ADAPTATION FUND

FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

Chad Oasis Project

Reversing the degradation trend in the oases of Borkou, Ennedi West and Wadi Fira through strengthening adaptation measures and improving resilience to climate change of vulnerable communities

Title of Project	Reversing the degradation trend in the oases of Borkou, Ennedi West and Wadi Fira through strengthening adaptation measures and improving resilience to climate change of vulnerable communities
Country:	Chad
Thematic Focal Area:	Multisector project
Type of Implementing Entity:	Regional Implementing entity
Implementing Entity:	Sahara and Sahel Observatory (OSS)
Executing Entities:	Ministry of Environment, Fisheries and Sustainable Development through the General Directorate of Forest, Wildlife and Fisheries Resources; in collaboration with the Union of Women for the Fight against Desertification in the Sahel
Amount of Financing Requested:	10,000,000 in U.S Dollars Equivalent
Letter of Endorsement (LOE) signed:	Yes ☒ No ☐
Stage of Submission:	

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

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

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

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

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PART I PROJECT INFORMATION

A. Project Background and Context

Background information on Chad

1. Chad, is the 5th largest country in Africa and ranks second among Sahelian countries after Sudan, covers an area of 1.284 million km^2 of which 98.1% is land and 1.9% is water, consisting mainly of 5 lakes including Lake Chad. It is a landlocked country in Central Africa, bordered to the north by Libya, to the east by Sudan, to the south by the Central African Republic and to the west by the countries with which it shares Lake Chad, namely Cameroon, Niger and Nigeria (Figure 1). The country's landscape is made up of vast Saharan, Sahelian and Sudanian zones.

2. Chad's land surface presents a spectacular variety of geographic contrasts. The vast northern third is located in the Sahara Desert and is sparsely populated, home to just **1 percent** of Chad's population. Both N'Djamena, the capital, and Lake Chad are located on the country's southwestern. Lake Chad is fed by the country's two main rivers, the Chari and the Logone. It is the largest body of water in the Sahel and a major centre of economic activity for the region. However, due to erratic variations in the region's climate and overexploitation of the rivers that feed it, this shallow lake (1.5 m deep on average) has shrunk to a small fraction of its 1960 size.

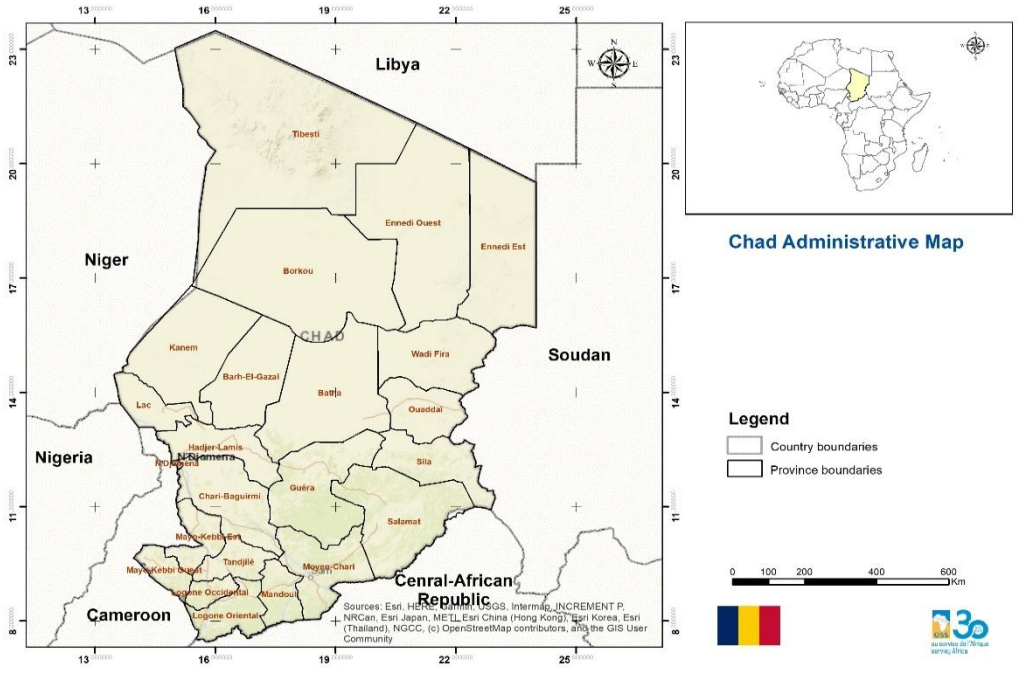


Figure 1 Administrative division of Chad (source: OSS,2022)

3. According to the latest World Bank report of Chad, has made significant progress in reducing poverty over the past 15 years. Nevertheless, it remains one of the poorest countries in the world, counting as a Least Developed Country (LDC)[1]. In the 2018 Human Development Index (HDI), Chad ranks 187th out of 189 countries and territories. According to the latest Chad Household Consumption and Informal Sector Survey (2018-2019), approximately 42% of Chadians, or 6.5 million people, including 3.4 million women and 3.1 million men, live below the national poverty line of 242,094 CFA francs per year or 663 CFA francs (Equivalent to $1.2) per day. Approximately, 15% of the population (2.4 million people) were in extreme poverty, i.e., unable to meet their basic nutritional needs of 2,300 kilocalories per day. Nearly 89% of poor households are in rural areas, while only 3% are in the capital, N'Djamena. Four main factors explain this poverty: (i) a lack of economic diversification; (ii) low productivity in the rural sector; (iii) exposure to shocks; and (iv) low levels of human capital. Of course, as elsewhere in the world, the repercussions of the COVID19 pandemic made the situation worse and pushed the country back into a second recession in 2020-2021.

4. Chad's economy is dominated by the agricultural sector, contributing at 51.9 % to the country's GDP in 2020, followed by the services sector with 43.6 % and the industrial sector with 12.0 %[2]. Chad's main export is petroleum with 92 % of total exports, followed by gold, insect resins and oilseeds[3]. Overall, 80 % of the population is engaged in smallholder farming and heavily relies on agriculture for food security and livelihoods. Therefore, concerns are rising about the effects of climate change including rising temperatures, reduced water availability and the occurrence of floods and other extreme weather events. Agricultural production in Chad is primarily subsistence based and rainfed.

5. Since 2015, the country has been experiencing unprecedented economic and financial crisis resulting in a continuous deterioration of the State's financial resources linked to the drastic fall in the price of oil, one of the country's main sources of

[1] World Bank, "World Bank Open Data,". Online available: https://data.worldbank.org
[2] World Bank, "World Bank Open Data," . Online available: http://wdi.worldbank.org/table/4.2
[3] Observatory of Economic Complexity (OEC), "Chad," 2020. Online available: https://oec.world/en/profile/country/tcd/#Exports.

revenue. This situation has a negative impact on the financing capacity of the administration's operations and investment for the sustainable development of the country. Also, the provision of public services in the various areas of rural development are underdeveloped due to lack of financial resources. Chad currently serves as a destination for migrants and refugees, 70 %[4] of whom are from Sudan. Other major countries of origin include the Central African Republic (19 %) and Cameroon (7 %).

Relief

6. According to the first NAP[5], Chad is located in a wide plain with flanks that rise gently eastward toward the Ennedi Range and north toward the Tibesti Mountains, which culminate in the Sahara's highest peak, Emi Koussi, at 3,415 m. The country's northern third consists of vast sandy and gravel plains, too dry for cultivation except for small- scale traditional irrigated farming in scattered oasis towns. The high plateaus of the Ennedi and Ouaddaï ecoregion gently slope toward the lower Sahelian plains of the Batha and Kanem ecoregions, stretching to Lake Chad far to the west. The Ennedi Plateau[6] is a mountainous region in the north-eastern corner of Chad, an impressive sandstone massif eroded by wind and temperature changes into series of terraces, gorges, cliffs and outliers. Although it is part of the Sahara, the climate of the Ennedi Plateau is much more suitable for human habitation than most of the desert, with regular rain during summer, wadis (seasonal rivers) flowing once or twice a year, and a relatively large range of flora and fauna including some of the few remaining populations of Saharan crocodiles west of the Nile. In 2016 the Ennedi Massif was recognised as a protected UNESCO World Heritage Site.

7. The southern third of Chad is in the Sudanian climate region, with many ecoregions that are defined by plateaus and local highlands, expansive plains, and broad drainage channels that flood annually. To the west, these plains are more conducive to agriculture owing to their deep, rich alluvial soils. In contrast, the largest ecoregion in the southeast, Moyen-Chari and Salamat Plain (EMS – Eastern Middle-Chari and Salamat), contains large expanses of Sudanian zone woodlands and savannas where scattered communities are engaged in subsistence farming, fishing, and raising livestock.

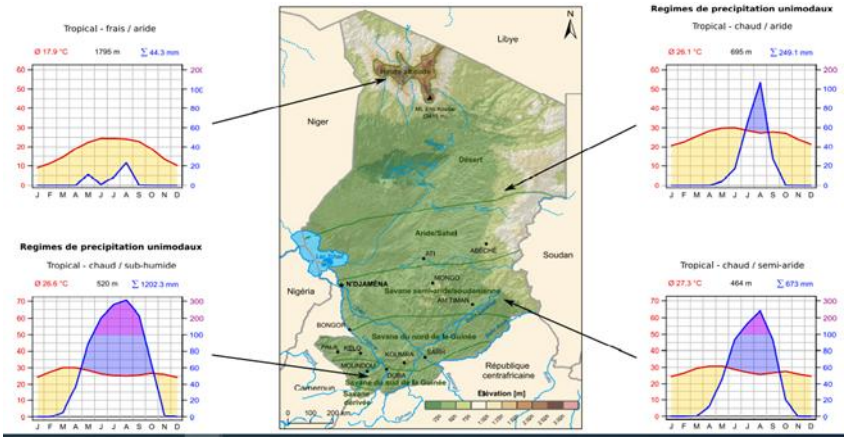


Figure 2: Topographic map of Chad with agro-ecological zones and existing rainfall patterns

Bioclimatic zones and their hydro-climatic characteristics

8. Chad has three major agro-ecological zones: (i) a Saharan or desert zone with rainfall of 100 mm/year or less, representing 47% of Chad's surface area, which is characterized by a complex oasis system combining date production, subsistence irrigated agriculture, small-scale sedentary livestock farming and transhumant camel farming, (ii) a Sahelian zone (43% of the territory) which receives rainfall that varies between 200 and 600 mm/year has an agro-pastoral vocation; It is a livestock zone par excellence, but agriculture is also widely practiced, and (iii) an essentially agricultural Sudanian zone, with rainfall varying between 600 and 1,200 mm/year, which covers about 10% of the territory and is characterized by diversified production systems, combining food crops and cotton cultivation with small ruminant, cattle, pig and poultry farming.

9. The main plant formations in Chad include, from north to south: (i) shrub steppes with thorny plants and annual herbaceous plants; (ii) tree and shrub steppes with thorny and non-spiny plants and annual herbaceous plants; (iii) tree and shrub savannahs with annual herbaceous plants and perennial herbaceous plants The fauna includes: the fauna of the oases, the fauna of the Saharan massifs, the crocodile and endemic species of fish in the Archéï guelta, avifauna and freshwater fish, the hippopotamus in Lake Chad, the manatee in Lake Léré (Mayo-Kebbi) and concentrations of elephants in the dry season, giraffes and other large mammals in the Zakouma National Park; elephants are also found in the Fitri Lake because it is

[4] UNDESA, "Trends in International Migrant Stock: Migrants by Destination and Origin," New York, 2019.
[5] First National Climate Change Adaptation Plan Of Chad, Feburary 2022
[6] Africanrockart.britishmuseum.org. Retrieved 2019-11-01.

landlocked, Chad shares its biomes with its neighbours: (i) the Saharan desert biomes with Libya, Sudan and Niger; (ii) the Sahelian biomes with Sudan, Niger and Nigeria; (iii) the dry savannahs with Sudan, Central African Republic, Cameroon and Nigeria; (iv) the humid savannahs with Central African Republic and Cameroon.

Temperature

10. According to a recent GIZ report, and in response to increasing greenhouse gas (GHG) concentrations, air temperature over Chad is projected to rise by 2.1 to 4.3 °C[7] (very likely range) by 2080 relative to the year 1876, depending on the future GHG emissions scenario (Figure 2). Compared to pre-industrial levels, median climate model temperature increases over Chad amount to approximately 2.1 °C in 2030 and 2.5 °C in both 2050 and 2080 under the low emissions scenario RCP2.6. Under the medium / high emissions scenario RCP6.0, median climate model temperature increases amount to 2.1 °C in 2030, 2.6 °C in 2050 and 3.5 °C in 2080.

11. In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35 °C) is projected to rise with high certainty all over Chad (Figure 3). Under the medium / high emissions scenario RCP6.0, the multi-model median, averaged over the whole country, projects 17 more very hot days per year in 2030 than in 2000,31 more in 2050 and 49 more in 2080. In some parts, especially in central Chad, this amounts to more than 300 days per year by 2080.

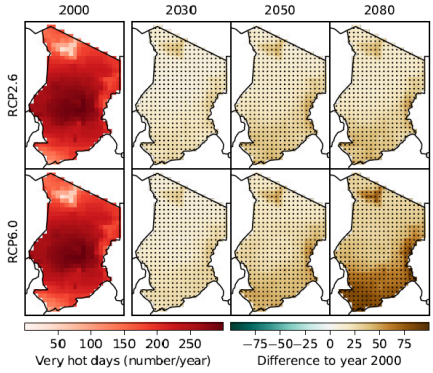


Figure 3: Projections of the annual number of very hot days (daily maximum temperature above 35 °C) for Chad for different GHG emissions scenarios

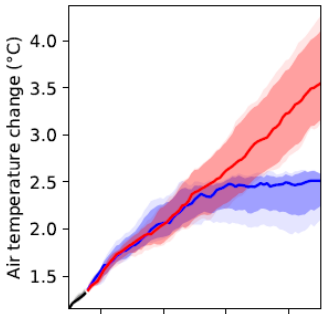


Figure 4: Air temperature projections for Chad

Water resources

12. Overall, Chad has considerable renewable water resources in relation to its needs. However, these resources are not distributed throughout the country and are highly variable and fragile.

Rainfall

13. Chad's rainfall varies according to the agro-ecological zones. The Saharan or desert zone receives 100 mm/year, the Sahelian zone receives , from 200 to 600 mm/year, and the Sudanian zone, from 600 to 1,200 mm/year in. Precipitation[8] is the source of running or stagnant surface water. The distribution of rainfall in time and space over the southern half of Chad is linked to the migrations of the Inter-Tropical Front (ITF) or Inter-Tropical Convergence Zone (ITCZ). The rains occur south of this front, which passes through N'Djamena around mid-May and descends towards the end of September. In the south of the country, the rainy season starts earlier and ends later, by about a month.

Surface water

14. In terms of surface water, Chad's major source is Lake Chad, which is located on the western border and which supports around 50 million people in the entire basin including neighbouring Cameroon, Niger and Nigeria. Lake Chad used to rank as one of the largest lakes in Africa, yet due to climate impacts and unsustainable water management, the lake surface has shrunk from approximately 25 000 km^2 in the 1960s to a minimum of 1 800 km^2 in 2010.

15. Chad water surface[9] includes the Chari (1200 km long) and the Logone (1000 km long) basins, the only perennial rivers, feeding Lake Chad, the Mayo-Kebbi (tributary of the Benue in Nigeria, itself a major tributary of the Niger), Salamat and Batha (a temporary river that empties into Lake Fitri) basins The Chari and Logone rivers originate in the Central African Republic (CAR). These hydro systems temporarily feed floodplains, due to flooding and low relief in the southern part of the country,

[7] Climate Risk Profile of Chad, the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), GIZ 2020
[8] Chad Water and Sanitation Master Plan 2003-2020.
[9] World Bank (2019), Chad Water and sanitation sector note

whose current area, once estimated at 95,000 km^2, is poorly known due to lack of recent hydrological data. The surface waters also include 5 lakes, the most important of which, spatially and ecologically, is Lake Chad and Lake Fitri.

16. Similarly, Lakes of Ounianga, which constitutes a particular ecosystem, are a series of lakes in the Sahara Desert, in North-Eastern Chad, occupying a basin in the mountains of West Tibesti and Ennedi East. It was added as a UNESCO World Heritage site in 2012. According to the UNESCO description[10], the lakes are in a hot and hyper arid desert that features a rainfall of less than 2 millimetres (0.1 in) a year. The lakes exhibit a variety of sizes, depths, chemical compositions and colorations. There is a total of 18 lakes.

17. In addition to these large areas, there are temporary drainage basins and smaller bodies of water, some of which are quite numerous and locally important for the populations: The Wadis of Kanem and Ouaddaï, natural and artificial ponds, a few artificial reservoirs, the oases and lakes of Ennedi, Borkou and Tibesti. In addition, there are other basins that are rather dead, since their water courses only flow during exceptional rains, the most important being the Bahr el Ghezal.

Groundwater

18. Groundwater resources are abundant and present in almost all the territory, but their renewal and exploitability is very variable. Three quarters of the country's surface area is made up of sedimentary formations, which are the site of continuous aquifers in the form of open or deep aquifers, distributed in the three geo-climatic zones, but mainly found in the north, west and south of Chad. The rest of the country is constituted of crystalline basement formations, which can be the site of discontinuous aquifers in the alterations.

19. Although considerable water reserves exist in the continuous aquifers of the Saharan zone, these are fossilized and susceptible only to "mining" exploitation. Renewable resources are mostly found in the Sudanian zone. Groundwater is generally poorly mineralized, with a few exceptions: excessive levels of sulphates, chlorides and magnesium from evaporite layers in some aquifers in the Sahelian zone, and ferruginous water in some aquifers in the Sudanian zone.

Agriculture and Food Security

20. The agricultural sector plays a major role in the national economy and remains the driving force behind the country's development, despite Chad's accession to the ranks of oil producing and exporting countries in 2003. The primary contribution of Chadian agriculture to the economy is its large share in the formation of GDP, of which 20% comes from food production and 3% from cash crops. It is also a major provider of employment, employing 2/3 of the country's active population, more than half of whom are women. The second fundamental contribution of agriculture is the production of food, which constitutes an immediate response to the issues of food insecurity and poverty, which are particularly important due to the recurrent food shortages that Chad experiences. The third contribution of agriculture to overall growth is the supply of raw materials to the country's agri-food to the country's agribusiness industries. Most of the production comes from small family farms of 2 to 5 ha for rainfed crops, and 0.1 to 1 ha for market gardening. Significant efforts have been made in recent years, with the development of both public and private hydro-agricultural facilities and the use of improved seeds, fertilizers and the development of mechanization. The main food crops are millet, sorghum, béré-béré, maize, rice and market gardening. Cash crops are cotton, sugarcane, peanuts and sesame.

21. Women are the main labour force in the agricultural sector, in both the rainfed and irrigated sub-sectors although there are no official statistics. They are the main bread winners in the household. However, women have been caught in complex web of vulnerabilities associated with the impacts of conflict, violence, climate change and environmental degradation. As bread winners, women had been particularly impacted by Covid-19 through the closure of markets and the curtailing of economic opportunities related to that.

