heritage impact assessments, involve communities in protection efforts, implement measures to avoid or mitigate impacts.	Preservation of cultural heritage, enhanced cultural pride and identity.	Low
15. Lands and soil conservation	Soil degradation through unsustainable land use practices.	Promote sustainable land management practices, implement soil conservation measures, monitor soil health, provide training.	Improved soil health, enhanced agricultural productivity, reduced soil erosion and degradation.	Low

This table provides a comprehensive overview of the potential risks, mitigating measures, positive impacts, and residual impacts after mitigation for the PRAGOA project, ensuring alignment with the Adaptation Fund's environmental and social principles.

Overall Project Alignment with AF's ESP principals

Each component of the PRAGOA Project is designed to be environmentally sustainable and socially inclusive, aligning with the 15 principles in the following ways:

1. **Compliance with the law**: Ensuring all activities comply with relevant laws and regulations.
2. **Access and equity**: Guaranteeing fair and equitable access to resources and opportunities.
3. **Marginalized and vulnerable groups**: Focusing on the inclusion and empowerment of these groups.
4. **Human rights**: Upholding and promoting human rights in all activities.
5. **Gender equality and women's empowerment**: Integrating gender considerations and promoting women's empowerment.
6. **Fundamental rights of women work**: Protecting women's labour rights in all initiatives.
7. **Indigenous Peoples**: Respecting and integrating indigenous knowledge and needs.
8. **Involuntary resettlement**: Avoiding or minimizing resettlement impacts.
9. **Protection of natural habitats:** Conserving natural habitats and biodiversity.
10. **Biodiversity conservation**: Promoting practices that protect and enhance biodiversity.
11. **Climate change**: Enhancing resilience and adaptive capacities to climate change.
12. **Pollution prevention and resource efficiency**: Implementing sustainable practices to prevent pollution and ensure resource efficiency.
13. **Public Health**: Improving public health through better resource management and environmental practices.
14. **Physical and Cultural Heritage**: Preserving cultural heritage through community engagement and education.
15. **Conservation of Land and Soil**: Promoting sustainable land and soil management practices.

9. ESMP budget

Table 62 : Estimated budget for the ESMP implementation

Project Activity	Description	ESMP Justification	Estimated ESMP Cost (USD)
1.1.2.1	Build or reinforce bunds to control runoff, promote infiltration and reduce soil erosion:	Habitat disturbance, water use risk, land conversion	10,000
1.1.2.2	Install suitable irrigation and drainage systems to better distribute water in palm groves and market gardens in the oases	Water use risk, access equity, aquifer pressure	10,000
1.2.1.2	Creation and rehabilitation of hydraulic infrastructures in targeted areas to address communities' needs	Over-extraction, habitat disturbance, water use risk, land conversion, aquifer pressure	22,000
1.2.1.3	Create and equip protected water sources and storage infrastructures for drinking water:	Over-extraction, access equity, health risks, sanitation management	10,000
2.1.1.2	Setup of a Center of Excellence for Climate Adaptation and Innovation Center (CAIC)	Access equity, land conversion	5,000
2.1.1.3	Set up and manage demonstration plots to test and adopt sustainable agropastoral and land management practices	Land degradation, erosion, biodiversity	5,000
2.1.2.1	Establish Green Belts for SDM Stabilization	Disturbance to fragile dune ecosystems	12,000
2.1.2.2	Promotion of Reforestation and Afforestation Practices in Degraded Areas and Creation of Pastoral Spaces	Land degradation, erosion, biodiversity	12,000
3.1.1.1	Create and develop pastoral areas to improve forage resources for livestock farmers	Grazing pressure, fodder sustainability	10,000
3.1.1.2	Reinforce livestock breeding, animal health and pastoral management systems for sustainable and resilient livestock production	Biohazards, biodiversity, grazing pressure	8,000
3.1.1.3	Develop an innovative oasis farming model (multi-storey farming (palm, tree, market gardening), hydroponics, etc.)	Access equity, water use risk, land conversion	10,000
3.1.1.4	Promote the production and use of compost to improve soil quality	Misuse of organic inputs, soil/water pollution	7,000
3.1.2.1	Implement community Income-Generating Activities to boost the local economy, with a particular focus on creating opportunities for women and youth	Access equity,	10,000
TOTAL			**131,000**

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VIII. Stakeholder consultation and mobilization

Carrying out environmental and social impact studies in Mauritania is governed by Law No. 2000-048 dated July 21, 2000 on environmental protection and Law No. 2012-015 dated March 26, 2012 on the Environmental Code. These laws require that stakeholders be consulted when conducting environmental and social impact studies. More specifically, Article 17 of Law No. 2000-048 states that "impact studies must be preceded by a consultation of the relevant populations and associations". Similarly, Article 31 of Law No. 2012-015 provides that "impact studies must be preceded by a consultation of the stakeholders, in particular local populations, local associations and the competent administrative authorities". It is therefore mandatory to consult the stakeholders, including local populations, local associations and the competent administrative authorities, before carrying out an environmental and social impact assessment in Mauritania. This consultation makes it possible to consider the concerns and needs of the stakeholders in carrying out the study and to ensure informed and transparent decision-making. Thus, the OSS Environmental and Social Performance Standard (PS1), refers to the participation of the stakeholders in the projects it carries out, in particular when carrying out an Environmental and Social Impact Notice (ESIN). This standard emphasizes the importance of consulting and actively mobilizing the stakeholders throughout the activity development process. Here is a description and explanation of the obligation to carry out stakeholder consultation and mobilization in accordance with the WB Standard 10.

1. Objectives of the stakeholder consultation and mobilization

Stakeholder consultation consists of actively involving individuals, communities and groups that may be affected by the project. This includes local populations, civil society groups, non-governmental Organizations, indigenous communities, workers, local businesses and other relevant actors. Consultation should be conducted in an open, transparent and inclusive manner, considering the needs and concerns of all stakeholders. Stakeholder engagement aims to encourage their active participation and foster their involvement in the planning, implementation and monitoring of the project. This may include activities such as public meetings, workshops, training, focus groups, surveys and other consultation methods. Stakeholder engagement provides an opportunity to collect information about their perspectives, interests and concerns, and to integrate these elements into decision-making. The requirement to conduct stakeholder consultation and mobilization in an ESIN is based on several key principles:

- Transparency: The PS 1 requires that relevant information about the project, including environmental and social aspects, be transparently communicated to stakeholders. This ensures equitable access to information and allows stakeholders to understand the potential impact of the project on the environment and affected communities.
- Inclusive participation: PS 1 highlights the importance of enabling the active participation of all stakeholders, particularly marginalized or vulnerable groups. It is essential to make sure that the views and perspectives of all stakeholders are considered in the decision-making process.
- Consideration of the stakeholder concerns: Stakeholder consultation and mobilization should collect and address the concerns expressed by the different stakeholders. This may include concerns related to human rights, health, safety, environment, employment, culture, land tenure and other relevant aspects.

2. Report of the consultations during the ESIN preparation

Public consultations carried out during the preparation of the ESIN: **Stakeholder consultations took place from 11/12/2023 to 16/12/2023 at the central level in Nouakchott and at the regional level in Adrar, namely the Moughataa of Atar, commune of Tawaz and at the level of the two development poles (Ziyara and Dhaya).**

A total of 80 people were interviewed, including 30 women, in order to ensure a balanced representation of the different stakeholders. Consultations began with internal meetings with the project coordination unit in Nouakchott. During these meetings, several stakeholders were interviewed at the central level, including the Ministry of Agriculture, followed by the ME. On 18/11/2023, two meetings were held with the Environmental Control Department. On 11/12/2023, a delegation paid Atar a courtesy visit to the administrative and municipal authorities, then site visits began. A visit was paid to the two development poles, followed by a consultation with the local population (see details in Table 40), and finally, meetings with the heads of the Dhaya and Ziyara Poles respectively. From 13 to 16/12/2023, the mission visited different sites (see Annex 1).

Table 63 : Distribution of the people interviewed by center, locality, main activity and gender

Poles	Ziyara				Dhaya				Sub Total	Sub Total	Grand total
Localities/places	Ziyara		Eguemoun		Dhaya		Tezegrez				
Main activity	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	M & W
Agriculture	1	3	5	4	13	9	7	6	26	22	48
Livestock breeding	9	8	10	12	4		4	6	27	26	53
Others	13	5	3	1			5		21	6	27
Total	**23**	**16**	**18**	**17**	**17**	**9**	**16**	**12**	**74**	**54**	**128**

P.N :

a) We took note that, in addition to the 2 managers of the Ziyara and Dhaya poles who supervised the consultations, the President of the regional office of farmers of Adrar and a municipal councilor of the commune of Tawaz, were met.
b) The lists of people, photos of institutional meetings and focus groups, as well as photos of the landscapes of the 2 poles, appear in the annexes.

All consultations aimed to gather stakeholder views and feedback on the potential environmental and social impacts of the project, and to address any concerns or issues raised. The consultations aimed to ensure that the perspectives and interests of local communities, government agencies, civil society Organizations and other relevant stakeholders were considered in the decision-making process. Consultations conducted at the central level in Nouakchott and the regional level in Atar, the commune of Tawaz and the two poles of Ziyara and Dhaya, involved a wide range of stakeholders. This inclusive approach

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allowed for a thorough understanding of the potential implications of the sub-projects and helped identify the appropriate mitigation measures and actions to enhance the overall sustainability of the sub-projects. The consultation process involved a series of meetings, site visits and interactions with the different stakeholders. This provided an opportunity to collect information on local contexts, cultural heritage, livelihoods and potential social and environmental sensitivities. It also provided an opportunity for stakeholders to voice their concerns, share local knowledge and propose ideas or alternatives that could contribute to the success of the sub-projects while minimizing potential negative impacts. Globally speaking, the extensive consultation and mobilization of the stakeholders throughout the process, as outlined in the timeline and specific locations, is in line with the OSS requirements for Performance Standards. This approach promotes transparency, inclusiveness and accountability in the project development, ensuring that decisions are informed by the perspectives and needs of those directly affected by the sub-projects and creating opportunities for sustainable development and positive social and environmental outcomes.

Stakeholder mapping

In accordance with the OSS PS 1, in particular with regard to stakeholder commitment, this section aims to present the mapping of the stakeholders involved in the project, considering their influence and interest. Stakeholder mapping is an essential tool to identify, analyze and prioritize key actors who can influence or be affected by the sub-projects, and to promote effective communication and collaboration between the different parties.

Stakeholder mapping according to the Influence / Interest quadrant is based on two main components:

- **Influence**: is the ability of a stakeholder to, positively or negatively, affect the decisions, activities or results of the project. Stakeholders with high influence may include government authorities, regulators, investors and opinion leaders.
- **Interest**: is the degree of involvement or concern of a stakeholder in relation to the project and its environmental and social impacts. Stakeholders with high interest may include local communities, human rights and environmental groups, employees and suppliers.

Combining these two components, we can classify stakeholders into four categories:

• **Low influence / Low interest:** These stakeholders have limited impact on the project and are not very concerned by its environmental and social impacts. It is important to regularly monitor and inform them, but they do not require special attention.

• **Low influence / High interest:** These stakeholders are directly concerned by the environmental and social impacts of the project, but have little power to influence decisions. It is crucial to consult them and keep them informed throughout the process, in order to take their concerns into account and ensure transparent communication.

• **High influence / Low interest:** These stakeholders have the power to affect the project, but are not directly concerned by its environmental and social impacts. It is important to mobilize and inform them to ensure their support and understanding of the project issues.

• **High influence / High interest:** These stakeholders are both directly concerned by the environmental and social impacts of the project and have the power to influence decisions. It is essential to actively mobilize them in the consultation process, keep them informed and work closely with them to ensure the success of the project and minimize negative impacts.

By following this approach, we will be able to identify key stakeholders, assess their needs and expectations, and develop appropriate communication and mobilization strategies to ensure effective management of the environmental and social impacts of the sub-projects.

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Table 64 : Stakeholder mapping

N°	Challenges	Concerned Stakeholders	Role	Level of Interest	Level of Influence	Proposed method of mobilization
1	Project implementation in accordance with the Adaptation Fund requirements	PRAGOA-PMU/SOS-OASIS	PRAGOA-PMU is in charge of the sub-projects' implementation SOS-OASIS is the national executing agency of the project	High	High	Physical and Teams meetings Publication of the ESIN on the project website
2	Project implementation in accordance with the OSS and Adaptation Fund requirements	OSS/ Adaptation Fund	The Adaptation Fund is the financing entity of the Program. The OSS is the executing entity of the project	High	High	Kick-off meeting Meeting to present the ESIN results Publication of the ESIN on the website Bilateral meetings
3	Project implementation in ordance with the Adaptation Fund uirements Water quality control	RD/MEV-MA-ME	The regional delegations of the MA/MEV/ME will be responsible for the technical support of the project during the operational phase	High	High	Physical meetings Meeting to present the ESIN results
4	Regulatory compliance Complaints management	Wali (Adrar)	Manage decentralized State services Mobilize institutional stakeholders Comply with the regulations and commitments Chair regional and departmental complaint management committees, Mobilize security services, if necessary	High	High	To be regularly kept informed by letters, telephones or supervisory messages
5	Categorization of the project ording to the Mauritanian regulations Compliance with local regulations	EACD / ME	Validate the Terms of Reference of the ESIN Organize the public consultation, Monitoring of the Environmental and Social Management Plan (ESMP), Control and prevent pollution and disturbances Authorize any deforestation, clearing or reforestation activity on the site of the sub-projets	Medium	Medium	Physical information meeting Framework meeting Provide it with a copy of the ESIN To be strongly involved in the development and monitoring/control of the ESMP implementation
6	Natural resources management	NWRC	Monitor the water table Monitor the works (drilling)	Low	Low	Sub-project and mission information meeting To keep informed of drilling and well characteristics and types of exploitation
7	Health risk management (construction and operation phase of new infrastructures)	DRASS/EACD/MA/ME	Prevent and monitor waterborne diseases Prevent and monitor other diseases and the spread of STIs/HIV/AIDS	Low	Medium	Sub-project and mission information meeting Entrust her with awareness-raising in health posts and keep her informed of the sub-projects' implementation
8	Workforce management Complaints management	Regional labor inspection	Monitor compliance with labor regulations, including working conditions and employee rights Monitor the implementation of workforce management actions Contribute to complaints management	Low	Medium	Keep her informed of all recruitment and works. Involve her, through a visa, in contracts. Involve her in checks and monitoring of the implementation of social safeguard measures.
9	Regulatory compliance Complaints management	Wilaya	Foster the ESMP implementation Ensure compliance with the regulations	Medium	Medium	To keep informed of the execution and monitoring of execution
10	Compliance with the regulations Complaints management	Commune	Foster the ESMP implementation Ensure compliance with the regulations	Medium	Medium	To keep informed of the execution and monitoring of execution
11	Awareness raising Complaints management	NGOs/ Unions	Monitor the measures Defend workers' rights, defend against hunger, defend against GBV, protect the nature - Information and awareness	Low	Medium	Integrate them in the dissemination of information and awareness
12	Complaints management	Pole Managers	Manage conflicts and complaints at the village Raise awareness among the population Ensure that commitments are respected Organize the population	High	High	Must be involved in the maintenance of community infrastructure To keep informed of the activities to be carried out in the different localities of the poles
13	Implementation of the ESMP	Service providers / CM / Expertise firms	Under contract for the implementation of the works; responsible for the recruitment and compliance with the CTF specifications and requirements	Low	Medium	To keep informed of the measures relating to the PGMO and the standards to be respected Require compliance with the clauses through effective

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Summary of the outcomes of the discussions held with the stakeholders

In-depth discussions were conducted with each stakeholder group involved in the project. These discussions provided valuable insights about the concerns, needs and expectations of each group. The results of these discussions were synthesized to better understand the environmental and social issues related to the sub-projects, as well as the perspectives and ideas of each stakeholder. This summary will help develop innovative solutions tailored to each stakeholder group, while promoting a collaborative and inclusive approach.

Table 65 : Summary of the consultation outcomes

N°	Stakeholders Met	Opinion on the project	Concerns/expectations	Project impacts	Proposed measures
1	PRAGOA-PMU/SOS-OASIS	The sub-projects represent one of the most important infrastructure projects in the area especially for the commune of Tawaz	Compliance with contractual obligations by the dealers Finalization of the studies within contractual deadlines	The project generates several socio-economic, biological and biophysical impacts and the PMU must ensure that these impacts are mitigated	Project implementation in accordance with the OSS and Adaptation Fund E&S standards and requirements for stakeholder mobilization
2	OSS/ Adaptation Fund	The Adaptation Fund & OSS support the project which serves to improve the quality of life in the sub-project area	It is important to consider the social acceptance of the project, especially in villages where sub-projects will bring no benefits. For example, in the case of villages located in the commune of Tawaz Profitability and visibility of the project Solvency of the promoter in the stakeholder community Lack of compliance with recovery schedules	Sub-projects generate several biological, biophysical and socio-economic impacts The AF plays an important role in verifying and controlling sub-project activities in accordance with the OSS PSs	Implementation of sub-projects in accordance with the requirements of the Adaptation Fund and the OSS for stakeholder mobilization (PS1)
3	Wali, Hakem and local population (Atar, Tawaz, Ziyara, Dhaya)	Authorities and local population are informed about the sub-projects	Effective and urgent implementation of sub-projects Considering the social concerns of the community (agriculture, livestock, climate change, etc.) Fear of non-compliance with the commitments by the company Guarantee the renewal of faulty equipment and the timely repair of breakdowns	Socioeconomic impacts	Create jobs by recruiting local residents from the sub-project region/localities and inform local authorities about available jobs
4	DRASS/EACD/MA/ME	They are informed by the sub-projects	Implement devices to prevent the proliferation of diseases linked to stagnant water due to leaks in a network or reservoir and to eliminate nuisances	Health and safety of the population	Carry out regular health checks on the network water to prevent the risk of contamination and disease. In the event of a network failure, the municipality must act quickly to remedy the situation
5	MSACF	MSACF is informed about sub-projects	Women and children have rights in the implementation of sub-projects, particularly with regard to employment	Gender and vulnerability	The ESMP takes these aspects into account and must be implemented in compliance with the E&S standards of the OSS and the AF
6	NGOs / Civil society	NGOs in the region are informed by the sub-projects	Agricultural development sub-projects have negative impacts on the environment, such as ecosystem disruption, land degradation and water pollution Sub-projects may not equitably benefit all local communities, particularly vulnerable groups such as women, children and people with disabilities Sub-projects do not consider sustainable water resources management, which could lead to overexploitation of water resources and exacerbate water scarcity problems in the region	Health and safety of the population Socioeconomic, biological, biophysical impacts	The ESMP takes these aspects into account and must be implemented in compliance with the E&S standards of the OSS and the AF A capacity building plan will be prepared as part of the ESMP

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3. Strategy and planning of stakeholder mobilization stages and consultations

Context and objective of the public consultation plan

The Public Consultation Plan (PCP) aims to strengthen the social acceptability of the project among local populations by facilitating collaboration and communication between the Stakeholders (SHs). This process allows for sharing information on the project activities and their environmental context, while actively involving beneficiaries and other SHs in identifying the needs, monitoring the activities and evaluating them.
The PCP emphasizes the importance of citizen control, sharing of knowledge and skills, as well as social participation and efficiency. It aims to enable all stakeholders, particularly those located at the local level, to develop a common vision and shared objectives for the actions undertaken by the sub-projects during its different phases: identification and preparation, implementation, and operation/management.
In addition, the PCP promotes the monitoring of the activities and their evaluation from a perspective of citizen responsibility, sharing of knowledge and know-how, active participation and social efficiency. It thus contributes to better consideration of the needs and expectations of local populations, while strengthening transparency and collaboration between the different stakeholders.

Consultation mechanisms and procedures

In order to ensure effective communication and active stakeholder participation, information, consultation and negotiation mechanisms and procedures must be based on a thorough understanding of the environment of the sub-project intervention area. It is also essential to reach social acceptability of the sub-projects, which implies ownership by local populations. Consultation tools and techniques must be designed according to an educational and social communication perspective, in order to guarantee clear and transparent communication with the stakeholders.

Strategy

In order to implement an effective strategy, it is recommended to start strategic planning and dissemination of environmental information from the sub-projects' kick-off or through a series of public announcements. The objectives of this strategy are as follows:

- Promote networking among the different stakeholders by providing them with knowledge about the environment, the intervention area of the sub-projects and the project itself.
- Set up intersectoral groups that reference the different components of the sub-projects.

Speaking of the environmental consultation, it is essential to fully involve cooperatives, private actors, women's and youth Organizations, local communication bodies and NGOs at the level of the Tawaz commune. Such a mobilization will make it possible to:

- Promote social ownership of the sub-projects.
- Mobilize national and local partners for the implementation of the activities of the sub-projects.
- Serve as a framework for the out-of-court resolution of possible conflicts.

Phases of the consultation

The public consultation process can be divided into two stages:

- Local consultation to allow community members to have their say on the different issues;
- Sectoral meetings with specific social and/or interest groups, which allow for more targeted comments and perspectives on particular issues. All these steps are essential to ensure a full and inclusive public consultation.

To ensure effective public consultation, the process is based on the following elements:
- Preparation of public consultation documents, which would include study reports (such as environmental and social assessment reports), a description of the identified activities already (location, characteristics, etc.) and survey sheets;
- Preparatory missions to the sub-project and consultation sites, to better understand local issues and stakeholder concerns;
- Public announcements to inform the community of the consultation and encourage participation;
- Public surveys, data collection at the sub-project sites and validation of the results to make sure that stakeholder comments and concerns are considered in the final decision-making;

By having the public consultation process built this way, stakeholders will more likely feel heard and the final decisions will be more informed and fairer.

Dissemination of information to the public

To ensure effective dissemination of information to the public, once the ESIN has been approved, the following measures will be put in place:
- Publication of the ESIN on the website of the Ministry of the Environment as well as on the external website of the OSS and the Adaptation Fund. The entry links will be widely disseminated;
- Online publication of the ESIN on the project website and dissemination for public consultation at the Project Coordination;
- Availability of the ESIN for public consultation in the Moughataa of Atar and the Commune of Tawaz.

These public consultations will make it possible to:
- Examine the project objectives, activities, impacts and the potential mitigation measures;
- Inform the authorities and local populations of the project usefulness and its potential impacts;
- Listen to and consider the concerns and suggestions of the authorities and local populations.

Following these public consultations, it is clear that the project is designed and supported by its promoter with a view to observing the environment balance, specificities and vulnerability, which will allow it to perfectly fit into its natural and social environment.

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4. Grievance mechanism

Purpose of the mechanism

The Grievance Mechanism (GM) is an important tool to prevent and resolve conflicts between the project stakeholders, project proponents and local communities. It allows the Organization to be accountable to its stakeholders and to use the feedback received to improve the implementation of the activities.
The GM provides accessible, timely and effective means for individuals and communities affected or likely to be affected by the sub-project activities to submit their complaints. Concerns are listened to, analyzed and addressed appropriately.
The Grievance Mechanism aims to:

- Collect and address the complaints;
- Prevent and resolve the problems before they aggravate;
- Manage possible misunderstandings;
- Establish and maintain a framework for dialogue and mediation with the communities and other stakeholders;
- Ensure accountability to the sub-project stakeholders and compliance with the environmental and social standards of the OSS (PS1) and the Adaptation Fund;

By establishing a strong GM, sub-projects can better address stakeholder concerns and improve their environmental and social performance.

Definition of the complaint

A complaint is an expression of dissatisfaction with the level or quality of a service or assistance provided, which may be related to the actions or inaction of the staff, volunteers or direct beneficiaries of a project, and which may cause direct or indirect distress to anyone.
Complaints may relate to various topics related to the implementation of sub-projects, such as concerns about administrative procedures, non-compliance with laws and regulations, quality and access to services, as well as environmental and social management (e.g. measures to eliminate or mitigate negative impacts, disclosure of the ESIN, compliance with the procedures established by the Environmental and Social Management Plans (ESMP) and the site ESMP, etc.). Complaints regarding the implementation of sub-projects may relate to sensitive issues that must be treated in secrecy, respecting the wishes of the plaintiffs. This may be the case for complaints relating to a fraud or corruption, abuse of power or human rights (working standards and conditions, sexual harassment, etc.).

Fundamental principles

The following fundamental principles will be observed in order to win the confidence of GM users.
The Grievance Mechanism must meet a set of requirements to comply with human rights and the OSS (PS1) Standard. It must be:

- Timely: the processing of a complaint must be carried out within a reasonable time, with a response time as short as possible (less than one month).
- Accessible: the mechanism must be easily accessible to all people affected by the project (close to the sub-project area, available every working day of the week, etc.).
- Culturally appropriate: the mechanism must consider local specificities (language spoken, literacy level, etc.).
- Access to the mechanism must not entail excessive expenses (e.g. for transport to the place where the complaint is filed).
- Anonymous: the identity of the plaintiffs must be preserved in all circumstances.
- Allowing for legal appeal: a person who has submitted a complaint to the company must be able to file a suit if necessary.

By complying with these requirements, the GM can ensure a prompt and effective response to stakeholder concerns and improve the environmental and social performance of the sub-projects.

Organization and responsibility

The Grievance Mechanism will be based on proven effective local practices, as confirmed by public consultations. People generally prefer conciliation rather than resorting to the courts to resolve conflicts. Thus, focal points and Grievance Committees (GCs) will be set up to receive and handle all grievances registered during the deployment of the sub-projects. Grievance registers will be opened with all affected stakeholders.
A bottom-up grievance management system will be deployed, meaning that a grievance that has not been resolved at a given level, will be forwarded to the next level. To ensure impartiality, neutrality and accessibility, the grievance committees will include mosque imams who have experience in managing farmer-breeder conflicts in the village. If necessary, the local committee will have to act under the supervision of the customary authority to avoid conflicts of competence and preserve the decision-making power of the settlement.
To ensure gender representation, a woman will be chosen from among the people designated by the community. The administration and technical services will be involved to identify the technical parameters, the socio-economic scope as well as all the effects of the activity. The formalization of the grievance committees will be carried out in collaboration with the territorial administration before the start of the activities to ensure effective implementation.
To disseminate information on the GM, several processes will be used depending on the intellectual level of the stakeholders. Meetings and focus groups will be given priority for local stakeholders and workers on the construction sites, considering the local languages of dissemination and the cultural specificities of each actor. Brochures on the GM procedures progress will also be developed and distributed to serve as a reference, if necessary. A register will be opened to record all grievances from these stakeholders. Other communication tools such as telephone, letter, message, email and direct communication may also be used by the communities.
Communication tools such as documents, brochures and leaflets will be used for intellectual stakeholders, such as technical services, administration, the municipality, the region and NGOs.

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The purpose is to share with all stakeholders, within the scope of action of the sub-projects and beyond, the approach, the bodies and methods of referral, the rules, the procedures for managing grievances and the means of appeal. This will ensure effective stakeholder buy-in, create a space for transparency and improve the implementation of the sub-projects.

Types of complaints and conflicts to be handled

Complaints may arise during the construction and operation phases in connection with environmental or social issues, for example:

- Sensitive complaints related to GBV/SEA/CV;
- Dust generated by certain construction activities, and damage to crops;
- Construction site disturbances (noise, dust, vibrations);
- Employment and social issues;
- Flow of migrants attracted by employment prospects and disturbance of local communities;
- Recruitment problems, allegations of discriminatory practices during labor recruitment;
- Allegations that many non-locals are employed instead of locals;
- Tensions between workers and locals;
- Risks to human health (waterborne diseases, vulnerable people, etc.);
- Request to benefit from the sub-projects.

Proposed mechanism

Access to information

The Grievance Mechanism (GM) will be widely disseminated to all stakeholders, particularly communities living in the intervention areas of the sub-projects at the level of the 2 poles of Ziyara and Dhaya. The aim is to inform about the importance and benefits of the GM, the objectives, the entities in charge and the available referral channels, as well as the processing times for each stage of the procedure. Appropriate communication channels will be used to disseminate this information.
To facilitate access to the GM, focal points, an e-mail platform and grievance registers, as well as a dedicated toll-free number will be set up at the national, regional (Wilaya) and local (Moughataa) levels. These mechanisms will allow potential plaintiffs to fully understand the GM and use it if necessary.
In addition, the PRAGOA PMU will produce an information leaflet on the grievance management procedure for wider dissemination. The goal is to make sure that all stakeholders understand the GM and know how to use it when needed.

General view

Any person affected or allegedly violated, while having the possibility of resorting to Mauritanian justice, may appeal to the out-of-court settlement mechanism, according to the procedures specified below. The chosen mechanism will include two stages of out-of-court settlement under the so-called joint settlement.
The overall procedure will include the following stages:
• Access to information to enable stakeholders to understand the out-of-court settlement mechanism and the procedures to be followed;
• Reception, registration and acknowledgement of receipt of the grievance to make sure that all grievances are considered and treated fairly;
• Categorization and examination of the grievance admissibility to determine whether they are admissible and whether they can be resolved by the out-of-court settlement mechanism;
• Assessment to determine the relevant facts and evidence necessary to resolve the grievance;
• Joint settlement to find an out-of-court solution between the stakeholders;
• The judicial management of the grievance as a last resort, if out-of-court settlement is not possible or if the stakeholders are not satisfied with the proposed solution.
The aim of this procedure is to make sure that all stakeholders have access to a fair and transparent out-of-court settlement mechanism to effectively and efficiently resolve all grievances.

IX. Conclusion

The project will bring significant environmental and social benefits to local populations. It is a response to the adaptation of vulnerable rural populations to the harmful effects of climate change in the areas of agriculture, livestock and water-efficient management. It can be explained by the following considerations: i) resilience of poor populations to the harmful effects of climate change; ii) contribution to food security; iii) contribution to poverty reduction; iv) contribution to the profitability of water pumping and control investments; and v) reduction of the energy bill linked to water pumping.
The objective of the project is to contribute to increasing agricultural and pastoral production in the agro-pastoral development pole of Ziyara and agricultural development pole of Dhaya, while improving the conditions and standard of living of the populations of the commune of Tawaz, more precisely in the villages of Ziyara and Dhaya. However, the sub-project may cause potential environmental and social damage that will be considered very early in the implementation process, in order to avoid irreversible effects that could compromise the achievement of the objectives. Indeed, this category B project complies with national legislation and is subject to an Environmental and Social Impact Notice. The negative impacts and potential risks identified in the Environmental and Social Impact Notice can be mitigated by implementing the appropriate measures proposed in the Environmental and Social Management Plan (ESMP). Improvement measures to strengthen the positive impacts expected from this sub-project as well as measures to monitor the actions' effectiveness, are also proposed by the ESMP.
The objectives of the sub-project can be achieved if the ESMP, contained in this Environmental and Social Impact Notice, is implemented as indicated.

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Annex 3: Gender Assessment and Action Plan

1. Introduction

The Adaptation Fund's Environmental and Social Policy (ESP) and Gender Policy require that all projects be screened against the 15 principles, including the gender principle. This includes the identification of all conditions affecting gender sensitivity and how the proposed project activities address gender inequalities. Therefore, in line with the Adaptation Fund procedure, a detailed gender assessment analysis should be conducted at the full proposal stage and a Gender Action Plan (GAAP) should be provided to ensure the effective participation of women and marginalized groups in the planned activities. To this end, this report presents a detailed gender assessment that includes the literature review and the results of the field-consultation process with the stakeholders, as well as the assessment of the gender sensitivity of the project activities. Based on this assessment, a Gender Action Plan (GAAP) specific to the relevant project activities has been developed.

1.1-OBJECTIVE

This section aims to finetune the initial gender assessment report produced during the preparation of the project concept note. The gender dimension will indeed have to be integrated into the various activities of the project, including the studies and analyses related to the baseline situations, the needs assessment, as well as the cost-effectiveness studies of the project activities. Gender integration should also be a prerequisite for the implementation of infrastructure development actions, at all levels - more generally at the level of communication, training and awareness-raising actions to be undertaken within the framework of the project and income-generating activities. The purpose of this assessment is to identify the main gender issues caused by climate variability and change, in particular by hazardous hydrometeorological events such as floods and droughts, as the main target impact of the project. This assessment includes an analysis of sex-disaggregated socio-economic and cultural data, in particular with regard to climate-dependent sectors. It establishes a gender baseline, describing gender differences, analyzing gender-differentiated impacts and risks, and detailing opportunities to proactively address gender gaps influenced by intersectional socio-political factors, aiming to promote the empowerment of women and girls as a key outcome of the project. The expected results will be: (i) an overview of the situation of gender inequality, gender analysis and (ii) its action plan with an assessment of the cost of implementation, a proposal for a monitoring-evaluation mechanism to measure progress and / or the impact of gender integration (from a climate change perspective).

1.2-METHODOLOGY

- The gender assessment paves the way for the development of the Gender Action Plan (GAAP). It combined a desk review, field missions and stakeholder consultations, and was carried out in parallel with the Environmental and Social Impact Assessment (ESIA) to ensure consistency across safeguards and gender requirements. The main steps were as follows:Literature review on the project and its sectors of activity was carried out prior to the field visits to the two relevant development poles of Ziyara and Dhaya. The literature review focused on: (i) reviewing relevant documents for the project to better understand the activities and their scope; (ii) reviewing relevant Mauritanian legislation on gender issues, the Adaptation Fund gender policy to which the project must comply and that of the OSS; (iii) reviewing other national, regional and global reports related to gender, in order to prepare a situational analysis of relevant indices; and (iv) reviewing other relevant documents related to the project preparation. The information collected at this stage was used to conduct the consultation process. The project concept note presented the geographical and hydro-climate context of the project area of intervention and gave a good idea of the natural resources exploited by the populations. It also provided a first overview of gender issues in the Wilaya of Adrar.
- Field missions and stakeholder consultations - the purpose of the field consultation was: (i) to understand and characterize the potential gender-related impacts of the project; (ii) to reach a good understanding of the project by all stakeholders and identify gender-related actions; (iii) to understand the expectations of the populations regarding the project; and (iv) to allow the project players to give their opinions and recommendations related to gender aspects.

The gender assessment was carried out jointly with the Environmental and Social Impact Assessment (ESIA), and involved meetings and discussions with several stakeholders, including: administrative and elected authorities of Adrar; the Municipality of Tawaz; representatives of the ministries of water and sanitation, environment, livestock, agriculture, social action/children and family; civil society Organizations. Field visits to communities that depend on natural resources (water, pastures) and subject to climate variability and change were also conducted.

Consultation process

Consultation is the process of gathering information or advice from stakeholders and taking their views into account when making decisions about the project and/or defining objectives and strategies. From December 11 to 23, 2023, consultations were conducted with stakeholders: government entities, the University of Nouakchott, the Institut Environnemental de Mauritanie/INEM, projects, communities, development partners and NGOs, to understand the challenges and needs, gather their opinions and comments on the project, as well as suggestions and recommendations that could improve the environmental and social performance of the project. The project activities have been designed and will be implemented with a particular focus on gender mainstreaming. The project activities have been discussed with the beneficiaries (including the most vulnerable groups - and considering the different needs and constraints of these groups). A broad consultation process on environmental and social issues, with specific treatment of gender aspects, was conducted in Ziyara (Eguemoune and Ziyara) and Dhaya (Tezegrez and Dhaya). These visits allowed for broad consultations with local populations, technical services, administrative and traditional authorities. In summary, during the field consultation process, 128 people were met (58% women) (see Consultation Report in Annex for detailed information). The list of stakeholders consulted and photos of the field missions are provided at the end of Annex 2.

2. Situation of gender inequality (women, men, youth and vulnerable groups) in the project areas

2.1- Reminder of the Mauritanian regulatory and programmatic framework

Mauritania has established several institutional mechanisms to contribute to gender equality, including:

a) Law No. 2013-011 of January 23, 2013 on the repression of the crimes of slavery and torture as crimes against humanity;
b) Organic Law No. 2012-034 of April 12, 2012 encouraging women's access to electoral terms and elective functions;
c) Law No. 2010-031 of July 20, 2010 amending Ordinance No. 2006-015 of July 12, 2006 and establishing the National Human Rights Commission of Mauritania as an independent constitutional body;
d) Law No. 2010-021 of February 10, 2010 criminalizing the unlawful trafficking of migrants;
e) Law No. 2007-042 of September 3, 2007 on measures to combat HIV and AIDS;
f) Law No. 2007-048 of September 3, 2007 criminalizing slavery and punishing slavery-like practices.

In October 2008, the Ministry for the Promotion of Women, Children and Family (MPWCF) was also replaced by the Ministry of Social Affairs, Children and Family (MSACF), by Decree No. 189-2008/PM establishing the attributions of the Minister and the organization of the central administration of his department. The MSACF has more missions namely: "ensuring the promotion of women and their full participation in the decision-making process and that of economic and social development, promoting the preservation of the family, the rights and well-being of the child in accordance with Islamic values and taking into account cultural realities and the requirements of modern life".

- Gender Monitoring Group (GMG): ad hoc group for advice and support on gender.
- National Strategy for Accelerated Growth and Shared Prosperity (NSAGSP): considers that the reduction of gender disparities as one of the most important imperatives for development. More specifically, the strategy provides for the reduction of inequalities and the promotion of gender, in particular through the empowerment of women, and the integration of groups with specific needs.
- National Strategy for Gender Institutionalization adopted in 2015.

2.2- Gender policy of the Adaptation Fund (AF)

The Fund's Gender Policy is based on human rights and is consistent with international instruments recognizing the centrality of women's rights as universal human rights, including the Universal Declaration of Human Rights (UDHR), the Convention on the Elimination of All Forms of Discrimination against Women, the ILO core conventions, the Millennium Development Goals (MDGs), the Sustainable Development Goals (SDGs) monitoring and the 2030 Agenda for Sustainable Development. It supports an equal right for women and girls, men and boys to access and benefit from the Fund's resources to enhance their adaptation capacity and reduce their vulnerability to the impacts of climate change, facilitating a shift to a gender-transformative approach.

Objectives

The Fund's gender policy aims to:

a) Ensure that the Fund achieves more effective, sustainable and equitable adaptation results and impacts through its internal and external processes that proactively analyse the dynamic linkages between strengthening gender equality, the empowerment of women and girls, adaptation needs and other social challenges, vulnerabilities and exclusions faced by women and girls, men and boys and their communities, and seek to address them in an intersectional manner, and that do not exacerbate, but rather correct, existing gender-based inequalities and eliminate existing disparities between men and women;
b) Provide women and men, regardless of their origin, age, race, ethnicity, religion, class, language, abilities, gender identity or other socio-cultural factors, with equal opportunities to participate in, contribute to and benefit from activities supported by the Fund to strengthen their power to act, increase their resilience and improve their adaptation capacity to the impacts of climate change and related challenges; recognize the need for targeted efforts to ensure the full and effective participation of women and to take into account the role of men in the implementation of required gender-responsive adaptation measures and the societal changes;
c) Address and mitigate the assessed potential risks of the projects/programs for women and men, girls and boys with respect to concrete adaptation measures financed by the Fund in accordance with the Fund's Environmental and Social Policy;
d) Contribute to addressing knowledge and data gaps on gender-related vulnerabilities and accelerating learning on effective and gender-equitable adaptation measures and strategies;
e) Meaningfully consider and integrate the experiences, capacities and, where appropriate, traditional, local and indigenous knowledge of affected women and girls, men and boys and their diverse communities throughout the Fund's processes, following a gender-responsive, participatory, inclusive and fully transparent approach to stakeholder engagement for effective adaptation measures.

Guiding Principles

The Fund's gender policy is based on a set of guiding principles, including:

- **Commitment**

The Gender Policy commits the Fund to work within its operational framework and with its partners to defend the fundamental rights of women and contribute to gender equality and the empowerment of women and girls in all its internal and external procedures, in accordance with international human rights instruments and applicable international and national law.

- **Completeness of scope and coverage**

The Fund applies its gender policy in all its adaptation activities, regardless of the size or focus of the project/program, whether implemented by multilateral, regional or national implementing entities accredited by the Fund.

2.3- OSS Gender Policy

This involves providing the OSS with a framework to guide its efforts to achieve equality between women and men, and to support the different roles played by women in the various programs, projects and development actions in its area of intervention. It supports and complements the OSS Environmental and Social Policy and also meets the investment policies and international

reporting and performance standards of the financial partners (such as the Green Climate Fund, the Adaptation Fund, the United Nations system, the African Development Bank, etc.).

Principles

The OSS Gender Policy is based on the following principles, which are increasingly recognized and accepted: The complementarity of the roles between men and women, in the development process and within the family, is an essential condition for solidarity and social peace, the foundations of development. Taking gender into account in the development process is not only a simple question of equity, but also a necessity. The harmonious and sustainable integration of the gender approach in the entire development process requires effective mobilization of the entire society and the international community.

Objectives

The overall purpose of the OSS Gender Policy is to promote participatory and equitable development of women and men, ensuring them equal and equitable access to resources and opportunities while respecting their fundamental rights.

At the external level

In its projects and activities, the OSS will work to align its action programs with the major priorities of its Gender policy. This approach is based on three aspects:

- Legal status and property rights.
- Economic empowerment.
- Capacity building and knowledge management.

2.4- IDENTIFICATION OF GENDER INEQUALITIES AND THEIR CAUSES IN MAURITANIA

The Mauritanian society is mainly governed by a patriarchal power, which determines the socio-cultural environment and the prevailing gender social standards. This common patriarchal dynamic creates a socio-cultural homogeneity between all communities, beyond cultural differences and traditions. As for the gender-based labor division, the predominant principle of the Mauritanian society is based on the idea of domestic tasks belonging primarily to women, regardless of social background and ethnicity. In addition, depending on the context, women may take part in a number of economic and productive activities outside the household, such as the marketing of agricultural, dairy or fishing products, the management of small ruminants and chicken coops, or field work.

In Mauritania, women have different influence and position within the household according to the community. However, due to the predominance of patriarchy in the Mauritanian socio-cultural environment, women's decision-making power and autonomy often remain limited within the household. Even if some women have some decision-making power within the family, their decision-making power does not extend to the community sphere.

In Mauritania, there is what we call feminization of poverty, which is more present in rural areas, due to the persistence of disadvantageous economic and socio-cultural conditions to women's empowerment. Indeed, a lower participation of women in the workforce compared to men, as well as women's limited access to land and loan, are all factors that hinder women's economic empowerment. Unlike women in some countries, Mauritanian women have relatively more freedom to access basic services, including health centers, without the prior authorization of their husband or a male family member. However, the lack of financial means linked to a situation of economic dependence on men, as well as the difficult geographical accessibility of health centers due to their distance or isolation, are the main obstacles restricting women's full access to health services, including in inland regions such as Adrar.

Speaking of local governance, the PRAGOA project area of intervention is marked by the low participation of women in traditional decision-making bodies. This marginalization may be partly linked to the low financial autonomy of women which limits their ability to make informed decisions in the same way as men.

2.5- PRELIMINARY GENDER ANALYSIS

The ambitions of the 2021-2025 action plan of the Mauritanian Strategy for Accelerated Growth and Shared Prosperity (SAGSP) indicate that Mauritania's strategic vision is that of a peaceful society fully committed to combating all forms of inequalities, including those related to gender.

In Mauritania, women face multiple obstacles to their economic and social inclusion. Due to deeply rooted social standards, Mauritanian girls and women face great inequalities within the household, in the labor market and within the institutions. These inequalities lead, among other things, to child marriage, early pregnancy and low levels of education for girls. This leads to higher fertility and therefore higher population growth. It is also believed that gender inequality within the household increases the risk of domestic violence. It also affects women's access to financial and economic opportunities. Women are half as likely as men to be in the labor force, and their work remains vulnerable and undervalued. Only one in seven women had a bank account, and only 2.4 percent of Mauritanian businesses were majority-owned by women. The share of women in the permanent private sector workforce amounts to 13% only.

The last two Permanent Household Living Conditions Surveys (PHLCS), conducted in 2014 and 2019-2020, show that the poverty prevalence rate has fallen from 30.9% to 28.2% (a decrease of 2.7 points). Poverty remains a rural problem, with an incidence of 41.2% in rural areas compared to 14.4% in urban areas. The contribution of rural areas to extreme poverty is greater than 80%, regardless of the poverty measure chosen.

In terms of economic integration, the level of unemployment seems to persist, with a rate of 12.2% in 2019 (ANSADE) compared to 11.8% in 2017 (Bilan Commun Pays 2020). In 2019, unemployment affected women more than men, with respective rates of

17.3% and 9.3%. The predominance of men, is also noted in the labor market, who are better professionally integrated. This predominance is mainly explained by social and cultural reasons.

In addition, youth unemployment also affects girls more than boys, regardless of their age: 25.6% (26.3% for 14-19-year-olds, 37.3% for 20-24-year-olds, etc.) compared to 14.5% (18.9% for 14-19-year-olds). This situation demonstrates the need to consider the gender and youth dimension within the framework of development strategies and the resulting projects in order to guarantee social equity and reduce inequalities.

In rural areas, women are the most vulnerable social group and continue to bear the heavy burden of the household in the absence of men who migrate in search of employment. According to the 2014 PHLCS data, women head more than 30% of households.

With a gender inequality index of 0.63215, Mauritania ranked 158th out of 162 countries in 2021. The significant gender inequalities that prevail in the country are also present in the project region and affect the resilience of communities through their social and economic involvement.

The impacts of climate variability and change, including recurrent droughts, contribute to the exacerbation of gender-based vulnerability in Mauritania, particularly in the Adrar region, where the project is located. The solutions proposed by this project will consolidate and operationalize a positive and transformative gender environment to reduce this differentiated vulnerability, particularly for women, girls and children. The implementation of the project activities is mainly based on gender integration.

2.6- UPDATE OF THE PRELIMINARY GENDER ANALYSIS AND CLIMATE CHANGE IN ADRAR

The Wilaya of Adrar, beneficiary of the PRAGOA project, is located in the Northern part of Mauritania and extends over a 221,544 km^2 area, i.e. 21.49% of the total area of Mauritania (1,030,700 km^2). It is bordered to the North by the Wilaya of Tiris Zemmour, to the West by the respective Wilayas of Dakhlet Nouadhibou and Inchiri, to the East by the Wilaya of Tagant, and to the South and South-west by the Wilayas of Inchiri and Trarza.

According to ANSADE projections, the population of the Wilaya of Adrar amounted to 60,843 inhabitants in 2022. That is to say 0.3 inhabitants per km^2, ranking Adrar second among the least populated Wilayas behind Tiris Zemmour and before Inchiri.

Adrar includes the most important landform of the country, with the presence of tabular mountain ranges with peaks reaching up to 800m (Plateaux de l'Adrar) and majestic sand dunes (El Mejabat elkhoubra, Erg Ouarâne).

The Wilaya of Adrar is subdivided into four Moughataas (Atar, Aoujeft, Chinguetti and Ouadane), this Wilaya has two districts (Choumme - N'Terguent) and eleven communes.

Like all the Wilayas of Mauritania, Adrar is affected by difficult climate conditions, which means that the conditions of the entire population remain more or less unbalanced, particularly those of women and girls. This situation places women as the segment of the population most exposed to poverty. Indeed, according to the 2008 ERAM results, the number of illiterate people amounted to nearly 677,527 people over the age of 15, three-quarters of whom (75.1%) live in rural areas, i.e. 508,796 people. With regard to gender, it should be noted that nearly two-thirds (65.6%) of illiterate people are women.

As for gender equity and equality, the action to be undertaken aims to address the needs, rights and contributions of women within the framework of an integrated approach. The strategic objective is to achieve the empowerment and advancement of women and girls. The National Strategy for the Institutionalization of Gender (NSIG 2015-2025) aims to ensure the success of the process of integrating gender issues in all development sectors with a view to promoting gender equality and equity and ensuring the advancement of women. The NSIG is the appropriate framework for interventions in the area of gender equity and equality. It is part of the commitment to the promotion and defense of human rights and the fight against all forms of discrimination. Its basic principle is that the objective of equality of women and men in rights and duties is both a condition and a means for sustainable human development. This strategy is in line with the recommendations of the various world summits, in particular the Beijing Platform for Action: human, sustainable and equitable development based on the principles of gender equity and equality.

The strategy is based on two main types of measures:

- The systematic gender mainstreaming in policies, laws, programs, budgets, structures and institutional cultures;
- The implementation of specific measures and positive actions intended for women (or men) as a catch-up exercise to correct distortions that generate said gaps.

Discussions with some stakeholders have shown that the implementation of this strategy still poses a problem given the socio-cultural context of the country.

In terms of legal discrimination, effectiveness of laws and the fight against gender-based violence, this will include the implementation, on the one hand, of the personal status code and criminal legislation by taking into account women's access to their rights and to justice and, on the other hand, of the texts on legal and jurisdictional aid allowing access to justice and rights for poor women, through the enactment of the legal status of interpreters and their appointment to family and criminal courts. Awareness-raising and training of justice professionals on the fundamental human rights of women and the economic and social constraints they face, continuing efforts to combat FGM, respecting the international commitments of the Mauritanian State - a State party to CEDAW, international covenants and SDGs, promoting the legal framework to combat gender-based discrimination and violence and developing a national strategy to combat gender-based violence are all areas in which the Government's action will be continued and strengthened.

The fight against gender-based discrimination and the dissemination of equality will be promoted. The fight against gender stereotypes is a condition for sustaining and incorporating recent achievements and reforms into the real lives of women, men and society as a whole.

Link between gender and climate change

Gender and climate change are intertwined. Climate change differently affects regions, generations, age groups and genders. In particular, climate change differently affects women and men. Women and girls are particularly vulnerable due to socio-cultural standards, power relations, their lower socio-economic status in society and unequal access to social, economic and physical resources. Specifically, differences in access to information, control over resources, workloads and the ability to innovate to respond to climate challenges determine, for example, the ability of an individual, household or community to adapt to climate change. Furthermore, differences in the roles of women and men translate into different knowledge, priorities and concerns about climate change.

Concept of resilience

There are several definitions of the concept of resilience, including one that defines it as: "the capacity of households, families, communities and vulnerable systems to cope with uncertainty and the risk of shock, to resist shock, to respond effectively, to recover and to adapt in a sustainable manner". Two main dimensions of the concept of resilience arise from this definition:

- The intrinsic strength of an entity (a natural person, a household, a community or a larger structure) to better withstand crises and shocks, and the capacity of this entity to rise quickly after the impact. Therefore, strengthening resilience and reducing vulnerability requires either increasing the strength of the entity or reducing the intensity of the impact, or both.
- Furthermore, it is estimated that women and girls are disproportionately affected by the effects of climate change due to prevailing gender inequalities. However, if climate change adaptation involves both resilience and vulnerability reduction, and if we consider the importance of gender equality in climate change adaptation, gender equality will need to encompass strengthening the resilience of women and men and reducing their vulnerability to climate change. Furthermore, women's (and men's) empowerment in climate resilience stems from the ability to access information, act (make choices based on information), and participate in decision-making at the household and community levels.

2.7 ANALYSIS OF DIFFERENCES IN ROLES BETWEEN MEN AND WOMEN IN THE PROJECT AREAS OF INTERVENTION

Gender and agriculture

Climate change and its associated impacts are not equally distributed in the agricultural sector, as those with the least capacity to cope and adapt are often the most vulnerable. Climate change thus exacerbates gender inequalities and particularly increases the vulnerability of women and girls, who often disproportionately depend on small-scale livelihoods based on natural resources, which require favorable climate conditions. In at least 90% of households, men are responsible for land preparation compared to 10% for women. For harvest and post-harvest activities, women are more involved with at least 40% depending on the crop. The impacts of climate change are reflected in rainfall disruptions (delays in start-up, shortening, etc.), crop loss linked to climate-related disasters such as drought and floods. In some regions, women have to deal with the increasing scarcity of water resources that prevent the development of off-season crops. It goes the same way for the acceleration and intensification of salinization and acidification of the soils, particularly rice fields, where women remain the most affected in a context of profound inequalities in access to land and other resources needed to improve their productivity (agricultural loan, seeds, inputs, agricultural equipment, labor, etc.). Beyond the effects of climate change on the production chain, mainly controlled by men, it is important to specify that the processing of agricultural products, mainly held by women, also remains affected by climate change. Indeed, the decline in agricultural yield and the loss of product quality are undoubtedly accompanied by a decline in women's income. The vulnerability of the Mauritanian agricultural sector to climate change combined with the precariousness of agricultural equipment, which is mainly owned and controlled by men, is also an obstacle to the full participation of women in the development of the agricultural sector and consequently a threat to food security.