22. Chad has one of the highest levels of hunger in the world with 66.2% of its population of 15.5 million living in severe poverty. It is surrounded by countries at war, and conflict and the climate crisis exacerbate hunger and poverty. Around 40 percent of children aged under five suffer stunting, with low height for their age caused by chronic malnutrition. The presence of hundreds of thousands of refugees who have fled conflict in neighbouring countries has put additional pressure on Chad's already limited resources. Displaced people, and other poor communities, in the Lake Chad Basin, the east and south of the country are dependent on humanitarian assistance for survival. According to the 2019 Humanitarian Response Plan, 4.3 million people need humanitarian assistance, of whom only 2 million are targeted with adequate support[11].

23. Most livestock in the Sahel region is raised according to a transhumant production system, characterized by cyclical migrations that coincide with the wet and dry seasons. In Chad, herds travel north during the rainy season to take advantage of temporary pasture that appears when rain falls on land that is arid for most of the year. At the end of the rainy season, herds return south, as temporary pasture is exhausted, to graze on lands that are also occupied by sedentary, crop-producing farmers. Historically, the relationship between transhumant; herders and sedentary farmers has been largely symbiotic. Since herds typically returned after farmers had taken in their harvests, farmers tended to welcome livestock into their fields to graze on the remaining vegetable matter and, in return, fertilize the land. Pastoralists often transported the harvests produced by

[10] UNESCO, Lakes of Ounianga, CHAD 2015, WHC-15/39.COM/7B
[11] WFP (2020) Chad Country Brief. https://www.wfp.org/countries/chad

farmers as they migrated with their cattle, in return for a portion of the harvest, a practice known as “chele”. Herders traded milk and meat products in return for cereals, fruit and vegetables from farmers. When conflict did break out between the two groups, it was normally managed by traditional, local conflict resolution mechanisms.

Population and indigenous people

Population

24. According to the second General Census of Population and Housing (RGHP2, in 2009, 11.1 million inhabitants, density 8.6 inhabitants per km2), Chad's population is projected to reach 16,244,513 by 2020[12], including a significant proportion of refugees. Its average annual growth rate is 3.3%, average mortality is 1.4% and infant mortality is 8.7%. It is predominantly rural (76.7%), young (the average age is 17 years and life expectancy are 52.6 years for men and 55.4 years for women). Its average density was 8.6 inhabitants/Km^2 in 2009 and would be around 13.1 inhabitants/Km^2 in 2021.

25. Spatial distribution is very uneven: 0.1 inhabitants/km^2 in the north, 52.4 inhabitants/km^2 in the south, with the desert sporadically occupied by the nomads of the Tedas and Dazas who represent only 3.4 percent of the total population, the north sparsely occupied by the well-dispersed Arabs and Islamized (Kotokos, Ouaddaians, and Kanembous), and the fertile south almost overpopulated, occupied by the Sudanese (Saras, Massas, Mundangs, and Toupours). Chad has a gender[13] inequality index of 0.701, which ranks it 160th out of 162 countries in 2018.

26. Violence in the Central African Republic, Nigeria, South Sudan and Sudan continues to push people across the border into Chad, exacerbating already protracted refugee crises in the country’s east, south and lake regions. As of 31 December 2021, Chad had 555,787 refugees and asylum seekers in its territory, including 374,216 Sudanese from Darfur, 121,511 Central Africans primarily in the south, 35,878 Cameroonians and 19,321 Nigerians in the Lake Chad area, 254 Congolese, and over 4,607 refugees and asylum seekers whose origins are not specified. Between December 2019 and January 2020, approximately 16,000 new Sudanese refugees crossed the border into eastern Chad, fleeing interethnic violence.

27. The majority of refugees live in camps; however, approximately 30 percent of Nigerian and Central African refugees are settled in host villages. In some regions, particularly in the east, the majority of refugees leave the camps before the start of the rainy season for “opportunity villages”. In the Lake Chad area, the security situation limits refugees’ and host communities’ access to land and fishing areas. In the Lake Chad region, climate change and conflict dynamics create a loop in which the impacts of climate change create additional pressures, while conflict undermines the communities’ ability to cope. The people of Lake Chad are trapped in conflict. Violent conflicts, poor governance, endemic corruption, environmental mismanagement and poverty have ruined the lives of local people. Climate change exacerbates these difficulties.

28. More generally, the socio-economic crises that have occurred in Chad in recent years are putting pressure on protection efforts and the ability of authorities, communities and families to protect those most at risk. This concerns both Chadian populations and refugees and particularly affects children and people with special needs, particularly women and girls. In addition, refugees and other displaced persons often face increased risk due to their displacement status. Protection challenges and solutions in Chad can only be properly addressed through a combination of concerted and coordinated humanitarian, resilience and development actions. The security implications have also disrupted traditional cross-border transhumance and trade, with consequences for the national and local economy. Whether the people trapped in conflict can escape will depend on a nuanced understanding of the interaction between climate change and conflict in this specific context.

Indigenous people and Local Communities (IPLCs), including nomadic and semi-nomadic pastoralist groups

29. Two population groups the Mbororo sub-group of the Fulani people (called also the Peul M’Bororo) and the Toubou[14] are Indigenous to Chad although the country does not officially recognize a distinct legal category called “Indigenous Peoples” the way some countries do. The government position is broadly that all Chadians are indigenous to Chad: The Mbororo Fulani live primarily from pastoralism and subsistence farming. Clustered in the dry center and tropical south where there is pasture for their livestock, it is estimated that they make up some 10% of the Chadian population. Many of the Fulani have emigrated to neighbouring Cameroon, the Central African Republic or Niger. They can be recognised by their way of life, culture, language, and by the discrimination, they suffer from. The Fulani are often poor, the majority of them are illiterate and they have no political representation at the national level.

30. The Toubous are considered one of the oldest groups and are known for their capacity for adaptation and survival in the particularly arid environment of the Tibesti mountains. They rear camels and cattle and live largely in northern Chad, with the exception of small communities settled in Niger, Libya and Egypt.

31. These communities face difficulties in accessing land and natural resources such as water and grazing land. Climate change exacerbates this situation by accentuating these difficulties. This disrupts the transhumance corridors, increasing the

12 Inseed-Tchad - Population, Total population projection by year of projection by gender (2009 -2050), Medium assumption.

13 FAO et CEEAC. 2021. National Gender Profile of Agriculture and Rural Development Sectors - Chad. N’Djamena. https://doi.org/10.4060/cb3046fr

14 https ://www.iwgia.org/en/chad/3498-iw2019-chad.html.

vulnerability of these nomadic populations. IPLCs contribute to the preservation of the Sahel's fragile ecosystems and their traditional knowledge deserves to be used, as it provides a valuable opportunity to complement the climate science base and identify other sustainable adaptation options. The Government has committed to involving these populations in national adaptation efforts and facilitating their own adaptation, including by appointing Hindou Oumarou, the President of the Association of Peul Women and IPLCs and a human rights and climate activist, as the Goodwill Ambassador to the Presidency of the Republic.

Biodiversity

32. Chad has 18 protected areas: three (3) National Parks, seven (7) wildlife reserves, one (1) biosphere reserve, eight (8) hunting domains, and one (1) pilot community hunting domain. Ramsar sites in Chad refer to the six sites designated as Ramsar Wetlands of International Importance in Chad. They cover an area of 124,050.68 square kilometres (47,896.24 sq. mi). They include Lac Fitri, Chadian part of the Lake Chad, Massenya Plain, Floodplains of the Bahr Aouk & Salamat, and the Binder-Léré fauna reserve.

33. In terms of plant diversity, Chad is home to a rich and very diverse flora. According to the national strategy on biodiversity in Chad[15], it is estimated that there are about 4,318 species of higher plants (wild and domestic), including 71 endemic species (including *Ficus carica*, *Ficus salicifolia*, *Rauwolfia sp*, *Adina microendemic* (including *Ficus carica, Ficus salicifolia, Rauwolfia sp, Adina microcephala, Clematis tibestica novsp, Celsia tibestica novsp, Artemisia tilhona novps*, endemic to Tibesti, ...) and 11 endangered species (including *Anogeissus leiocarpus, Pteropcarpus enrinaceus, Vitex doniana ,Detarium microcarpum, Prosopis africana*....) This list is far from being exhaustive, because there was never been a complete inventory made on the whole territory. Nevertheless, the Laboratory of Veterinary and Zootechnical Research of Farcha (LVRZ) has an herbarium of 8,000 specimens and a reference herbarium with more than 2,500 specimens at the level of the "Projet suivi écologique et conservation du Parc National de Zakouma", which is recognized as a national site with a unique richness in francophone Africa. The park's flora includes more than 700 plant species. No reliable information is currently available for the lower plants, notably the group of fungi, algae and lichens.

34. Chad's wildlife diversity includes 722 species of animals (wild and domestic), not including the group of insects that are found in the country and which seems to be richer in specific diversity. The best-known fauna is composed of mammals, birds, reptiles and fish. We currently know 131 species of large mammals, 532 species of birds, of which 354 are resident 117 palearctic migrants and 260 Afro-tropical migrants, and 177 species of fish. Among these species, 15 mammal species, 4 bird species as well as crocodiles (*Crocodilus niloticus*) and (*Varanus niloticus*), the Sitatunga (*Limnotragus spekei*), the manatee (*Trichechys senegalensis*) and the white-cheeked otter (*Aonyx capensis*) are fully protected.

Environmental threats and challenges

35. The factors degrading Chad's environment include the regression of the vegetation cover, the progressive advance of the desert, the decrease in biodiversity, the degradation of arable agricultural land, hydro-morphological alterations, the silting up of hydro-systems, and the increased fragility of the populations. Degraded areas in Chad have been estimated at 428,000 km², or 33.43% of the total area[16]. The main explanatory factors are: overgrazing, wind erosion, fuelwood and timber and mining activities.

36. The exponential increase in livestock numbers in recent years and changes in transhumance routes are also contributing to the recomposition of the rural space. The pressure on natural resources has also contributed to the degradation of historical relations between pastoral and agricultural societies. The reduction of the surface area of Lake Chad from 25,000 km^2 to 2,500 km^2 between 1963 and 2008 has had negative effects on the quality of life of communities, biodiversity and the risks of migration and conflict.

Climate trends

Past climate

37. The IPCC Sixth Assessment Report (2021) indicates that the increase in extreme weather and climate events has resulted in irreversible impacts, with natural and human systems being pushed beyond their capacity to adapt. The extent and magnitude of climate change impacts are greater than those estimated in previous assessments. Climate change has led to widespread deterioration in ecosystem structure and function, resilience and natural adaptive capacity, and altered seasonal patterns, with adverse socio-economic consequences. Climate change is therefore among the most worrying and urgent challenges facing humanity in the 21st century.

38. As a least developed country, Chad is not spared the consequences of climate change, which represents an additional constraint in its efforts to fight poverty and improve the living conditions of its population in general. Indeed, climate change, particularly global warming and the increased frequency of extreme weather and climate events, pose risks to all of Chad's

[15] National Strategy on biodiversity in Chad, 2016
[16] PAN/LCD (2003)

ecosystems and human systems. As a Sahelo-Saharan country (90%), Chad's vulnerability is accentuated by its heavy dependence on rain-fed agriculture and its limited and undiversified local resources and economies.

39. Chad's climate risk profile[17] indicates that the rainy season lasts two months in the north and more than six months in the extreme south of the country. Throughout the country, average minimum and maximum temperatures range from 19 to 21°C and 34 to +37°C respectively. Annual minimum temperatures in Chad have increased by 0.5 to 1.7°C depending on the station since 1950, while annual maximum temperatures have increased by 1.34°C over the same period. The Chad NDC[18] indicates that the inter-annual evolution of the temperature index from 1950 to 2019 shows a continuous increase in temperature since the early 1980s until today. Globally, the 1990s and 2000s were the warmest years since the beginning of weather records in Chad. Maximum temperatures have increased by an average of 1.1°C across the country. The Third National Communication (TNC) indicates an average annual temperature increase of 0.8ºC in the south, 1.2ºC in the center and 1.3ºC in the north.

40. Precipitation is highly variable from year to year and from decade to decade. Meteorological observations in the Sudanian part indicate a decrease in rainfall trends during the rainy season (May-October) over the period 1951-2000. In the Sahelian zone, there has been a recovery in rainfall since the 1990s, with above-average rainfall in several years. The evolution of the national rainfall index shows strong variability from 1965 onwards, with a downward trend, with repercussions on natural and human systems. The length of the agricultural season is also subject to significant inter-annual variability, with a marked trend towards shorter seasons. Another trend is the increased frequency of prolonged dry periods during the rainy season. According to the Chad TNC[19], when considering the average climate sensitivity, it is expected that in the south, central-west and central-east, rainfall will be close to that currently observed, given that the increase in rainfall indicated by most models is only around 11%. In the north and northeast, up to 100% excess rainfall, but unfortunately this will not bring a very significant change in these regions where sometimes no rainfall is recorded throughout the year. These conditions will further affect timber resources, water resources and rural development sectors.

41. Among the extreme weather phenomena, the National Strategy and Action Plan for Disaster Risk Management of Chad (SNPAGCC) adopted in 2020 highlights droughts and floods as the most important, and are often the cause of recurrent disasters with considerable impacts on the population and the environment. Borkou belongs to the hot and arid tropical climate of the Saharan type. It is crossed by the isohyet 100, on its southern limits. The average annual rainfall rarely reaches 100 mm. The rainy season is spread over three months, with August being the wettest month.

42. The figures below illustrate these variations in rainfall and temperature over Chad as presented in the risk profile document and in the Third National Communication (TNC).

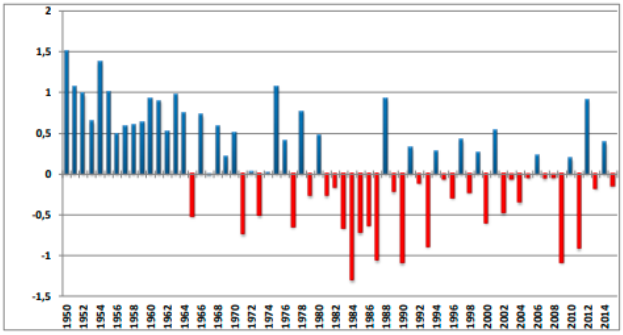


Figure 5: Interannual evolution from 1950 to 2014 of the national annual rainfall accumulation index.

Forecast

43. The climate risk profile[20] conducted in Chad projects that in response to rising greenhouse gas (GHG) concentrations, air temperature in Chad is projected to increase by 2.1°C to 4.3°C by 2080 relative to the year 1876 under different GHG emission scenarios. Relative to pre-industrial levels, the median temperature increase from climate models in Chad reaches about 2.1°C in 2030 and 2.5°C in 2050 and 2080 under the RCP2.6 emissions reduction scenario. For the medium-to-high emissions scenario (RCP6.0), the median of climate model temperature increases is 2.1°C in 2030, 2.6°C in 2050, and 3.5°C in 2080.

44. Along with the increase in average annual temperatures, the number of very hot days per year (maximum temperature exceeding 35°C) is projected to increase with a high degree of certainty across the country. Under the RCP6.0 medium-to-high emissions scenario, the median of the multi-model ensemble projects 17 more very hot days per year in 2030 than in 2000, 31 in 2050, and 49 in 2080. In some parts of the country, particularly in the center, this equates to more than 300 very hot days per year by 2080.

[17] chad-country-programme.2019
[18] National Determined Contribution of Chad, 2021
[19] Third National Communication, 2020
[20] GIZ, 2021, Climate Risk Profile, Chad. https://agrica.de/wp-content/uploads/2021/01/GIZ_Climate-risk-profile-Chad_EN_final.pdf

45. Compared to the year 2000, the median of the projections shows an increase in average annual precipitation of 32 mm under RCP2.6 and 50 mm under RCP6.0 by 2080. The number of days with heavy rainfall is also projected to increase. In Chad, some climate models project an increase in the number of heavy rainfall days from 7 per year in 2000 to 9 (RCP2.6) and 10 (RCP6.0) by 2080. Chad's hydrological projections predict a larger increase in potential evapotranspiration under RCP6.0 than under RCP2.6. Under RCP6.0, potential evapotranspiration would increase by 2.1% in 2030, 3.3% in 2050, and 5.7% in 2080 compared to 2000 levels. The figures below illustrate these different projections.

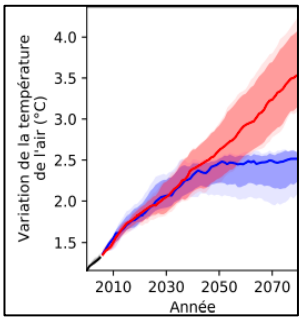


Figure 6: Air temperature projections in Chad for different GHG emission scenarios

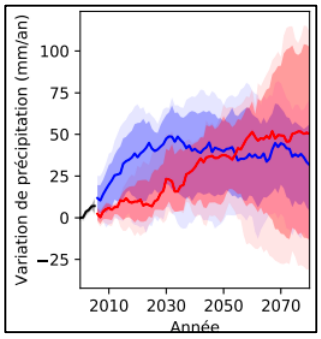


Figure 7: Average annual rainfall projections in Chad for different GHG emission scenarios, relative to the year 2000

Impacts of climate change

Impacts on water resources

46. Climate change is having an impact on surface water resources, particularly through the drastic reduction in the water level of Lake Chad between 1966 and 1975, by 95%. Still facing major threats, its variability under climate change remains very uncertain. The country's other lakes were also severely affected by the droughts of the 1970s and 1980s, with Lake Fitri drying up completely in 1973 and 1984 as a result of a significant reduction in inflows. The country's two major rivers, the Chari and the Logone, also experienced marked variability in their hydrological regimes (the lowest modulus of the Chari, at N'Djamena, was 235 m3/s, recorded in 1984 and a clear downward trend). Current projections of water availability in Chad are fraught with a high degree of uncertainty under either GHG emission scenario. Considering population growth per capita, water availabilitý in Chad is projected to decline by 75 percent by 2080 relative to the year 2000 under both scenarios.

Impacts on agriculture and livestock

47. Agriculture contributes 51.9% of GDP, 20% of which comes from food production and 3% from cash crops. The impacts of climate change on agriculture include decreases in yields and production (-10 to -25%) of food crops (millet, sorghum, maize), a regression of vegetation cover, and an expansion of cultivated land at the expense of forest land that may lead to irreversible deforestation in the long term. It is also noted that the distribution area of crop pests (plagues, diseases, etc.) is extended, which can lead to a decrease in agricultural production. Impacts are observed on the modalities of livestock transhumance with possible reductions in forage biomass with prolonged stays in the south and an evolution towards agro-pastoral systems.

Impacts on fishing and aquaculture Sector

48. The fisheries and aquaculture sector represent 3% of GDP. Fish farming is still underdeveloped with only 156 tons of production in 2016; this represents a very small percentage of the total national fish production. However, fisheries and aquaculture are impacted by climate change through the loss of about 210,000 ha of spawning areas in the floodplains and swamps of the Chadian part of Lake Chad. Most of the known fish species in Chad are now threatened with extinction. There is also a loss of oxygen saturation that eliminates many fish species, especially in swamp water, and poor reproduction of many migratory species, including an important commercial species, the Salanga (*Alestes baremoze*), which recovers during years of good river flooding.