Gender and livestock

The livestock sector remains dominated by men in Mauritania, although it is important to note the strong involvement of women, who play a predominant role in the breeding of small ruminants, poultry and dairy animals. Since ownership has nothing to do with the management, 12% of women manage livestock under their responsibility, compared to 26% of men. In 90% of households, livestock is kept and cared for by men, while this is observed among women in 27% of cases. This disparity in livestock management can be explained by the relatively significant involvement of women in activities ranging from milking to processing. From milking to processing, women have a more pronounced involvement and sometimes even a majority presence. For example, 61% of farms entrust milk processing to women. The use of paid external women is as rare in livestock farming as in agriculture. Women are particularly involved in feeding animals and monitoring animal health and particularly work on the marketing and processing of livestock products, while men are involved in the livestock management, maintenance and marketing. Like activities in rural areas, the livestock sector is strongly impacted by climate change. Indeed, it causes a reduction in the quality and quantity of milk produced and its by-products (butter), due to livestock being very affected by lack of food. Climate change thus leads to a high mobility of livestock populations, the effects of which are difficult for women to experience, because transhumance limits the collection, production and processing of milk. This situation increases the vulnerability of women who are already forced to deal with limited access to production factors (access to capital for the purchase of breeding stock, the construction of sheepfolds, access to land, water for watering and fodder production, etc.).

Determining factors of gender inequalities in a climate change context

Sociocultural factors determining gender relations to face climate change

Several socio-cultural factors underlie gender inequalities in the climate context. In many communities, traditional gender standards are still having a significant influence on people's daily lives. Women are expected to take on the majority of domestic duties and childcare, resulting in time constraints for them compared to men. This often makes women disproportionate users of natural resources such as water, firewood and forest products. Other factors such as age, class, disability, ethnicity, religion and physical appearance also combine with gender to exacerbate women's vulnerability to extreme weather conditions.

As previously announced, patriarchal social organization, combined with the precepts of Islam, often leads to many men holding decision-making power and positions of authority at different levels of society. However, the country is making progress in improving women's participation in decision-making in recent years through the adoption of gender-balanced regulations.

Social standards also explain gender inequalities in women's access to and control over resources such as land, water, forest and fisheries products, etc., which further limits women's adaptation capacity. Yet, climate change adaptation efforts will be neither effective nor sustainable if they do not take gender into account (UNFCCC, 2015). Because through their roles in agriculture, environmental management, health, household management, etc., women must contribute to and benefit from climate adaptation and resilience activities.

Constraints to integrating gender and climate change into planning documents

- **Institutional and technical constraints.** The situational analysis of the institutional and technical constraints of the fight against climate change in Mauritania reveals a lack of synergy between the various institutions responsible for climate change management and a weak integration of gender in their various programmatic interventions. It appears that the various institutions do not systematically undertake a gender-based analysis and that they do not always systematically consider gender through better cooperation and closer collaboration between the structures responsible for reducing climate change and gender-related issues. Furthermore, the existence of gender focal points in the various ministries contrasts with the lack of resources for the implementation of their various specific actions.
- **Regulatory constraints.** The specific consideration of gender and climate issues in the Mauritanian regulatory and legislative corpus constitutes a challenge to be met for a better adoption of this theme by all stakeholders in the development process. The country has certainly an important regulatory framework in terms of the fight against climate change and the gender promotion, but it should be noted that the regulatory and legislative mechanisms do not seriously integrate the gender and climate bipolarity, especially since they suffer from a lack of application. Indeed, the laws and policies aimed at combating climate change do not make the necessary bridges with government policies and strategies in terms of gender equality.
- **Financial constraints.** The implementation of climate and gender-sensitive policies is crucial to address the challenges and issues of adaptation and mitigation of the climate change effects. However, it appears that climate financing integrating gender remains insufficient. There is therefore little support for financial mechanisms that should meet the specific needs of vulnerable groups with a view to sustainability.

SWOT analysis of gender and climate change

The analysis of strengths, weaknesses, opportunities and threats in the fight against gender-sensitive climate change in Mauritania is presented in the table below:

Table 66 : SWOT analysis of gender and climate change

Strengths	Weaknesses
▪ Existence of a positive national legislative and institutional framework for th fight against climate change and the promotion of gender ▪ Existence of the necessary information, seasonal forecasts and weath forecasts in most of the areas	▪ Weak gender integration in legislative and policy documents and planning combat climate change ▪ Migration of populations to regions less affected by climate change f agricultural, fishing, livestock, and informal activities, etc. ▪ Increase in women's domestic workload ▪ Decrease in women's access to collecting food, fodder, wood and medicin plants ▪ Disparities in women's access to climate information ▪ Decrease in women's capacity to adapt to climate change leading to a drop agricultural yield
▪ **Opportunities**	▪ **Threats**
▪ Several international provisions and commitments for the fight again climate change and gender promotion	▪ Warming and increase in extreme weather events (rainfall, heat waves ar prolonged droughts) ▪ Worsening soil erosion ▪ Climate disruption

2.8- ANALYSIS OF THE BARRIERS, GAPS AND OBSTACLES TO REMOVE, TO REDUCE OR EVEN CUT WITH THE INEQUALITIES IDENTIFIED IN THE CONTEXT OF THE PROJECT IMPLEMENTATION

Despite the significant progress made in the political participation of women and the strong political commitment of the Mauritanian government, proven by the adoption of several strategies and texts for the promotion of women and gender equity, Mauritanian women still encounter obstacles. This vulnerability is sustained by the persistence of retrograde socio-cultural factors and especially by the inadequate enforcement and popularization of national and international legal texts, poverty resulting from poor access to production factors (land and loan), illiteracy especially in rural areas (42.8% men and 49.9% women), stereotypes and the weakness of technical and financial capacity building programs as well as the lack of female political models. Recently, the current government has counted 25 ministers including 5 women compared to 7 in the previous

team.

The gender-based labor division. In terms of gender-based labor division, the predominant principle of the Mauritanian society is based on the idea of domestic tasks belonging primarily to women, regardless of social background. Within the household, cleaning, food, children care and water and firewood collecting are primarily the responsibility of women and girls. However, there are some ethnic and regional differences. According to the 2019 PHLCS data, the working-age population in the Wilaya of Adrar was 44,618 people, i.e. 2% of the total working-age population in Mauritania, more than half (52.9%) live in rural areas and the majority are women. The rate of paid employment in the non-agricultural sector is 25.9%, i.e. 8.8 points below the national average (34.7%), while informal employment represents 91.3% of total employment, i.e. 2.1 points above the national average (89.2%), and is slightly more common among women (96.8%) than among men (91.3%). In the project area of intervention, water collection is a task that falls mainly to men aged 15 or over (54%), then to women aged 15 or over (34%). With regard to work outside the household, depending on the context, women may take part in number of economic and productive activities, such as the marketing of dairy products, the management of small ruminants and chicken coops, or field work. The accumulation of these tasks with daily domestic work creates a workload for women that is significantly heavier than men. This situation is aggravated in the project area by the seasonal or long-term male rural exodus, which is common in the project area of intervention. This compels women to have additional responsibilities which traditionally fall to men.

Decision making within the household. In Mauritania, the influence and position of women within the household vary according to ethnic communities. However, due to the predominance of patriarchy in the Mauritanian socio-cultural environment, women's decision-making power and autonomy often remain limited within the household. "The young girl from birth until death, depends on her parents, then it's her husband. If her husband is not there she returns to the family, and it's the big brother. She is never independent, even if she gets married, ..." says a young participant in the focus group in the project area. Even if some women have a certain decision-making power within the family, this does not extend to the community sphere. The inequality of power between men and women is reinforced by the applicable legislation, because Article 56 of the Personal Status Code gives the man the role of head of household, the woman becomes the assistant. The sociocultural factors behind the secondary positioning of women's roles within the household and society are complex and may differ across ethnic groups. In other cases, the dominant position of men is justified as a protection mechanism for women. The woman will then have her say, but the final decisions are made by the man. However, there are nuances in the Mauritanian society, due to the patriarchal heritage in Moorish society, Moorish women have more influence and autonomy in managing the household, compared to women from other communities.

Similarly, a greater involvement of women in decision-making within the household is observed among educated couples of the younger generations. In addition, seniority influences the social position of women. Indeed, older Mauritanian women are respected and listened to within the household, and are involved in resolving marital conflicts and the moral education of younger women. The respect that is given to them is linked to their experience and wisdom acquired over the years.

The limited involvement of women in decision-making within the household does not help develop the community resilience, because one of its important consequences is a difficult adaptation of women to shock situations, due to their poor autonomy. This situation is all the more worrying for women who find themselves head of household following different circumstances, such as the departure of the husband in exodus.

Control of production assets. In Mauritania, there is what we call feminization of poverty, which is more present in rural areas, due to the persistence of disadvantageous economic and socio-cultural conditions to women's empowerment.

Labor/workforce. First, there is an imbalance between men and women in terms of participation in the workforce. Indeed, according to the results of the latest Permanent Household Living Conditions Survey in Mauritania (PHLCS 2019-20), 63.8% of men compared to only 30.8% of women participate in the country's workforce. Various factors are root causes of this imbalance, in particular, childcare responsibilities that do not allow many women to cope between work and family responsibilities, but also the existence of a social standard according to which married women must obtain their husband's prior consent to work. This standard is formalized in the Personal Status Code (PSC), Article 57 of which states that "a woman may only exercise a profession outside the marital home subject to the requirements of Sharia law". Nationally, active women in the labor market are mainly present in the informal sector, more particularly in commercial activities (67%) as well as in agri-food processing activities and sewing activities (76%). In the project region, women are quite active in commercial activities. In rural areas, agriculture is the main economic activity for women. Indeed, more than 90% of active women in rural areas work in the agricultural sector, more particularly in market gardening. They are also present in other agricultural areas such as livestock breeding and forestry activities, but with 90% women, market gardening remains the most feminized area. For domestic workers, in most cases young girls from poor families; the Mauritanian government had put in place laws in their favor, namely: law n°017/2004 on the labor code, law n°67039 establishing a social security system, as well as the ministerial decree of March 2013. This 2013 decree on the protection of domestic workers provided for the main provisions, namely: any employee working in the household more than 20 hours per week must be over 14 years old and have the right to a work permit, a salary higher than the minimum wage, a working time not exceeding 260 hours per month. Weekly rest is 24 hours per week. And social security coverage is mandatory. However, compliance with and application of this decree as well as other laws in force is a major challenge for the Mauritanian government.

Access to land. Although Mauritanian law recognizes equal property rights between men and women, including land ownership, it is generally men who inherit land, regardless of the community. Indeed, the inheritance rules applied are based on a mixture of Islamic law, according to which women receive only half of the man's share, and traditional customs, which generally exclude women from access to land, in a logic of preserving property within the family.

In terms of management and decision-making on the property, including land, primacy is given to men, which contributes to marginalizing women in the management of property, including property belonging to them (Article 58 of the Personal Status Code). With regard to land purchase, women's ability to access land ownership depends on their family status, family situation and level of education. Thus, in rural areas, women organize themselves into women's cooperatives, which allow them to access

small plots of land dedicated to this type of structure, particularly in the field of market gardening. Thus, women in Mauritania represent only 7.9% of landowners, but since agriculture and livestock farming are important sources of income, this inequality contributes to excluding women from economic opportunities. However, according to the World Bank, Mauritania could increase its economic wealth by 19% if women had more opportunities to fully participate in economic activity.

Access to loan. In Mauritania, women's access to loan remains low due to various obstacles, which include the limitation of financial services, the absence of bank guarantees, their limited decision-making capacity due to gender standards, and illiteracy in rural areas.

All these challenges of Mauritanian women's access to work, land and loan are compounded by a lack of legal protection of women's rights. Indeed, Mauritania has expressed reservations on Articles 13 and 16 of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), on the grounds that they are incompatible with Sharia law, the sole source of law in Mauritania. Article 13 and Article 16 of CEDAW commit States parties to take appropriate measures to eliminate discrimination against women with regard to the right to bank loans and financial credits, personal rights relating to the choice of a profession or occupation, as well as the rights to own, acquire, and manage property.

Differences in access to and control over the resources between men and women significantly affect the resilience of communities because they hinder access to and maintenance of the livelihoods necessary for the survival and development of communities. This is particularly seen in the feminization of poverty, which has increased in recent decades in Mauritania, including in the project area of intervention, following the increase in the phenomenon of male rural exodus to large cities.

Access to public spaces, resources and services. Mauritanian women have more freedom to access basic services, including health centers, without prior authorization from their husband or a male family member. However, there may be cases where women's access to public spaces requires men's authorization, particularly to work. In addition, the lack of financial means linked to a situation of economic dependence on men, as well as the difficult geographical accessibility of health centers due to their remoteness or isolation, are the main obstacles hindering women's full access to health services.

Because full access for all to basic social services is an essential condition for the development of resilient communities, these geographical and financial obstacles experienced by women and the rest of the communities constitute an obstacle to their survival, development and transformation.

Claiming rights and meaningful participation in public decision-making. Traditional Mauritanian society is made of different social groups organized according to a dynamic of specialization, and within which the rights, duties, and level of participation of men and women in social life are different. Most often, men head the traditional chiefdoms, but it can happen that some chiefs, who are generally the most educated and have pretty flexible attitude towards traditions, involve women in consultations and discussions. The current Mauritanian socio-cultural context is not conducive to women speaking in public, especially in front of men or older people, which constitutes an obstacle to women's participation in public decision-making.

Despite this low participation of women in community decision-making bodies, there are women leaders throughout Mauritania, including in the project area of intervention. These women leaders have different profiles: on the one hand, there are active women in politics elected by the population, and on the other hand, there are women leaders at the community level, who are made in particular of female activists from the civil society, women head of SMEs, or women defending the causes of their communities. The exclusion of women from community decision-making processes is an obstacle to the development and resilience of the communities, because it implies a failure to consider the specific needs and opinions of women in community policies and actions, thus reinforcing the situation of vulnerability of women and girls.

Gender-based violence (GBV) and corrective justice. In Mauritania, gender-based violence (GBV) takes different forms: it can be physical, psychological, cultural, sexual and economic. As in the rest of the country, in the Adrar region where the project operates, female genital mutilation and early marriage are among the most common GBV. In order to address the existing GBV challenges in the country, the Mauritanian State adopted a national action plan on GBV (2014-2018) and a strategy to combat it in 2020, which constitutes an important step forward for the country. However, despite the efforts made by the State in the fight against GBV, the existence of gaps in national legislation does not help provide the victims with the necessary protection.

Access to justice

Mauritania has adopted a National Strategy for Access to Justice (2015-2020) based on four axes: (i) Access to legal assistance; (ii) Access to legal aid; (iii) Strengthening and expanding the network of services; and (iv) Organization and management of the justice access system. However, women's access to justice is limited by mentality problems and their limited financial resources. They are unaware of their rights or are afraid to take their problems to court. The weight of the family is strong, especially in the case of a same-family marriage (relatives). In addition to the limitation of several legal texts in terms of women's rights promotion and protection, there are factors that make the effectiveness of existing ones more difficult:

- The high level of illiteracy among women, and the lack of knowledge of their fundamental rights and the legal texts relating thereto;
- The multiplicity of sources of law which weakens the authority of state law;
- The poverty of the sanctions system, as well as its weak enforcement; and
- The absence of implementing texts for international conventions and certain national laws.

2.9- EXPECTATIONS EXPRESSED DURING THE CONSULTATIONS ON THE GAAP BY WOMEN, YOUNG PEOPLE AND PEOPLE LIVING WITH DISABILITIES IN THE DEVELOPMENT POLES OF ZIYARA AND DHAYA

Women's expectations

During the consultations, women said that the proposed project will contribute to improving access to factors of production, strengthening integrated management of natural resources (water, pastures, crop areas) and increasing their income with the overall aim of supporting their economic empowerment and resilience and that of their families to shocks and situations related to climate deterioration and resource scarcity. Women are heavily impacted by the misery caused by droughts and illiteracy which complicates their lives to the extent that some of them (during the absence of men to herd or who look for work) are solely

responsible for the household and the well-being of the family, health, education and schooling of their children. To improve their income, they need to develop paying activities as workers in men's fields during harvests and sometimes even use children to help them in productive tasks instead of attending school. Access to drinking water is very difficult for women, a tiring and time-consuming activity because it is very far away and there are no boreholes available. Women are asking that the project allow them to have access to a diversification of activities throughout the year; because they run their households and after the grazing or harvest period (4 months per year) they become poorer and economically weaker and in desperate need for income. Women also expect the project to improve their livelihoods by providing them with technical and financial support for income-generating activities linked to their resilience to climate change. Climate change makes their lives difficult because of the difficult access to loan, both in rural and urban areas, to finance their own means of production. For this reason, women and girls remain the main agricultural workforce on the land and those who look for drinking water which is increasingly rare. Malnutrition affects many children and women, especially pregnant women. Women expect the project to contribute to access to drinking water. Indeed, during the increasingly long dry season, women spend more than eight hours a day looking for water. This is why it is the duty of children to bring water home and this affects the schooling of girls and boys. They are mostly illiterate and have difficulty accessing information in the same way as men who have difficulty integrating them into decision-making spheres. They expect from the project to build their organizational capacities, support them and assist them technically and financially through income-generating activities so that they can benefit from new skills to improve their agricultural practices in order to combat food and nutritional insecurity and hope that the project will provide them with a space for capacity building, training and awareness-raising on all issues of public and common interest.

Expectations of young people

The high illiteracy rate of the adult population, poverty and recurring crisis situations are major constraints to the mobilization of the resources needed to ensure access to quality education for all children. To this end, girls and children living in rural areas are among the most exposed to various risks. Girls and young people expect the project to strengthen their skills and help them get trained in new skills for small crafts or certain businesses linked to their resilience to climate change and poverty in order to improve their income and facilitate their self-esteem and the restoration of their social image. Young people suggest that the project develop income-generating activities that focus on agroforestry or livestock/agriculture integration. They expect the project to support awareness campaigns and training in agrometeorology to adapt to drought for innovative agriculture.

They want the project to develop activities adapted to their real needs, such as empowerment in agricultural activities. And expect the project to rely on them and train them in new information-based skills to improve data sharing in inaccessible areas.

Expectations of vulnerable people living with disabilities

In several households, there are women, girls, young people and elderly people living with disabilities who suffer from droughts and food insecurity. Many of them depend on their families and do not have access to the social protection system. These people expect the project to provide specific treatment to improve their situation, through income-generating activities that are compatible with them so that they can adapt to climate change.

3. Action plan with an assessment of the implementation cost and monitoring-and evaluation mechanisms

3.1- Development of an action plan with the implementation costs to reduce gender inequalities and consider vulnerable groups in the project implementation

Based on the gender assessment findings, the project will implement a targeted Gender Action Plan (GAAP) with an incremental budget of USD 70,000. The GAAP will be mainstreamed across all components and embedded in annual workplans, procurement packages and reporting requirements.

The GAAP focuses on concrete measures to reduce gender disparities and address the needs of vulnerable groups (including women, youth and women-headed households), while ensuring safe and meaningful participation throughout implementation (see Table 38)

Table 67 : Gender Action Plan Matrix (GAAP) – PRAGOA (Mauritania)

Output/Activity	Action	AF GP Principle (P.1–P.7)	GAAP Actions	Indicators	Baseline	Target	Responsible entity(ies) Lead & Support	Budget (USD)
PROJECT-WIDE GENDER MEASURES (applies across all components)								
Project implementation arrangements	Institutionalize gender requirements across governance, procurement and delivery.	**P.1:** Promote gender equality and women's empowerment.	• Designate a Gender & Social Inclusion (GSI) Focal Point in the PMU and integrate gender/SEA-SH clauses in key ToR and contracts. • Train PMU staff, implementing partner and community facilitators on AF Gender Principles, inclusive facilitation and do no harm.	• GSI Focal Point designated and operational (Yes/No) • Percentage of relevant ToR/contract templates integrating gender and SEA/SH requirements • Number of staff/partners trained (women/men)	Not in place at baseline.	• GSI Focal Point operational by inception • 100% relevant ToR/procurements/contracts include gender and SEA/SH requirements • 100% relevant reporting includes SADD data and gender analysis; ≥40% women among trainees	Lead: NEE (SOS Oasis Mauritania); PMU (Project Coordinator; GSI Focal Point). Support: Local Coordination / Project Zone Focal Points; NSC (strategic oversight); contracted service providers.	**6,000**
Gender-responsive baseline and outcome monitoring	Establish a gender responsive baseline and outcome tracking system to guide adaptive implementation.	**P.1:** Promote gender equality and women's empowerment.	• Conduct a gender sensitive baseline (access, time use, decision-making, income control, safety) and update the beneficiary registry (sex-, age- and disability-disaggregated). • Integrate gender indicators into the MEL plan and conduct mid-term and end-line outcome tracking (survey plus sex separate FGDs where relevant).	• Baseline completed (Yes/No) • Percentage of relevant indicators reported with sex-, age- and disability-disaggregated data • Mid-term and end-line gender outcome assessments completed (Yes/No)	Baseline to be established during inception.	• Baseline completed by Month 6 • 100% relevant indicators reported with disaggregated data • Mid-term and end-line outcome tracking completed	-Lead: PMU (M&E Specialist, GSI Focal Point). Support: Baseline consultant; National Statistics Office; sectoral technical services; Local Coordination/Project Zone Focal Points; community committees (women/youth reps)	**9,000**
Gender Action Plan monitoring, reporting and learning	Track implementation quality, document results and mainstream learning on women's resilience and empowerment.	**P.1:** Promote gender equality and women's empowerment.	• Produce quarterly gender monitoring updates and integrate GAAP progress into semi-annual and annual reports; hold feedback sessions with women and men. • Document and disseminate lessons (one gender learning note) and implement corrective actions through adaptive management.	• Number of gender monitoring updates produced • Gender learning note produced (Yes/No) • Number of corrective actions implemented based on feedback/monitoring	Not systematically implemented at baseline.	• GAAP monitoring integrated from Year 1 (quarterly updates) • At least 2 review sessions/year with documented actions • 1 learning product produced (mid-term or end-line)	Lead: PMU–GSI Focal Point. Support: PMU–M&E Officer; Implementing Partner; communication/training providers.	**10,000**

Gender-sensitive GRM and SEA/SH mitigation	Ensure safe, confidential access to grievances and prevent/mitigate SEA/SH risks throughout implementation.	**P.7:** Ensure access to effective grievance mechanisms and protection from SEA/SH.	• Operationalize a confidential GRM with multiple entry points and women friendly channels, including at least one female focal point per community. • Establish SEA/SH referral pathways and deliver awareness sessions for communities and workers/contractors.	• GRM operational (Yes/No) • Percentage of grievances resolved within agreed timelines (sex-disaggregated where applicable) • Number of SEA/SH awareness sessions delivered (women/men)	GRM to be established at inception.	• GRM operational by Month 3 • 100% grievances acknowledged and processed within agreed timelines • ≥40% women participate in awareness sessions	Lead: PMU (Safeguards/GRM Officer). Support: PMU–GSI Focal Point; NEE; community facilitators/women leaders; local authorities; health & social services (SEA/SH referrals	**5,000**
COMPONENT 1: IMPROVING ACCESS TO AND MANAGEMENT OF WATER RESOURCES FOR LOCAL COMMUNITIES								
Output 1.1.1: Integrated Water Resources Management Plans developed or updated (**Activities 1.1.1.1–1.1.1.4:** WRMP; IWRM best-practice training; establishment of LWMCs; LWMC governance/O&M training)	Ensure women's water uses, constraints and priorities shape WRMP decisions and inclusive local water governance.	**P.2**: Ensure women's full and effective participation in all stages of the project cycle.	• Integrate women's domestic, productive and livestock water uses into WRMP preparation and IWRM trainings through targeted consultations and time-burden analysis. • Establish and strengthen LWMCs with at least 50% women members and 30% women leaders; deliver governance and O&M modules adapted to women's availability.	• Number of women participating in WRMP consultations/IWRM trainings • Number of Local Water Management Committees (LWMCs) that actively include women established • WRMP validated with gender responsive measures (Yes/No)	To be established during inception.	• 80 women (40% of total beneficiaries) in consultations, validation and trainings. • 40 LWMCs established and operate autonomously (*50% women led)* • WRMP validated and includes gender-responsive measures • 100% LWMCs established meet representation threshold	**Lead:** PMU–Water Resources Specialist. **Support**: PMU–GSI; WRMP consultant; water/hydraulic services; local authorities; LWMCs/user groups; women/youth groups.	**7,000**
Output 1.1.2: Improved and rational use of available water through implementation of water resources management infrastructures (**Activities 1.1.2.1–1.1.2.4:** bunds/runoff control; irrigation & drainage; flood-recession cropping; water demand/safe-use awareness)	Promote equitable access and women's voice in the design, operation and uptake of water management infrastructures and practices.	**P.3:** Ensure women's equal access to and control over resources.	• Apply gender responsive siting and design criteria for bunds, irrigation/drainage and related works (access, safety, usability) and include women in supervision/acceptance. • Deliver women-accessible training and awareness on flood-recession cropping, safe water use and demand management; monitor workload and time impacts.	• Percentage of infrastructures applying gender responsive criteria (siting/design/operating rules) • Percentage of women among trainees/participants in awareness and skills sessions • Percentage of women reporting improved access or reduced time burden	To be established during inception.	• ≥40% women in committees and among trainees • Improved skills documented through pre/post assessments • Regular awareness sessions implemented with ≥40% women participation	**Lead:** PMU (Water Resources Specialist). **Support:** PMU–GSI Focal Point; Implementing Partner(s); contractors; agriculture & water extension services; LWMCs/farmer groups; PMU–Communications Officer.	**5,000**
Output 1.2.1: Water resources mobilization infrastructures created or rehabilitated (**Activities 1.2.1.1–1.2.1.3:** assessment & action plan; rehabilitation/creation;	Ensure water mobilization infrastructures and operating rules respond to women's needs,	**P.4:** Ensure women benefit equally from project outcomes.	• Integrate women's priorities into the assessment/action plan and into design and operating rules for water points and storage (hours, fees, maintenance). • Strengthen community	• Operating rules include gender responsive measures (Yes/No) • Percentage of women in infrastructure	To be established during inception.	• 100% new/rehabilitated infrastructures apply gender criteria • Measurable reduction in time burden where applicable	**Lead:** PMU (Water Resources Specialist). **Support:** PMU–GSI Focal Point; technical design office; contractors;	**4,000**

protected drinking water sources and storage)	safety and affordability.		management arrangements with meaningful women's participation and monitor women's reported access and time savings.	management bodies and leadership roles • Average time spent collecting water (women/girls)		• Increased satisfaction reported by women users	water/hydraulic services; local authorities; community committees (incl. women); LWMCs (O&M).	
COMPONENT 2: IMPROVING THE RESILIENCE OF ECOSYSTEMS AND LIVELIHOODS TO CLIMATE CHANGE AND VARIABILITY								
Output 2.1.1: Adaptive practices adopted for rehabilitation and preservation of ecosystems (**Activities 2.1.1.1–2.1.1.4:** community adaptation action plans; CAIC centre; demonstration plots; Producer Clubs with women's participation)	Ensure women and vulnerable groups participate and benefit equitably from SLM planning, services and adoption pathways.	**P.2:** Ensure women's full and effective participation in all stages of the project cycle.	• Conduct targeted outreach and women friendly training under adaptation action plans, CAIC services, demonstration plots and Producer Clubs. • Apply transparent benefit sharing and participation targets (at least 40% women), including priority support to women-headed households.	• Percentage of women participating in action planning, CAIC services, demo plots and Producer Clubs • Number of women-headed households benefiting from SLM support • Percentage of women adopting promoted SLM practices (where applicable)	To be established during inception.	• ≥40% women participation in planning and implementation • Producer Clubs established with women participation threshold met • Adoption/benefits for women documented through monitoring	**Lead:** PMU (SLM/Livelihood Specialist). **Support:** PMU–GSI Focal Point; CAIC team; agriculture & livestock services; Producer Clubs; community groups (women-headed households, youth); local authorities.	**3,000**
Output 2.1.2: Agro-pastoral ecosystem practices enhanced, adopted and effectively implemented	Strengthen women's equitable access to green-belt, re/afforestation and pastoral-space benefits and related skills.	**P.4:** Ensure women benefit equally from project outcomes.	• Engage women in planning and implementation of green belts and re/afforestation with safe work conditions and equitable access to restored resources. • Tailor training and access to inputs (seedlings, tools) to women and track knowledge gains and workload impacts.	• Percentage of women participating in implementation/training • Percentage of women reporting improved knowledge/awareness (target ≥30%) • Benefit-sharing rules applied and monitored (Yes/No)	To be established during inception.	• ≥40% women participation where feasible • Training delivered with ≥40% women participation • Positive perceived benefits documented among women users	**Lead:** PMU (SLM/Livelihood Specialist). **Support:** PMU–GSI Focal Point; forestry & environment services; contractors/community work teams; pastoral associations; women's groups; CAIC (technical guidance).	**2,000**
COMPONENT 3: DIVERSIFYING INCOME SOURCES THROUGH IGAs (WITH EMPHASIS ON WOMEN AND YOUTH)								
Output 3.1.1: Adaptive agriculture practices enhanced	Close gender gaps in skills, assets and services for climate-resilient agropastoral and oasis production.	**P.5:** Promote women's economic empowerment.	• Provide targeted coaching for women and young producers (production, post-harvest, animal health, pastoral management and climate-smart practices). • Facilitate women's access to productive assets/equipment and extension services and monitor workload impacts to avoid harm.	• Percentage of women among supported producers receiving coaching/assets • Percentage of women reporting increased productivity or income • Workload mitigation measures documented (Yes/No)	To be established during inception.	• ≥40% women among supported producers • Positive adoption and income trends for women beneficiaries • Workload impacts monitored and mitigated	**Lead:** PMU (Livelihood/Agro-pastoral Specialist). **Support:** PMU–GSI Focal Point; agriculture & livestock services; Producer Clubs/cooperatives; private input/service providers; women & youth producers.	**4,000**
Output 3.1.2: Source of income diversified through IGAs (**Activities 3.1.2.1–3.1.2.3:** women/youth IGAs; ecotourism; value-chain and market linkages)	Enable women and youth to start/expand viable IGAs and retain control over benefits along the value chain.	**P.5:** Promote women's economic empowerment.	• Deliver women- and youth-targeted IGA packages (business skills, mentoring, market linkages), including financial literacy and savings mechanisms. • Apply safeguards against	• Number of women and youth supported through IGAs (sex- and age-disaggregated) • Percentage of women reporting	To be established during inception.	• ≥60% women and youth among IGA beneficiaries • ≥60% women report improved income control	**Lead:** PMU (Livelihood Specialist). **Support:** PMU–GSI Focal Point; local cooperatives/CSOs; private sector &	**10,000**

			elite capture and strengthen women's decision-making and control over IGA income.	control over IGA income • Percentage of women and youth among IGA beneficiaries		• Market linkages documented for targeted value chains	market actors; tourism associations/local authorities; women & youth groups.	
COMPONENT 4: CAPACITY BUILDING, KNOWLEDGE SHARING AND AWARENESS RAISING								
Output 4.1.1: Practitioners, technicians, decision-makers and local actors have strengthened capacities for integrating CCA into planning processes (**Activities 4.1.1.1–4.1.1.4:** KAP surveys; capacity building incl. SOS-Oasis; gender-responsive communication strategy; dissemination and knowledge sharing)	Ensure capacity-building, KAP and communication activities are accessible, relevant and safe for women, men and youth.	**P.2:** Ensure women's full and effective participation in all stages of the project cycle.	• Integrate gender and do no harm/SEA-SH modules into trainings and ensure participation measures (timing, language, childcare-friendly options where feasible). • Use KAP results to tailor curricula and communication products; track pre/post learning outcomes by sex.	• Percentage of women among trainees • Pre/post training score improvement (women/men) • KAP findings integrated into curricula/communication (Yes/No)	To be established during inception.	• ≥40% women among trainees • Documented learning gains for women and men • Results disseminated through gender-balanced forums	**Lead:** PMU (Capacity Building Lead). **Support:** PMU–GSI Focal Point; PMU–M&E Specialist; PMU–Communications Officer; training providers/consultants; CAIC; sectoral technical departments; local authorities/community structures.	**3,000**
Output 4.1.2: Community awareness and understanding of climate change adaptation strategies significantly increased	Deliver gender responsive community awareness and capacity building on CCA, water management and health.	**P.2:** Ensure women's full and effective participation in all stages of the project cycle.	• Develop awareness and training materials adapted to women, men and youth and use outreach channels that effectively reach women. • Build the capacity of women and local CSOs in climate-resilient livelihoods and promote shared household decision-making for resilience.	• Number of awareness sessions/products targeting women and youth • Percentage of women reporting increased awareness of CCA and water/health practices • Percentage of women reached through communication products	To be established during inception.	• Regular outreach reaching women and men; documented awareness gains • ≥40% women participation in sessions where relevant	**Lead:** PMU–Communications Officer. **Support:** PMU–GSI Focal Point; Implementing Partner; community leaders; women's groups/CSOs.	**2,000**
Total incremental budget for implementing the Gender Action Plan								**70,000**

Note: This matrix highlights the priority gender-responsive actions required to address the main gender gaps and risks identified. Gender considerations will be mainstreamed across all project activities through implementation arrangements, monitoring and budgeting. The matrix may be updated during implementation based on ongoing monitoring and evaluation and community feedback.

3.2- GENDER-RESPONSIVE MONITORING, EVALUATION AND LEARNING (MEL)

A gender-responsive MEL system will track both technical results and gender equality outcomes, using sex-age-disability disaggregated (SADD) data and qualitative evidence. GAAP implementation tracking, including budget execution and corrective actions, is resourced under a dedicated line in Table 38 (Gender Action Plan monitoring, reporting and learning).

3.2.1- GENDER IN MONITORING-EVALUATION

Monitoring stage: constant verification of the proper functioning of the project to integrate, as it progresses, the necessary corrective actions.

- Continuously verify the impact and effect of the project on gender relations and their evolution.
- Integrate, if necessary, new actions related to gender, or even specific actions targeting women or men.

Evaluation stage: evaluations to assess the achievement of the objectives and formulate recommendations for the rest of the project.

- Make sure the evaluation tools integrate gender criteria and indicators.
- Formulate specific recommendations on gender.
- Promote expertise, publish good practices.

3.2.2- GENDER ANALYSIS MATRICES ((PARTICIPATORY TOOL)

The Gender Analysis Matrices (Tables 22 and 23) are participatory tools used to understand how project actions affect women and men differently, including changes in workload and time use, access to resources and services, decision-making, benefits and safety.

They should be applied during the inception phase (to validate risks and tailor implementation) and repeated at mid-term to assess progress and adjust interventions. Where relevant, separate discussions with women and men are recommended to ensure safe spaces for women's voices.

The matrices can use a simple scoring approach (e.g., −2 to +2) to capture the direction and magnitude of change, complemented by qualitative evidence and examples. Agreed mitigation measures should be integrated into the GAAP tracking and annual workplans.

Process (how to use the matrices)

• Identify the activity/change being assessed and the groups involved (women, men, youth and vulnerable groups).

• Discuss expected and observed changes in: workload/time, access and control over resources, participation and decision-making, benefits and safety.

Table 68 : Gender Analysis Matrix – impact on women and men (workload, resources and benefits)

	Work	Time	Resources
Men			
Women			
Households			
Communities			

• Record the direction and magnitude of change using a simple score (e.g., −2 to +2) and document the evidence.

• Agree mitigation measures and implementation adjustments; assign responsibilities and integrate them into Table 38 and the annual workplan.

• Repeat the exercise at mid-term and end-line to validate outcomes and capture learning.

Table 69 : Gender Analysis Matrix – impact on gender roles and decision-making within the value chain

	Before the project	After the project	Reason for change
Access to the market			
Household generated income			
Income under men's control			
Income under women's control			
Women's workload			
Women's capacities/skills (production, management, marketing…)			

3.3.3- KEY QUESTIONS FOR INTEGRATING GENDER INTO PROJECT MONITORING-EVALUATION

The project can be monitored and evaluated using the following questions for gender consideration.

- Is this information used to regularly review the association's actions?
- Does the project involve men and women in the monitoring-evaluation process?
- Does the project have an information system to see and evaluate the project's impacts on men and women separately?
- Are (qualitative and quantitative) gender-sensitive indicators used?
- Does the evaluation include indicators relating to women's empowerment?
- Is gender-disaggregated data collected for project monitoring-evaluation (number of men/number of women, etc.)?
- Does the project have differentiated effects and impacts on men and women?
- Does the final project report systematically identify gender gaps or successes?
- Have the members of the evaluation group received instructions on how to take the gender dimension into account in their mission?

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4- RECOMMENDATIONS FOR BETTER GENDER CONSIDERATION UNDER THE PROJECT IMPLEMENTATION

Patriarchal gender dynamics dominate gender dynamics in Mauritania, namely in the Adrar region. This results in low women's empowerment, low participation of women in public decision-making, as well as the persistence of practices and standards that are harmful to women and girls, such as early marriage and FGM, which significantly affect the fundamental rights of women and girls, as well as their individual resilience.

The vulnerability of women and girls in the region is aggravated by these challenges, which hinders the resilience and slows down the development of communities, especially in contexts of high male exoduses and migrations.

Through its gender sensitive strategy: improving access to production factors and resources, capacity building, as well as the implementation of actions and strategies targeting women and girls, PRAGOA can be an entry point for transforming gender standards for women and girls in the area of intervention, in the 2 development poles of Ziyara and Dhaya.

The following recommendations are formulated in order to strengthen and ensure gender sensitivity as a basic criterion, and promote gender-transformative programming paths, while considering the local challenges and particularities of the intervention sites.

In order to address the abovementioned challenges and improve gender equality, the project's efforts will contribute to (i) promoting women's economic opportunities, including access to employment, assets and other productive resources; and (iii) Improving women's voice, autonomy and representation.

This will be undertaken through:

- Initiatives to strengthen and develop women's leadership;
- Advocacy campaigns on gender and the rights of women and girls. These actions will be carried out in partnership with the civil society;
- The creation of a women's empowerment program through agro-processing;
- The organization of campaigns to promote organic agricultural products for women and girls on national, regional and international markets;
- The creation of a fund to promote and support the best women farmers;
- The development of awareness-raising, training, advocacy and communication actions and events on gender and climate change issues throughout the project;
- The development of partnerships with state projects, civil society Organizations and the private sector for the resources to be combined.

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Annex 4: Cost Effectiveness Study Report

1. Introduction

Mauritania, located in West Africa along the Atlantic coast, has a population estimated at over 4.17 million in 2020[17], growing at a rate of 2.8% annually (NSO, 2020). The majority of its population is concentrated in Nouakchott, Nouadhibou, and the Senegal River Valley due to the largely Saharan climate elsewhere in the country. With a GDP per capita of US$1,723 in 2021 and over 50% of its population depending on agriculture, Mauritania is classified as a Low to Middle-Income Country (LMIC) (World Bank, 2022). Its economy is mainly driven by services (45.8% of GDP), followed by industry (25.3%) and agriculture (18.7%).

The country is highly vulnerable to climate change, particularly due to its arid climate, reliance on rainfed agriculture, and recurring droughts since 1968. Mauritania has an arid climate, due to its location in the Saharan desert and the Sahel region. Average annual temperatures range from 21°C to 30°C, with the lowest measured values on the northern coast and the highest in the southeast. Annual rainfall totals range from as little as 20 mm on the northern coast to 400 mm in the south-center which has a Sahelian climate. There is only one rainy season (unimodal rainfall regime) in Mauritania from June to October in the south, with a shortening of the rainy season and rainfall towards the north18.

Water resources are unevenly distributed and severely affected by drought and degradation. Of the 400 existing hydraulic structures, 36% are non-functional, resulting in a loss of 300 million m³ of potential irrigation water19. The 1989 conflict in the Senegal River Valley was a direct consequence of resource scarcity exacerbated by climate stressors20.

Agricultural productivity is constrained by unpredictable rainfall, limited irrigation (only 10% of potential used as of 2004), and poor soil conditions, especially in central and northern areas. These challenges contribute to the erosion of agro-biodiversity and increased food insecurity21.

Ecosystems are under threat from climate-induced changes such as desertification, biodiversity loss, and habitat degradation. Between 2001 and 2016, Mauritania lost 86,000 hectares of forest cover, equivalent to a 28% reduction.

Mauritania is also highly exposed to hydrometeorological hazards such as coastal and riverine flooding, flash floods, water scarcity, and extreme heat. Its vulnerability is worsened by poverty and dependence on climate-sensitive sectors (agriculture, fisheries, livestock, and mining).

Despite experiencing economic growth from 2008–2014, significant disparities remain. Poverty persists, and access to basic services is limited: only 55% of children aged 6–11 is enrolled in school, 33% of households live in poor housing, and just 38% of the population has access to electricity. These social challenges are compounded by environmental pressures, including land degradation, urban migration, and extreme weather events, which all hinder sustainable development.

The Wilaya of Adrar is located in the north of Mauritania and covers an area of 233,478 km2, which is 22.65% of the total area of Mauritania (1,030,700 km2). It is bordered to the north by the Wilaya of Tiris Zemmour, to the west by the Wilayas of Dakhlet Nouadhibou and Inchiri, to the east by the Wilaya of Hodh El Chergui and Mali, to the south by the Wilayas of Trarza and Tagant (World Bank, 2023).

The Adrar region is dominated by the Mejabat El Khoubra, an almost impermeable desert that covers 52% of the Wilaya's area with altitudes that can reach between 200 and 350 m in hight. The region is mainly characterized by aquifer resources and a number of temporary pools.

The Adrar region depends mainly on two deep aquifers: the Dhar and the Aoukar, both part of the Taoudeni sedimentary basin. The Dhar aquifer is the most strategic, with high-quality water, strong flow rates (>10 m³/h), and reserves estimated at 10 billion m³, enabling long-term use for irrigation and drinking water. In contrast, the Aoukar aquifer remains underused due to accessibility issues and limited infrastructure, serving mainly informal pastoral needs (Teiss & Faye, 2018). However, both aquifers suffer from minimal natural recharge (0.4–5 million m³/year), while extractions exceed 6.5 million m³ annually (BRGM, 2021). This unsustainable use, intensified by climatic pressures, irregular rainfall, and high evapotranspiration, increases hydrological risks. Without regulation, informal overexploitation could lead to local depletion, salinization, and well collapse. Sustainable water resource management is thus crucial in this arid and demographically growing region (JICA, 2020).

In Adrar, surface water is extremely limited, with seasonal wadis like Seguellil flowing only a few days per year during exceptional rains (JICA, 2025). These flows are partially harnessed through rainwater harvesting systems, but agriculture remains almost entirely reliant on groundwater, raising sustainability concerns (Ahmed & Nagasawa, 2007).

Demographically, the region has undergone notable shifts: modest growth between 1988–2000 was followed by a population decline (2000–2013) and a recent moderate recovery (RGPH, 2023). This trend masks rural-urban disparities and a significant male exodus driven by employment opportunities in cities and mining areas (SOS Oasis, 2023). Declines in traditional agriculture due to drought, land degradation, and market instability further fuel this migration (FAO, 2018).

Economically, Adrar's traditional sectors (oases farming, livestock, crafts) are giving way to new dynamics, particularly mining, which now accounts for nearly 30% of Mauritania's GDP and over 50% of export revenues (EITI Mauritania, 2023). This marks a significant socio-economic transformation shaped by environmental pressures and shifting livelihoods.

In response to these challenges the PRAGOA project (Projet de Résilience et d'Adaptation des Oasis de l'Adrar) was designed as a comprehensive intervention to address the multidimensional vulnerabilities threatening the Adrar region. The project builds on existing national strategies and more than two decades of SOS-OASIS's experience in community-based development. It

[17] World Bank, "World Bank Open Data," 2019. Disponible en ligne : https://data.worldbank.org

[18] "Profil de risque climatique : Mauritanie", GIZ,2021

[19] Fourth national communication of mauritania, july 2019

[20] A. Nicolaj, "The Senegal Mauritanian Conflict," Africa Riv. Trimest. di Stud. e Doc. dell'Instituto Ital. per l'Africa e l'Oriente, vol. 45, no. 3, pp. 464–480, 1990

[21] Y. M. Bachir and A. Ould Hamadi Sherif, "Mauritania Livelihood Zoning Plus," Washington, D.C. and Madrid, Spain, 2013.

focuses on promoting sustainable water and land management, revitalizing degraded ecosystems, diversifying livelihoods, and strengthening institutional and technical capacities particularly for women and youth. Through an integrated and participatory approach, PRAGOA seeks to build lasting resilience across oases communities while aligning with broader national and regional climate adaptation and development priorities.

The project supports the Mauritanian government's environmental policy and builds on over 20 years of SOS-OASIS's experience in inclusive, locally adapted interventions. It aims to strengthen the climate resilience of communities particularly women and youth in the Ziyara and Dhaya oases, through sustainable water, soil, and natural resource management, in line with national strategies to combat climate change and biodiversity loss.

The overall Objective of the project is to enhance the resilience of oases communities (women and youth) to climate change impacts by promoting sustainable management of soils, water, natural resources, and agro-ecosystems.

The specific Objectives:

- ✓ Ensure rational management of water resources in oases
- ✓ Implement concrete adaptation actions to strengthen the resilience of oases and agro-pastoral ecosystems
- ✓ Promote income diversification and improve the living conditions of vulnerable women
- ✓ Build institutional and technical capacities, share knowledge, and raise awareness among stakeholders at all levels

Project Components are:

Component 1: Improved water resources access and management for local communities: This component focuses on enhancing water management systems and infrastructure. It includes the rehabilitation of small hydraulic works, promotion of efficient irrigation techniques, and adoption of good practices, in collaboration with national ministries (Hydraulics, Agriculture, Environment).

Component 2: Improved resilience of ecosystems and livelihoods to climate change and variability. Aims to strengthen the adaptive capacity of oases and agropastoral ecosystems through practical solutions in agriculture, pastoralism, and land management key sectors for food security in the region.

Component 3: Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth. This component promotes income-generating activities (IGAs) and environmental co-benefits by supporting agriculture, livestock, and agro-pastoral product processing, especially for women, youth, and people with disabilities.

Component 4: Capacity building, knowledge sharing, communication and awareness raising of stakeholders and beneficiaries at different levels. Targets capacity gaps related to climate change adaptation. It supports training, awareness campaigns, and communication efforts, and fosters integration of adaptation strategies into decision-making processes.

Why the PRAGOA Project is Important

The PRAGOA project is a critical initiative for the Adrar region of Mauritania because it addresses the intersecting crises of climate vulnerability, ecosystem degradation, rural poverty, and social inequality. In a fragile oases-based environment already suffering from rising temperatures, water scarcity, and soil degradation, the project provides integrated solutions that improve not just environmental sustainability, but also economic opportunity and social cohesion.

On the economic front, PRAGOA promotes long-term livelihood security by investing in sustainable agriculture, pastoralism, and the development of income-generating activities (IGAs), especially for women and youth. Through innovations such as integrated crop-livestock systems, hydroponic farming, composting, and solar-powered irrigation, the project enables farmers and herders to produce more while spending less. It also stimulates rural entrepreneurship through the promotion of ecotourism, local product value chains (e.g., dates, honey), and vocational training. These activities are designed not only to increase incomes, but also to reduce the need for costly food imports and mitigate youth migration caused by lack of opportunities.

Socially, PRAGOA plays a transformative role by strengthening community participation, gender equity, and local capacity. It ensures the active involvement of women, youth, and vulnerable groups in governance bodies, training programs, and planning processes. The project introduces grievance redress mechanisms, bilingual outreach (Arabic–Hassaniya), and community-based monitoring—tools that empower marginalized populations and improve local accountability. By restoring access to clean water, improving food and nutritional security, and building inclusive institutions, PRAGOA enhances the dignity, autonomy, and well-being of rural communities.

Environmentally, the project restores degraded lands, regenerates oases, protects biodiversity (including endangered date palm species), and reduces greenhouse gas emissions through solar energy and sustainable land management. These interventions not only mitigate the effects of climate change but also improve the long-term viability of natural resources that are vital to local livelihoods.

Overall, PRAGOA responds to urgent needs in a highly vulnerable region by combining environmental restoration, economic diversification, and inclusive governance. Its multisectoral approach is aligned with national development priorities and contributes to building more resilient rural territories over the long term.

2. Alternatives considered for the cost-effectiveness study

The Adaptation of the "Enhancing the resilience of communities of agropastoral and oases ecosystems of Ziyara and Dhaya to the adverse effects of climate change in the Adrar region in Mauritania" project will create significant economic, social and environmental benefits and impact at household, community, national and regional levels.

In this study we will evaluate the cost-effectiveness analysis of the following alternative that we will introduce in the context of the project.

- Alternative 1: Integrated crop livestock system

- Alternative 2: Three-layer cropping
- Alternative 3: Ecotourism system

This cost-effectiveness analysis compares all the climate-adapted agricultural production and livelihood and income strengthening interventions defined in the proposal with the conventional system, considering the project investment and its return to the beneficiaries.

Furthermore, the cost-effectiveness analysis makes a comparison between the implementation of different systems of income generating activities and in water management.

2.1. The PRAGOA Project is not implemented

The project is not implemented, the current situation for communities remains the same, therefore agricultural production is not improved and adaptation measures are not implemented, leaving agricultural production insufficient to meet the demand of the population.

2.1.1. Impact of climate change

Without the project measures, Mauritania's agricultural and pastoral systems especially in vulnerable regions like Adrar will continue to deteriorate under the accelerating pressures of climate change and ecosystem degradation. Observed changes over the past five decades include an increase in intense rainfall events causing flash floods, fewer low-intensity, long-duration rains, more frequent and longer droughts, and a 0.9°C rise in mean annual temperature, all of which have severely impacted rural communities. The droughts of the 1970s and 1980s forced many nomadic pastoralists to abandon traditional migration routes, settle near oases, or migrate to urban areas, leading to a significant decline in meat production and income across the country.

Future projections suggest a worsening scenario. The average temperatures could rise by up to 3.8°C by 2080, while the number of very hot days (over 35°C) could increase by 49 days per year, reaching nearly 300 days annually in parts of southwestern Mauritania.

Rainfall will become increasingly unreliable and insufficient, with a possible decline in total precipitation and fewer days of heavy rain, making water for irrigation and livestock even scarcer. Already, the country suffers from severe water stress, with over 7,500 traditional wells depending on fragile groundwater sources. Without intervention, the overexploitation of these resources will likely lead to widespread well collapse, water depletion, and land salinization.

Precipitation is expected to remain highly variable, while the frequency of heavy rainfall events is projected to decline, reducing groundwater recharge and worsening water scarcity. In a context where over 7,500 traditional wells serve communities with limited modern infrastructure, pressure on fragile groundwater resources will become increasingly unsustainable.

The consequences for agriculture are severe. The region's agropastoral systems, which are already among the most vulnerable in the world, are highly sensitive to seasonal variability, droughts, and floods. Crop yields are expected to decline, particularly for modern cereal varieties that are less tolerant to heat stress above 2°C. Changes in cropping calendars and increasingly erratic seasons will reduce agricultural potential, particularly in dryland zones, and may lead to a shift toward extensive livestock systems. In some transition areas, livestock may entirely replace crops by 2050, increasing pressure on pastures and water. Without adaptation measures, Mauritania faces a future marked by worsening land degradation, food insecurity, economic vulnerability, and rural poverty, particularly affecting women, youth, and marginalized communities. As noted by experts, only proactive, well-targeted interventions can build resilience and prevent the deepening of an already fragile situation.

2.1.2. Vulnerability of current practices

Agricultural systems in Mauritania particularly Adrar region are increasingly fragile in the face of worsening climatic stress, land degradation, and socio-economic pressures. Traditional farming and pastoral practices, shaped by decades of coping with drought and water scarcity, are no longer sufficient to meet the needs of a growing and increasingly vulnerable rural population. These systems are marked by poor resilience, limited productivity, and weak adaptation to climate variability and environmental change. The following are the main vulnerabilities affecting agricultural practices.