Impacts on ecosystem services

49. Recurrent droughts and extensive desertification have contributed to the loss of biodiversity in Chad. Other impacts of climate change observed are related to the limitation of vegetation to lowlands, outwash plains and groundwater outcropping areas in the north, increased dieback of woody plants and soil cracking in the Sahelian zone. The Sudanian zone is experiencing a relative reduction in large trees. The disappearance of certain animal and plant species (especially aquatic species), the degradation of ecosystems and ecosystem services, especially wetlands and river systems, which are at risk of being transformed into other ecosystems, are also observed impacts. An increase in the risk of forest fires and bush fires has also been noted.

50. In a context of increasing desertification, insecurity and the loss of grazing land to expanding settlements, the southward migration of Chad’s herders is causing tensions over land and water with local farmers. Chad is facing a resurgence of deadly

communal conflicts between nomadic Arab herders and local farmers. Land use rights and access to water are the leading causes of these inter-communal clashes, especially during the arid and dry season, where water sources and pastures become very scarce. Farmers who do not allow cattle to graze in these areas are attacked by herders who destroy their fields and huts. Drought and desertification degrade pastures, drying up many natural water sources and forcing large numbers of herders to migrate southward in search of grassland and water for their herds. These conflicts quickly escalate and aggravate relations among communities and clans. To prevent the crisis from escalating, national authorities should strengthen security for herders and farmers, implement conflict resolution mechanisms, promote social cohesion and guarantee herders and breeders access to land as well as ensure food self-sufficiency. There is also concern regarding the non-respect of transhumance corridors, by both farmers and herders, and the non-application of texts governing transhumance corridors by local authorities.

Impacts on Human health and nutrition sector

51. Climate change poses significant threats to the health and nutrition sector due to the increased frequency of heat waves, floods, droughts and storms. Increased morbidity and mortality resulting from vector-borne and non-vector-borne tropical diseases (malaria, cholera, bacillary dysentery, measles, etc.) and water-related diseases (diarrhoea and cholera). There are already more than 2.5 million cases of malaria, including 8,693 deaths in 2018. A significant increase in the number of cases of meningitis that largely corresponds to the Sahel region and is the site of the majority of meningitis epidemics. The effects of climatic shocks associated with conflict and migration exacerbate malnutrition (which is already chronic in 14 regions of Chad with a prevalence ranging from 40.1 percent to 63.9 percent). Projections of the share of the population affected by at least one heat wave per year show a sharp increase for the RCP6.0 scenario, from 2.5% in 2000 to 14% in 2080. In addition, for the same scenario, and the same baseline, heat-related mortality is likely to increase threefold, to 12 deaths per year per 100,000 inhabitants.

Impacts on infrastructures

52. Human settlements and economic production sites, particularly in densely populated urban areas (such as N'Djamena, Moundou, or Sarh) are impacted by climate change. Makeshift dwellings are often built in unstable geographical locations, such as riverbanks, where flooding can result in the destruction of homes, water contamination, injury or death. The heavy floods of 1996, 1999, 2004, 2005, 2006, 2007 and 2008, 2010, 2016 affected the precarious neighborhoods of urban centers, leaving thousands of people homeless and homes destroyed in N'Djamena.

Impacts on the oasis ecosystem

53. 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[21]. 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 plants being succeeded and animals losing habitats. Increased temperatures and droughts can also influence succession in forest systems while concurrently increasing the risk of invasive species, all of which affect ecosystems. With regards to tree cover. model projections vary depending on the scenario. Climate Model projection announce a variation for more or less of 2% in the tree cover in the south of the country by 2080. Although these results paint a rather positive picture for climate change impacts on tree cover, it is important to keep in mind that the model projections exclude any impacts on biodiversity loss from human activities such as land use, which have been responsible for significant losses of global biodiversity in the past, and are expected to remain its main driver in the future[22] .For example, population influxes in affected areas, need for pasture and agricultural land and logging have resulted in high rates of deforestation[23]: Chad has lost 1.54 million ha of forest cover in the period from 2001 to 2016, which is equivalent to a 25 % decrease[24].

Vulnerability assessment and adaptation measures

54. The vulnerability assessment conducted in 2020 through the process of developing Chad's Third Communication on Climate Change showed that agriculture, livestock, forestry, health and water resources sectors are all vulnerable to the adverse effects of climate change. Indeed, food security is far from assured in the future as there is a clear gap between the food needs of a rapidly growing population and likely agricultural production. By 2050, if nothing is done, the number of malaria cases will increase by about 50% and that of meningitis and measles by 76.79% and 9.74% respectively.

55. For surface water resources, the impacts stem from projected changes in precipitation and land use. Changes in the volume, timing and quality of flow and recharge, and the characteristics of the aquifer system, are the determining factors in the impacts of climate change on groundwater resources. It is likely to observe on groundwater: a very significant decrease in the recharge

[21] T. M. Shanahan et al., "CO² and Fire Influence Tropical Ecosystem Stability in Response to Climate Change," Nat. Publ. Gr., no. July, pp. 1–8, 2016.
[22] IPBES, "Report of the Plenary of the Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services on the Work of Its Seventh Session," n.p., 2019.
[23] FAO and UNHCR, "Rapid Woodfuel Assessment 2017 Baseline for the Area Around the City of Goré, Chad," Rome, Italy and Geneva, Switzerland, 2018.
[24] Global Forest Watch, "Chad." Online available: https://www.globalforestwatch.org

of aquifers in large sedimentary basins and a decrease or increase in the contribution of groundwater to rivers depending on the increase or decrease in recharge.

56. Announced in its Third National Communication and confirmed in its first National Adaptation Plan and its updated Determined National Contribution, Chad has adopted a series of measures to address the immediate risks of climate change. Among these measures the national authorities intend to enhance the development of new techniques and less costly technologies for water and soil conservation, mobilization of runoff water and its use for irrigated and off-season crops, particularly market gardening, establish a balance between the availability of water resources and water needs for irrigation and consumption by the population and livestock; continuing to build hillside reservoirs and dams and promote and enhance mobilization of surface water for the increase of agricultural production and for the recharging of groundwater

57. On other hand and in relation with the agriculture and direct support to population, the government intends to further support for the development of small-scale livestock farming for women and young people, the promotion of the realization of large-scale hydro-agricultural facilities (dams, micro-dams, dykes, dikes, spreading sills). It will also strengthen the collection of agro-meteorological data throughout the country and to Intensify and diversify agricultural production systems while integrating agroforestry and to develop animal fattening and the promotion of the exploitation and development of non-timber forest products sectors.

58. To do this, it is necessary to provide decision-makers with the necessary tools and mechanisms to ensure the implementation and monitoring of the above-mentioned actions. For this purpose, Chad government will support for the implementation of local development plans, enhance the development and implementation of development and management plans for natural forests, community forests and will improve the effectiveness of mechanisms for anticipating and coordinating interventions in emergency situations.

59. This project, which focuses on building the resilience of oasis ecosystems to cope with drought, is part of the implementation of these priority adaptation measures as outlined in Chad's Third National Communication, NAP and updated NDC.

Specific information on the project area

Geographic, socio-economic and environmental characteristics of the oases of Borkou, Ennedi Ouest et Wadi-Fira

60. The project will operate in three regions, namely: Borkou (Faya), West Ennedi and Wadi Fira as shown in the figure 8. The geographical, socio-economic and environmental characteristics of these three areas are as follows:

Borkou Province

61. The Borkou Province of Chad covers over an area of 241,000 km².(RGPH2, 2009). The region experiences dry and hot desert climate. The primary economic activity practiced is livestock husbandry, with agriculture practiced in the oases regions through market gardening and arboriculture (especially dates). The only important market is that of Faya (capital of the region), with important trade flows that make the locality the hub of the Chadian Sahara. Dates and natron leave this market for other centers in the area, notably Bardaï and Fada, but also for the east (Abeche) and the south of the country via N'Djamena..

62. In the Borkou region, average annual temperatures in the area are around 29°C. Due to the short rainy season, annual fluctuations are not very pronounced. Low temperatures are observed in December, January and February; the average is 22°C but the minimum and maximum temperatures reach 9°C and 26°C respectively in January, with a fairly high thermal amplitude of around 17°C. The hottest periods are observed in May, June and July with an average of 35°C and minimum and maximum temperatures reaching 25°C and 43°C respectively, with fairly marked daily fluctuations: 18°C on average.

63. This population is estimated at 138,103 in 2020[25]. The population is very young, with those under 15 years of age representing 46% of the total population. Adults or working people (15-59 years old), who are more numerous, represent 50% and older people (over 60 years old) 4%. Life expectancy is the lowest in the country: 39.2 years on average, and the average age is 32 years. Population growth is also low: 2.10% per year, with a very high crude mortality rate: 22.80%.

64. Borkou is almost devoid of vegetation. The few vegetation cover present in the region are summarized in: - the shrubby and herbaceous steppe with Acacia and Aristida which is located mainly in the south-eastern part over a fairly small area (537826 ha); -the very sparse vegetation characteristic of the Sahara is arranged in pockets, probably around the oases and on a very small area (723,051 ha). The Borkou region is the driest in the country. Apart from the Wadis and oases, the only wadis present have their source in the Tibesti watershed and in the Mourtcha watershed in the western Ennedi. All these wadis dry up very quickly.

Ennedi West Province

65. The region is part of the Mouridi depression and contains lakes (Ounianga), which are a significant tourist attraction in a Saharan context. West Ennedi belongs to the Saharan ethnic-linguistic group. It was part of the organized northern states with

[25] chad-country-programme.2019

mostly nomadic populations. The inhabitants are mainly Daza and, to a lesser extent, Teda. The main languages spoken are Daza and Teda, known under the generic name of Goran but with many variations.

66. With a population of 59,744 inhabitants, West Ennedi is one of the least populated regions in northern Chad with a density of 0.48 inhabitants/km² (RGPH2, 2009). A large part of the population is young: 46% of the population is under 15 years old. Life expectancy is 55.4 years on average. The crude mortality rate is 12.40%. The proportion of women of childbearing age is the highest in the country: 90.4% and the fertility rate is 6.1 children per woman. In Ennedi West, the school enrolment rate is low (9%). This compares with the population aged 6-15 years (29%). The literacy rate is 8% and 69% of the population can neither read nor write. The region has an agropastoral vocation. 57% of the inhabitants work in agriculture. Agriculture is the main activity practiced in the oases through market gardening, which is the most developed, and to a lesser extent, arboriculture, especially the date palm.

67. Livestock breeding is a significant activity, in a transhumance mode in which pastoralists travel hundreds of kilometres in search of pastures in the south-east of the region. This nomadic livestock industry is mainly composed of camels and small ruminants. The region has several markets, the most important of which are Fada, where cereal products essential to the population's diet converge, and Ounianga, from where salt leaves for Libya and the south of the country..

68. In the Ennedi West region, the average annual temperature in the region is around 29°C. Due to the short rainy season, annual fluctuations are not very marked. Low temperatures are observed from December to February. The average is 22°C, but the minimum and maximum temperatures reach 9°C and 26°C respectively in January, with a temperature range of about 17°C.High temperatures are observed in May, June and July, with an average of 35°C and minimum and maximum temperatures reaching 25°C and 43°C respectively, with fairly marked daily fluctuations: 18°C on average.

Wadi-Fira Province

69. The region located on the margin of the Saharan zone covers 48 650 km². Its regional capital is Bilitine.The terrain is savannah merging into the Sahara Desert in the north, and rising to the east. The main economic activity is followed by agriculture, which is practiced in the vast areas around wadis and ponds as well as on the sides of the mountains.

70. In Wadi-Fira, the average temperature is around 26°C with extremes between 22 and 31°C. The hottest months are in April, May and June when temperatures reach 30°C, the coolest months are in December, January and February, when temperatures are around 22°C. Temperature fluctuations are less pronounced during the rainy season, especially in July and August, when temperatures drop to 11°C. On the other hand, during the cooler months, temperature ranges reach 19°C. Minimum temperatures are around 13°C in December and January and maximum temperatures reach 40°C in April and May.

71. Rainfall is rare in the northern part, influenced by the Saharan domain, as evidenced by the Arada rainfall station where the annual cumulative rainfall does not reach 200 mm per year. On the other hand, in the eastern and south-eastern part, plateaus and wadis create a microclimate that causes rainfall that can exceed 400 mm per year, as evidenced by the stations of Guéréda and Biltine. The rainy season lasts 3 to 4 months depending on the environment. Inter-annual fluctuations are quite marked, with the maximum rainfall reaching 470 mm in 1994 and the minimum being 120 mm in 1996. August is the wettest month and concentrates most of the annual rainfall, 130 mm in 2008 for an annual total of 200 mm on the station of Arada. Wadi-Fira has a fairly mild microclimate, because of the many wadis, especially on the eastern side of the region.

72. This population is estimated at 754,740 inhabitants. It is very young (53% of the inhabitants are under 15 years old). Adults or working people (15-59 years old) represent 41% and the elderly (over 60 years old) 6%. The population growth is sustained (6.5% per year). The proportion of women of childbearing age is 42.86%; the fertility rate is 7.2 children per woman. 11% of the inhabitants attend school, well below the 6-14 age group (31%). 10% of the population can read and write. Cereal production is quite significant and is growing, consisting mainly of small millet (penicillium) but also red sorghum. However, the cultivation of oilseeds, although less important than that of cereals, shows a very high growth rate. The existence of wetlands also makes it possible to grow tomatoes, okra, peppers and watermelons, which are sold in the region's urban centers. Animal husbandry remains the main activity of the region. There are several types, ranging from sedentary to transhumant through an intermediate type: semi-sedentary (transhumance to neighbouring regions). The presence of wadis and ponds is quite conducive to the development of livestock in the region.

Project zone identification, description & target population

73. The project activities will be developed in priority in the areas selected by the executing entity in close consultation with the communities as the most vulnerable in the country, based on the following criteria: (i) high variability of rainfall, (ii) high frequency of drought episodes, (iii) significant environmental degradation, (iv) degree of threat of the oases by sand dunes movement (v) food insecurity, (vi) high dependence on agriculture and livestock, (vii) low level of income of the population, (vii) Chad's priorities in strategic development documents (NAPA, NAP, NDP...).

74. The consultative selection process took place from September 3 to 17, 2022 where different oases were visited, resulting into the selection of 5 communes namely Biltine, Arada, Kalait, Fada and Faya Largeau as presented in the following table:

Province	Department	Communes
Borkou	Borkou	Faya

Ennedi West	Fada	Fada
		Largeau
	Mourtcha	Kalaït
Wadi-Fira	Biltine	Biltine
	Al Biher	Arada

75. Most of these communes are located in the northern region of Chad, as shown in the map (figure 9), where we find a number of oases around which socio-economic activities related to agriculture, livestock, pastoralism and market gardening are practiced. These oases suffer from the negative impacts of drought, causing water shortages, SDM and soil fertility problems. The most vulnerable among the communities living in these areas are the women as in some communes the men have to seek work in bigger communes and nearby cities during dry seasons. . The women and children being less mobile are left behind have to fill the gaps and are forced to innovate to maintain food security.

76. Direct project beneficiaries will be selected during the development of the full proposal among the vulnerable communities of the five (05) selected communes and whose activities are strongly exposed to the risk of drought.

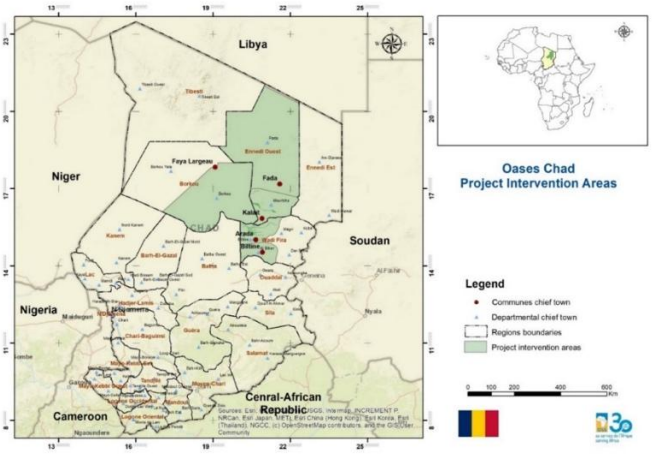


Figure 8 Oases Chad project intervention areas map

77. The consultative selection process further detailed the main environmental and climatic challenges being experienced in the 5 communes as summarised below.

78. The most common shocks and hazards that the communities in all 5 communes deal with is mainly rain failure, sometimes this is very localized, sometimes more widespread, and this affects their ability to either practices agriculture or raise livestock. It is projected that in future years, areas with 200–500 mm of annual precipitation, where Chad is located will face a decline in groundwater recharge due to climate change[26]. In all the 5 communes there is very limited surface water and where it exists, it is mainly seasonal. These projections further indicate that both surface and groundwater availability and accessibility will decline as a result of reduced rainfall, temperature increases and more frequent droughts and this will impact negatively on the livelihoods of the communities.

79. The communes of Fada and Faya near the temporary watercourses (wadis) that benefit from the relatively moist soil practice some agriculture and this is supplemented with irrigation, but this is vulnerable to a changing climate. Given the repeated cycles of droughts, desertification and even the occasional floods, it is increasingly harder for the local population to sustain subsistence agricultural practices. In a zone where the rainfall is already minimal, if a little less rain than normal falls this can have a drastic impact on the harvest. Every one to three years in ten the harvest is attacked by crop pests.

80. The impacts of climate change are also straining the relationship between the herders and pastoralists. For many years, where the pastoralists have crossed the communes heading to the south towards Moyen Chari to feed their herds. The scarcity of water, pasture and fertile soil has thus forced people to migrate27. Such displacement has led to conflicts over land and resources between herders and farmers. Climate variability is therefore strongly interacting with other conflict drivers and exacerbating the situation.

81. Chad has experienced occasional excessive rain, as seen in 2022 and 2019. The whole country experienced but the worst hit were the rural areas, where all these 5 communes fall. The flooding caused water courses to rise, washing away homes, crops and even livestock. It also delays transhumant and their animals from completing their journey north, causing significant problems in that a large number of animals migrating north are blocked at the seasonal river, unable to cross. If this delay is

[26]https ://www.iwgia.org/en/chad/3498-iw2019-chad.html.

27

long the situation can rapidly deteriorate with animals crowding and often break out of diseases and trampling the fields close to the river, limited pasture and water access for all the animals, all leading to the risk of loss of animals and livelihoods.

82. One year in about three the rainfall is insufficient for adequate crop growth in the south of the zone, either because not enough rain falls throughout the year or because the pattern of rainfall over time is not conducive to good plant growth. In a zone where the rainfall is already minimal, if a little less rain than normal falls this can have a drastic impact on the harvest. This is further worsened by the fact that every one to three years in ten the harvest is attacked by crop pests. The outcome of this is that there is noticeable overgrazing and land clearing to try and produce more food. The pressure from a rapidly growing population is also contributing to land and soil degradation in these areas.

83. All the 5 communes are rural based with very little urban and modern amenities and facilities. They are also in nature and the inhabitants among the most illiterate in Chad. These communities, are unaware of the rising challenge of climate change on their environment and their livelihoods, as a result of the very little information gathered and disseminated on the environment and climate trends by the relevant government authorities. As such, there is little to no public awareness on the impacts of climate change, how to adapt and combat them, and how human activities can impact these as there is a lack of relevant data and information on the oasis ecosystem, the impacts of climate change and therefore this project aims to help facilitate the production of knowledge materials and transfer of natural resource management through the development of human capital, strengthening policy and regulatory framework (policy), and raising awareness on threats and potential impacts of environmental degradation and climate change at all levels (knowledge)..

B. Project Objectives

84. The overall objective of the project is to strengthen the resilience of vulnerable communities in Borkou, West Ennedi and Wadi-Fira by building adaptive capacity to recurrent drought risks and promoting the sustainable management of oases and associated ecosystems.

The specific objectives of the project are:

- Develop and strengthen the monitoring, legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities;
- Improve access to water and its sustainable management;
- Implement concrete adaptation actions to improve the resilience of the most vulnerable communities in the project area;
- Promote partnerships and local governance mechanisms;
- Ensure the sustainability of adaptation measures through mobilizing and sensitization of beneficiaries and partners, and sharing knowledge with all stakeholders.

C. Components and financing of the project

Project Components	Expected Outcomes	Expected Concrete Outputs	Amount (US$)
Component 1: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities.	Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced.	Output 1.1.1: Information, legal and institutional frameworks for sustainable management of oasis ecosystems in the project area, are upgraded.	1,501,382
Subtotal C1			**1,501,382**
Component 2: Implementation of concrete adaptation measures to improve the resilience of the oasis ecosystems and local communities.	Outcome 2.1: Water availability in the oasis is enhanced.	Output 2.1.1: Water availability for the development of agro-pastoral activities in the intervention sites is promoted.	800,000
		Output 2.1.2: Access to potable water for target communities is enhanced.	800,000
	Outcome 2.2: Sustainable Land Management (SLM) practices are promoted.	Output 2.2.1: Land and dune management systems are reinforced	700,000
		Output 2.2.2: Climate resilient Agricultural practices are adopted.	1,750,000
	Outcome 2.3: Climate resilient livelihood are strengthened.	Output 2.3.1: Livestock production practices are improved.	500,000

		Output 2.3.2: Oasis value chain is strengthened.	500,000
		Output 2.3.3: Community livelihoods resilience is enhanced through adoption of (IGAs).	955,529
Subtotal C2			**6,005,529**
Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders	Outcome 3.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted populations	Output 3.1.1: Knowledge and awareness on adaptation and climate risk reduction issues in oasis are developed and disseminated.	834,101
Subtotal C3			**834,101**
Activities budget [C1,C2,C3] (A)			**8,341,101**
Project Execution cost (B) (9,5%)			**875,577**
Total Project Cost (C) = A+B			**9,216,590**
Project Cycle Management Fee charged by the Implementing Entity (8,2% C)			**783,410**
Amount of Financing Requested			**10,000,000**

D. Projected Calendar

Milestones	Expected Dates
Start of Project Implementation	December 2026
Mid-term Review	November 2028
Project Closing	November 2030
Final Evaluation	April 2031

PART II PROJECT JUSTIFICATION

A. Description of the project components

85. Frequently ranked as one of the most vulnerable countries in the world to climate change, Chad has struggled for years with a range of environmental pressures that have threatened its population especially its nomadic populations and those who occupy the most vulnerable areas of the Chad such as the oases and more precisely in the north of the country where this project will be implemented.

86. Recurrent droughts and extensive desertification have contributed to the loss of biodiversity in Chad. 80 % of the population is engaged in smallholder farming and heavily relies on agriculture for food security and livelihoods. Therefore, concerns are rising about the effects of climate change including rising temperatures, reduced water availability and the occurrence of floods and other extreme weather events. Seasonal southerly migration by pastoralists and their cattle in the Sahel traditionally in the dry season between October and May which has always caused friction with local sedentary populations reliant on the same pasture and wells used by herders to feed and water their livestock

87. However, in recent years the impact of climate change has changed patterns in place for many generations, causing new tensions. Over the course of just a decade, landlocked Chad's dry northern Saharan and central Sahelian zones have spread 150 kilometres south, shrinking fertile farming and grazing areas. Decreasing or more erratic rainfall has forced herders mostly Mbororo (Fulani, Peulh), Toubou to move south ever earlier in the year, with the result that at times their herds arrive before local farmers have had time to harvest their crops and spoil the yield. They also tend to stay for longer periods or even permanently, further upsetting the delicate balance between Chad's different ethnicities, lifestyles and livelihoods.

88. Thus, and to face all these serious dangers the project proposes an integrated approach that combines both the dimension of combating desertification, improving access to natural resources including water, ensuring food security for all while helping to mitigate inequalities and vulnerabilities for the poorest.

89. This project will build on the acknowledgements and advances made by national institutions in terms of planning and strategy, such as the updated NDC or the national adaptation strategy, and will move to the concretization of these concrete adaptation actions with a focus on oases as an example of an endangered system. The project will also strengthen national planning capacities by providing access to quality information and support for broader, bottom-up consultation processes.

90. The main actions to be deployed in the sites will eventually lead to a significant reduction of the impacts related to major climate hazards in the Chad (particularly the Water and food security), to the improvement of the livelihoods and living conditions of the communities as well as to revitalize the ecosystem. For a better efficiency/effectiveness, this 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 is thus organized around three components where the planned activities as well as the expected outputs and outcomes to achieve the project objectives are in line with the Adaptation Fund's strategic outcomes. Presented below are the details on the components, outcomes and activities.

Theory of change

91. The Chad Oasis Project seeks to address the accelerating degradation of oasis ecosystems and strengthen the resilience of vulnerable communities in the regions of Borkou, Ennedi Ouest, and Wadi Fira. These areas are experiencing increasingly severe climate impacts, including desertification, extreme water scarcity, and biodiversity loss conditions that are undermining livelihoods and pushing traditional oasis systems toward collapse. The project applies an integrated approach to ecosystem restoration, sustainable resource use, and community-based adaptation, grounded in a clear Theory of Change (ToC). **IF** a conducive policy and institutional environment is established, water availability is improved, and sustainable land and livelihood practices are promoted in a participatory and inclusive manner, **THEN** the resilience of both ecosystems and communities will be significantly enhanced, **BECAUSE** locally led, ecosystem-based adaptation measures are proven to deliver lasting impacts in fragile and arid contexts such as northern Chad.

92. The first step in this transformation is to build a robust enabling environment by strengthening information systems, legal frameworks, and institutional capacity for oasis ecosystem management (Outcome 1.1). The project will establish a geospatial baseline of ecological conditions, conduct legal and policy reviews, and support decentralized climate governance structures that empower local and traditional institutions. By increasing institutional coordination and access to reliable environmental and climate data, decision-makers and communities will be better equipped to design, implement, and monitor adaptive actions tailored to local needs and risks.

93. The second dimension focuses on direct investments in natural resources and productive systems to reduce vulnerability and restore ecological integrity. Water security will be improved through the rehabilitation of traditional and modern water infrastructure, promotion of water harvesting technologies, and introduction of efficient water-use practices (Outcome 2.1). In parallel, sustainable land and agricultural management techniques will be introduced to combat erosion, enhance soil fertility, and increase productivity (Outcome 2.2). These include reforestation with native species, dune stabilization, composting, and drought-tolerant crops. Combined, these efforts will regenerate ecosystem services, stabilize oasis environments, and secure natural resources essential for livelihoods.

94. Additionally, the project will work to empower local communities by strengthening climate-resilient livelihoods and enhancing awareness and ownership of adaptation processes. It will promote diversified economic opportunities such as processing of oasis products, ecotourism, and sustainable livestock value chains and provide microfinance and entrepreneurial training targeting women and youth (Outcome 2.3). At the same time, extensive awareness-raising activities and participatory planning processes will foster behavioural change and ensure that climate risk reduction is integrated into everyday decision-making (Outcome 3.1). Together, these actions will result in a self-reinforcing system of ecological restoration, socio-economic empowerment, and institutional sustainability, laying the foundation for a long-term adaptation pathway in Chad's oasis regions.

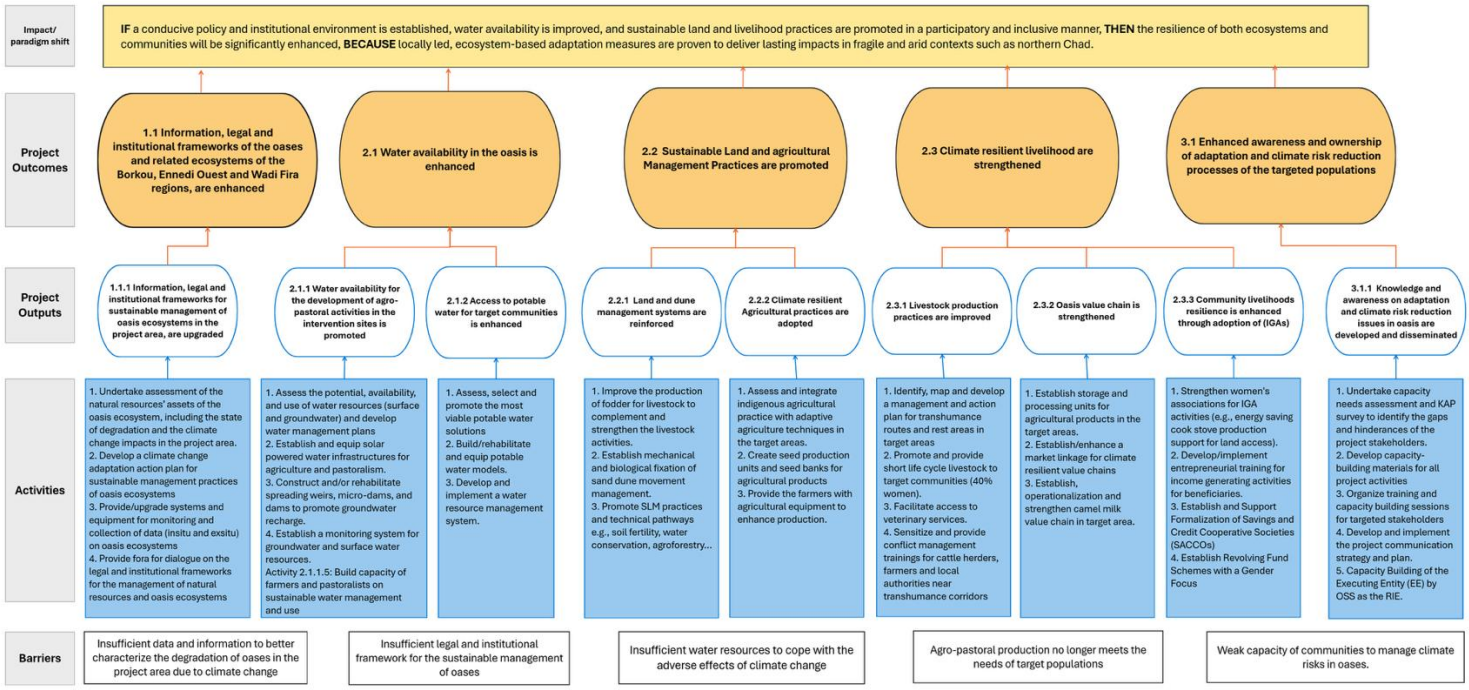
95. In concurrence to the ToC, The Chad Oasis Project aims not only to deliver localized adaptation benefits but to catalyse a paradigm shift in how fragile oasis ecosystems and the communities that depend on them respond to the mounting challenges of climate change. In the current baseline scenario, oasis systems in Borkou, Ennedi Ouest, and Wadi Fira are trapped in a downward spiral of environmental degradation, socio-economic marginalization, and institutional fragmentation. Conventional interventions have often been reactive, short-term, and sectorally isolated focusing on immediate needs without addressing the systemic drivers of vulnerability, such as unsustainable land use, poor water governance, exclusion of traditional knowledge, and limited local ownership of adaptation processes.

96. The project proposes a fundamental shift from fragmented and extractive approaches to integrated, regenerative, and locally owned climate action. At its core, the project embraces an ecosystem-based, community-driven model of adaptation that views local populations not as passive beneficiaries but as active agents of change. This model harnesses traditional knowledge systems, strengthens local governance, and positions communities to lead in the planning, implementation, and monitoring of solutions. It prioritizes long-term sustainability by reinforcing local institutions, embedding adaptation into regional development frameworks, and promoting inclusive decision-making structures that reflect the diverse needs and capacities of women, youth, and IPLC pastoralist groups.

97. Technically, the paradigm shift is operationalized through a move from conventional land rehabilitation and water access measures toward scalable nature-based solutions and climate-resilient productive systems. This includes restoring ecosystem services (soil, water, vegetation), adopting drought-tolerant agriculture, and rehabilitating traditional water infrastructure such as foggaras and oasis wells with modern innovations. Economically, it supports a shift from vulnerable, subsistence-based livelihoods toward resilient and diversified economic opportunities, such as value-added processing of oasis goods, sustainable tourism, and green entrepreneurship supported by revolving finance mechanisms. Socially, it fosters a cultural

shift in how climate risk is understood and addressed through participatory education, intergenerational knowledge exchange, and the mainstreaming of climate adaptation in community and institutional priorities.

98. Ultimately, the project offers a replicable and scalable model for transformational adaptation in arid and semi-arid zones across the Sahel and Sahara. By reversing ecological degradation while enabling vulnerable populations to drive and sustain climate resilience from the ground up, the Chad Oasis Project goes beyond incremental improvements. It establishes the structural, ecological, and behavioural foundations for a lasting paradigm shift from environmental fragility and reactive coping to systemic resilience, proactive planning, and self-determined climate futures.



Component 1: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities

99. Chad's northern regions are home to critical oasis ecosystems that support approximately 700,000 inhabitants, nearly 17% of the national population, through a complex mosaic of irrigated agriculture, date palm cultivation, sedentary livestock, and transhumance. Despite their ecological and economic importance, these oases are poorly understood and increasingly degraded due to desertification, climate change, and unsustainable resource use. The scarcity of reliable data and the absence of integrated legal and institutional frameworks severely limit the ability of decision-makers to monitor, plan, or sustainably manage these ecosystems. This knowledge and governance gap forms the basis for Outcome 1.1, which seeks to lay the institutional and informational foundation for long-term, climate-resilient management of oasis ecosystems in the Borkou, Ennedi Ouest, and Wadi Fira regions.

Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced

100. This outcome will facilitate a comprehensive characterization of the oases in the project intervention area, covering key ecological and socio-economic dimensions. The characterization will assess the region's flora, fauna, degree of environmental degradation, agricultural and fisheries potential, and the influence of climate change. The findings will inform the development of adaptation action plans tailored for each commune within the intervention areas. Technical and material support will be provided to strengthen existing institutions in data collection, processing, and archiving. This outcome directly supports Chad's Environmental Policy, particularly Strategic Axis 1 (combating desertification and conserving biodiversity) and Strategic Axis 3 (ensuring equitable access to natural resources and improving living conditions).For sustainable management of oases and associated ecosystems, the project will also strengthen the legal and institutional framework governing natural resource management. Support will be extended to the Ministry of the Environment particularly the General Directorate of Forestry, Wildlife and Fisheries Resources. Local and regional consultation platforms will be revitalized to put place oases related concerns at the heart of the environmental governance. This aligns with the strategic axis 4 (improvement of governance and management capacities environmental) of the National Environmental Policy, which promotes improved environmental governance and institutional capacities.

Output 1.1.1: Information, legal and institutional frameworks for sustainable management of oasis ecosystems in the project area, are upgraded.

101. The oases of the Borkou, Ennedi Ouest, and Wadi Fira regions are vital for biodiversity, agriculture, and local livelihoods, yet their sustainable management is constrained by insufficient data and outdated or fragmented governance structures. These gaps limit institutional capacity to address degradation, climate risks, and unsustainable resource use. This output will enhance governance foundations through improved data systems, legal frameworks, and inclusive dialogue. Stakeholder consultations will guide the revision of governance structures, ensuring alignment with national strategies and on-the-ground realities. The expected results of this output include stronger institutional capacity, enhanced availability of data, and upgraded governance systems in alignment with Chad's National Environmental Policy. Memorandums of Understanding (MoUs) will be established with public, private, and civil society partners to guide collaboration during the project's implementation, contributing to sustainability of outcomes.

102. *Activity 1.1.1.1: Undertake assessment of the natural resources' assets of the oasis ecosystem, including the state of degradation and the climate change impacts in the project area.* This activity entails an integrated assessment of the oasis ecosystem and the socio-economic conditions of the target communities within the project area, along with the baseline study and the KAP survey under *Ac 2.2.1.1* and the capacity needs assessment under *Ac. 3.1.1.1*. It aims to generate a robust evidence base to inform adaptive planning, guide targeted interventions, and strengthen the project's monitoring and evaluation framework. The assessment will deliver a comprehensive analysis of the state and dynamics of key natural resource assets, including water availability, soil fertility, vegetation cover, and biodiversity. It will further examine the extent and underlying drivers of environmental degradation, alongside the observed and projected impacts of climate change on ecosystems and livelihoods.

103. Concurrently, the assessment will explore socio-economic dynamics, such as community livelihood systems, resource utilization patterns, and the vulnerabilities of households and local institutions to climate-related shocks. A mixed-methods approach will be adopted, combining remote sensing and GIS-based analysis, field surveys, structured interviews, and participatory stakeholder consultations. This methodology is designed to ensure scientific robustness, contextual accuracy, and inclusive stakeholder engagement.

104. All collected data will be integrated into a centralized database to support the production of thematic ecosystem maps, the identification of critical ecological zones, and the delineation of climate-vulnerable areas. These outputs will form the analytical basis for the formulation of localized climate change adaptation strategies, and will directly feed into *Ac. 1.1.1.2* and *1.1.1.3,* which focus respectively on the development of community-based action plans and the design of sustainable natural resource management interventions.

105. This activity will be led by a specialized consulting firm in close coordination with the General Directorate of Forestry, Wildlife, and Fisheries Resources, thereby ensuring alignment with national policies and sectoral priorities. Technical partners will support geospatial analysis and ecosystem mapping, while local actors, including the NGO Union of Women for the Fight Against Desertification in the Sahel (UWFADS), provincial execution units, community committees, and traditional leaders, will contribute through the provision of indigenous knowledge and ground-truth data. This inclusive process will enhance the quality, legitimacy, and local ownership of the assessment and its outcomes.