- Heavy reliance on rainfall: Most farmers still depend on seasonal rain, yet rainfall is erratic and declining, especially in Adrar where annual precipitation ranges from only 40–100 mm. This leads to frequent crop failures and low productivity, especially in cereals like sorghum and millet.
- Limited irrigation infrastructure: Though Mauritania has a potential for irrigation (estimated at 250,000 ha), less than 10% is irrigated, and in Adrar, irrigation is complicated by poor soil quality, groundwater salinity, and inefficient water extraction techniques. Many dams and reservoirs are non-functional or poorly maintained.
- Declining oases agriculture: In Adrar, phoeniciculture (date palm farming) is central to food and income security. However, oases face degradation due to water scarcity, pest infestations, aging plantations, and low technical support. Despite Adrar contributing 45% of national date production, yields remain low and inconsistent, averaging only 15–20 kg per palm without irrigation.
- Low crop diversification: Agricultural systems are dominated by a few staple crops (dates, sorghum, cowpeas), with limited adoption of drought-resilient varieties or crop rotation practices. The few alternatives (market gardening, flood-recession agriculture) are seasonal, underdeveloped, and vulnerable to climate shocks.

- Weak water resource management: Groundwater is the main source of irrigation in Adrar, but aquifers are often discontinuous, brackish, and poorly recharged due to irregular rainfall and lack of investment in sustainable water technologies (drip irrigation, water harvesting). Competition between pastoralists and farmers also creates tension over scarce water points.
- Degraded land and soil fertility: Years of overuse, erosion, and desertification have reduced the arability of land. The silting of valleys, lowland depressions, and oases reduces land use potential. Nutrient-poor sandy soils dominate the central and northern parts of Adrar, requiring significant amendments for any productivity.
- Poor access to inputs and services: Farmers lack quality seeds, tools, fertilizers, and extension services. Veterinary and phytosanitary services are also limited, increasing livestock mortality and crop pest outbreaks.
- Insufficient climate adaptation capacity: Farmers lack knowledge, training, and financial means to adopt climate-smart agriculture, diversify income sources, or invest in resilient infrastructure. Innovation and local knowledge systems (e.g. traditional soil and water practices) are not being integrated or scaled.

2.1.3. Impact on Livelihoods and Resource Systems

The result is an unsustainable cycle of low productivity, high vulnerability, and increasing resource pressure:

- Food insecurity is worsening, particularly in remote areas like Adrar, where cereal production often covers only 30% of needs in good years.
- Income generation is limited, especially for women and youth, due to poor market access, weak value chains, and a lack of post-harvest and processing infrastructure.
- Rural exodus and youth unemployment are increasing as agriculture fails to offer viable livelihoods.
- Pressure on water, land, and vegetation increases as communities overexploit dwindling resources in search of survival.

2.1.4. Environmental Impacts

- Water scarcity and depletion of aquifers: Over extraction of underground water for irrigation in oases, without recharge due to erratic rainfall, is accelerating aquifer depletion. In Adrar, water tables are often deep, discontinuous, or saline and many water points are drying up or degraded.
- Soil degradation and erosion: Unsustainable cultivation methods, deforestation for firewood (e.g. charcoal), and lack of soil fertility management contribute to nutrient loss, soil erosion, and reduced land productivity. In Adrar, the silting of lowlands and oases also limits farming potential.
- Loss of agro-biodiversity: The abandonment of traditional crop varieties and weak seed conservation systems are leading to a decline in agro-biodiversity, particularly in oases ecosystems that once hosted diverse species of date palms, vegetables, and medicinal plants.
- Desertification and ecosystem fragility: The desert continues to advance southward, driven by wind erosion, vegetation loss, and poor land management. In Adrar, this leads to the encroachment of dunes on arable lands, pastures, and settlements.
- Threats to oases ecosystems: Oases systems are vital to both agriculture and biodiversity in Adrar are under stress due to water scarcity, pest outbreaks, and neglect. The degradation of oases threatens not only crops but also the broader microclimates and wildlife habitats they support.
- Increased vulnerability to climate hazards: Reduced vegetation and degraded land cover weaken natural defenses against floods, droughts, and extreme temperatures. As resilience declines, the environment becomes more sensitive to shocks, further undermining long-term sustainability.

2.1.5. Social Impacts

The vulnerability of agricultural systems also has serious social consequences:

- Food insecurity and undernutrition: Recurrent droughts, low productivity, and market access challenges lead to seasonal food shortages, undernutrition, and increased dependency on food aid especially for vulnerable groups such as children and women.
- Increased rural poverty: Many rural households depend on agriculture and livestock for their livelihoods. When harvests fail or pasture becomes scarce, income collapses, pushing families deeper into poverty and debt.
- Migration and rural exodus: As agriculture becomes less viable, youth and working-age adults migrate to urban areas (e.g. Nouakchott or Nouadhibou), leaving behind an aging population and creating pressure on already strained urban infrastructure.
- Gender inequality: Women, who are heavily involved in market gardening, date harvesting, and small livestock, face limited access to land, credit, training, and technology. They are particularly vulnerable to economic shocks, yet often excluded from decision-making structures.
- Education gaps and youth exclusion: In areas like Adrar, where many youth are involved in seasonal agricultural labor (e.g. Guetna harvests), school dropout rates remain high. Poor infrastructure and limited job opportunities deepen youth disillusionment and vulnerability.
- Cultural erosion: As traditional oases management practices and farming techniques are lost, so too is the intergenerational knowledge that sustained these systems for centuries. This erodes cultural identity and social cohesion in rural communities.
- Conflict and competition for resources: Limited water and land resources in regions like the Senegal River Valley and Adrar lead to farmer-herder conflicts, particularly during the dry season when both groups converge around the same water points and pastures.

2.1.6. Economic impact

- Low and unstable agricultural productivity: In rain-fed and oases systems alike, yields remain low and fluctuate from year to year due to unpredictable rainfall, pest outbreaks (e.g. date palm cochineal), poor soil fertility, and limited access to irrigation. In Adrar, despite being the largest date-producing region, average yields are still significantly below regional benchmarks.

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- Post-harvest losses and poor market integration: Inadequate infrastructure for storage, cold chains, and transportation leads to significant post-harvest losses, especially for perishable goods like vegetables and dates. Farmers in Adrar often lack access to markets or are forced to sell at low prices due to transport difficulties and poor product quality.
- High input and production costs: Dependence on imported inputs (seeds, fertilizers, equipment) and rising fuel and transport costs raise the cost of production, making agriculture economically unviable for many smallholders. In oases agriculture, the high cost of maintaining wells and pumps further burdens local producers.
- Lack of diversification and value addition: Agricultural activities are often not diversified and focus on a few staple or traditional crops. In Adrar, for example, most dates are consumed locally or sold raw, with limited transformation or packaging, restricting income potential and value chain development.
- Insufficient investment in rural economies: There is limited public and private investment in agriculture, especially in remote areas like Adrar. This results in underdeveloped infrastructure (roads, electricity, water systems), weak financial services, and a lack of innovation and technology adoption.
- Limited access to credit and insurance: Most small-scale producers have no access to agricultural credit or risk insurance, limiting their capacity to invest, innovate, or recover from climate shocks. In Adrar, rural financial systems remain largely informal and inaccessible to women and youth.
- Economic exclusion of vulnerable groups: Women and young people who are key actors in market gardening, small livestock, and post-harvest activities often operate in the informal economy without adequate institutional or financial support, leading to persistent income inequality.
- Dependence on food imports: With low national food production and frequent crop failures, Mauritania remains heavily dependent on imports to meet domestic food needs. This creates a large trade deficit, exposes the country to international price volatility, and reduces resilience.
- Weak employment generation: Despite its economic potential, agriculture in Mauritania, and particularly in Adrar, fails to generate decent employment opportunities, leading to underemployment, disguised unemployment, and the migration of rural labor to urban areas or abroad.

2.1.7. Institutional Impacts

- Weak governance and poor inter-sectoral coordination: Institutional efforts across ministries responsible for water, agriculture, livestock, and environment are often disjointed. This lack of coherence leads to overlapping mandates, inefficient resource use, and slow implementation of national policies at the local level.
- Under-resourced extension services: Public extension services, critical for disseminating climate-smart agricultural practices, remain underfunded, understaffed, and poorly equipped, particularly in remote Wilayas like Adrar. As a result, farmers lack access to technical advice on soil management, irrigation efficiency, crop protection, and agroecological practices.
- Inadequate veterinary and livestock support: Livestock an essential livelihood in Adrar receives minimal institutional support. There are few veterinarians, low vaccine coverage, and limited monitoring of animal health, increasing vulnerability to disease and loss.
- Low community participation and empowerment: Agricultural development programs often adopt top-down approaches, with limited involvement of local communities, women's groups, and producer associations in planning, decision-making, and evaluation processes. This reduces ownership, effectiveness, and sustainability of interventions.
- Lack of agricultural data and monitoring systems: There is a serious gap in reliable agricultural, climatic, and hydrological data, which hinders informed policy-making, early warning systems, and adaptive planning. This is particularly problematic in regions like Adrar where monitoring is logistically difficult but critically needed.
- Weak civil society and farmer organizations: Many cooperatives and producer associations are informal, inactive, or lack the capacity to represent their members or advocate for their needs. Women and youth remain underrepresented in rural organizations.
- Limited decentralization and institutional reach: Decentralized services (regional agriculture departments, rural development offices, etc.) often have insufficient human and financial resources to carry out their mandates in large and sparsely populated areas like Adrar, which contributes to uneven service delivery and rural neglect.
- Inadequate support for research and innovation: National research institutions lack sufficient funding to generate locally adapted solutions, such as drought-tolerant crops or water-efficient irrigation techniques. In Adrar, traditional knowledge remains underutilized due to poor linkages between science and communities.

2.1.8. Poor agricultural strategies

Despite the increasing visibility of climate change as a pressing threat to sustainable development in Mauritania, particularly in vulnerable regions like Adrar, national and local agricultural policies have so far failed to integrate effective and context-specific climate adaptation strategies. In Adrar—an arid region marked by extreme water scarcity, land degradation, and fragile oases ecosystems—agricultural development has remained largely reactive, fragmented, and disconnected from broader environmental resilience goals.

Mauritania's existing frameworks, such as the National Adaptation Program of Action (NAPA) and the National Strategy for Sustainable Agricultural Development (SNDAD), recognize climate risks but have not been operationalized in ways that reach remote, ecologically sensitive zones like Adrar. The lack of coordination between agriculture, water, and environment sectors has further limited integrated planning, while regional offices remain underfunded and lack the technical capacity to mainstream climate-smart practices.

Without the implementation of targeted climate-resilient initiatives, such as those envisioned under externally supported programs, Adrar remains locked in a cycle of vulnerability. The absence of proactive adaptation strategies in oases agriculture,

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inefficient water resource management, and outdated farming techniques not only undermines food and income security but also accelerates environmental degradation.
In the absence of structured intervention, government resources risk being diverted toward reactive spending, such as:

- Emergency food aid for rural households facing crop failure due to droughts
- Subsidies to maintain agricultural production, particularly for oases systems and cereal crops
- Financial support for staple food imports to offset national deficits caused by low local yields
- Disaster response to recurrent climate shocks (floods in wadis, sandstorms, and desertification)
- Restoration of degraded land and water points in drylands and oases ecosystems.

This policy gap highlights the urgent need to strengthen institutional coordination, local governance, and resource mobilization to embed climate adaptation at the heart of agricultural planning particularly in marginalized and climate-sensitive areas such as Adrar.

2.2. Alternative with the PRAGOA Project

The proposed alternative builds on a tested, community-based approach used in other climate adaptation projects. It aims to guide local populations especially women and youth toward more economically viable, socially inclusive, and environmentally sustainable practices. By promoting climate-smart agriculture, empowering local actors, and integrating traditional knowledge, this approach strengthens resilience, enhances livelihoods, and ensures that communities become active drivers of sustainable development. Within this project, we propose to implement three such alternatives to assess their impacts on the target area.

2.2.1. Integrated crop livestock system

This approach combines crop production with livestock rearing on the same land to create a mutually supportive and resource-efficient system.
In the context of Adrar, where agricultural systems are highly vulnerable due to climate variability, water scarcity, and soil degradation, the adoption of Integrated Crop-Livestock Systems (ICLS) offers a promising alternative to traditional farming approaches. ICLS involves the strategic combination of crops and livestock within the same production system, which can enhance productivity, improve resource use efficiency, and increase climate resilience (FAO, 2013; ILRI, 2012).
In Adrar, where phoeniciculture and small ruminant rearing (goats and camels) dominate the rural economy, integrating fodder crops with oases-based agriculture can provide multiple benefits. Livestock can contribute manure to improve soil fertility, while crop residues can serve as feed, reducing pressure on natural rangelands (PNDA, 2016; PDDO, 2020). This cyclical system enhances nutrient recycling and reduces input costs. Additionally, in a region where farmers face limited access to synthetic fertilizers, the use of organic matter from livestock becomes especially valuable for improving soil quality and structure (FAO, 2013).
ICLS also contributes to greater income stability and food security, as it diversifies sources of livelihood and makes better use of land and water resources. Livestock provide both immediate income and resilience in times of crop failure, while crops ensure household food supply and income during seasonal peaks (World Bank & FAO, 2018). In Adrar's lowland areas and oases zones, integrating fast-growing fodder species such as Panicum or alfalfa can sustain animal nutrition during dry spells, which is critical in a region experiencing rising desertification (GIZ, 2014).
Moreover, ICLS helps reduce environmental pressure. By limiting overgrazing and reducing the need for extensive grazing movements, it supports the conservation of fragile vegetation cover, particularly in areas around oases that are under increasing stress from livestock congestion (ICRISAT, 2015).
Despite its potential, ICLS in Adrar faces implementation challenges: inadequate technical knowledge, weak extension services, and limited access to seeds and veterinary support (ILRI, 2012; USAID, 2020). Nonetheless, pilot programs across West Africa, including Mauritania, have shown that with training and infrastructure support, farmers can adopt ICLS practices that improve productivity and environmental sustainability (FAO, 2013; ILRI, 2012).

Benefits of ICLS in Adrar

The implementation of Integrated Crop-Livestock Systems (ICLS) in Adrar offers a range of economic, environmental, and social benefits that address the region's key agricultural vulnerabilities:

- Enhanced resilience to climate shocks: By diversifying production, ICLS reduces dependence on a single crop or income source, improving household resilience to droughts, pests, or market fluctuations particularly vital in Adrar's highly variable climate (FAO, 2013; ILRI, 2012).
- Improved soil fertility and land restoration: The use of animal manure replenishes soil organic matter, enhancing soil structure, water retention, and fertility, especially in the nutrient-poor sandy soils of Adrar. This contributes to reversing land degradation and desertification (PNDA, 2016; World Bank & FAO, 2018).
- Increased productivity and food security: ICLS boosts overall productivity by efficiently using available land and water resources. Livestock provide meat, milk, and manure, while crop yields benefit from improved soil conditions. This is crucial in Adrar, where cereal production alone often fails to meet local food needs (PDDO, 2020).
- Reduced pressure on rangelands: Integration reduces the need for long-distance grazing, helping prevent overgrazing and degradation of fragile vegetation around oases and lowlands (ICRISAT, 2015).
- Income diversification and stability: Households can generate income from both crops and livestock throughout the year. This is especially beneficial for women and youth involved in market gardening, dairy production, or livestock trade in oases (USAID, 2020).
- Efficient resource recycling: Crop residues are used as livestock feed, while livestock waste returns to the field as organic fertilizer. This closed-loop approach reduces reliance on external inputs and lowers production costs (FAO, 2013; ILRI, 2012).
- Lower greenhouse gas emissions per unit of output: Compared to specialized systems, well-managed ICLS can reduce emissions intensity by improving feed quality, manure management, and reducing land-use change (World Bank & FAO, 2018).

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2.2.2. Three-layer cropping

The Three-Layer Cropping System also called multi-storey or vertical cropping is an agroecological farming method in which three types of crops are grown simultaneously at different heights to optimize space, light, water, and nutrient use. In arid and oases zones like Adrar, this system offers a climate-smart solution to increasing food production, conserving water, and rehabilitating degraded lands.
This model mimics natural ecosystems such as forest structures by combining:

- Tall species (upper canopy): e.g. date palms (Phoenix dactylifera)
- Medium-height fruit trees or shrubs: e.g. pomegranate, fig, or Moringa
- Ground-level crops: e.g. vegetables, legumes, alfalfa, or cowpeas

This method is especially suited to oases farming systems, where land and water are limited, but traditional palm groves already provide a shaded upper layer.

Advantages of Three-Layer Cropping in Adrar

Environmental Benefits

- Reduces soil erosion and improves soil structure through ground coverage
- Increases water efficiency, as the upper layers reduce evaporation and shade the soil
- Enhances biodiversity by supporting different root systems, insects, and microclimates
- Fixes nitrogen (in the case of legumes) and adds organic matter, reducing dependence on chemical inputs

Agricultural Benefits

- Maximizes land productivity by producing multiple crops from the same area
- Reduces pest and disease incidence, thanks to crop diversity and shading
- Improves soil fertility, especially when livestock manure is incorporated
- Stabilizes yields under climatic stress by spreading risk across different crop types and root depths

Socio-Economic Benefits

- Boosts food and nutrition security, with access to fruit, vegetables, and fodder year-round
- Generates multiple income streams, especially for women involved in vegetable gardening and product transformation
- Revives traditional oases know-how, while introducing new crop combinations and improved varieties
- Reduces labor seasonality, offering continuous agricultural activity throughout the year

Adaptation to Adrar's Climate

In Adrar, where annual rainfall is only 40–100 mm and sandy soils dominate, the three-layer cropping system allows farmers to:

- Use limited irrigation more efficiently, especially in oases perimeters
- Protect ground crops from wind and sun exposure
- Restore abandoned palm groves through understory cultivation and soil improvement
- Combine with drip irrigation and organic mulching for maximum resilience

Studies in similar Saharan environments (southern Tunisia, Algeria) have shown significant increases in land-use efficiency and household income using this model (FAO, 2012; CIRAD, 2016).

Challenges Without Project Support

Without technical support and investment:

- Traditional oases systems may remain underutilized, with declining palm productivity
- Ground crops may fail due to extreme heat, poor soil, or water misuse
- Farmers lack access to intermediate-layer trees and inputs needed to complete the three-tier system
- Knowledge about crop spacing, shade tolerance, and water needs may be limited

2.2.3. Ecotourism system

The Adrar region of Mauritania possesses exceptional ecological, historical, and cultural assets that make it uniquely suited for community-based ecotourism development. With its vast Saharan landscapes, ancient ksour (walled cities), sacred libraries, geological wonders like the Richat Structure (“Eye of the Sahara”), and more than 75 oases, Adrar offers an immersive tourism experience rooted in authenticity, nature, and heritage (UNESCO, 2020).
Ecotourism in Adrar focuses on low-impact, culturally respectful, and environmentally sustainable travel that brings direct economic and social benefits to local communities. This approach contrasts with conventional tourism by emphasizing conservation, community ownership, and long-term sustainability (UNWTO, 2021). Given Adrar’s vulnerability to climate change, desertification, and rural poverty, ecotourism provides an opportunity to:

- Diversify household income
- Reduce reliance on climate-sensitive agriculture
- Enhance the value of natural and cultural resources
- Strengthen local governance and collective action

Without structured project intervention, the region's tourism potential remains untapped, infrastructure weak, and local actors excluded from decision-making and economic benefits (World Bank, 2018).

Benefits of the Ecotourism System

Environmental Benefits

- Incentivizes conservation of oases, palm groves, and water points

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- Reduces pressure on fragile ecosystems by lowering reliance on extensive agriculture and grazing (GIZ, 2017)
- Promotes sustainable land and water management practices
- Decreases emissions through solar-powered infrastructure and local supply chains

Social Benefits

- Creates local jobs in guiding, hosting, cooking, transport, and crafts especially for women and youth
- Revitalizes cultural heritage, strengthens identity, and preserves oral traditions and architecture
- Reduces rural exodus by making local livelihoods more attractive
- Fosters community ownership and participatory governance in tourism planning

Economic Benefits

- Generates direct income from tourism spending in rural areas
- Stimulates value chains around dates, artisanal products, and natural medicine
- Offers a climate-resilient income source, less vulnerable to rainfall variability than agriculture
- Attracts external funding and green investment, especially for renewable energy and heritage conservation

2.2.3.1. Other income activity

As part of its long-term sustainability strategy, the PRAGOA project supports a variety of income-generating activities designed to improve household resilience and diversify local economies. Among these, the establishment of the Center of Excellence for Climate Adaptation and Innovation Center (CAIC) will serve as a national platform for training, demonstration, and applied research on sustainable land and water management in arid zones. These include poultry farming, which provides a rapid and accessible source of food and income, especially for women and youth; compost production, which improves soil fertility and reduces input costs for farmers; local processing of agricultural products, adding value to small-scale production, which build on the cultural and environmental assets of oases communities. Together, these diverse income streams are expected to enhance food security, reduce rural exodus, and improve the financial autonomy of households, while reinforcing the long-term economic sustainability of PRAGOA's interventions.

3. Comparison between implementing and not implementing the PRAGOA Project

The implementation of the Mauritania Oases Project will generate substantial environmental, social, and economic benefits while significantly improving the resilience of vulnerable communities in arid regions such as Adrar. The project is designed to address the root causes of climate vulnerability by strengthening ecosystem services, promoting sustainable livelihoods, and building local capacity to adapt to climate change.

Environmental Effectiveness:

- Restoration of degraded ecosystems through sustainable land and water management (SLWM) practices, agroecological farming, and reforestation in oases.
- Protection of biodiversity and conservation of traditional oases systems, which are under severe threat due to desertification, water stress, and poor agricultural practices.
- Improved water resource management, including small hydraulic infrastructure, rainwater harvesting, and aquifer protection, particularly critical in water-scarce zones like Adrar.
- Reduction in land degradation and soil erosion, especially in lowland depressions, oases, and wadis, which will enhance vegetation cover and ecological balance.

Social Benefits :

- Increased food security through improved agricultural productivity, crop diversification, and climate-resilient production systems (e.g., integrated crop-livestock systems and three-layer cropping).
- Empowerment of women and youth through income-generating activities (IGAs), training, and direct participation in value chains such as date processing, market gardening, and ecotourism.
- Strengthened social cohesion and reduced migration pressures, particularly by revitalizing oases-based agriculture and diversifying rural employment options.

Economic Benefits:

- Diversification of income sources through IGAs, ecotourism development, and support for local cooperatives and small enterprises.
- Job creation in agriculture, processing, ecosystem restoration, tourism, and services linked to the project's implementation.
- Improved market access and local value addition, including through capacity-building and infrastructure support for storage, packaging, and processing of oases products.

Institutional and Capacity Development:

- Establishment of the Center of Excellence for Climate Adaptation and Innovation Center (CAIC) which will anchor long-term technical training, knowledge sharing, and innovation in dryland agriculture and ecosystem restoration.
- Train-the-trainer systems, with local trainers delivering continuous support to producers and natural resource managers across project zones.
- Strengthening of local governance and planning mechanisms, including integration of adaptation strategies into municipal and regional development plans.

Long-Term Effectiveness and Sustainability:

- The project is built on a participatory and inclusive approach, ensuring that local communities are at the center of planning, implementation, and monitoring.
- The proposed interventions are aligned with national strategies on land degradation neutrality, climate adaptation, and food security, which increases institutional ownership and policy coherence.

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- Long-term impact is supported by partnerships with regional institutions (e.g., Tunisia's Institute of Arid Regions, Egypt's Desert Research Center) and the potential for replication and upscaling in other Sahelian dryland regions.

The PRAGOA project has clear benefits in the results to be achieved for each component of the project (table 4).

Table 70 : Comparison between the benefits created by the project and the no-intervention of the project

Components	Outcomes	Outputs	With the project	No project
Component 1 Improved water resources access and management for local communities	Outcome 1.1 Strengthened capacity on water management and increased adoption of best practices in integrated water resources management (IWRM)	Output 1.1.1 Integrated Water Resources Management Plans developed or updated	Community resilience to climate change will be significantly enhanced through land restoration, improved water infrastructure, and agroecological practices. In Adrar, access to water will improve via rehabilitated small dams and boreholes, leading to a 15–30% increase in agricultural yields and reduced resource conflicts.	Without the project, water scarcity and land degradation in Adrar will worsen. Seasonal water shortages will increase, exacerbating tensions between farmers and herders and contributing to food insecurity and yield decline of over 30% in some years.
		Output 1.1.2 Improved and rational use of available water through implementation of water resources management infrastructures	Improved water infrastructure (e.g., foggaras, boreholes) will enable year-round irrigation, reduce aquifer pressure, and stabilize crop production, especially in oases. Water losses of up to 300 million m³ annually will be mitigated through rehabilitation efforts.	Without the project, 36% of water infrastructure in Adrar will remain non-functional, limiting irrigation and increasing reliance on erratic rainfall. Crop failure and reduced water access will worsen poverty and migration.
	Outcome 1.2 Water resources acces improved for target communities	Output 1.2.1: Water resources mobilization infrastructures created or rehabilitated	Communities will benefit from new or rehabilitated water points, reducing collection time (especially for women) and supporting irrigation for more than 8,000 farms in Adrar.	Without the project, women and children will continue to walk long distances for water, limiting time for productive or educational activities. Water stress will worsen due to
Component 2 Improved resilience of ecosystems and livelihoods to climate change and variability	Outcome 2.1 SLM Practices promoted and operationalized	Output 2.1.1 Adaptive practices adopted for rehabilitation and preservation of ecosystems	land rehabilitation, dune stabilization, and biodiversity protection will improve land productivity, reduce erosion, and enhance vegetation cover across 75 oases in Adrar.	Without the project, ongoing degradation will reduce arable land, worsen desertification, and cause biodiversity loss, threatening 45% of Mauritania's date palm population concentrated in Adrar.
		Output 2.1.2 Agro-Pastoral Ecosystem Practices Enhanced Adopted and Effectively Implemented	Improved rangeland and livestock management practices will enhance forage availability through rotational grazing and reseeding of degraded pastures, increasing biomass by up to 30%. Livestock health will benefit from improved watering points and better access to veterinary services, reducing mortality rates especially among small ruminants. Income from pastoral activities, particularly for transhumant communities in Adrar, is expected to increase through better herd productivity and diversification (e.g., small-scale milk production, fattening units). Pilot interventions in similar Sahelian zones have shown income increases of 25–40% per household over three years.	Without the project, grazing pressure and climate shocks will reduce pasture viability. Livestock deaths during droughts will increase, cutting incomes and accelerating rural exodus in transhumant communities.
Component 3 Diversifying sources of income through IGAs to improve livelihoods of communities with a focus on women and youth	Outcome 3.1 Enhanced adaptive capacities and sources of income for communities' resilience through adoption of IGA	Output 3.1.1 Adaptative agriculture practices enhanced	integrated crop-livestock systems and climate-resilient seeds will increase productivity and reduce food insecurity. Yield gaps will be narrowed, covering up to 60% of cereal needs versus 30% currently in good years.	Without the project, dependence on low-yield rainfed crops will persist. Food deficits will rise and 70% of rural families will remain vulnerable to income shocks.Sources of income
		Output 3.1.2 Source of income diversified through IGAs	Income-generating activities will empower women and youth by creating jobs and diversifying household income. Tourism and local enterprise development will stimulate seasonal employment and attract investment into rural economies.	Without the project, rural livelihoods will remain undiversified. Youth unemployment and female economic exclusion will persist. Migration from oases will increase, weakening local economies.
Component 4 Capacity building, knowledge sharing, Communication and awareness raising of stakeholders and beneficiaries at different levels	Outcome 4.1 Stakeholders are mobilized and sensitized through communication and capacity building activities	Output 4.1.1 Practitioners, technicians, decision-makers and communities are sensitized and trained on CC issues and the integration of Climate Change Adaptation into planning processes	CAIC in Atar will train technicians and farmers in dryland agriculture and climate adaptation. Over 60,000 people will benefit from enhanced knowledge and tools for sustainable land management.	Without the project, technical knowledge on arid-zone adaptation will remain inaccessible. Communities will continue outdated practices and miss climate financing opportunities.
		Output 4.1.2 Community awareness and understanding of climate change adaptation strategies significantly increased	awareness campaigns and farmer field schools will build local knowledge of adaptive practices, reduce land degradation, and improve planning across generations	Without the project, awareness of climate risks and adaptive responses will remain low. Communities will be unprepared for future shocks, increasing humanitarian aid dependency.