106. *Activity 1.1.1.2: Develop a climate change adaptation action plan for sustainable management practices of oasis ecosystems.* This activity will create tailored adaptation action plans for each commune, addressing droughts, floods, land degradation, biodiversity loss, and resource conflicts. It will involve participatory approaches, engaging communities, farmers, youth, and women to define local priorities. A consulting firm will mobilize key stakeholders, including community representatives, farmers, local authorities, youth, and women, to identify intervention priorities. The firm will collaborate with the UWFADS through its local executing units to assess vulnerabilities, resource conditions, and community needs. Workshops, field surveys, and tailored questionnaires will gather valuable insights from local authorities and communities. Based on this data, the firm will draft a comprehensive action plan outlining prioritized adaptation measures, integrating inputs from local communities, technical experts, and provincial stakeholders. The plan will be validated through stakeholder consultations to ensure alignment with local realities and ownership. The plans will consider traditional knowledge, local agricultural practices, government policies, and sustainable natural resource management innovations. They will strengthen community resilience to climate change and promote inclusive and sustainable development by supporting local economic initiatives like oasis agriculture and eco-tourism. Monitoring and evaluation mechanisms will adjust strategies based on results and evolving community needs. These plans will serve as a roadmap for targeted initiatives, integrating innovative approaches and nature-based solutions to ensure better adaptation to future climatic conditions and strengthen food and water security. Based on data from *Ac.1.1.1.1*, a consulting firm will lead the planning process with extensive community engagement. These plans will be validated during stakeholder workshops and integrated into local governance platforms through *Ac. 1.1.1.4*.

107. *Activity 1.1.1.3: Provide/upgrade systems and equipment for monitoring and collection of data (insitu and exsitu) on oasis ecosystems.* To effectively monitor and collect data on oasis ecosystems, this activity will strengthen capacity by providing

new systems and equipment for both in situ and ex situ data collection and monitoring. Advanced tools like environmental sensors, GPS units, and data loggers will be installed for field monitoring, while software and data management systems will facilitate centralized analysis and archiving. The upgraded system will collect high-quality, real-time data on biodiversity, water availability, soil quality, and climate change impacts, feeding into a centralized database for decision-making and resource management. Capacity-building workshops will train technical staff and local stakeholders on equipment use and maintenance, ensuring long-term sustainability. Indigenous knowledge and participatory monitoring approaches will be integrated by engaging local communities in data collection, promoting inclusivity and ownership. The data will support activities like assessing natural resource assets and developing adaptation action plans, ensuring evidence-based and targeted interventions. The General Directorate of Forestry, Wildlife and Fisheries Resources will lead the implementation, collaborating with local government entities, technical partners, and community groups. Technical experts and consultants will assist in system design, equipment procurement, and capacity building. MoUs or agreements will clarify roles and ensure proper management and operation of the monitoring systems. This activity aims to provide critical information on ecosystem health and trends, contributing to sustainable management and resilience of oasis ecosystems in the project area. It builds on Ac. 1.1.1.1's findings and ensures long-term sustainability through capacity building and institutional partnerships.

108. *Activity 1.1.1.4: Provide fora for dialogue on the legal and institutional frameworks for the management of natural resources and oasis ecosystems.* This activity will facilitate dialogue among stakeholders to discuss, review, and enhance the legal and institutional frameworks governing natural resource and oasis ecosystems management. Government officials, local authorities, community representatives, and technical partners will address gaps and propose governance improvements. Workshops, roundtables, and multi-stakeholder consultations will foster knowledge-sharing, consensus-building, and collaborative planning. Discussions will align existing frameworks with national strategies and project objectives, ensuring better coordination and integration. The climate change adaptation action plan will serve as a benchmark to assess framework sufficiency. Ecosystem assessments and baseline surveys will provide evidence for adapting and upgrading frameworks. These dialogues will ensure governance improvements are data-driven and aligned with ecological realities and priorities. The Ministry of Environment will coordinate this activity, with local authorities and community leaders actively participating to represent their perspectives. Agreements and actionable recommendations will be documented and used to strengthen governance systems.

Component 2: Implementation of concrete adaptation measures to improve the resilience of oasis ecosystems and local communities

109. This component aims to restore and enhance the productive capacity of the targeted oasis ecosystems by implementing inclusive, community-driven adaptation measures. Through dynamic partnerships among local communities, government institutions, and technical stakeholders, the project will introduce innovative approaches to managing natural resources, improving agricultural productivity, and supporting value addition of local products. It will foster the formation of associations, cooperatives, and private enterprises that align with local economic and social contexts. Recognizing the mounting pressures on oasis agro-systems due to climate change, population growth, and unsustainable practices, the component focuses on transforming oases into resilient landscapes that provide sustainable livelihoods. By strengthening capacity, improving market linkages, and reducing environmental degradation, the project will promote ecosystem-based adaptation that can be scaled across other oases in Chad.

Outcome 2.1 Water availability in the oasis is enhanced.

110. Climate models predict that Chad will experience a significant rise in temperatures, between 2°C to 6°C or higher, by the end of the century. This increase will amplify water scarcity, particularly in oasis regions already under pressure from agricultural expansion, population growth, and recurrent droughts. In response, this outcome aims to improve the availability and efficient use of water resources for both agro-pastoral and domestic purposes. Activities are structured under two interlinked outputs to ensure sustainable management of water in oasis ecosystems and build resilience to climate variability.

Output 2.1.1: Water availability for the development of agro-pastoral activities in the intervention sites is promoted.

111. In the target regions, oasis agriculture, particularly date-palm production, relies heavily on irrigation sourced from groundwater aquifers. However, this resource is increasingly strained due to overuse, inadequate infrastructure, and climate-related variability. This output aims to address these issues by improving access to water for irrigation and livestock, enhancing efficiency, and conserving groundwater through a combination of conventional and innovative measures. Emphasis will be placed on introducing renewable energy technologies and smart irrigation systems to reduce costs and ensure sustainability. These interventions will increase water availability, support productive livelihoods, and build climate resilience for farmers and herders. This output will provide an opportunity to introduce innovative solutions, including the use of renewable energy and the development of advanced irrigation techniques. These measures will assist in lower energy costs and significantly reduce water usage for irrigation, achieving substantial savings.

112. *Activity 2.1.1.1: Assess the potential, availability, and use of water resources (surface and groundwater) and develop water management plans.* This activity will assess water resources, including surface and groundwater, in project sites. Field surveys, hydrological modelling, and remote sensing will map and quantify water availability, recharge rates, and usage patterns. Stakeholder consultations, including local authorities, water user associations, and community representatives, will provide insights into traditional water management practices and local needs. A consulting firm with hydrology expertise will lead the process, supported by the Ministry of Environment and local technical staff. Based on findings, integrated water management plans will address agricultural and pastoral needs while ensuring resource sustainability. These plans will outline equitable water allocation, groundwater recharge, infrastructure development, and climate resilience measures. The consulting firm, local authorities, and stakeholders will collaborate to draft plans aligned with national water management policies. Workshops will validate plans with community and stakeholder input before implementation.

113. *Activity 2.1.1.2: Establish and equip solar powered water infrastructures for agriculture and pastoralism*. Based on the findings of the water assessment and management plans, solar-powered water infrastructure will be established along transhumance routes to support agricultural irrigation, pastoral water points, and drinking troughs. The infrastructure will include boreholes, solar pumps, storage tanks, and distribution systems to improve water access and reduce fossil fuel dependence. Site selection will be based on the water resource assessment and consultations with local stakeholders. Technical surveys will determine the optimal infrastructure placement and design. Specialized contractors will construct and install the infrastructure under the Ministry of Environment's supervision. Local management committees or water user associations will operate and maintain the infrastructure, with capacity-building provided for effective use. This activity will enhance water availability, reduce resource conflicts, and promote sustainable agricultural and pastoral practices.

114. A*ctivity 2.1.1.3: Construct and/or rehabilitate spreading weirs, micro-dams, and dams to promote groundwater recharge.* This activity aims to enhance groundwater recharge by constructing and rehabilitating spreading weirs, micro-dams, and dams in targeted areas. Spreading weirs slow water flow, allowing soil infiltration and groundwater replenishment. Micro-dams and dams capture and store water during rainy seasons, preventing runoff and promoting groundwater percolation. This intervention mitigates water scarcity, enhances local water supplies, and improves ecosystem resilience to drought. It aligns with Ac. 2.1.1.1 water management plans, identifying priority sites based on hydrological assessments and community needs. Local authorities, water user associations, and community representatives plan and implement the project, ensuring local priorities and ownership. The Ministry of Environment oversees technical design and construction with specialized engineering firms. NGO UWFADS and its provincial units coordinate field activities, facilitating community involvement and supporting agricultural and pastoral needs. Capacity-building sessions train local stakeholders on maintenance and sustainable management. Regular monitoring and evaluation assess infrastructure effectiveness in groundwater recharge and its contribution to the water management strategy.

115. *Activity 2.1.1.4: Establish a monitoring system for groundwater and surface water resources.* This activity involves setting up a comprehensive monitoring system to track groundwater and surface water levels, quality, and usage trends in project sites. The system will include piezometers, hydrometric stations, and relevant equipment and software to provide accurate, real-time data on water resources. These tools will complement water management plans by providing ongoing insights to guide resource allocation and identify challenges. Stakeholders, including the Ministry of Environment and its technical directorates, will oversee implementation, working with consulting firms for technical design and installation. The UWFADS will engage the community to ensure local stakeholders support the monitoring efforts. Training will be provided to local authorities and water user associations to maintain and utilize the equipment effectively, integrating monitoring results into broader water management strategies.

116. *Activity 2.1.1.5: Build capacity of farmers and pastoralists on sustainable water management and use*. This activity empowers farmers and pastoralists with sustainable water management and resource use knowledge and skills. Training programs will introduce efficient irrigation, water conservation, and equitable sharing practices. Capacity-building sessions ensure stakeholders implement water management plans and benefit from new infrastructure under *Ac. 2.1.1.2* and *2.1.1.3.* The UWFADS coordinates training, ensuring representation from all communities and sectors, forming water management committees. Technical experts from the Ministry of Environment and agricultural extension services will deliver adapted training content. Practical demonstrations and participatory workshops maximize learning and application. This activity will enhance resource efficiency, reduce water conflicts, and ensure long-term water sustainability in project sites.

Output 2.1.2: Access to potable water for target communities is enhanced.

117. Access to clean and safe drinking water remains a significant challenge in Chad, with an estimated 44%[28] of the population lacking access to potable water. In the project's targeted regions, access rates are particularly low, approximately 57% in Ennedi and 46%[29] in Wadi Fira. This output aims to improve water security by identifying and implementing sustainable water supply solutions tailored to the needs of oasis communities. By enhancing access to potable water, the project will contribute to reduced water-borne disease prevalence, improved health outcomes, and a decrease in the time and physical burden

[28] USAID Study, 2020
[29] https://2012-2017.usaid.gov/results-data/success-stories/potable-wells-improve-water-access-chad.

associated with water collection, especially for women and young girls. These objectives will be realized through an integrated approach that includes assessing viable water solutions, installing decentralized water infrastructure, and establishing sustainable community-led water management systems.

118. *Activity 2.1.2.1: Assess, select and promote the most viable potable water solutions.* To improve potable water access, the project will assess and identify effective, sustainable potable water solutions for targeted areas. This includes evaluating existing water sources, treatment technologies, distribution methods, and revising national drinking water quality standards. It also promotes innovative solutions like “hippo roller” technology to reduce water collection effort, especially for women and young girls. The project aligns with enhancing community resilience by improving water access and addressing gender-specific challenges. Selected solutions will be promoted through targeted campaigns and community engagement sessions. Stakeholders, including the Ministry of Environment, local authorities, and community representatives, will contribute insights into local water challenges and preferences. The findings will guide water model design and implementation *Ac. 2.1.2.2* and water management system development *Ac. 2.1.2.3*, ensuring practical, sustainable, and community-tailored interventions.

119. *Activity 2.1.2.2: Build/rehabilitate and equip potable water models*. Building on the solutions identified under *Ac. 2.1.2.1*, the project will construct or rehabilitate decentralized water infrastructure suited for community-scale potable water provision. These systems may include boreholes with solar-powered pumps, gravity-fed rainwater harvesting tanks, or small-scale filtration and purification units, depending on site-specific needs. The systems will be designed to be climate-resilient, energy-efficient, and easy to maintain. Construction will be executed by certified contractors under the supervision of the Ministry of Environment, with active involvement from local communities during planning and installation. These systems will serve as demonstration models, showcasing scalable solutions that improve water quality, reduce health risks, and ease domestic water burdens complementing the water management system to be implemented under *Ac. 2.1.2.3*.

120. *Activity 2.1.2.3: Develop and implement a water resource management system.* To improve potable water access, a water resource management system will be developed. This will include the formation or reinforcement of local water committees, training in system operation and maintenance, and awareness-raising on responsible water use. It will focus on equitable water allocation, infrastructure maintenance, and community education on water demand management and conservation. Training and awareness campaigns will equip community members to operate and maintain the systems. The system will build on *Ac. 2.1.2.2* water models and integrate feedback from *Ac. 2.1.2.1*. Local water committees will oversee resource management and ensure regulatory compliance. The Ministry of Environment will guide the institutionalization of the system, with technical support from UWFADS and local extension agents. This activity directly supports improved health, climate resilience, and inclusive community governance.

Outcome 2.2: Sustainable Land Management Practices are promoted.

121. The target communities in Borkou, Ennedi Ouest, and Wadi Fira face accelerating land degradation due to overgrazing, deforestation, unsustainable farming practices, and increasing pressure from growing populations and livestock herds. This outcome seeks to promote Sustainable Land Management (SLM) practices that restore degraded ecosystems and strengthen the ecosystem services they provide, including water regulation, carbon sequestration, and agrobiodiversity preservation. Particular emphasis will be placed on the development of green belts to manage sand dune encroachment, promotion of climate-resilient agricultural techniques, and conservation of indigenous plant genetic resources through the creation of a community seed bank. These efforts will be complemented by enhanced agricultural extension services to support farmers with training on best practices in land use, crop production, and resource conservation. The integration of indigenous knowledge and active participation of custodians of traditional practices will further promote ownership and sustainability of interventions.

Output 2.2.1: Land and dune management systems are reinforced.

122. To address the increasing threat of wind erosion and sand dune encroachment that undermines food security and causes forced displacement, this output focuses on implementing an integrated land restoration and dune stabilization program. Activities will include participatory assessments, fodder production enhancement, mechanical and biological dune fixation, and the widespread promotion of sustainable land management techniques. The General Directorate of Forestry, Wildlife, and Fisheries Resources, in coordination with local authorities, technical staff, and community organizations, will lead and coordinate implementation.

123. *Activity 2.2.1.1: Improve the production of fodder for livestock to complement and strengthen the livestock activities.* To support sustainable land use and reduce pressure on existing vegetation, the project will promote high-quality fodder crop production for livestock. Integrating fodder production with livestock management practices will provide a reliable feed source and minimize overgrazing. This involves adopting high-yielding, nutrient-rich fodder crops like legume intercrops, establishing fodder banks for reliable supply during scarcity, and improving pasture management through soil enhancement techniques like fertilization and irrigation. Six (6) demonstration plots and ten (10) training sessions will showcase best practices in fodder cultivation, harvesting, and storage. The General Directorate of Forestry, Wildlife, and Fisheries Resources will collaborate with, at least forty (40) local agricultural extension services and farmer groups to ensure effective implementation. This activity

will complement the mechanical and biological sand dune fixation efforts by reducing livestock-related land degradation *Ac. 2.2.1.3*.

124. *Activity 2.2.1.2: Establish mechanical and biological fixation of sand dune movement management.* This activity will implement a dual strategy to address active sand dune movement in twelve (12) selected sites. Mechanical stabilization will include but not limited to the installation of windbreaks and barriers such as checkerboard fencing to physically contain dunes extending over a total length of at least 30kms. In parallel, at least 80kms of biological measures will focus on the planting of native drought-resistant vegetation (e.g., Acacia, Panicum) to form green belts that anchor sand and restore 150 hectares of degraded land. These interventions will reduce wind erosion, protect agricultural land, and prevent further encroachment, especially in areas identified through the KAP survey *Ac. 3.1.1.1* and local hazard mapping. Community participation in planting and maintenance will be prioritized to ensure sustainability.

125. *Activity 2.2.1.3: Promote SLM practices and technical pathways e.g., soil fertility, water conservation, agroforestry…* The project will promote SLM practices (e.g., contour bunds, oasis-based permagardens, farmer managed natural regeneration inter alia) to restore soil fertility, conserve water and soil, and integrate agroforestry systems into farming. Proper soil preparation, irrigation, and pest control maximize yields, while agroforestry systems provide green fodder through strategically planted trees. 500 Farmers(including at least 200 women) will be trained in composting, crop rotation, and water harvesting. Innovative water-saving practices like drip irrigation, crop diversification, water-efficient varieties, mulching, and contour farming will maximize water retention and use efficiency, incorporating SWC techniques to reduce water infrastructure dependence. 20 experiential visits to established demonstration sites will facilitate farmer-to-farmer learning and adoption. Lessons from the KAP survey *Ac. 3.1.1.1* and the baseline will inform the design of practical and locally accepted interventions.

Output 2.2.2: Climate resilient Agricultural practices are adopted.

126. Chad's agricultural systems are increasingly vulnerable to climate change, with erratic rainfall, frequent droughts, and degraded soils undermining food security and farmer livelihoods. Traditional farming methods, while important culturally and historically, are proving insufficient in the face of rising climate pressures. This output seeks to strengthen agricultural resilience through the adoption of climate-smart practices that combine indigenous knowledge with modern, adaptive technologies. The strategy includes the documentation and integration of traditional practices, establishment of local seed production units and community seed banks to conserve agrobiodiversity, and provision of appropriate agricultural tools to enhance productivity while reducing environmental degradation and labour intensity.

127. The General Directorate of Forestry, Wildlife, and Fisheries Resources will lead implementation in collaboration with agricultural extension services, research institutions, farmer cooperatives, and local communities. Activities will be grounded in participatory approaches to ensure cultural relevance, ownership, and long-term sustainability.

128. *Activity 2.2.2.1: Assess and integrate indigenous agricultural practice with adaptive agriculture techniques in the target areas.* The project will evaluate traditional agricultural practices in target areas, identifying those that contribute to sustainability and resilience. Twelve (12) participatory engagement with local communities will document these practices. Adaptive techniques like conservation agriculture, agroecology, precision farming, and climate-resilient cropping systems will be combined with traditional methods to create integrated, context-specific solutions. Workshops with farmers and stakeholders will facilitate knowledge exchange, preserve indigenous expertise while enhancing it with modern innovations. The practices will be evaluated for effectiveness in addressing climate variability, soil degradation, and water scarcity. Six (6) training sessions and workshops will build 300 (at least 40% women) farmers' capacity to adopt these integrated methods.

129. *Activity 2.2.2.2: Create seed production units and seed banks for agricultural products*. To promote seed sovereignty and safeguard local agrobiodiversity, the project will establish six (6) decentralized seed production units and three (3) community-managed seed banks. These facilities will focus on cultivating and preserving high-quality, drought-tolerant, and climate-adapted crop varieties tailored to the agroecological conditions of the target regions. Implementation will begin with the selection of suitable sites with community consultations, the installation of appropriate seed processing and three (3) storage infrastructure, and training sessions for at least 500 farmers (200 women) on seed harvesting, preservation, and quality control. Partnerships will be developed with agricultural research institutes to introduce improved varieties and support seed multiplication. The seed banks will be managed by farmer cooperatives to encourage local stewardship, promote seed-sharing networks, and ensure reliable year-round access to climate-resilient seeds. This initiative will serve as a cornerstone of long-term food security and climate adaptation strategies.

130. *Activity 2.2.2.3: Provide the farmers with agricultural equipment to enhance production.* To improve agricultural productivity and resilience, farmers and local farmer cooperatives will be equipped with tools and machinery tailored to the needs of the target areas. Equipment such as no-till seeders, hand-held ploughs, water-efficient irrigation systems, and threshing machines will be provided, prioritizing innovations that enhance efficiency and minimize environmental impact. The selection and distribution of equipment will be informed by consultations with farmers and local cooperatives aligned with *Ac. 2.2.2.1*, agricultural extension services, and local authorities to ensure relevance and practicality. Training sessions will be organized to familiarize farmers with the operation and maintenance of the equipment. By reducing labour intensity and improving yields, this intervention will empower farmers to adopt sustainable land and climate-resilient practices introduced through the project.

Outcome 2.3: Climate resilient livelihood are strengthened.

131. The communities inhabiting Chad's oasis regions face growing climate-related challenges, including prolonged droughts, resource conflicts, and economic vulnerability, which undermine traditional livelihood systems. To build resilience and diversify income sources, the project will focus on improving livestock production systems, developing inclusive value chains, and supporting alternative income-generating activities (IGAs) tailored to the local context. Particular emphasis will be placed on empowering women and youth, promoting equitable access to resources, and strengthening local capacities to adapt to climate risks.

132. Under this outcome, sustainable livestock production practices will be introduced alongside veterinary services and conflict resolution mechanisms in transhumance zones. These efforts will be complemented by expanded value addition, entrepreneurial development, and savings cooperatives to foster resilient and inclusive economies. The General Directorate of Forestry, Wildlife, and Fisheries Resources, together with UWFADS and relevant local institutions, will lead implementation.

133. Additionally, the project will support entrepreneurial training, savings and credit cooperatives, and gender-focused revolving funds, fostering economic independence and financial resilience. Coordinated capacity building and stakeholder engagement will ensure the sustainability of these interventions and broader replication across the region.

Output 2.3.1: Livestock production practices are improved.

134. The project will promote the production of small short-cycle animals particularly with a focus to promote women/youth activities. It will focus on the scaling up of small animal husbandry, namely poultry, goats, etc. Support introduction of drought-tolerant livestock breeds. The project will collaborate with animal research/breeding centers in the targeted countries to identify livestock breeds that are able to feed on poor quality forages (a characteristic of drylands) and crop residues. Often these are the breeds that have low feed requirements and yet produce better quality livestock products in the breading techniques and fodder production

135. The project will also seek to enable access to veterinary services for cattle farmers in the region, as most cattle farmers currently lack access to vet services. In fact, climate change projections of frequent droughts could increase the frequency and magnitude of cattle diseases.

136. These four activities are interlinked to support the development of a more climate-resilient livestock sector. Mapping of transhumance corridors Ac. 2.3.1.1 will inform livestock distribution and veterinary coverage Ac. 2.3.1.2 and 2.3.1.3, while conflict resolution training Ac. 2.3.1.4 will reduce tensions exacerbated by increased livestock mobility. Together, they enhance both the productivity and social sustainability of pastoralist livelihoods.

137. *Activity 2.3.1.1 Identify, map and develop a management and action plan for transhumance routes and rest areas in target areas.* This activity will entail the comprehensive identification and participatory mapping of transhumance routes and associated rest areas across selected intervention zones, with the objective of enhancing pastoral mobility, minimizing resource-based conflicts between herders and agricultural communities, and optimizing seasonal livestock movements. Building on a robust field assessment, the project will engage in inclusive consultations with key local actors including cattle herders (sedentary and transhumant), pastoralists, community leaders, local authorities, and technical services to integrate indigenous knowledge and validate the spatial configuration of routes and rest points. GIS will be employed to generate detailed and geo-referenced cartographic outputs, highlighting priority transhumance corridors and identifying critical infrastructure needs such as water points, veterinary services, and conflict mediation mechanisms. These consultations will also serve as the basis for the co-development of a Transhumance Route Management and Action Plan, ensuring that the actualized routes and rest areas are governed through locally appropriate and operational mechanisms. This plan will be validated by key stakeholders and outline sustainable usage protocols, seasonal access calendars, institutional responsibilities, and risk mitigation measures to support the long-term functionality and resilience of pastoral systems. Oversight and technical validation will be led by the General Directorate of Forestry, Wildlife, and Fisheries Resources and the UWFADS in alignment with national pastoral development frameworks and regional mobility agreements.

138. *Activity 2.3.1.2: Promote and provide short life cycle livestock to target communities (40% women).* To boost livestock production and support climate-resilient livelihoods, the project will promote Short Cycle Livestock (SCL) like goats, and sheep, which need fewer resources and adapt well to dryland conditions. These SCL have shorter gestation and maturity periods, enabling efficient breeding and quicker turnover. The first step will be to identify and prioritize species at least three (3) species that are well-suited to the bio-climatic zone and based on the market demand. These drought-tolerant breeds will be introduced with support from animal research and breeding centers, ensuring suitability for local conditions and feeding on crop residues and low-quality forages. At least 40% of 500 beneficiaries will be women. Thirty (30) trainings on husbandry and breed management will accompany livestock distribution to ensure sustainability and maximize productivity. These sessions will be strategically aligned with the animal health trainings under *Ac. 2.3.1.3* to provide a holistic and coherent capacity-building package for livestock producers.

139. *Activity 2.3.1.3: Facilitate access to veterinary services.* Access to veterinary care remains limited in the target zones, exposing livestock to preventable diseases and reducing productivity. To address this, three (3) mobile veterinary clinics will be established and existing facilities strengthened with equipment and twelve (12) trained personnel. Partnerships will be formed with local veterinary professionals and animal health organizations to deliver regular services including vaccination campaigns, deworming, and routine health checks. Thirty (30) community para-veterinarians will be trained to provide first-line services. This activity will address the rising threat of livestock diseases exacerbated by climate change, safeguarding animal health and improving productivity. Training sessions will also be organized for farmers on basic animal healthcare to complement veterinary services. These trainings will be coordinated with the husbandry and breed management modules delivered under activity 2.3.1.2, reinforcing technical skills through an integrated livestock support approach.

140. *Activity 2.3.1.4 Sensitize and provide conflict management trainings for cattle herders, farmers and local authorities near transhumance corridors.* Resource conflicts between herders and farmers often escalate during drought periods due to increased competition over land and water. This activity aims to strengthen the local governance of natural resources and build capacity for peaceful coexistence through tailored conflict management trainings. The target audience will include pastoralists, agricultural producers, customary leaders, and local administrators operating along the identified transhumance corridors. Training modules will cover negotiation techniques, mediation strategies, and participatory natural resource governance mechanisms. These sessions will be directly aligned with the management and action plan for transhumance routes and rest areas developed under *Ac. 2.3.1.1*, ensuring coherence between spatial planning and social cohesion efforts. The integration of conflict sensitivity into transhumance route management is critical to enhancing sustainability, reducing the likelihood of violented disputes, and fostering inclusive and coordinated mobility governance. Furthermore, community dialogue platforms will be established to reinforce the application of the conflict resolution tools introduced during the trainings and to serve as ongoing arenas for multi-stakeholder engagement around the implementation of the transhumance management plans.

Output 2.3.2: Oasis value chain is strengthened.

141. To enhance economic resilience and improve the profitability of agricultural activities in the oases of Borkou, Ennedi Ouest, and Wadi Fira, the project will strengthen local value chains by investing in storage, processing, and marketing infrastructure, alongside the promotion of climate-resilient products and traditional crafts. These interventions aim to increase value addition, reduce post-harvest losses, and create employment opportunities, especially for women and youth. The value chain approach will focus on products typical of oasis ecosystems, including dates, fruit trees, aromatic and medicinal plants, cereals, fodder crops, and artisanal goods such as weaving and basketry. By combining productive alliances with climate-smart marketing strategies, this output will generate long-term income diversification and sustainable livelihoods.

142. The successful implementation of this output depends on the strong interconnection between infrastructure development, market access, and input availability. The storage and processing units established under *Ac. 2.3.2.1* will serve as the backbone for improved product transformation. Market linkage initiatives under *Ac. 2.3.2.2* will ensure these products reach profitable markets, while agricultural input shops under *Ac.2.3.2.3* will guarantee the availability of necessary production tools. Together, these activities will reinforce the resilience and competitiveness of oasis-based value chains and promote sustainable economic development across the three target regions.

143. *Activity 2.3.2.1: Establish storage and processing units for agricultural products in the target areas*. To boost agricultural production in Borkou, Ennedi West, and Wadi Fira provinces, the project will establish three (03) community led storage and processing units for dates or millet or sorghum and/or gum Arabic. The selection of commodities and the technical specifications of each unit will be guided by the level of yield produced within the target communities, based on the findings of the production potential assessment carried out under *Ac. 1.1.1.1*, the yield data collected under *Ac. 1.1.1.3*, and the outcomes of the assessment of indigenous agricultural practices and adaptive techniques conducted under *Ac 2.2.2.1*. These facilities will preserve raw materials and transform them into marketable by-products, increasing their market value. Organic waste will be used for compost, promoting sustainability. The UWFADS and provincial units will oversee site selection, construction, and equipping local farmer cooperatives. Training programs will empower 150 community members, especially women and youth (50%), to manage and operate these facilities. This intervention aims to improve livelihoods, reduce post-harvest losses, and strengthen oasis communities.

144. *Activity 2.3.2.2: Establish/enhance a market linkage for climate resilient value chains.* The project will strengthen market linkages for climate-resilient products from oases by connecting producers, processors, and buyers. It will organize twelve (12) trade fairs, create six (9) producer cooperatives at least 3 women led, and develop one (1) digital platform for market access. Niche products like date derivatives, gum Arabic, and woven crafts will be promoted due to their high market potential. 10 capacity-building sessions will enhance producers' knowledge of market standards, branding, and negotiation skills. At least 4 partnerships with private sector actors and retailers will ensure long-term sustainability and profitability of the value chains.

145. *Activity 2.3.2.3: Establish, operationalization and strengthen camel milk value chain in target area.* This activity aims to enhance the climate resilience and economic integration of agro-pastoral communities in Borkou, Ennedi West, and Wadi Fira by establishing and strengthening a Camel Milk Value Chain (CMVC). Building on the community-based cooperatives

established under *Ac. 2.3.2.2*, the project will reinforce their institutional and technical capacities to serve as primary nodes for milk collection, quality assurance, processing, and commercialization strengthening the production, processing, market linkage while reinforcing synergies with rangeland management, input provision, cooperative development, and income-generating activities. Thus, these interventions will improve household nutrition, increase incomes, reduce post-harvest losses, and promote camel milk integration into formal markets, while safeguarding socio-cultural heritage and ensuring ecological sustainability of Sahelian production systems.

146. At the production level, the activity will complement efforts under *Ac. 2.3.1.1* (fodder production and rangeland rehabilitation) by improving farmers' access to climate-smart agricultural inputs through the establishment and rehabilitation of cooperative-managed input shops. These shops will stock high-quality fodder seeds, veterinary supplies, and water-saving tools to strengthen productivity and reduce vulnerability to climate shocks.

147. For post-harvest handling, this activity links directly to *Ac. 2.3.2.1* by introducing user-friendly quality testing kits, hygiene and certification protocols, and deploying motorbikes as context-appropriate transport solutions. To address perishability in remote arid areas, it will also pilot solar-powered cooling technologies and adapt traditional techniques (e.g., smoking) to extend shelf life ensuring that gains in production are not lost further down the chain.

148. On value addition, the activity connects with *Ac. 2.3.3.1* by supporting the creation of decentralized, women- and youth-led processing units to produce diversified camel dairy products such as pasteurized milk, fermented beverages, yogurt, and cheese. Market assessments under *Ac. 2.3.3.2* will guide product diversification to match urban and niche market preferences. In this context, a strategic technical partnership with the International Center for Agricultural Research in the Dry Areas (ICARDA) will provide specialized expertise on camel production systems, dairy product development, and food safety standards. ICARDA will contribute through applied research, adaptive trials, and knowledge transfer on rangeland-based dairy systems in arid and semi-arid zones. Its role will also extend to introducing innovative processing techniques, supporting the design of hygiene and certification protocols, and linking local cooperatives with broader regional knowledge networks on camel dairy value chains.

149. Capacity development will cut across all components with at least 150 producers and cooperative members ensuring 50% women and youth participation benefiting from structured training on hygiene, sanitation, milk quality control, cold-chain logistics, and cooperative management. ICARDA will co-lead training design and delivery in partnership with national institutions, ensuring that international best practices are adapted to the local Sahelian context and that skills and innovations are embedded sustainably at the community level. The results pathway is mapped below which ensures the CMVC is key:

Table XX: Results Pathway for Camel Milk Value Chain (CMVC)

Stage	Key Activities	Expected Outputs	ICARDA's Role	Outcomes/Impacts
Inputs & Production	- Fodder production and rangeland rehabilitation (link to Ac. 2.3.1.1) - Establishment of cooperative input shops (fodder seeds, vet supplies, water-saving tools)	- Increased access to climate-smart inputs - Improved animal health and productivity	- Provide technical guidance on climate-resilient rangeland management and fodder systems - Adaptive trials on feed efficiency and animal nutrition	- Improved milk yields - Reduced vulnerability to climate shocks
Collection & Post-Harvest Handling	- Milk collection through cooperatives - Hygiene and certification protocols - Quality testing kits - Transport via motorbikes - Solar-powered cooling & traditional shelf-life techniques	- Reduced milk spoilage and losses - Increased compliance with quality standards	- Support design of milk hygiene, testing, and certification protocols - Provide technical backstopping on post-harvest handling in arid contexts	- Reduced post-harvest losses - Higher marketability of camel milk
Processing & Value Addition	- Establish decentralized processing units (women and youth-led) - Diversification into yogurt, cheese, fermented beverages	- Diversified camel dairy products - Increased opportunities for women/youth	- R&D on product development (fermented milk, cheese) - Support food safety standards and innovation - Pilot adaptive technologies for dairy processing	- Expanded product portfolio - Enhanced income opportunities - Women/youth economic empowerment
Market Linkages	- Market assessments (urban/niche demand) - Cooperative commercialization - Strengthening of value chains	- New market channels for camel dairy - Stronger cooperatives	- Support participatory market assessments - Facilitate linkages to regional/niche markets - Knowledge sharing from global camel dairy systems	- Higher incomes for producers - Increased resilience of household economies
Capacity Building & Knowledge	- Training 150+ producers and cooperative members (50% women/youth)	- Strengthened technical and managerial skills - Local ownership of CMVC	- Co-lead training design and delivery with local institutions - Transfer international best practices adapted to Sahelian context	

	- Focus on hygiene, sanitation, cooperative management, cold-chain logistics			

Output 2.3.3: Community livelihoods resilience is enhanced through adoption of Income-Generating Activities (IGAs).

150. To strengthen the local community's resilience, the project will promote the diversification of local livelihoods through community micro-projects that promote alternative farming and non-farming activities. These activities generate income, improve living conditions, reduce pressure on natural resources, and improve resource quality and sustainability.

151. Women's Socio-Professional Associations and Groups (W-SPAG) from all ethnic groups will be involved in developing the IGAs, with priority given to those practicing the target activity. An information campaign will sensitize W-SPAG to the project objectives and benefits. Through community-led programs, these groups build skills in income-generating activities, entrepreneurship, and vocational training, strengthening their capacity to implement collectively managed income-generating activities for their members' benefit.

152. The four activities are mutually reinforcing. Strengthening women's associations lays the foundation for inclusive participation in IGAs, while entrepreneurial training builds the skills necessary to run successful businesses. Financial support mechanisms, through cooperatives and revolving funds, ensure stakeholders can invest in and grow their ventures. Together, these interventions create a comprehensive support system that enhances livelihood security, promotes social cohesion, and increases community resilience to climate-induced economic shocks.

153. *Activity 2.3.3.1: Strengthen women's associations for IGA activities (e.g., energy saving cook stove production support for land access).* This activity will empower women's associations, particularly the Women's Self-Help Producer and Agribusiness Groups (W-SPAG), to actively engage in sustainable IGAs that enhance resilience and diversify livelihoods. Building on the project's broader capacity needs and socio-economic assessments *Ac.3.1.1.1*, it will focus on delivering concrete support, resources, and institutional strengthening tailored to women's priorities.

154. The communities with other stakeholders will be engaged to identify and prioritize IGAs of which two flagship IGAs will be promoted under this activity from the onset. First, the production and distribution of at least 5,000 energy-saving cook stoves, which reduce fuelwood consumption, improve household energy security, and lessen pressure on fragile ecosystems. Second, women will be supported to participate in the processing at least 50,000 litres of camel milk annually, in complementarity with *Ac. 2.3.2.3*, by leading decentralized milk processing and marketing units. These units will enable women and youth to produce and sell value-added products such as pasteurized camel milk, yogurt, and fermented beverages, targeting both local and urban niche markets.

155. To address structural barriers, the project will facilitate women's access to productive resources through secure land leasing arrangements and community-negotiated agreements, while partnerships with local authorities, private sector actors, and microfinance institutions will expand women's access to credit, equipment, and markets. Institutional strengthening will include training modules on cooperative governance, business planning, and gender-responsive leadership, complemented by peer-to-peer mentoring and linkages with camel milk cooperatives established under *Ac. 2.3.2.2.*

156. *Activity 2.3.3.2: Develop/implement entrepreneurial training for income generating activities for beneficiaries*.

157. To ensure the sustainability and scalability of income-generating activities (IGAs), the project will design and deliver a structured four (4) entrepreneurial training programme tailored to the socio-economic profiles of target groups. The programme will combine both foundational and advanced modules covering business planning, financial literacy, marketing and branding, resource mobilization, and enterprise risk management.

158. 10 workshops will deliberately prioritize women and youth (60%and 30%), addressing gender-specific barriers and opportunities to ensure inclusivity. Training will be delivered using interactive methodologies such as group work, simulations, case studies, and hands-on exercises to strengthen practical application and peer learning. Participants will be equipped to identify viable market opportunities, analyse local demand, and diversify income sources beyond subsistence agriculture. A comprehensive needs assessment and market analysis will inform the selection of promising IGAs, including weaving, basketry, eco-tourism services, camel milk processing, and the manufacture of energy-efficient products.

159. To facilitate post-training implementation, technical assistance will be provided to beneficiary groups in developing full-fledged business plans. These will set out strategic objectives, production and operational processes, financial projections, marketing strategies, pricing structures, and risk management frameworks. The training initiative will be anchored in existing community structures and linked to relevant value chains, ensuring integration with other project activities. Delivery will be supported by partnerships with local business development service providers, microfinance institutions, and vocational training centers to secure sustainability and institutional ownership.

160. Monitoring mechanisms will be established to track participant progress and assess the impact of training on IGA performance, focusing on indicators such as the number of viable business plans developed, percentage of women and youth-led enterprises, and increased revenues or market linkages achieved by trained groups.