The comparison between the PRAGOA project and the baseline scenario clearly illustrates the project's transformative economic and social value. In the baseline scenario representing the situation without PRAGOA interventions the Cost-Effectiveness Ratio (CER) is limited to 1.47, suggesting only modest efficiency, with each dollar invested generating 1.47 USD in return. With the PRAGOA project in place, the CER nearly doubles to 2.91, demonstrating a significant increase in investment effectiveness and confirming that each dollar spent produces nearly 2.91 USD in economic return. This reflects the strength of the project's integrated approach, which combines investments in water infrastructure, ecosystem rehabilitation, income diversification, and institutional capacity building.

The difference in Net Present Value (NPV) between the two scenarios further highlights the scale of impact. While the baseline scenario yields an NPV of only 288,589.14 USD, the PRAGOA project achieves a far greater return of 16,629,853.04 USD, showing how the project multiplies the long-term economic value of invested resources.

Importantly, the project also delivers substantial improvements in the well-being of both direct and indirect beneficiaries. Under the baseline scenario, direct beneficiaries would receive an average benefit of just USD 678.89, compared to 3,499.77 USD with PRAGOA an increase of more than fivefold. Indirect beneficiaries experience a similar improvement, with benefits rising from 341.82 USD to 1,762.13 USD. These gains reflect the project's impact on improving access to resources, strengthening livelihoods, and enhancing local adaptive capacity.

Table 71 : comparison between the baseline scenario (without the project) and with the PRAGOA Project

	Without the PRAGOA Project (base line scenario)	With the PRAGOA project
Cost-Effectiveness Ratio (CER)	1.47	2.1
Net Present Value (NPV)	288,589.14	16,629,853.04
Benefits for Direct Beneficiaries	678.89	3,499.77
Benefits for indirect beneficiaries	341.82	1,762.13

4. Specific analysis of project cost-effectiveness

4.1. Cost-Effectiveness of components 1

Component 1 of the PRAGOA project demonstrates strong cost-effectiveness and economic viability over the four-year implementation period. With a total investment of 2,676,350.40 USD, the interventions under this component are projected to generate an estimated return of USD 6 715,655.28 USD, resulting in a substantial net economic benefit of 4,039,304.88 USD. The Cost-Effectiveness Ratio (CER) stands at 2.51, meaning that every dollar invested under this component yields 2.51 USD in measurable economic return. This strong performance is largely driven by the implementation of water management infrastructure such as bunds, solar-powered irrigation systems, and protected water points, all of which directly contribute to increased water availability, reduced losses, and improved irrigation efficiency in oases agricultural systems. These physical investments enhance the productivity and profitability of farming activities by mitigating the risks of crop failure and enabling more intensive, year-round cultivation of high-value crops such as vegetables and dates.

In addition to infrastructure, Component 1 includes a significant capacity-building dimension focused specifically on water resource governance. The creation and training of Local Water Resource Management Committees, along with technical workshops on integrated water resources management (IWRM), contribute to strengthening local ownership and improving long-term operation and maintenance of water infrastructure. These actions ensure that communities are not only passive recipients of infrastructure but are actively equipped to manage and sustain it.

By combining practical infrastructure with targeted institutional support, the component offers a coherent and durable response to the structural water challenges faced by oases communities. The high cost-effectiveness ratio observed reinforces the strategic value of investing in water resource access and governance in arid and semi-arid environments. Moreover, the economic returns generated are supported by lasting improvements in local capacity and resilience, ensuring sustainability beyond the project's timeframe.

Moreover, the economic benefits generated by this component are distributed in a way that ensures meaningful impact at both the household and community levels. Direct beneficiaries receive an average return of 802.25 USD per person, while indirect beneficiaries benefit from approximately 403.93 USD each. These figures reflect the tangible value of improved water access for irrigation, domestic consumption, and small-scale agricultural and pastoral production. Beyond increasing income, these gains contribute to reducing household vulnerability, strengthening food and water security, and laying the groundwork for diversified and climate-resilient rural livelihoods. The broad reach of these benefits underscores the role of water infrastructure and governance as a catalyst for inclusive and sustainable development in the oases of Adrar.

Table 72 : Cost Effectiveness Analysis of Component 1

Metric	Value (USD)
Total Cost (for 4 years)	2,676,350.40
Total Estimated Return	6,715,655.28
Net Benefit	4,039,304.88
Cost-Effectiveness Ratio (CER)	2.51
Benefits for Direct Beneficiaries	802.25
Benefits for indirect beneficiaries	403.93

4.2. Cost-Effectiveness of components 2

Component 2 of the PRAGOA project, which focuses on improving the resilience of ecosystems and livelihoods to climate change and variability, demonstrates solid cost-effectiveness over the four-year implementation period. With a total investment of 2,180,123.84 USD, the interventions under this component are expected to generate an estimated return of 4,029,393.17 USD, resulting in a net economic benefit of 1,849,269.32 USD.

The Cost-Effectiveness Ratio (CER) is calculated at 1.85, indicating that every dollar invested yields 1.85 USD in economic return. This result reflects the effectiveness of activities such as the establishment of green belts and vegetative barriers, reforestation of degraded areas, protection of oases from sand encroachment, and the introduction of sustainable land and rangeland management practices. These actions contribute to the stabilization of fragile ecosystems, reduce land degradation, and support the long-term productivity of agro-pastoral zones.

Although the return on investment is slightly lower than infrastructure-heavy components, the benefits generated by Component 2 are critical to the overall sustainability of the project. Ecosystem restoration and climate adaptation interventions typically yield medium- to long-term impacts, including improved soil fertility, water retention, and biodiversity conservation factors that underpin both agricultural performance and community resilience.

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Capacity building is also an integral part of this component. Through training, demonstration plots, and the creation of producer clubs, the project strengthens the technical skills and adaptive capacity of local actors. This investment in human capital supports the scaling-up of sustainable land management (SLM) practices and enhances the community's ability to cope with increasing climate variability.

In terms of distributional impact, direct beneficiaries receive an average gain of 367.28USD, while indirect beneficiaries benefit from approximately 184.93 USD over the implementation period. These benefits, while modest on a per-person basis, represent significant contributions in vulnerable rural settings. They reflect improvements in land productivity, reduced exposure to environmental risks, and better access to rehabilitated natural resources, all of which are crucial for protecting livelihoods and reducing long-term vulnerability.

Table 73 : Cost Effectiveness Analysis of Component 2

Metric	Value (USD)
Total Cost (for 4 years)	2,180,123.84
Total Estimated Return	4,029,393.17
Net Benefit	1,849,269.32
Cost-Effectiveness Ratio (CER)	1.85
Benefits for Direct Beneficiaries	367.28
Benefits for indirect beneficiaries	184.93

4.3. Cost-Effectiveness of components 3

Component 3 of the PRAGOA project dedicated to diversifying income sources and enhancing livelihoods, with a focus on women and youth demonstrates exceptional cost-effectiveness and strong economic performance over the four-year implementation period. With a total investment of 2,842,070.76 USD, this component is projected to generate 13,431,310.56 USD in economic return, resulting in an impressive net benefit of 10,589,239.80 USD.

The resulting Cost-Effectiveness Ratio (CER) of 4.73 indicates that for every dollar invested, the component delivers 4.73 USD in economic returns the highest ratio among all components. This exceptional return reflects the direct and rapid income-generation potential of activities such as the development of ecotourism, agro-processing, women-led microenterprises, poultry and small livestock farming. These activities not only increase household income but also enhance employment opportunities, particularly for rural youth and women, contributing directly to local economic revitalization.

The component’s strong performance is further reinforced by its practical and inclusive approach. By supporting small-scale entrepreneurs, and providing targeted start-up support and training, Component 3 delivers quick economic results while fostering local ownership and long-term sustainability.

In addition to the robust financial returns, the distributional impact of this component is especially noteworthy. Direct beneficiaries receive an average gain of 2,103.13 USD, while indirect beneficiaries benefit by approximately 1,058.92 USD over the project period. These are substantial figures in the rural Mauritanian context, reflecting the high economic leverage of livelihood-focused interventions. These benefits translate not only into improved incomes, but also into enhanced economic autonomy, social inclusion, and resilience among target groups particularly women and youth.

Table 74 : Cost Effectiveness Analysis of Component 3

Metric	Value (USD)
Total Cost (for 4 years)	2,842,070.76
Total Estimated Return	13,431,310.56
Net Benefit	10,589,239.80
Cost-Effectiveness Ratio (CER)	4.73
Benefits for Direct Beneficiaries	2,103.13
Benefits for indirect beneficiaries	1,058.92

4.4. Cost-Effectiveness of components 4

Component 4 of the PRAGOA project dedicated to capacity building, knowledge sharing, communication, and awareness raising shows strong cost-effectiveness and considerable indirect impact, particularly given its enabling and cross-cutting role across all other components. With a total investment of 751,455 USD over four years, this component is projected to generate a return of 2,686,262.11 USD, resulting in a net benefit of 1,934,807.11 USD.

The Cost-Effectiveness Ratio (CER) stands at 3.57, meaning that for every dollar invested, the component generates 3.57 USD in economic return. This impressive ratio reflects the catalytic role of training, awareness campaigns, technical assistance, and stakeholder mobilization activities, which underpin the adoption, uptake, and long-term sustainability of the project's core interventions.

Component 4 contributes to improving the technical and institutional capacity of local actors’ farmers, pastoralists, technicians, youth, and local officials through structured training programs, knowledge products, participatory planning processes, and peer-to-peer learning (e.g., study tours and exchange visits). These interventions enhance climate literacy, support behavior change, and ensure that beneficiaries are equipped to apply and scale the innovations introduced through Components 1, 2, and 3.

Although this component does not generate direct physical outputs like infrastructure or IGAs, it is instrumental in ensuring that the project’s benefits are well understood, socially inclusive, and sustainable. Its strong CER reflects the multiplier effect of well-targeted capacity building and communication: by strengthening skills and awareness, it amplifies the impact of investments made in water management, ecosystem restoration, and income diversification.

In terms of benefit distribution, direct beneficiaries receive an average gain of 384.27 USD, while indirect beneficiaries gain approximately 193.48 USD. These benefits capture the often-intangible, but essential, contributions of improved knowledge, enhanced technical capacity, and institutional coordination. In resource-constrained and climate-vulnerable regions like Adrar,

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such interventions are fundamental to building long-term resilience and ensuring that development outcomes extend beyond the lifespan of the project.

Table 75 : Cost Effectiveness Analysis of Component 4

Metric	Value (USD)
Total Cost (for 4 years)	751,455
Total Estimated Return	2,686,262.11
Net Benefit	1,934,807.11
Cost-Effectiveness Ratio (CER)	3.57
Benefits for Direct Beneficiaries	384.27
Benefits for indirect beneficiaries	193.48

4.5. Cost-Effectiveness of the PRAGOA Project

The cost-effectiveness assessment of the PRAGOA project over its four-year implementation period confirms the strength and efficiency of its investment strategy. With a total expenditure of 9,241,292 USD and projected cumulative returns of 26,862,621.11 USD, the project delivers a substantial net benefit of 17,621,329.11 USD. This corresponds to a Cost-Effectiveness Ratio (CER) of 2.91, indicating that every dollar invested generates nearly 2.91 USD in direct economic returns. Such a result reflects the coherence and complementarity of the project's components combining hard investments in water infrastructure, ecosystem restoration, and livelihood support with critical soft interventions in capacity building, knowledge transfer, and community engagement.

The magnitude of this return is particularly significant given the fragile context of implementation, where climate vulnerability, rural poverty, and resource scarcity pose systemic constraints to development. Importantly, the benefits measured here reflect only the returns captured during the four-year implementation phase. In practice, the long-term impact is expected to exceed these figures substantially, as rehabilitated land and water systems continue to support production, local institutions gain maturity, and income-generating activities become self-sustaining. This long-term perspective reinforces the project's relevance not only as a climate adaptation initiative but as a scalable and replicable model for integrated rural development in other oasian and agropastoral areas across Mauritania and the Sahel.

Table 76 : Cost Effectiveness Analysis of the PRAGOA Project

Metric	Value (USD)
Total Cost (for 4 years)	9,241,292
Total Estimated Return	26,862,621.11
Net Benefit	17,621,329.11
Cost-Effectiveness Ratio (CER)	2.91

5. Financial Analysis

The financial analysis of the PRAGOA project over its four-year implementation period demonstrates a highly favorable return on investment, underscoring the soundness of its integrated and phased approach. With total expenditures amounting to 9,240,000 USD and projected cumulative benefits reaching 26,862,621 USD, the project achieves a strong Benefit–Cost Ratio of 2.91, indicating that each dollar invested generates nearly 2.91 USD in measurable economic return. This performance is supported by a consistently positive annual cash flow and a particularly strong result in Year 4, when key infrastructures become fully operational and income-generating activities reach maturity, resulting in a Benefit–Cost Ratio of 7.02. The Net Present Value (NPV), estimated at 18,994,376 USD, confirms that the present value of benefits significantly outweighs investment costs, while the Internal Rate of Return (IRR) of 25% reflects robust financial efficiency well above accepted thresholds for climate-resilient development projects. These results point to the strategic effectiveness of PRAGOA's design, where early investments in water infrastructure, ecosystem rehabilitation, and capacity building lay the foundation for sustainable, locally driven income generation. Importantly, the project is expected to continue generating economic and social benefits well beyond the four-year implementation phase, as restored systems, strengthened institutions, and productive assets remain in place and fully operational. As return scale over time and reach a wide range of beneficiaries, the project demonstrates not only economic viability but also the potential for long-term impact and replicability in similar vulnerable Osian and agropastoral environments.

Table 77 : Financial analysis of PRAGOA Project

Component / Indicator	Year 1	Year 2	Year 3	Year 4	Total
Component 1 (USD)	956,088	1,150,088	360,088	210,088	2,676,350
Component 2 (USD)	811,809	556,809	450,754	360,754	2,180,125
Component 3 (USD)	651,330	923,580	823,580	443,580	2,842,070
Component 4 (USD)	205,728	195,728	155,000	195,000	751,455
Execution costs (management units) (USD)	237,000	197,500	158,000	197,500	790,000
Total costs (A) (USD)	2,861,954	3,023,704	1,947,421	1,406,921	9,240,000
Total financial benefits (B) (USD)	4,319,371	5,776,663	6,883,548	9,883 ,040	26,862,621
Cash flow (B − A)	1,457,417	2,752,959	4,936,127	8,476,119	17,622,621
Cost-Effectiveness Rate (CER) (%)	1.51	1.91	3.53	7.02	2.91
Net Present Value (NPV) (USD)	4.8				18,994,716
Internal Rate of Return (IRR) (%)					25%

5.1. The Internal Rate of Return (IRR) of the PRAGOA project

The Internal Rate of Return (IRR) curve demonstrates the strong and sustained economic viability of the project, with returns rising quickly to 25% by year 4 and reaching a stable 35% by year 15. This steady growth reflects the project's ability to

generate increasing benefits over time through interventions such as improved water infrastructure, sustainable agricultural practices, and diversified income-generating activities. Beyond profitability, the long-term sustainability of the project is evident in the way it builds community capacity, institutional support, and environmental resilience. The stabilization of IRR after year 15 indicates that the systems and practices introduced such as integrated crop livestock system, ecotourism system become self-sustaining. Communities, particularly in vulnerable areas like Adrar, continue to benefit from these systems without requiring continuous external support. Key to this sustainability is the establishment of local governance structures (e.g. water-user associations and Farmers' Clubs), the training of local technicians through the Center of Excellence for Climate Adaptation and Innovation Center (CAIC), and the promotion of locally adapted innovations. These ensure that knowledge, tools, and infrastructure are maintained and passed on, enabling future generations to build on the project's results. Furthermore, by reducing reliance on external aid and increasing adaptive capacity, the project secures long-term resilience against climate change. The combination of strong IRR performance and built-in sustainability mechanisms confirms that the project is not only cost-effective but also strategically designed to deliver lasting development impact.

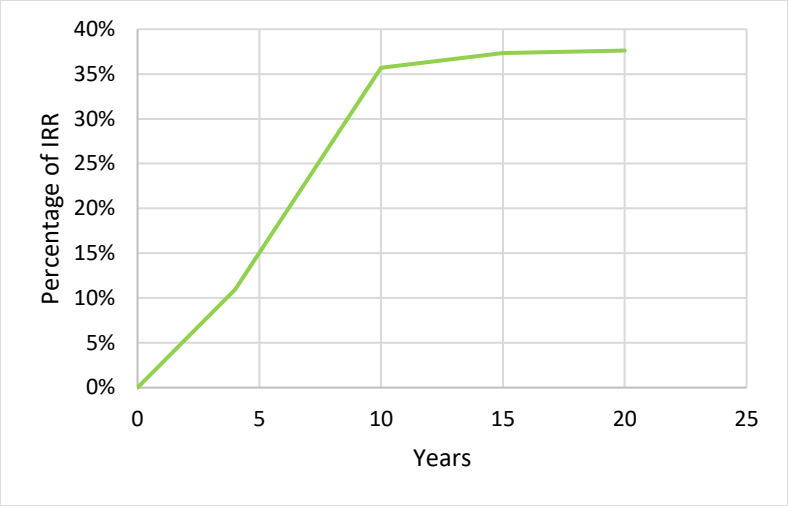

Figure 13: Evolution of the IRR of the project

5.2. The Internal Rate of Return (IRR) of the three-layer cropping system

The Internal Rate of Return (IRR) curve for the Three-Layer Cropping system highlights very strong economic benefits, especially demonstrated by the rapid increase in profitability during the first ten years and sustained high returns over a 20-year period. The steep climb to nearly 48% IRR by year 10 shows that this system quickly generates significant financial gains, largely due to the early productivity of fast-growing herbaceous and shrub crops in the lower and middle layers, such as vegetables and legumes, which provide immediate income and help farmers recover their investments early, reducing financial risks and encouraging adoption.

By integrating trees, shrubs, and herbaceous crops with staggered growth and harvest times, the system offers year-round productivity and multiple sources of income. This diversification reduces vulnerability to market and climate fluctuations, increasing overall financial resilience for farmers. For example, while fast-growing crops generate short-term revenue, the medium and upper layers such as fruit trees begin yielding commercially viable harvests over time, providing steady income and economic stability in the medium and long term.

The vertical layering of crops also maximizes land and water use efficiency, which is critical in fragile, arid regions like Adrar. This efficient utilization translates into higher returns per unit area compared to monoculture systems, boosting profitability without requiring additional land or water inputs. After the initial rapid growth phase, the IRR continues to rise moderately, surpassing 51% by year 20, where it stabilizes. This plateau reflects a mature agroforestry system that delivers strong, sustainable returns as trees and shrubs establish, soil fertility improves, and microclimates become more favorable. Reduced need for external inputs like fertilizers and irrigation further lowers costs and increases net income.

Over time, the system's ecological benefits contribute to its economic viability by enhancing soil health and water retention, which helps reduce operational expenses and increases self-sufficiency. This makes the system less dependent on costly external inputs and supports sustained profitability. Moreover, its structural diversity and resilience to drought or pest outbreaks protect farmers' livelihoods against environmental and market shocks.

The high IRR also indicates strong incentives for adoption, which could have positive ripple effects on local economies through job creation and diversification of agricultural production. Overall, the Three-Layer Cropping system not only provides rapid and sustained economic returns but also promotes long-term resilience, sustainability, and rural development in climate-stressed and resource-scarce regions.

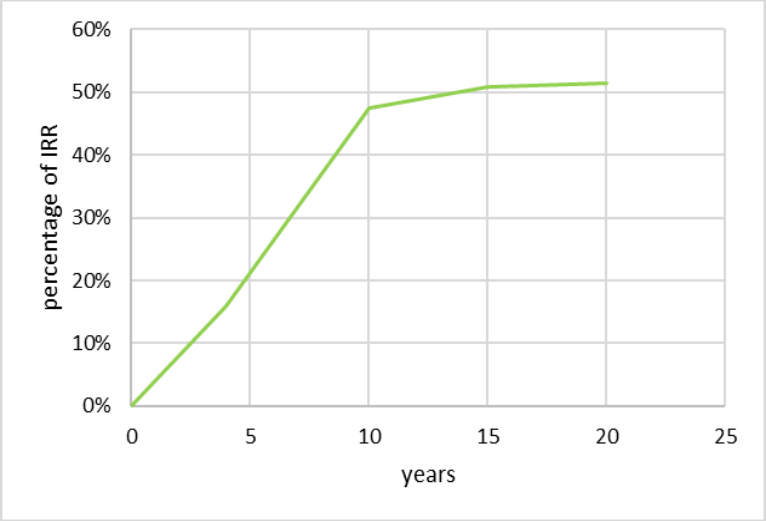

Figure 14: The IRR of the Three-Layer Cropping system

5.3. The Internal Rate of Return (IRR) of the integrated crop livestock system

The figure displays the Internal Rate of Return (IRR) as a percentage over a 20-year period for an Integrated Crop-Livestock System (ICLS). The trend shows a sharp increase in IRR during the first 10 years, reaching approximately 48%, followed by a more gradual rise that stabilizes around 51% by year 20.

This pattern indicates that ICLS becomes economically viable relatively quickly, with significant gains in the early years due to improvements in soil fertility, productivity, and input efficiency. The steep IRR growth during the first decade likely reflects the system's ability to optimize natural resource use, reduce input costs, and generate diversified income streams. After year 10, the IRR continues to grow, though more slowly, reflecting a mature, resilient system that continues to deliver high returns with lower marginal investments.

In the context of the PRAGOA project in Adrar, this trend highlights the long-term sustainability and profitability of ICLS as a climate adaptation measure. It shows that the system not only generates a strong economic return but also maintains its value over time, even under arid and resource-constrained conditions. This reinforces the relevance of ICLS in strengthening livelihood resilience, improving food security, and promoting climate-smart agriculture in the oasian and agropastoral zones of Mauritania.

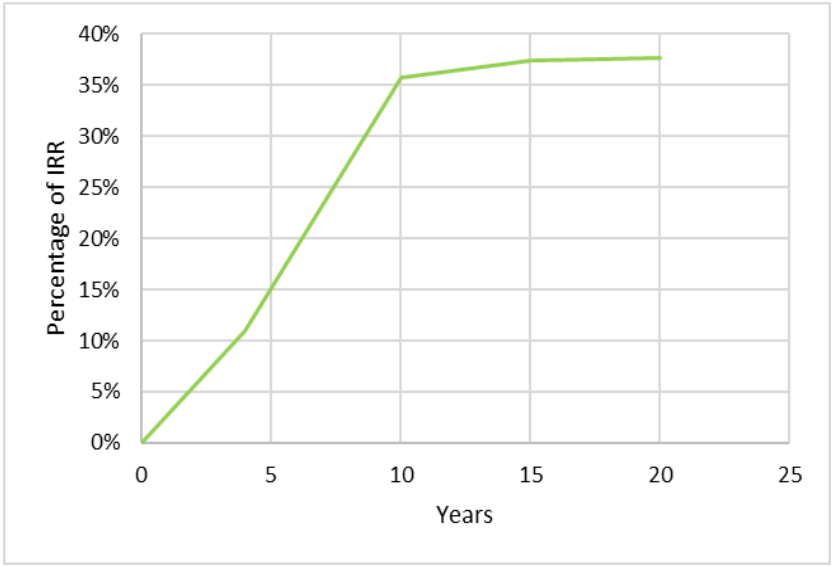

Figure 15: The IRR of Integrated crop livestock system

5.4. The Internal Rate of Return (IRR) of the ecotourism system

The Internal Rate of Return (IRR) over a 20-year horizon for the community-based ecotourism system planned in the Adrar region under the PRAGOA project shows a sharp increase during the first 10 years, reaching approximately 58%, followed by a gradual rise that stabilizes around 59% by year 20.

In the first four years, the system transitions from a phase of substantial capital investment to early operational success. Year 1 is marked by heavy expenditures for infrastructure development such as eco-lodges, water systems, and local capacity building resulting in a negative cash flow. However, starting from Year 2, the launch of tourism services and local income-generating activities (crafts, guiding, accommodation) leads to rapid revenue growth. By Year 4, the system begins to generate positive net benefits, and the IRR becomes positive, indicating a relatively fast recovery of the initial investment and early economic viability. This performance reflects the system’s efficient design, high visitor potential, and strong community participation.