161. *Activity 2.3.3.3: Establish and Support Formalization of Savings and Credit Cooperative Societies (SACCOs)*:This activity will facilitate the creation and formalization of six (06) women, youth, and community-led SACCOs, directly linked to the 50 IGAs established under *Ac. 2.3.3.4*. These SACCOs will enhance financial inclusion by pooling collective savings, improving access to small loans, and fostering investment in productive ventures. Members will receive training on cooperative governance, financial management, and loan administration, with a target of at least 300 members trained (50% women, 30% youth). To ensure sustainability, SACCOs will be formally linked to at least two (2) financial institutions and microfinance actors, enabling integration into the broader financial system and long-term access to credit. This initiative strengthens the financial resilience of marginalized groups, builds trust in collective mechanisms, and anchors IGAs within inclusive, locally owned structures.

162. *Activity 2.3.3.4: Establish Revolving Fund Schemes with a Gender Focus:* To address structural barriers to finance, this activity will establish community-managed revolving fund schemes with a strong emphasis on gender equity, prioritizing access for women and youth engaged in IGAs. It is expected that at least 40% of SACCO members will have accessed loans, 70% of funded IGAs will demonstrate increased revenues. These funds will provide flexible, small-scale loans to support the start-up or expansion of 50 IGAs in sectors such as agri-processing (camel milk, dates, gum Arabic), artisanal production, and other climate-resilient services. The revolving funds will be managed through the SACCOs established under *Ac.2.3.3.3*, ensuring participatory and transparent oversight. Initial seed capital will be disbursed with structured, low-interest repayment terms aligned to beneficiaries' cash flow cycles, with repayments reinvested to support additional entrepreneurs. To strengthen governance, at least 10 training workshops will be delivered on fund management, financial accountability, conflict resolution, and inclusive decision-making. The revolving funds, together with SACCOs, will establish a self-sustaining financing mechanism that fosters community ownership, enhances financial literacy, and promotes resilient, inclusive local economies.

Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders.

163. Component 3 will focus on strengthening the capacity, generating and disseminating knowledge so as raise the environmental and economic governance of the oasis in the Borkou, Ennedi Ouest and Wadi Fira regions, which are the main backbones of the development of these areas. The project will strengthen and institutionalize awareness of the oasis resources management plan and build the capacity of sub-national and national structures to support in its implementation. Knowledge and awareness on adaptation and climate risk reduction issues in oasis will be developed and disseminated. are disseminated and shared. All activities will be implemented in cooperation with national structures such as the Ministries of Agriculture and Environment, etc. These specific aspects will be achieved through outcome 3.1 as illustrated below.

Outcome 3.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted populations

164. The objective of this outcome is to address and create an enabling environment to ensure all stakeholders are empowered to take the appropriate decisions and actions to address climate change impacts in the target communities. This component aims to consolidate the awareness raising and mobilization of the different stakeholders and target populations through appropriate communication and capacity development of the relevant stakeholders to facilitate the implementation of adaptation to climate change activities. With regard to capacity building for local actors, planning documents at the local level do not sufficiently integrate crosscutting themes, such as climate change, biodiversity and natural and cross-border resource management.

Output 3.1.1: Knowledge and awareness on adaptation and climate risk reduction issues in oasis are developed and disseminated.

165. The implementation of this project should allow the various actors to strengthen their technical capacity on the issue of climate change, including the reduction of climate risks and adaptation of oasis ecosystems. This would be an opportunity for them to deepen their knowledge in the sustainable management of oases in a context of climate change. A baseline study will therefore be conducted on the baseline situation or the state of play in terms of knowledge, expertise or capacity in the field of climate change in general and in particular in the adaptation focusing on the sustainable management of oasis ecosystems. Tools or teaching materials will be developed on the basis of the priorities identified according to the categories of actors (decision-makers, technical executives, grassroots communities, etc.).

166. The implementation of this project will generate results in terms of good practices and lessons learned that must be shared or disseminated. These good practices and lessons learned concern, among other things, the results obtained in terms of strengthening the resilience of oases through improved governance, water resource management, agricultural productivity, and income-generating activities. Dissemination will be done through publications (production of newsletters, articles ...), posters in the form of kakemonos, radio and television broadcasts, meetings at various levels (exchange visits, side event at

the COP of the UNFCCC, ...). A strategy and an appropriate communication plan will be established accordingly for a good operationalization of this output. The proposed activities to undertake this output include:

167. *Activity 3.1.1.1: Undertake capacity needs assessment and KAP survey to identify the gaps and hinderances of the project stakeholders.* This activity will launch its capacity-building process by undertaking a comprehensive Capacity Needs Assessment (CNA) combined with a Knowledge, Attitudes, and Practices (KAP) survey. This foundational exercise will establish a clear understanding of the current knowledge base, institutional capacities, and resource availability of the project's key stakeholders including local communities, technical staff, and decision-makers. The CNA will identify critical knowledge gaps, operational challenges, and structural constraints that hinder effective adaptation and climate risk reduction. Particular emphasis will be placed on reviewing local and sub-national planning documents to assess the integration of cross-cutting issues such as climate change, biodiversity conservation, gender equality, and natural resource governance. Data will be collected through participatory approaches, including structured surveys, key informant interviews, focus group discussions, and multi-stakeholder workshops, ensuring gender-balanced and age-inclusive representation.

168. In parallel, the KAP survey will explore community perceptions, traditional land-use practices, and behavioural patterns related to land degradation, dune movement, and sustainable land management. These insights will guide the design of culturally appropriate, context-sensitive, and targeted capacity-building programmes and technical interventions under subsequent activities. The General Directorate of Forestry, Wildlife, and Fisheries Resources will lead implementation in collaboration with local authorities and community representatives to guarantee inclusivity and ownership.

169. To track progress, a secondary KAP survey will be undertaken towards the completion of the project. This follow-up exercise will be cross-referenced with the baseline results to document behavioural and institutional changes, assess the effectiveness of interventions, and capture lessons for scaling and replication.

170. *Activity 3.1.1.2: Develop capacity-building materials for all project activities.* Building on the CNA *Ac. 3.1.1.1*, this activity will focus on the creation of at least 10 customized training and learning materials adapted to different user profiles. These will include modules, handbooks, visual guides, and multimedia tools tailored to decision-makers, technical personnel, and community members. The content will cover key themes such as sustainable oasis management, locally led adaptation strategies, ecosystem-based approaches, and integrated resource governance. Materials will be designed to be culturally appropriate, accessible to varied literacy levels, and relevant to field-level realities ensuring their effective use during training sessions and beyond. By project midterm, all training packages will be validated and field-tested with at least 100 stakeholders to ensure usability and uptake. These resources will serve both as training tools and as ongoing references for stakeholders throughout project implementation and beyond.

171. *Activity 3.1.1.3: Organize training and capacity building sessions for targeted stakeholders.* Using the materials developed in *Ac. 3.1.1.2*, the project will conduct structured training sessions (at least 10 sessions), practical workshops, and peer-learning events reaching a minimum of 500 stakeholders (with at least 50% women and 30% youth). These will aim to enhance the adaptive capacity of local authorities, civil society representatives, technical officers, and other key actors. Topics will include integrating climate adaptation into local planning processes, applying sustainable land and water management practices, and mainstreaming gender and equity in resource governance. The training will adopt participatory and experiential methodologies, ensuring active engagement and co-learning. Exchange visits and inter-regional learning forums will complement local sessions, with a target of at least 3 exchange visits and 2 regional learning forums by project end. Monitoring will track the proportion of participants applying acquired skills, with a target of at least 70% of trained stakeholders demonstrating improved capacity (as measured by pre- and post-training evaluations and follow-up surveys).

172. *Activity 3.1.1.4: Develop and implement the project communication strategy and plan.* This activity will design and operationalize a comprehensive communication strategy supported by an actionable outreach plan and tailored materials. The strategy will define communication goals, core messages, target audiences, and delivery mechanisms to ensure consistent and impactful dissemination of project results and adaptation messages.

173. A diverse set of communication tools will be deployed, including quarterly newsletters, at least 10 community radio segments, 6 infographics, 6 short videos, and active social media campaigns, to reach various demographic and stakeholder groups. Beyond community-level outreach, the project will share lessons learned and success stories with national and international stakeholders through at least 5 policy briefs, 4 national workshops, and 3 international events (e.g., UNFCCC COP). This will position project outcomes within broader adaptation dialogues and promote replication. Building on insights from *Ac. 3.1.1.1*, communication content will highlight the links between climate change, human and animal health, and water resource degradation. By the end of the project, at least 70% of surveyed community members will report increased awareness of climate risks and locally appropriate adaptation actions, contributing to the adoption of climate-resilient practices and improved health outcomes.

174. Partnerships with at least 5 media outlets, 5 youth groups, and 10 traditional/community leaders will be established to amplify outreach, foster inclusive participation, and strengthen community ownership of adaptation and risk reduction processes in oasis ecosystems.

175. *Activity 3.1.1.5: Capacity Building of the Executing Entity (EE) by OSS as the RIE.* As the accredited Regional Implementing Entity (RIE), OSS will lead a structured capacity-building programme targeting the Executing Entity (EE) and its project partners to ensure effective, transparent, and accountable project delivery. This activity will further strengthen the EE's institutional, fiduciary, technical, and monitoring capacities in alignment with Adaptation Fund policies and OSS's oversight role based on the Know Your Client (KYC) principle.

176. This will begin with an inception workshop to familiarize the EE with OSS's operational procedures, fiduciary standards, and environmental and social safeguards. This will be followed by thematic training sessions on financial management, procurement, gender mainstreaming, knowledge management, and reporting requirements. OSS will also provide tailored technical coaching on monitoring, evaluation, and learning (MEL), including the use of indicators and data collection tools to track progress and impact. To reinforce skills and institutional sustainability, OSS will establish a mentorship and backstopping mechanism whereby OSS technical staff provide ongoing support to the teams throughout project implementation. This will include quarterly review sessions, joint field missions, and technical clinics to address emerging challenges in real time. Training materials, toolkits, and manuals will be developed and shared to ensure knowledge retention and replication beyond the project's life cycle as well as linking it to project sustainability.

B. Economic, Social and Environmental Benefits

177. The CHAD OASIS project aims to deliver transformative economic, social, and environmental outcomes at the local and national levels, with a strong emphasis on gender inclusivity. The project will harness the adaptive capabilities of communities and strengthen the resilience of the ecosystem through various activities, including sustainable oasis management, community development, and income-generating activities. These activities will reduce disaster risk, accelerate post-disaster recovery, build overall climate resilience, and provide households with a source of income that is less exposed to climate change. By fostering socio-economic resilience, environmental sustainability, and community empowerment, the project seeks to enhance livelihoods, mitigate climate risks, and restore ecosystem balance.

Economic co-benefits

178. The CHAD OASIS project will create lasting economic benefits by diversifying income sources, strengthening local value chains, and promoting climate-resilient livelihood systems. Through targeted interventions such as the establishment of three community-led storage and processing units (Ac. 2.3.2.1), twelve trade fairs, and one digital platform for market access (Ac. 2.3.2.2), producers will be able to reduce post-harvest losses, meet quality standards, and negotiate better prices in both local and urban markets. The camel milk value chain (Ac. 2.3.2.3) is expected to process at least 50,000 litres annually, with five decentralized units run largely by women and youth, strengthening both nutritional security and income diversification. In parallel, women's associations will be supported to implement at least two flagship IGAs, energy-saving cookstove production and camel milk processing (Ac. 2.3.3.1), with an expected output of 5,000 cookstoves.

179. To sustain these ventures, four structured entrepreneurial training programmes and at least ten workshops (Ac. 2.3.3.2) will be delivered, generating no fewer than 200 full-fledged business plans and supporting at least 100 new or strengthened IGAs. Financial access, often a barrier in remote regions, will be addressed through six newly created SACCOs linked to at least two microfinance institutions (Ac. 2.3.3.3), complemented by revolving funds with gender equity mechanisms (Ac. 2.3.3.4). Together, these financial systems will ensure that at least 40% of SACCO members access loans, and that 70% of financed IGAs increase revenues. Overall, these measures are expected to lead to an average 25% rise in household incomes, build stronger entrepreneurial ecosystems in oasis regions, and position local producers in emerging niche markets for dates, gum arabic, milk products, and artisanal goods.

Social co-benefits

180. Beyond material income gains, the project will generate substantial social dividends by strengthening community cohesion, reducing labour burdens, and enhancing human capacity. Approximately 35,000 individuals will benefit directly and indirectly from project services, while 7,000 will receive targeted capacity development through training, workshops, and awareness-raising campaigns (Component 3). Improved water security will ease daily burdens on households, particularly women and girls, through potable water systems (Ac. 2.1.2.2–2.1.2.3) that reduce walking distances and cut collection times. Energy-efficient stoves (Ac. 2.3.3.1) are expected to decrease household firewood consumption by at least 20%, lowering health risks from indoor smoke and saving hours of daily labour. Capacity building will be deepened by the production of at least 10 tailored learning materials (Ac. 3.1.1.2) and delivery of at least 10 structured training sessions, three exchange visits, and two regional forums (Ac. 3.1.1.3), reaching at least 500 stakeholders, with 50% women and 30% youth.

181. By the end of the project, at least 70% of participants will demonstrate improved adaptive planning and resource management skills as measured by post-training evaluations. Social cohesion will also be enhanced by conflict-management trainings for pastoralists and farmers along mapped transhumance routes (Ac. 2.3.1.1; 2.3.1.4), supported by three mobile veterinary clinics and 30 para-veterinarians (Ac. 2.3.1.3). These combined measures will reduce tensions around land and water access, strengthen local governance, and build the foundations of peace and stability in fragile oasis regions.

Gender-sensitive development impact

182. The gender dimension will be considered throughout the project by involving women and youth in all activities. A central pillar of the project is the empowerment of women and youth as agents of change in climate adaptation and local development. Women's associations (W-SPAG) will receive tailored support to lead IGAs (Ac. 2.3.3.1), including the production of 5,000 energy-efficient cookstoves and processing of at least 50,000 liters of camel milk annually. By complementing their roles in household nutrition and food security, these activities provide women with new avenues for income generation and leadership. Secure land-use agreements and access to credit via SACCOs (Ac. 2.3.3.3) and revolving funds (Ac. 2.3.3.4) will enable at least 50% of W-SPAG members to gain documented land-use rights, while 40% of SACCO members access loans, translating into greater financial independence.

183. Gender-sensitive entrepreneurial training (Ac. 2.3.3.2) will prioritize 60% women and 30% youth, producing at least 200 business plans and fostering women's participation in cooperative leadership, with a target of at least 40% representation in camel milk cooperatives. Beyond economic empowerment, gender-responsive communication campaigns (Ac. 3.1.1.4) will deliver quarterly newsletters, at least 10 radio segments, six infographics, and six short videos, while engaging at least five media outlets, five youth groups, and 10 traditional leaders. By project end, 70% of surveyed community members, including women and youth, will report increased awareness of climate risks and feasible adaptation actions. These combined efforts ensure that women and youth are not passive beneficiaries but active leaders, enhancing social equity, strengthening household resilience, and driving inclusive, climate-smart development across the oasis regions.

184. This holistic approach not only strengthens individual livelihoods but also reinforces community resilience against climate-induced shocks. By incorporating gender and youth considerations into the project's core, the initiative fosters long-term social equity and inclusive economic development.

Environmental co-benefits

185. The project will deliver extensive environmental co-benefits by restoring degraded lands, conserving scarce water resources, and protecting biodiversity. Water security will be enhanced through a package of measures that includes solar-powered water infrastructure (Ac. 2.1.1.2), groundwater recharge through spreading weirs and micro-dams (Ac. 2.1.1.3), and monitoring systems with piezometers and hydrometric stations (Ac. 2.1.1.4). These interventions will provide reliable water for both agro-pastoral and domestic use, reduce conflicts over scarce resources, and secure potable water supplies (Ac. 2.1.2.2). Land restoration will be promoted through an integrated dune stabilization program (Ac. 2.2.1.2), combining at least 30 km of mechanical barriers with 80 km of biological green belts, thereby stabilizing around 150 ha of degraded land.

186. In parallel, SLM techniques such as contour bunds, zai pits, permagardens, and agroforestry (Ac. 2.2.1.3) will be introduced to at least 500 farmers, including 200 women, reinforced by 20 farmer-to-farmer experiential visits. These interventions will increase soil fertility, reduce erosion, and boost productivity while simultaneously sequestering carbon. Agrobiodiversity will be conserved through the creation of six seed production units and three seed banks (Ac. 2.2.2.2), enabling farmers to access high-quality, drought-tolerant varieties and safeguarding genetic diversity for future generations. Complementary interventions include the production of 5,000 efficient cookstoves (Ac. 2.3.3.1), which will reduce deforestation pressures and household emissions, and the deployment of solar-powered pumps, which will displace diesel-based irrigation and cut greenhouse gas emissions. Taken together, these measures will reverse ecosystem degradation trends, restore resilience to fragile oasis ecosystems, and secure environmental services for both people and nature.

187. The table below outlines the Co-benefits Alignment with AF Core Indicators:

Co-benefit Category	Key Project Interventions / Activities	Expected Results / Targets	Alignment with AF Core Impact Indicators
Economic	- IGAs (Ac. 2.3.3.1–2.3.3.4) - Value chains (Ac. 2.3.2.1–2.3.2.3) - Entrepreneurship training (Ac. 2.3.3.2) - SACCOs & revolving funds	•≥100 new/strengthened IGAs •≥200 business plans- 6 SACCOs linked to ≥2 MFIs •≥25% average income growth- ≥5,000 stoves sold •≥50,000 L of camel milk processed annually	**Core Indicator 1**: Number of direct beneficiaries (women/men) **Core Indicator 4**: Number of people with increased income, or avoided decrease in income, due to climate-resilient alternatives
Social	- Water infrastructure (Ac. 2.1.2.2–2.1.2.3) - Training & awareness (Ac. 3.1.1.2–3) - Conflict management (Ac. 2.3.1.4) - Efficient stoves (Ac. 2.3.3.1)	•35,000 total beneficiaries •7,000 trained- 20% reduction in fuelwood use- •Reduced water-collection time •Decline in resource-based conflicts •≥70% trained stakeholders show improved skills	**Core Indicator 1**: Number of direct beneficiaries **Core Indicator 2**: Percentage of targeted population reporting increased adaptive capacity **Core Indicator 6**: Number of policies, plans, or processes modified to respond to climate change

Environmental	- Water management & recharge (Ac. 2.1.1.1–2.1.1.5) - Dune fixation & SLM (Ac. 2.2.1.1–2.2.1.3) - Agro-biodiversity (Ac. 2.2.2.1–2.2.2.2) - Solar irrigation & clean energy stoves	•≥30 km mechanical dune barriers •≥80 km biological green belts-~150 ha stabilized •500 farmers trained in SLM (200 women) •6 seed units & 3 seed banks •5,000 stoves reduce deforestation •Solar pumps displace diesel	**Core Indicator 5**: Number of natural resource assets created, maintained or improved **Core Indicator 8**: Reduced GHG emissions (qualitative co-benefit) **Core Indicator 2**: % reporting increased adaptive capacity (ecosystem services maintained)
Gender-sensitive development	- Women's associations (W-SPAG) IGAs (Ac. 2.3.3.1) - SACCOs & revolving funds (Ac. 2.3.3.3–2.3.3.4) - Camel milk processing (Ac. 2.3.2.3) - Communication & outreach (Ac. 3.1.1.4)	•≥50% W-SPAG with documented land-use rights •≥40% women in cooperative leadership •≥60% women & 30% youth in training •≥70% awareness among community members •Improved household dietary diversity	**Core Indicator 1**: Number of direct beneficiaries disaggregated by gender **Core Indicator 2**: % of targeted population reporting increased adaptive capacity **Core Indicator 6**: Gender-sensitive plans, frameworks and processes strengthened

C. Cost-effectiveness of the project

188. The Oasis Chad Project is an integrated and strategic response to accelerating climate, environmental, and socio-economic pressures in the northern provinces of Borkou, Ennedi Ouest, and Wadi Fira. These arid and semi-arid regions face persistent drought, high temperatures, erratic rainfall, sand dune encroachment, and overexploited groundwater, which severely constrain agriculture, water availability, and livelihoods. Agro-pastoral communities particularly women, youth, and nomadic pastoralists are increasingly vulnerable to food insecurity, poverty, and marginalization.