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The rapid IRR growth in the first decade highlights the effectiveness of combining natural and cultural assets with renewable energy, low operating costs, and targeted market linkages. From Year 10 onwards, the IRR stabilizes, suggesting a mature, steady-state operation with sustained revenues and minimal reinvestment requirements.
In the context of PRAGOA, this trend confirms that ecotourism is not only economically viable but also an important pillar of sustainable rural development. It offers a reliable, long-term income stream for communities, especially for youth and women, while reinforcing local cultural identity and reducing pressure on natural resources. As such, it supports the project's broader goals of resilience, livelihood diversification, and climate adaptation in Mauritania's oasian and agropastoral zones.

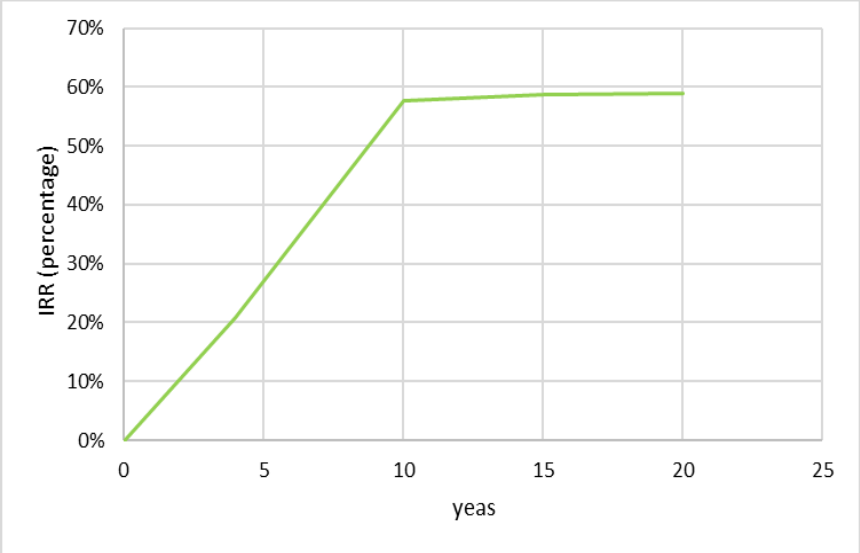

Figure 16: The IRR of an ecotourism system

6. Long term impact of PRAGOA project

6.1. Economic Impact

The PRAGOA project will bring tangible and lasting economic improvements to oases and agropastoral communities in Adrar, particularly by boosting productivity, reducing economic vulnerability, and diversifying local livelihoods. One of the most immediate outcomes will be higher and more stable rural incomes, made possible by the rehabilitation of wells, improved water-harvesting systems (such as bunds and dikes), and the introduction of solar-powered irrigation. These interventions will reduce the risk of crop failure, particularly in dry seasons, and enable farmers to grow high-value crops such as vegetables and forage year-round. In parallel, the promotion of an Integrated Crop-Livestock System (ICLS) will create synergies between agriculture and livestock: crop residues will serve as animal feed, while livestock manure will be used to improve soil fertility. This closed-loop system will lower reliance on external inputs, increase yields, and raise net farm margins over time leading to a cumulative increase in agricultural income, especially for smallholders.
Another central pillar of PRAGOA's economic strategy is job creation and youth retention. The project's support for income-generating activities (IGAs) such as ecotourism will stimulate entrepreneurship and rural employment. Training programs, start-up kits, and technical assistance will target women and youth, who are often excluded from conventional employment channels. During community consultations in Dhaya and Ziyara, widespread concern was expressed about the rural exodus of young people toward mining zones due to the lack of economic opportunities. PRAGOA directly addresses this concern by fostering local value chains and supporting microenterprises with long-term growth potential.
Furthermore, the project is expected to reduce the high costs associated with food imports in remote areas like Adrar. By increasing the local availability of vegetables, meat, dairy, and date-based products, PRAGOA will help households shift from dependency on expensive and often nutritionally limited imported food to locally produced, nutrient-rich alternatives.
In the long term, these economic changes will create self-reinforcing rural economies that are more resistant to climate and market shocks. Farmers equipped with resilient infrastructure and knowledge will be able to maintain higher productivity levels, while local value chainsrooted in diversified production and small-scale enterprises will continue to generate employment and income beyond the project's duration. The skills and governance capacities built among farmers, youth, and local institutions will sustain inclusive economic development for years to come.

6.2. Social Impact

PRAGOA's social impacts are deeply rooted in improving the well-being, equity, and agency of rural populations, with a strong focus on inclusivity and empowerment. One of the most pressing challenges addressed by the project is food and nutrition security. By expanding crop diversity, integrating small-scale livestock production, and promoting household gardens, the project directly targets the causes of malnutrition identified by the Ministry of Social Action. These actions will make nutrient-rich foods more available and affordable throughout the year, improving dietary quality particularly for children and women of reproductive age.
The project also promotes gender equity and the empowerment of women, not only through access to IGAs and financial support but also by ensuring that women occupy leadership roles in local governance bodies, including water management committees. Dedicated training sessions and participatory planning will ensure that women are fully involved in decision-making processes, enabling them to gain control over their income and actively shape community development.

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Moreover, PRAGOA strengthens social cohesion and community participation through a robust and inclusive engagement process. Local leaders, women, youth, farmers, and herders have already been consulted and have expressed strong interest in the project.

To support long-term transformation, PRAGOA invests in skills development and institutional capacity-building. Targeted training in areas such as water governance, veterinary care, integrated water resource management (IWRM), and climate-smart agriculture will enhance the technical capabilities of local actors and government staff. These skills will be critical in sustaining project outcomes and enabling communities to manage their natural resources more effectively, in a context where technical support has traditionally been lacking.

Over time, these social investments will strengthen the human and institutional fabric of rural Adrar. Improved nutrition will lead to better health and learning outcomes. Empowered women and trained youth will play a stronger role in economic life and local governance. Inclusive institutions established during the project will outlast it, ensuring that communities can continue resolving challenges and coordinating action collectively. The result is a socially cohesive and more resilient society capable of adapting to future risks.

E. Environmental Impact

PRAGOA's environmental impacts are equally transformative, targeting both ecosystem restoration and climate adaptation. The project will contribute to the restoration of degraded land and water tables by implementing effective soil and water conservation measures. These include the construction of earth bunds, re-vegetation with native species, and rotational grazing systems to reduce overuse of rangelands. These interventions will regenerate soil structure, prevent erosion, reduce sand encroachment, and enhance groundwater recharge some of which have already shown positive results in pilot areas visited during the mission.

In terms of biodiversity conservation, the project partners with the Association for the Protection of Endangered Date Palm Species to safeguard and propagate native cultivars that are essential to local diets, culture, and resilience. Additionally, promoting diversified fodder crops, rotational grazing, and agroecological practices will help protect local flora and fauna, maintaining essential ecosystem functions.

Crucially, PRAGOA contributes to climate change mitigation and adaptation. The transition from diesel to solar-powered water pumps will reduce greenhouse gas emissions and dependency on fossil fuels. The adoption of integrated farming systems and organic soil management will increase soil carbon content and improve overall water-use efficiency. Rehabilitated dikes and runoff control infrastructure will also reduce the impact of flash floods and preserve soil health. Together, these interventions build the region's adaptive capacity to withstand rising temperatures and increasing climate variability, which are expected to worsen in Adrar over the coming decades.

In the long term, PRAGOA's environmental actions will lead to lasting improvements in the health and productivity of agroecosystems. Rehabilitated land and rangelands will support sustainable livelihoods far beyond the project's timeline. Biodiversity preservation will safeguard the genetic base needed for future adaptation and food security. Clean energy adoption and sustainable land management practices will embed environmental responsibility in local systems, ensuring long-lasting resilience to climate stressors and ecological degradation.

7. Conclusion

The PRAGOA project presents a highly cost-effective and strategically relevant intervention to address the accelerating environmental, social, and economic challenges of the Adrar region. With a total net economic benefit exceeding 17.6 million USD and a Cost-Effectiveness Ratio (CER) of 2.91, the project proves to be a strong investment for enhancing climate resilience, natural resource management, and sustainable livelihoods.

Each of the project's components contributes meaningfully to both immediate impact and long-term viability. Water access and management interventions (Component 1) mitigate climate-induced water stress. Ecosystem and agricultural improvements (Component 2) restore degraded land and increase productivity through climate-smart approaches. Diversified income-generating activities (Component 3) offer economic resilience and empowerment, particularly for women and youth. Institutional and community capacity building (Component 4) ensures that the project's gains are rooted in strong local ownership.

Importantly, PRAGOA was designed with a long-term sustainability pathway. Beyond infrastructure and economic gains, it strengthens local governance, builds human and institutional capacity, and promotes knowledge dissemination through the establishment of the Climate Adaptation and Innovation Center Excellence (CAIC). The CAIC will continue to serve as a regional hub for training, research, and innovation in climate adaptation beyond the project's duration.

At the conclusion of the four-year implementation phase, the Sahara and Sahel Observatory (OSS) will transfer full responsibility for the project to SOS Oasis Mauritania under the supervision of the Ministry of Environment and Sustainable Development. This handover ensures institutional continuity, national ownership, and integration with broader environmental and climate strategies.

The PRAGOA project effectively transforms vulnerability into opportunity through community empowerment, sustainable development, and strengthened governance, ensuring the resilience of oases communities well beyond the project's timeline.

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Annex 5: Consultation Process Report

1. Context and rationale

The Wilaya of Adrar is located in the northern part of Mauritania and extends over a 233,478 km2 area, i.e. 22.65% of the total area of Mauritania (1,030,700 km2). It is bordered to the north by the Wilaya of Tiris Zemmour, to the west by the Wilayas of Dakhlet Nouadhibou and Inchiri, to the east by the Wilaya of Hodh El Chargui and Mali, to the south by the Wilayas of Trarza and Tagant. It is characterized by many natural depressions whose morphology and hydrological features make it one of the best oases landscapes, with significant agricultural potential and rich biological diversity. Agriculture and livestock are the main economic activities in the region, where agropastoral production systems are particularly vulnerable due to their dependence on rainfall, intra- and inter-seasonal climate variability, as well as the recurring challenges of droughts and floods, which systematically impact crops and livestock. In addition, poverty limits the ability of farmers and rural communities to adapt to these challenges.

With a view to better identifying and implementing appropriate approaches to managing environmental problems and challenges, the NGO SOS-Adrar in partnership with the Ministry of the Environment and Sustainable Development initiated the development of the "Improving the resilience of communities in agropastoral and oases ecosystems of Ziyara and Dhaya to the harmful effects of climate change in the Adrar region - Mauritania" national project, with the technical support of the Sahara and Sahel Observatory (OSS).

This project was submitted to the Adaptation Fund (AF) according to the two-stage approval process. The first stage (Concept Note) which was approved by the Executive Board of the Fund, contains more detailed information on the project and is accessible via the AF website. The second step will consist of the development of the project full proposal to be submitted to the AF, in early 2025, in order to have access to funding. At this stage, all detailed information must be provided, considering the comments and recommendations from the concept note evaluation. It will be implemented by the OSS in its capacity as an AF-accredited Regional Implementing Entity and executed at the national level by the national NGO SOS-Oasis in partnership with the Ministry of the Environment and Sustainable Development of Mauritania. In accordance with the AF requirements, a consultation process was conducted with the stakeholders at the local and national levels in the Wilaya of Adrar, in order to ensure better ownership of the project and optimal consideration of their needs. This process also made it possible to carry out a more detailed assessment of the sites in the project potential areas of intervention, and identify the initial criteria for selecting the sites and beneficiaries, which will be applied for the implementation of the project activities. In this context, the OSS, in collaboration with the project national and local executing partners, met with stakeholders and beneficiaries in the project potential sites of intervention. These consultations took place from October 17 to 21, 2023 in Adrar.

It is worth reminding that PRAGOA never received a Project Formulation Grant (PFG) from the Adaptation Fund to finance the development process thereof, including other preparatory studies, due to the OSS accreditation category. Consequently, the Ministry of the Environment and Sustainable Development and the OSS mobilized their own financial resources to support such a process. In order to plan and finetune all necessary details, a coordination mission was conducted, on September 19-20, 2023, by the OSS represented by its Executive Secretary who met with H.E. Mrs. Lalya Aly Kamara, Minister of the Environment. During this meeting, the financing scheme for the preparatory studies and the consultation process in the Wilaya of Adrar was established. A working and planning session brought together experts from the Ministry of the Environment, SOS-Oasis and the OSS. An action plan was validated and the dates and schedule of field visits were finalized during this meeting.

F. Objectives of the process

The stakeholder consultation process was led by the OSS in partnership with the Ministry of the Environment and SOS-Oasis. The logistical and organizational aspects of the field mission, including the meetings, consultation visits and the mobilization of local communities were handled by the Ministry of the Environment and coordinated in partnership with SOS-Oasis. The process took place at a national and a local level, as follows:

- A working/scoping meeting was held between the OSS, the Ministry of the Environment and SOS-Oasis,
- Visits to the pre-selected sites and areas for consultations with local stakeholders and potential beneficiaries of the project.

An online planning meeting preceded the OSS delegation’s trip to Mauritania, to define the details of the consultation and plan the site visits. Various documents were prepared in advance, namely: the mission concept note, the data collection questionnaire, the consent letters for community representatives, local authorities and traditional leaders, the attendance lists and the photo and video consent form, the FPIC process guide, the visit program and the guide for interviews with the stakeholders. This planning allowed the representatives of the different institutions to agree on the objectives of the mission as well as the expected outcomes for each site to be visited.

G. Framework meeting

On October 17, 2023, a scoping session was held at the Ministry of the Environment to provide details on the stakeholder consultation process and visits to the pre-selected sites. This meeting brought together Mr. Sidi Mohamed El Wavi, focal point of the Adaptation Fund National Designated Authority (NDA), as well as representatives of SOS-Oasis, the OSS and the Ministry of the Environment (see attendance list).

During this session, the mission provided officials from the Ministry of the Environment and SOS-Oasis with a number of key documents, including the mission concept note, the data collection questionnaire, the agenda of the meetings and visits and the consultation process guide. This meeting allowed the executing partners to: i. Validate the overall agenda of the mission; ii. Have a clearer understanding of the objectives and expected outcomes of the mission; iii. Agree on the data collection approach to be adopted; iv. Identify the necessary secondary data to be collected in collaboration with some sectoral actors on the ground.

H. Field visits, stakeholder consultations and results

Stakeholder consultations took place from October 18 to 21, 2023 in the Wilaya of Adrar. Several meetings were organized with local authorities and representatives of national technical structures at the Wilaya. Meetings were also held with representatives of civil society and local populations. Field visits made it possible to observe interventions carried out in the project area and to explore ongoing or recently completed initiatives. Details and the main results of each stage of this mission are presented within this document.

4.1. Work meeting with Mr. Abdallahi Mohamed Mahmoud, Wali of Adrar

The mission was accompanied by the Wilaya's delegate to the environment and paid visit to Mr. Abdallahi Mohamed Mahmoud, Wali of Adrar, at the Wilaya's premises. During this meeting, members of the mission presented the PRAGOA project, explained its objectives and the main expected results. An overview of the various stages completed and those for the full document to be finalized was also presented.

The Wali expressed his satisfaction with the collaboration with the OSS and said he appreciated that the concept note was prepared, submitted and validated by the Adaptation Fund in such a short time. He stressed the importance of this field mission to identify the beneficiaries and validate the selection of the project sites. He also assured his support, as well as that of the Wilaya's services, throughout the project implementation. He recommended targeting the unattended populations and beneficiaries.

4.2. Work meeting with Mr. Cheikh Said Bakili, Hakem of Atar

After learning about the project and the purpose of the mission, Mr. Cheikh Said Bakili, Hakem of Atar, assured the delegation of the total commitment of local authorities and regional technical services to grant all the necessary facilities. He also reiterated his support for the project implementation phase.

4.3. Meeting with the Delegates of the Ministries and Regional Technical Services

This meeting brought together representatives of the various ministries and regional technical services, as well as potential partners of the project in the Adrar region. The delegates of the environment (Mr. Sidi Mohamed ADEBA), hydraulics, agriculture, livestock, social affairs of children and family, tourism, as well as representatives of other local initiatives, attended the meeting. Discussions made it possible to define the specific problems in the project area of intervention and to exchange on potential solutions. The representatives shared their experiences in implementing previous initiatives in the region, highlighting the lessons learned. Discussions highlighted several shared challenges and recommendations for the project, based on previous experiences.

Mobilization of the Populations: The mobilization of communities was identified as a major challenge that many projects have faced in the region. According to the speakers, this is often due to inadequate awareness and a poor involvement of the populations from the project conceptualization phase. The mission specified that such a gap will be bridged, in particular through awareness-raising and community organization activities from the project launch. In addition, some project activities will use the High Intensity of Labor approach to better involve local populations.

Extent of the Area of Intervention: The large area of the region, the long distances between villages and the scarcity of means of transport are another major challenge to deal with, exacerbated by often extreme climate conditions. The mission will therefore have to carefully plan logistics to effectively cover the entire area of intervention.

Mr. Elhoussein CHRIF, regional delegate for hydraulics, highlighted several challenges specific to his sector, including the poor knowledge about water resources. The lack of up-to-date data in the Wilaya of Adrar limits planning and the identification of real needs. He said he was hoping the project would accurately describe the situation of this resource. He also said there was a problem with the infrastructure maintenance, stressing that many hydraulic structures were out of service due to the lack of maintenance. In addition, he recommended promoting the use of renewable energies, particularly solar energy for water pumping. Finally, he stressed the importance of developing water management models that integrate the impacts of climate change for appropriate planning and management.

Mr. Sid'Ahmed SFEIRA, regional delegate for agriculture, highlighted several major challenges and expectations for the agricultural sector. The few diversified crops in the region limit economic opportunities, with tree farming being almost exclusively focused on date palms, while market gardening is mainly limited to beets and carrots. This monoculture weakens the agricultural sector. The delegate suggested that the project include awareness-raising activities to encourage farmers to diversify their crops. Soil degradation in the oases is another major challenge that is exacerbated by prolonged drought cycles and a lack of water resources. The delegate stressed the need to introduce soil restoration practices and build the technical capacities of local actors so that this problem is adequately addressed. In addition, the region has strong agricultural potential thanks to the varieties of date palms that have high nutritional and economic value, still, the number of these trees is decreasing. The delegate said he would ask of the project to support degraded soils rehabilitation efforts, improve agricultural practices and strengthen the skills of farmers and extension workers, for an optimal use of these resources.

Mr. Abdellahi BILAL, regional delegate for livestock, highlighted the current situation of the livestock sector in the Wilaya of Adrar, by presenting the issues and challenges it faces. He explained that the main activity of breeders in this region is focused on camelids and goats, due to their great resilience and adaptability to the arid climate of the region. Breeders adopt a pastoral management method, moving from one pastoral well to another in search of sources of food for their herds. However, despite their adaptability, these animals are undergoing increasing pressure due to the lack of pastures and rangelands, as well as the absence of alternative solutions to ensure food security.

The mission was also informed of the very limited number of pastoral wells and the absence of well-defined transhumance corridors for an easier movement of the herds. Furthermore, the lack of local veterinary services is another major obstacle: livestock farmers do not have easy access to animal care to treat diseases and guarantee vaccinations. Moreover, existing pastoral wells lack adequate facilities to ensure their proper functioning and prevent their contamination by animal waste during watering.

Several avenues for improvement have been proposed for these challenges to be addressed:

- Creating specially designed rest areas and grazing areas for the herds, in order to preserve natural resources and ensure a more sustainable environment for livestock farming;
- Defining and developing suitable transhumance corridors to secure the travel routes of livestock farmers and their herds;
- Introducing the breeding of other small ruminants, as well as semi-intensive poultry farming in oases, in order to have more sources of income for livestock farmers and strengthen the resilience of the sector;
- Considering developing processing sectors for camelid dairy products, which would promote local production and create economic opportunities for local communities…

Mr. Cheikh Malainin SAADBOUH, regional delegate for tourism, praised the cultural wealth and significant tourism potential of the Adrar region. He stressed that desert tourism, although promising, remains underdeveloped due to the inadequate welcoming infrastructure. This potential is mainly based on one-of-a-kind historical sites, such as ancient cities, traditional libraries and archaeological sites. In addition, he highlighted local crafts, which speak the cultural identity of the region and have strong development potential.

In order to promote this tourism potential, the delegate expressed his wish to see the project provide support to this sector, especially since many unemployed young people in the region are particularly interested in tourism-related activities. He precisely proposed the creation of community guest houses, which could become spaces for collaboration for various stakeholders. He also suggested supporting the creation and development of tourist circuits. These initiatives could strengthen

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the livelihoods of the local population and provide alternatives to traditional activities in the region, such as agriculture and livestock breeding.

4.4. Visit to the Atar Date Palm Patho-Biotechnology Lab

This visit was made under the supervision of the Ministry of Agriculture. This center's mission is to promote research results in order to develop the oases agriculture sector. Here follow the main areas of work of this lab.:

- **Expansion of oases areas:** the lab. provides high-quality plants through in vitro cultivation of palm trees, in order to support the increase in national production;
- **Control and fight against palm diseases:** it conducts research and control actions to protect palm groves against diseases;
- **Selection of varieties:** the selection of productive and disease-resistant varieties to improve crop resilience;
- **Restoration and rejuvenation of the Mauritanian palm grove:** through in vitro multiplication, it contributes to the renewal of palm groves by selecting high-performance and resistant varieties;
- **Characterization of local varieties:** the lab. makes studies to characterize Mauritanian varieties of date palms, thus contributing to the preservation of biodiversity.




In addition, the center has initiated a program for the production of good quality potato seeds, through in vitro cultivation, in order to support agricultural diversification in the region. The mission was received by the head of the lab., who made a presentation on the history of the institution and its mission. The delegation visited the facilities and assessed the technical and material capacities thereof. It was clear that the lab. had state-of-the-art equipment, including an acclimatization greenhouse, which makes it capable of effectively supporting the agricultural sector in the region. However, it was obvious that the staff of the center needed capacity building, particularly in terms of training, in order to optimize the use of its infrastructure and leverage the impact of its interventions. The lab. has considerable potential to play a key role in the agricultural development of the region, thus contributing to strengthening the resilience of oases systems to face climate and health challenges. This center could also become a strategic partner of the project, by supporting certain specific activities and providing valuable expertise.

4.5. Visit to the National Tourist Office/Regional Delegation of the Wilaya of Adrar

The mission was received at the National Tourist Office by Mr. Cheikh Malainin SADBOUH, regional delegate. The mission introduced the project and the purpose of the visit. The delegate stressed the importance and opportunities that the tourism sector represents for the Adrar region, as a tool to improve the living conditions of local populations and strengthen their resilience. He also recalled that tourism plays a major economic role, especially during the guetna period (date harvest season that attracts many visitors). The Delegate expressed the expectations of the project, emphasizing the hope that it will contribute to the revitalization of the tourism sector through several actions. He stressed the need to improve the welcoming and stay infrastructure, support local initiatives, such as the creation of community guest houses and strengthen tourist circuits around the historical and cultural sites of the region. The delegate also discussed the importance of supporting the training of young people and women in tourism professions, in order to stimulate employment and promote local craft heritage. A visit to the Office's exhibition room was then organized. The room displays a sample of craft products made by women in the region, illustrating the cultural wealth and local know-how, which could be further promoted within the framework of the project to attract a wider and more diverse audience.

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4.6. Visit to the Regional Office of the Ministry of Social Action, Children and Family of the Wilaya

During this visit, the mission was received by Mrs. Mama LEKBAR, Regional Delegate of the Ministry of Social Action, Children and Family. After presenting the objectives and expected results of the project, the Delegate expressed her keen interest in the planned activities, particularly the ones likely to contribute to improving the living conditions and resilience of local populations. She stressed that a large part of the rural population of the region lives in fragile conditions, due to the difficult economic situation, aggravated by the climate challenges facing the region. She also highlighted the problem of malnutrition, particularly among children, which results mainly from the lack of nutrients and the low diversification of agricultural products and, given the remoteness of the Adrar region from other regions, the importation of food products is made on high costs, making these products inaccessible to local communities. The Delegate recommended taking the necessary measures to integrate local stakeholders and national structures into the consultation process, in order to ensure the effectiveness and relevance of the project actions. The mission assured that all active national and local structures in the project region will be involved at various levels, whether within the governance bodies (CoPiL) or in the implementation of the activities. It was also agreed that this structure would be consulted during the development of the baseline study, which will identify and finetune the criteria for selecting the project beneficiaries. Such an approach will provide the most appropriate responses to the specific needs of the region and benefits those who need it most, while building local capacities for sustainable resilience.

4.7. Community consultations

Consultations were also held with local communities in the project areas of intervention, respectively in the Dhaya and Ziyara poles. A strong mobilization of the population made it possible to bring together various groups, including farmers, herders, women and youth, so that they could express their concerns, needs and suggestions to improve their socio-economic situation.

One of the main concerns shared by all was the strong wave of migration, especially of young people leaving rural areas for mining areas, thus abandoning agricultural activities that are becoming less and less profitable. Some villages have even become completely deserted due to this migration. The youth representatives expressed their wish that the project would support them by creating new job opportunities, particularly in the ecotourism sector. In addition, young farmers requested the introduction of new innovative cultivation techniques, such as hydroponics, which make it possible to adapt agricultural practices to water scarcity. Farmers highlighted the main challenges ahead of them, in particular water scarcity, the difficult access to agricultural inputs and equipment, as well as the lack of technical support. The mission representatives presented the different components of the project, the expected results, as well as the implementation mechanisms and the crucial role of the population in the implementation of the activities. The populations asked many questions and members of the delegation provided the necessary answers. The populations expressed great interest in training and capacity building, and requested that the activities be implemented according to a community approach, directly involving local actors.

The delegation also informed the populations that a grievance mechanism was there and would allow them to express their concerns and suggestions throughout the project. Finally, it stressed the importance of considering the gender aspect in the implementation of the activities, thus ensuring equitable participation of men and women. Exchanges with the communities were conducted in the local language, so that the entire population fully participates in the consultation process.

This approach promoted the understanding and commitment of all, regardless of language barriers. Community leaders, as well as representatives of the various groups, including women, youth and farmers, also signed consent letters, thus confirming their involvement in the consultations. These letters translate their support for the project activities and are annexed hereto.

4.8. Field visits to the Ziyara and Dhaya poles: Situation and opportunities for improvement

Field visits to the Ziyara and Dhaya poles made it possible to examine different sites, including oases, hydraulic infrastructures such as wells, springs and dikes, restoration sites, as well as several villages. These visits revealed prospects for improvement within the framework of the project, by providing a global vision of the current situation of local ecosystems and the challenges faced by the populations. Exchanges and discussions were conducted with the inhabitants, including farmers and herders, thanks to the support of the pole managers, respectively Mr. Egdavna CHEIKH SAAD BOUH and Mrs. Mounina KREIKED. This allowed for a better understanding of the daily difficulties faced by these populations. Some sites, having benefited from the intervention of other initiatives, have shown remarkable results in the recovery of degraded land, mainly through the valorization of rainwater. These rainwater collection and management infrastructures could be replicated in other areas targeted by the project. However, some installations need to be rehabilitated, due to an initial faulty sizing for the local environmental context, as highlighted by the regional delegates. Several villages also lack infrastructure for collecting and recharging groundwater, and many pastoral wells and their watering troughs are silted up and have become out of service.

The visits also highlighted the importance of biodiversity and the challenges associated thereto. The gradual disappearance of some local varieties of date palm, the abandonment of oases due to the lack or poor quality of water resources, as well as increasing sand encroachment and soil degradation are reducing the fertility of agricultural land. This situation is pushing many villages to a rural exodus, since residents only return for the harvest period (guetna).

Interviews with pastoralists revealed the impacts of recurring droughts and the scarcity of pastures, which lead to livestock losses. They welcomed the initiatives proposed by the project, including the creation pastoral-well-management committees, which would help structure pastoralists into groups and better organize the use of the resources. They also highlighted the lack of access to veterinary care, a key concern for the management of their livestock.
Finally, the visits highlighted an underexploited potential of solar energy for water pumping in agricultural and pastoral activities, which could be a sustainable solution to meet the water resource needs of local communities.

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4.9. Exchange meeting in the commune of Tawaz

The delegation was received by Mr. Mohamed ELY SALEM, Deputy Mayor of the commune as well as members of the municipality. Several representatives of the local population had been invited to this meeting to learn about the project, share their needs and express their expectations. After a presentation of the activities and objectives of the project, the floor was given to the members of the commune and the population. The participants first expressed their satisfaction with the project, then, highlighted the main challenges they are facing, including difficult and limited access to drinking water, the weak and poor agricultural activities exacerbated by drought episodes, and the gradual abandonment of the region's oases. They also reported a significant rural exodus, particularly of young people that result in a lack of workforce for agricultural activities. According to their comments, almost all young people in the commune have migrated to other regions, which heavily impacts local production capacity.

In response, the delegation informed the participants that the project is scheduling awareness-raising campaigns and resilience strengthening initiatives among the communities, particularly young people. The Deputy Mayor came up with an important recommendation: carrying out mobilization and awareness-raising actions during the date harvest period. This period is marked by the return and presence of a large majority of the residents who left for economic reasons. This approach would thus make it possible to reach a larger proportion of potential beneficiaries.

4.10. Visit to the Association for the Protection of Endangered Date Palm Species

During the field visit, the delegation met with a civil society Organization that has set up a plot of local date palm variety bank in the Adrar region since it was created. This initiative could bring interesting partnership potential within the framework of the project activities, particularly to strengthen biodiversity efforts. The president of the association, Mr. Deddahi MOHAMED ABDELLAHI, expressed his interest in this collaboration, particularly to support local biodiversity preservation and promotion actions.

4.11. Mission restitution meeting and visit to the SOS-Oasis premises (NGO)

The delegation made a final visit to the headquarters of the NGO SOS-Oasis in Atar. This visit began with a presentation of the NGO premises, which is leading the project, allowing for an initial assessment of its capacities in terms of infrastructure, material equipment and human resources. The premises include a few offices and a meeting room. The president of the NGO informed the mission that these premises would be made available to the project management unit. It was also agreed that part of the project implementation budget would be allocated to the rehabilitation of these premises, in order to make sure that the project team has the best possible conditions. Furthermore, the president of SOS-Oasis was informed that a due diligence

process would be undertaken by the OSS to evaluate the capacities of the NGO and identify the necessary strengthening actions, with the aim of ensuring optimal implementation of the project through the best institutional arrangement to be proposed.

Then, a restitution meeting allowed to recall the main conclusions of the mission as well as the major problems facing the targeted areas. Water resources are becoming increasingly scarce, with a depletion of water tables and a lack of knowledge on the availability of groundwater. Rural exodus, aggravated by climate change, is increasing sharply, leading to a direct impact on the workforce available for agricultural activities. Food security is also a concern due to the low diversity of the products, which affects the health of local populations. Agricultural biodiversity is threatened by the loss of local varieties of date palm, land degradation and the desertification of oases, often abandoned due to the scarcity and poor quality of water. Drought affects the pastoral sector, leading to livestock losses and the scarcity of grazing areas. Finally, gaps in rainwater management, water erosion, and adequate technical capacities hamper the sustainable development of economic activities, here is why some existing interventions are inappropriate to the current local context.

I. Conclusion of the mission

The field mission in the Wilaya of Adrar made it possible to draw up an accurate situation of the challenges faced by local communities, particularly in terms of water resources, food security, biodiversity and economic development. Consultations with the stakeholders and field visits revealed the potential of the region, particularly in terms of sustainable agricultural development, valorization of natural resources and promotion of tourism.

This information will be communicated to the consultants responsible for the thematic studies for integration into the final versions. In addition, the due diligence process will be launched following the mission. A validation workshop for the project document is planned for early 2024. Once the final version has been validated by all stakeholders, the document will be submitted to the Adaptation Fund for approval.

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Annex 6: Validation Workshop Report

In accordance with its agenda (Annex 1), the workshop began at 9 a.m., with a background introduction by the moderator who placed the workshop into context, followed by a presentation of the participants (Annex 2) from various sectors: associations, university researchers and the media, as well as regional stakeholders from the Wilaya of Adrar, where the development poles of Ziyara and Dhaya, beneficiaries of the PRAGOA project, are located. The ceremony was marked by the speeches of the following high-ranking personalities:

- **H.E. Mrs. Lalya Ali KAMARA,** Minister of the Environment of Mauritania,
- **H.E. Mr. Nabil BEN KHATRA,** Executive Secretary of the Sahara and Sahel Observatory (OSS),
- **Mr. Mohamed Souleymane MAHAH,** President of SOS-Oasis (NGO - initiator of the project), and
- **Mr. Sidi Mohamed EL WAVI,** Director of the Climate & Green Economy Department at the Ministry of the Environment, and focal point of the Adaptation Fund in Mauritania.

In her opening speech, Mrs. Lalya A. KAMARA paid tribute to the OSS, the SOA-OASIS NGO and all stakeholders for having successfully carried out the project promotion process, with consultation and inclusiveness of all relevant stakeholders. Indeed, she stated that her Ministry will spare no effort to support the project throughout its implementation. She recalled that H.E. Mr. Mohamed CHEIKH ELGHAZOUANI, President of the Islamic Republic of Mauritania, has integrated, into his presidential program, the fight against the negative effects of climate change and constant support for vulnerable populations, such as the rural populations of the Ziyara and Dhaya poles in Adrar. Previously, Mr. Nabil BEN KHATRA welcomed the approach of Mauritania which placed its trust in civil society and its components at all levels: young people, women, breeders, oases dwellers and the importance it gives to consultation and coordination between all its stakeholders. He subsequently reiterated the OSS availability to support the project and to broaden its scope of collaboration with public or civil society structures to contribute to meeting development challenges. In his speech, Mr. MAHAH thanked the Ministry of the Environment and the OSS for their support which allowed the PRAGOA Concept Note to be approved by the Adaptation Fund and to reach the development phase of the project full proposal. He recalled that the process had started in 2017 and that the populations of the Ziyara and Dhaya poles were waiting for the mobilization of the resources as well as the start of the project's field activities.

Mr. EL WAVI recalled the importance of the project, the level of progress after the AF approval and the quality of the support provided and expected from the OSS to assist the project implementation.

After the speeches of the officials, a group photo (Annex 3) and a break, the participants started the workshop, with the aim of:

- Discussing the results of the consultations conducted so far, with the beneficiaries of the project at the local, municipal and regional levels,
- Analyzing the preliminary results from the thematic studies,
- Identifying priorities in the final document, and
- Collecting the expectations and recommendations of the workshop participants, in particular the relevant departments and the other stakeholders present at the workshop.

In this session, the main institutional partners of the project (ME, OSS and SOS-OASIS) took turns presenting their institutions so that the assistance reach the same level of knowledge and information. For the workshop objectives to be achieved, framing presentations were made to the participants in order to complete, guide and enrich them. The first presentation was made by **Mr. Ghazi GADER (OSS)**, who recalled that the PRAGOA project is first and foremost a resilience strengthening project for the populations of the two development poles of Ziyara and Dhaya to face climate change in Adrar, one of the Wilayas of Mauritania most hit by drought and desertification. Then, he shared the objectives of PRAGOA:

- Accessing to water for the relevant populations, through the mobilization of possible resources and rational water management.
- Strengthening the resilience of the oases and agropastoral populations, through adaptation actions specific to their local context.
- Introducing local adaptation practices, in order to diversify sources of income, and improve the conditions of the most vulnerable groups.
- Building the capacities of the various institutional and technical actors, who must support the project, in particular through practices and knowledge sharing, as well as ongoing awareness-raising and mobilization.

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The PRAGOA project will benefit approximately 15,000 direct and indirect people in the areas of Ziara and Dhaya, in the commune of Tawaz, and also other populations of the Moughataa of Atar, capital of the Wilaya of Adrar. The following components of the project will have to be improved:

- **Component 1:** Access to water through the mobilization and diversification of the resources, increase in available resources, development of surface and groundwater, rationalization and management of water management and retention practices.
- **Component 2:** Resilience of the oases and agropastoral ecosystems through the preservation of palm species, definition of pastoral routes and protection of indigenous species, creation of a local center for exchanges in local environmental practices, training of young people and women.
- **Component 3:** Diversification of the sources of income, through IGAs for the benefit of cooperatives and associations, young people and women, development of new technologies in irrigation and continental fish farming.
- **Component 4:** Capacity building, knowledge sharing, communication and awareness-raising of stakeholders and beneficiaries at different levels, through field surveys summarizing the best practices in ecosystem management, development of training, dissemination of proven successful practices.

Mr. Ghazi ended his communication highlighting two recommendations to be considered in the development of the full proposal:

- Focus on the protection of the watersheds, as well as water optimization.
- A cost/effectiveness analysis of the project, including institutional capacities and the sustainability of the project interventions.

Mr. Aziz BLEHAMRA (OSS), briefly presented the results of the local field-consultation carried out by the OSS team in October 2023, with a focus on the following points:

- A natural depression in the localities most hit by drought and desertification, but with potential to be developed,
- An overall dependence on rainfall, life is punctuated by the seasons,
- Severe droughts, but also floods in the event of heavy rains,
- A general degradation of natural resources.

The field-missions aimed to collect proposals from the populations and have them commitment, as well as that of the municipal, administrative and technical authorities. We also need to keep in mind that the project is promoting methods such as the examination of the effectiveness of the populations' choice, in terms of local initiatives and the functionality of cooperatives and associations. At the end of these missions, the following observations were made:

- The depletion of the water table,
- Poor water recovery and inadequacy of the water catchment infrastructures (covers),
- Species conservation is limited, and the Oases Lab distributes palm seedlings and potato seeds, with no monitoring and application in the field, particularly in landlocked localities,
- Loss of soil and fertility,
- The degradation of transhumance corridors,
- The lack of diversification of plants, particularly for other uses, such as fruit and medicinal plants.

This has strongly impacted the economic activities and the mobility of the populations, who come two months out of twelve, during a Guetna (date harvest period).

After consultation with the technical services, the populations proposed:

- To sow the transhumance corridors,
- To develop IGAs for the integration of agriculture and livestock,
- To diversify crops,
- To promote fish farming in aquatic life pools,
- To support local technical services in popularization and monitoring.

Participants took the floor to comment on this first level of presentations:

The Hakem of Atar praised the project initiative and confirmed the relevance of the selected poles given their vulnerability. In addition, he guaranteed the administration's availability to support them for the full success of the PRAGOA project.

The representative of the NGOs, in particular the NGO AGIR, proposed to bring the populations into commissions to optimize their participation.

The Deputy of the National Assembly welcomed the initiative and considered that the consultation process is very interesting. He proposed to have it applied to other regions of Mauritania, in particular its Moughataa.

The mayor of Tawaz said that the project came at the right moment to address environmental restoration issues and improve the resilience and settlement of the populations in the two target areas. He went on saying that it was time for

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the populations to see the results of the project, especially since the localities of Ziara and Dhaya deserve priority attention.

The regional delegate for the environment in the Wilaya of Adrar, said that the project would be very useful for the populations, and recommended considering environmental issues in the management of ecosystems.

The representative of the Ziyara pole, Bahaida Cheikh Saad Bouh, said that the project was well tied-up since the preparatory missions took their time to exchange with them. He noted the consideration of their grievances and suggestions in the proposed activities. The rapid application of this displayed content will surely save the populations, he said.

The representative of women in the Dhaya pole, Aicha Vall Sleimane, said that all women were eager to attend the start of the project activities.

Professor Moctar of the University of Nouakchott recommended exploiting the topographical and morphological nature of the landform in the project locations, in order to promote the implementation of slopes for the rapid runoff of water during rainfall, but also to introduce the stoning of rocks in Hofras and in the foothills of the mountains, to capture water well and promote vegetation and biodiversity.

Finally, he proposed the training of a workforce, in reinforcement of the work to be carried out by the communities for the project, in particular in ploughmen, planters, well-diggers, gabion workers, cultivators, shepherds, wool workers, etc.

The representative of the social action department, recommended using solar energy, in particular in the processing of agricultural products for women.

The youth representative, recommended the adoption of greenhouse crops and the extension of the project to other Wilayas.

In the communication on the environmental and social impact study and the ESMP, the consultant shared the results of:

- The assessment of the Environmental and Social Impact (environmental analysis, potential impacts of the project, characteristics of the impacts, alternative measures, etc.) for consideration at all stages of the project.
- The development of an ESMP to manage the risks and/or impacts identified in the assessment process: identification of the impacts, mitigation measures, monitoring method, performance indicators, responsibility, schedule, cost estimation) in order to bring the project into line with national environmental protection policies and strategies and those of the AF and the OSS.

The participants attended a presentation by **Mrs. Gueytana MOHAMED** on gender and a gender action plan to be included in the full proposal to ensure gender integration in the project.

At the end of the workshop, the participants recommended:

- Considering the suggestions for form and content improvement proposed during the discussions, in particular those relating to the effectiveness of the institutional plan, following the "fewer structures, better structures" principle,
- Maintaining the effectiveness of the PRAGOA project instruction process to speed-up its implementation,
- Launching some water recovery practices before the upcoming rainy season,
- Maintaining consultation and regular information on the project progress after the workshop.

Finally, the participants congratulated SOS-OASIS, the OSS and the Ministry of the Environment for the successful project formulation and called upon them to launch the subsequent stages.

Nouakchott - April 23, 2024

FOR THE PARTICIPANTS

Pr. Moctar EL HACEN
Rapporteur

Dr. Mohamed Fadel A. CHEIKH MOHAMED FADEL
Moderator

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Annex 1 - Agenda of the National Consultation Workshop
PRAGOA - ADRAR/MAURITANIA

Nouakchott Hotel, Tuesday - April 23, 2024

Time	Activities	Speaker(s)
	Session 1: Opening of the workshop	
8:30 a.m. – 9:00 a.m.	Welcome and registration of the participants	SOS-Oasis
9:00 a.m. – 9:25 a.m.	**Opening ceremony** - Word of welcome from the Focal Point - Adaptation Fund - Speech of the President of SOS-Oasis - Speech of the OSS ES - Opening speech from the Minister of the Environment	FP AF President SOS-Oasis OSS ES ME
9:25 a.m. – 9:35 a.m.	- Presentation of the participants and adoption of the agenda - Setting up of the session presidium	Moderator
9:35 a.m. – 10:00 a.m.	Group photo, Coffee break, Press interviews	
	Session 2: Presentation of the project development process	
10:00 a.m. – 10:20 a.m.	- Presentation of SOS-Oasis - Presentation of the Ministry of the Environment - Presentation of the OSS	SOS-Oasis ME OSS
10:20 a.m. – 10:30 a.m.	- Reminder of the general process of the project development and AF requirements	OSS
10:30 a.m. – 11:00 a.m.	- Presentation of the Consultation process at the local level - Summary of the projects conducted in the project area	OSS SOS-Oasis
11:00 a.m. – 1:00 p.m.	- Presentation and validation of the Logical Framework (Objectives, Components, Results, Products, and Activities) - Budget	OSS SOS-Oasis
1:00 p.m. – 2:30 p.m.	Lunch break	
	Session 3: Presentation of the first results of the preparatory studies	
2:30 p.m. – 3:30 p.m.	- Environmental and Social Impact Study/ESMP - Gender evaluation and integration	Consultants
	Session 4: Institutional arrangement	
3:30 p.m. – 4:30 p.m.	- Presentation and validation of the institutional arrangement	ME SOS-Oasis
	Session 5: Summary of the discussions, recommendations and end of the workshop	
4:30 p.m. –	- Summary and presentation of the main recommendations of	Rapporteurs

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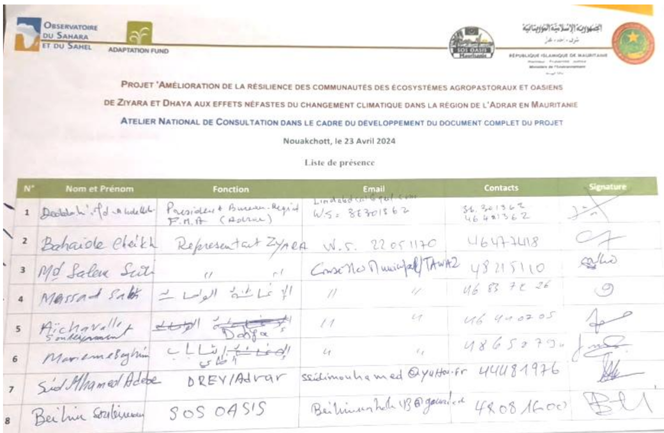
5:00 p.m.	the workshop - Next steps and end of the workshop.	SOS-Oasis ME OSS
5:00 p.m. – 5:15 p.m.	Coffee break/end of the workshop	All

Annex 2 - Attendance Sheets


Observatoire du Sahara et du Sahel — Adaptation Fund — SOS Oasis Mauritanie — République Islamique de Mauritanie

Projet d'amélioration de la résilience des communautés des écosystèmes agropastoraux et oasiens de Ziyara et Dhaya aux effets néfastes du changement climatique dans la région de l'Adrar en Mauritanie

Atelier National de Consultation dans le cadre du développement du document complet du projet

Nouakchott, le 23 Avril 2024

Liste de présence

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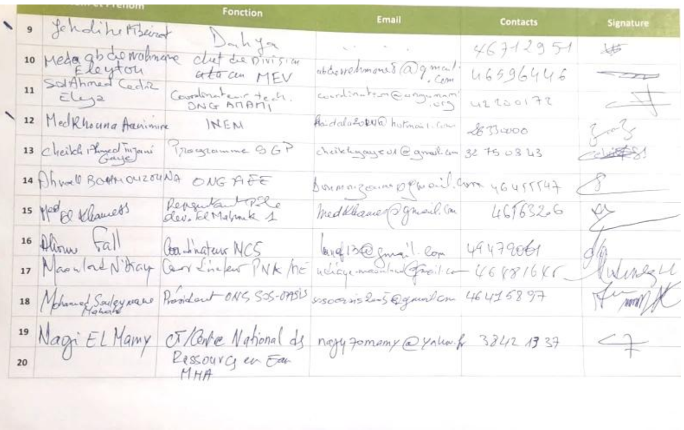
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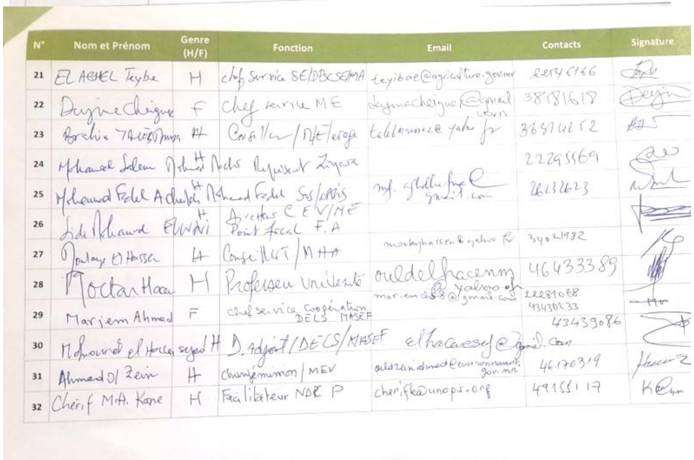
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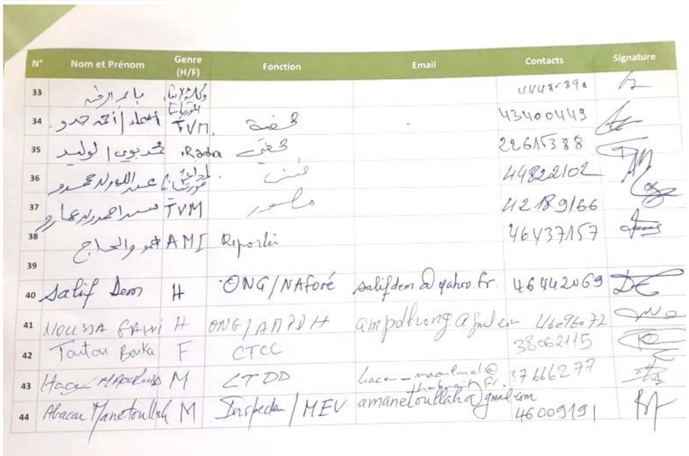
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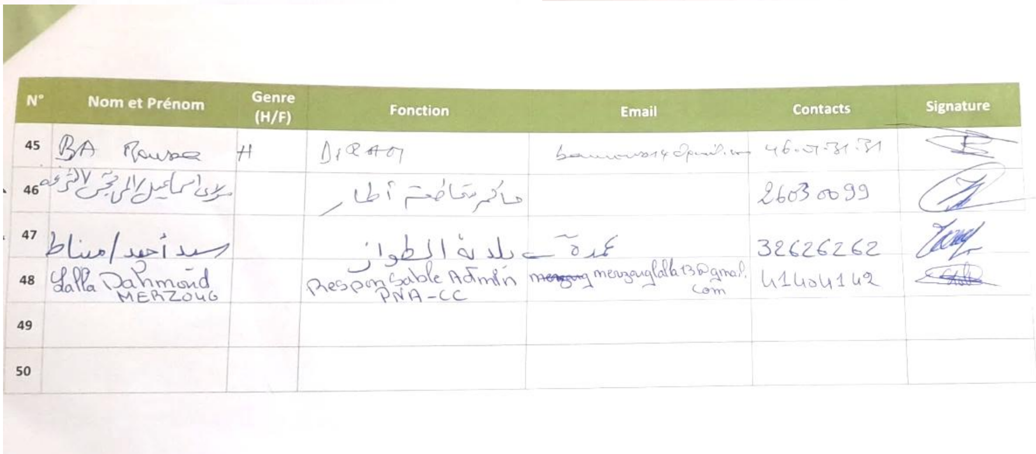
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Annex 7 : Adaptation Fund Core Impact Indicator Tables

Core Indicator 1 – Number of Direct Beneficiaries

Indicator	Baseline	Mid-term Target	End of Project Target	Disaggregation	Means of Verification
Number of direct beneficiaries supported by the project	0	2,770	5,035	Women: 2,660 (52.8%), Youth: 605 (12%)	M&E reports, beneficiary database
Number of indirect beneficiaries	0	5,000	10,000	Women: 4,000 (40%), Youth: 1,200 (12%)	Surveys, progress reports

Core Indicator 2 – Number of Early Warning Systems and Risk Reduction Measures Developed or Strengthened

Type of Measure	Baseline	Mid-term Target	End of Project Target	Description	Means of Verification
Local drought and water monitoring systems	0	1	2	Community-based systems linked to local water committees	Technical reports, community records
Risk reduction and preparedness plans	0	2	5	Integrated into IWRM and local adaptation plans	Institutional reports

Core Indicator 3 – Physical Assets Strengthened or Protected to Withstand Climate Change Variability and Risks

Asset Type	Baseline	Mid-term Target	End of Project Target	Unit	Means of Verification
Water infrastructures (wells, tanks, irrigation systems)	0	60	100	Units	Engineering and supervision reports
Mini-irrigation networks and demonstration plots	0	25	40	Systems	Field reports
CAICs, community centers, storage facilities	0	3	5	Units	Construction completion reports

Core Indicator 4 – Natural Assets Protected or Rehabilitated to Sustain Ecosystem Services

Natural Asset Type	Baseline	Mid-term Target	End of Project Target	Unit	Means of Verification
Degraded land restored	0	200	400	ha	GIS mapping, M&E reports
Rangelands and pastures improved	0	250	500	ha	Field surveys
Oasis ecosystems rehabilitated	0	300	600	ha	Technical reports, field verification
Sand dunes stabilized / reforested	0	150	350	ha	Satellite imagery, project reports
Total area protected/rehabilitated	0	900	1,850	ha	Consistent with RF Table 24

Core Indicator 5 – Policies and Plans that Mainstream Climate Resilience

Policy/Plan Type	Baseline	Mid-term Target	End of Project Target	Description	Means of Verification
Local Water Management Plans (IWRM) updated	0	1	2	Integrating climate risk and water use efficiency	Policy documents, validation reports
Community Adaptation Action Plans developed	0	3	5	Developed through participatory processes with gender inclusion	Workshop records, community validation
Regional coordination frameworks strengthened	0	1	2	Promoting cross-sectoral climate resilience planning	Meeting records, MoUs

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All the annexed reports are available at:

Annex 2: ESIA and ESMP Studies

Annex 3: Gender Assessment and Action Plan

Annex 4: Cost Effectiveness Study Report

Annex 5: Consultation process Report

Annex 6: Validation Workshop Report

Annex 7 : Adaptation Fund Core Impact Indicator Tables

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