189. The project aims to reverse these trends through improved water resource management, restoration of degraded land, diversification of incomes, and strengthening of institutional and community adaptive capacity.

190. The Oasis Chad Project is fully aligned with Chad's national climate adaptation priorities, the National Development Plan, and commitments under the Great Green Wall Initiative. It supports the Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) by addressing land degradation, desertification, and rural poverty through ecosystem-based adaptation. Its design reflects the realities of fragile oasis ecosystems while contributing to broader Sahelian development frameworks.

191. The project is designed not only for immediate impact but also for long-term sustainability. By combining participatory governance, community-led water management, climate-smart agriculture, and inclusive value chains, it creates self-sustaining systems that reduce dependence on external support. Strengthened legal frameworks, local adaptation plans, and capacity building ensure that benefits are maintained and scaled after project completion. This foundation for resilience is expected to endure well beyond the four-year implementation period.

Economic Analysis: Baseline vs. Project Scenario

192. The comparison between the baseline scenario and the Oasis Chad Project clearly highlights the project's substantial added value. Without the project, the Cost-Effectiveness Ratio (CER) stands at 2.10, meaning each dollar invested generates just over two dollars in return. With the Oasis Chad Project in place, the CER rises significantly to 3.91, confirming its high economic efficiency and strong return on investment.

193. The Net Present Value (NPV) also shows a remarkable increase from 304,721.81 USD under the baseline scenario to 26 257,494.97 USD with the project demonstrating the transformative long-term financial gains achieved through its integrated approach to water management, ecosystem restoration, livelihood diversification, and institutional strengthening.

Table 1: comparison between the baseline scenario (without the project) and with the Oasis Tchad Project

	Without the Project (baseline scenario)	With the project
Benefit Cost Ratio (CER)	2.10	3.91
Net Present Value (NPV)	304 721.81	26 257 494.97

Cost effectiveness analysis

194. The Oasis Chad Project demonstrates strong economic efficiency and strategic relevance, transforming a total investment of USD 9.39 million into an estimated USD 36.73 million in returns yielding a substantial net benefit of USD 27.34 million. The overall Cost-Effectiveness Ratio (CER) stands at 3.91, meaning each dollar invested generates nearly four dollars in measurable economic returns. This performance reflects the integrated design of the project, where governance reform, natural resource restoration, and livelihood diversification reinforce one another to deliver lasting benefits.

195. Component 1 with an investment of USD 1.50 million, generates returns of USD 7.35 million, producing a net benefit of USD 5.84 million and a CER of 4.89. The high ratio reflects the efficiency of investments in legal and institutional frameworks, local adaptation planning, and monitoring systems that enhance the management of fragile oasis ecosystems. These reforms have a multiplier effect by enabling better coordination among stakeholders, improving compliance with environmental regulations, and ensuring that climate adaptation strategies are implemented effectively. The component also invests in targeted capacity-building for local authorities, community leaders, and technical services, laying the foundation for durable governance systems that safeguard both natural and socio-economic assets.

196. Component 2 the largest investment area, allocates USD 6.55 million to activities that yield USD 25.71 million in returns, resulting in a net benefit of USD 19.16 million and a CER of 3.93. The component delivers climate adaptation at scale through the rehabilitation of degraded land, dune stabilization, reforestation, and the deployment of solar-powered boreholes and micro-dams to secure water for both agriculture and livestock. It also promotes drought-tolerant crops, sustainable irrigation techniques, and improved pasture management, alongside income-generating activities with short return cycles. These initiatives particularly target women and youth, fostering both employment and entrepreneurship while reducing reliance on climate-sensitive livelihoods. The combined impact of ecological restoration, improved water access, and economic diversification creates a strong economic and environmental return, supporting food security and resource sustainability in the targeted provinces.

197. For component 3, although the smallest in terms of investment at USD 0.40 million, generates USD 3.67 million in returns, yielding a net benefit of USD 3.27 million and the highest CER of 9.15. This performance is driven by targeted capacity-building, institutional coordination, and knowledge management. The component strengthens technical capacities of stakeholders, promotes awareness and education on sustainable practices, and supports the dissemination of lessons learned and best practices. By empowering local institutions and enhancing community engagement, it amplifies the effectiveness and sustainability of the other components, ensuring that project benefits are sustained well beyond the implementation period.

198. The project's strong CER of 3.91 is the result of a well-balanced portfolio: governance and institutional reforms (Component 1) ensure long-term impact, large-scale ecological and water management interventions (Component 2) deliver sustained productivity gains, and livelihood diversification (Component 3) provides rapid, high-yield returns. This integrated approach maximizes economic, environmental, and social outcomes positioning the Oasis Chad Project as a model for climate-resilient development in arid and fragile regions.

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

Metric	All the Project (USD)	Component 1 (USD)	Component 2 (USD)	Component 3 (USD)
Total Cost	9390000	1503164.00	6545227.51	401608.49
Total Estimated Return	36728177	7345635.33	25709723.65	3672817.66
Net Benefit	27338177	5842471.33	19164496.14	3271209.17
Cost-Effectiveness Ratio (CER)	3.91	4.89	3.93	9.15

Financial Analysis

199. The financial analysis of the Oasis Chad Project confirms its strong cost-efficiency and long-term economic viability. Over the four-year implementation period, total project costs amount to 9.39 million USD, while cumulative financial benefits are projected to reach 36.73 million USD, yielding a solid Cost-Effectiveness Ratio (CER) of 3.91.

200. The Net Present Value (NPV) of 26.26 million USD demonstrates that the present value of the benefits significantly exceeds the investment costs, while an Internal Rate of Return (IRR) of 33% after four years and 66% after 20 years confirms the project's financial soundness in line with, and exceeding, international development benchmarks.

201. Cash flows remain consistently positive throughout implementation, with a pronounced increase in Year 4, when major infrastructures such as solar-powered boreholes, micro-dams, and restored agricultural lands become fully operational. This coincides with the scaling up of income-generating activities, resulting in a peak CER for that year.

202. These results underscore the project's strategic design: early investments in water resource management, land restoration, climate-resilient agriculture, and institutional strengthening lay the foundation for sustainable and locally managed income streams.

203. The Oasis Chad Project is expected to continue generating substantial economic and social returns well beyond the implementation phase. The durability of physical infrastructure, the institutionalization of governance mechanisms, and the resilience of community-based livelihoods ensure that the project's impact will extend into the long term, making it a scalable and replicable model for other fragile oasis and dryland environments across the Sahel.

Table x: Financial Analysis

	Year 1	Year 2	Year 3	Year 4	Total
Component 1	625533	611419	207054	59158	1503164
Component 2	1702414	2227864	1435765	1179185	6545228
Component 3	117610	117610	83194	83194	401608
Execution costs (management units)	235000	235000	235000	235000	940000
Total costs (A)	2 680 557	3 191 893	1 961 013	1 556 537	9 390 000
Total financial benefits (B)	4 775 541	5 922 424	11 108 016	14 922 197	36 728 177
Cash flow (BA)	2 094 983	2 730 531	9 147 003	13 365 660	27 338 177
Cost-Effectiveness Rate (CER)	1.78	1.86	5.66	9.59	3.91
Net Present Value (NPV)	5.2				26 257 495
Internal Rate of Return (IRR)(after 4 years)					33%
Internal Rate of Return (IRR)(after 20 years)					66%

204. The Climate-Resilient Oasis Agroecosystem (CROA) system demonstrates exceptional long-term economic performance, with an Internal Rate of Return (IRR) reaching 33% by Year 4 and steadily increasing to 66% by Year 20. This strong trajectory reflects the system's integrated design, which combines water-efficient infrastructure, climate-resilient crops, agroforestry, and diversified income-generating activities. Early gains are driven by fast-maturing crops and value chain activities, while medium- and long-term returns benefit from the progressive productivity of date palms, restored rangelands, and stabilized ecosystems. The CROA model not only ensures rapid cost recovery but also maintains high profitability and resilience well beyond the project's implementation phase.

205. In the Chad Oasis Project, livelihood activities show strong Internal Rates of Return (IRR), confirming both quick gains and long-term viability. Short-cycle livestock such as poultry, sheep, and goat farming deliver rapid returns up to 46%, 36%, and 17% respectively after four years while vegetable farming leads with 52% in the short term. Longer-term investments like the camel milk value chain reach 35% by year ten. Together, these activities diversify incomes, strengthen food security, and enhance resilience in oasis communities.

D. Consistency with development strategies

206. The CHAD OASIS project is fully consistent with Chad's national and regional development priorities and international commitments. At the national level, the project supports the National Development Plan (PND 2022–2026), which emphasizes sustainable natural resource management, poverty reduction, and rural development. By enhancing community resilience through climate-smart agriculture, improved water governance, and diversified livelihoods, the project operationalizes Chad's vision of inclusive, sustainable growth as outlined in Vision 2030: "The Chad We Want."

207. The project is also strongly aligned with Chad's climate policy frameworks, including the National Strategy to Combat Climate Change (NSCCCC, 2017), which promotes adaptation, integrated resource management, and ecosystem restoration. Interventions on water harvesting, dune stabilization, and climate-resilient agriculture directly respond to the vulnerabilities identified in the National Communications to the UNFCCC (2001 and 2012). Similarly, the project addresses priority areas of the National Adaptation Programme of Action (NAPA, 2009) by strengthening food security and building the resilience of rural communities in arid zones.

208. Furthermore, the CHAD OASIS project is aligned with Chad's Nationally Determined Contributions (NDC, 2021) under the Paris Agreement, which prioritize adaptation in the water, agriculture, and forestry sectors. By scaling sustainable land management practices, rehabilitating ecosystems, and empowering women and youth in climate-resilient livelihoods, the project contributes directly to NDC targets. It also supports the National Adaptation Plan (NAP) by translating medium- and long-term adaptation goals into locally driven, concrete measures in the oasis regions.

209. Regionally, the project complements the Great Green Wall Initiative (GGWI) by restoring degraded oasis ecosystems, enhancing sustainable land use, and reducing migration and pressure on fragile landscapes. It also operationalizes commitments under the National Environmental Policy and the Strategic Investment Framework for Sustainable Land Management, ensuring coherence with Chad's multi-sectoral approaches to combating desertification and biodiversity loss. Through these synergies, the project not only strengthens national resilience but also contributes to regional stability and global environmental goals.

Table 2: Project alignment with national policies and strategies

Strategy / Plan	Alignment with Project	Relevant Outputs
Vision 2030: The Chad We Want	Supports inclusive, sustainable development and improved livelihoods through community-led adaptation, value chain development, and resilience-building.	O. 2.3.3
National Strategy to Combat Climate Change (NSCCCC, 2017)	Promotes adaptation, integrated natural resource management, and ecosystem restoration. Project contributes through water resource management, dune stabilization, and ecosystem rehabilitation.	O. 2.1.1, 2.1.2, 2.2.1, 2.2.2
National Communications to the UNFCCC (2001, 2012)	Contributes to Chad's commitments on climate risk reduction and adaptation, addressing vulnerabilities in water, agriculture, and biodiversity.	O. 2.1.1, 2.2.2
National Adaptation Programme of Action (NAPA, 2009)	Addresses priority areas such as sustainable land and water management, food security, and resilience of rural communities in arid zones.	O. 2.1.2, 2.2.1, 2.3.1
Nationally Determined Contributions (NDC, 2021)	Supports sectoral priorities in agriculture, water, and forestry; enhances adaptive capacity of communities and ecosystems to meet NDC adaptation targets.	O. 2.2.1, 2.2.2, 2.3.2
National Adaptation Plan (NAP)	Operationalizes medium- to long-term climate adaptation goals by implementing locally relevant measures in water, land, and ecosystems.	O. 2.1.1, 2.1.2, 2.2.1
National Development Plan (PND 2022–2026)	Aligns with strategic pillars for sustainable development, natural resource management, and rural resilience.	All project outputs – multi-sectoral integration
Poverty Reduction Strategy Paper (2008–2011)	Reduces vulnerability through resilient livelihoods, improved resource management, and local economic strengthening.	O. 2.3.3
National Biodiversity Strategy and Action Plan (NBSAP)	Conserves biodiversity through seed banks, agroecology, and sustainable use of natural resources.	O. 2.2.2, 2.3.2
National Environmental Policy	Ensures adherence to environmental standards, safeguards, and improved natural resource governance.	Components 2 & 3 – all environmentally focused activities
National Programme of Action to Combat Desertification (NPACD)	Fights land degradation and desertification through dune stabilization, afforestation, and SLM.	O. 2.2.1
Great Green Wall Initiative (GGWI)	Contributes to regional objectives of restoring degraded ecosystems, promoting sustainable land use, and enhancing rural livelihoods.	O. 2.2.1, 2.2.2, 2.3.2

E. Alignment with national technical standards

210. The CHAD OASIS project is fully aligned with Chad's national technical standards, legal frameworks, and policy priorities related to climate adaptation, sustainable land management, and rural development. All interventions, particularly those concerning water infrastructure, land restoration, agriculture, livestock, and biodiversity will strictly comply with regulations established by the Ministry of Environment, Fisheries and Sustainable Development (MEFSD), the Ministry of Agriculture, the Ministry of Water and Sanitation, and the Ministry of Livestock and Animal Production. Project activities will adhere to relevant national guidelines on Environmental and Social Impact Assessments (ESIA), potable water quality, irrigation norms, agricultural input standards, veterinary health, and land tenure regulations. Technical oversight and validation will be ensured through collaboration with national technical directorates and decentralized provincial services to guarantee that interventions meet environmental, safety, and quality benchmarks. Furthermore, the project will integrate traditional knowledge and community-based practices embedded in local development plans, ensuring cultural appropriateness and institutional coherence. This compliance reinforces sustainability, scalability, and alignment with Chad's national adaptation commitments under the NDC (2021), NAPA (2009), and the National Development Plan (PND 2022–2026).

211. The table below outlines the relevant national laws and regulations of Chad concerning agriculture, land, water, soil resources, and environmental and social standards. It will also serve as a compliance and monitoring tool during project implementation. For each law or standard, the project identifies the responsible institution, links with relevant outputs/activities, defines its alignment.

Table 3: Relevant technical standards that can be applied in the framework of the project

Legal / Technical Standard	Responsible Institution	Relevant Outputs / Activities	Description of Alignment
Law nº 016 / PR / 99 – Water Code (amended 2011)	Ministry of Water and Sanitation	O. 2.1.1, O. 2.1.2	Ensures water access, allocation, and usage rights. Project boreholes, solar pumps, irrigation, and potable water systems will comply with updated water quality and usage regulations.

Law nº 014 / PR / 98 – General Principles of Environmental Protection	MEFSD	All infrastructure and land-based activities (e.g., 2.2.1.3, 2.1.1, 2.3.2.1)	Establishes environmental protection as a guiding principle. All project activities will preserve ecosystems, conserve biodiversity, and prevent pollution.
Decree nº 630 / PR / PM / MERH / 2010 – EIA Regulation	MEFSD	Components 1 & 2 (infrastructure, resource use)	Mandates EIAs for construction and land-use projects. The project will conduct required EIAs, obtain approvals, and apply mitigation plans.
Order nº 039 / PR / PM / MERH / 2012 – National EIA Guidelines	MEFSD	Components 1 & 2	Provides screening, categorization, and methodology for EIAs. The project will follow the guidelines for all infrastructure and resource-use interventions.
Decree nº 904 / PR / PM / MERH / 2009 – Regulation of Pollution and Nuisances	MEFSD	Ac. 2.2.1.2, 2.3.2.1, 2.3.3.1	Addresses air, soil, and water pollution. Project will implement composting, clean energy stoves, solar cooling, and waste management training.
Law No. 24 – Land Tenure and Customary Rights	Ministry of Land Management and Cadastre	Ac. 2.3.3.1, 2.2.1.4	Protects land tenure and customary rights. Project will strengthen women's and marginalized groups' land access through secure leases and community agreements.
Draft Pastoral Code (under revision)	Ministry of Livestock; Local Authorities	O. 2.3.1	Governs pastoral mobility, transhumance corridors, and grazing rights. Project transhumance mapping and conflict training will align with draft provisions.
Law n°14/PR/2008 – Forest, Fauna & Water Resources and Decree n°579/PR/PM/MAE/2014 (Application Text)	General Directorate of Forestry	O. 2.2.1, O. 2.2.2	Provides rules for sustainable forest management, species protection, and water/soil conservation. Project agroforestry and dune fixation activities will apply these standards.
National Environmental Impact Assessment Guidelines	MEFSD	O. 2.1.1, O. 2.1.2, 2.3.2.1	All activities with potential risks will be screened and validated using Chad's national EIA system.
Water Resource Management Standards	Ministry of Water and Sanitation	O. 2.1.1, O. 2.1.2	All irrigation and potable water systems will conform to technical norms and sustainable water resource management standards.
National Agroforestry and Reforestation Guidelines	General Directorate of Forestry	O. 2.2.1, O. 2.2.2	Greenbelt establishment, dune fixation, and reforestation will use approved native species and government-recommended reforestation techniques.
Seed Certification and Agricultural Input Regulations	Ministry of Agriculture	Ac. 2.2.2.2, 2.2.2.3	Seed banks and input distribution will comply with national standards on seed quality, safety, and certification.
Veterinary Health and Livestock Breeding Codes	Ministry of Livestock	O. 2.3.1	Livestock interventions (e.g., short-cycle species, mobile vet clinics) will follow national veterinary protocols and breeding regulations.
ORSEC National Emergency Plan (2014) & Decree n°622/PR/PM/2016 on Civil Protection	Directorate of Civil Protection; MEFSD	O. 2.1.2, O. 2.3.1	Establishes risk management and emergency response. Project water and transhumance activities will integrate contingency planning and early warning systems.
National Health Policy (2016–2030)	Ministry of Health	O. 2.1.2, Comp. 3	Guides public health interventions. Project potable water and awareness activities will reduce waterborne diseases and improve community health resilience.
Microfinance and Cooperative Law	Ministry of Economy and Planning	Ac. 2.3.3.3, 2.3.3.4	Revolving funds and SACCOs will adhere to national laws on cooperative governance, financial accountability, and lending practices.
National Gender Policy and Social Protection Strategy	Ministry of Women and Child Protection	O. 2.3.3, Component 3	IGAs, trainings, and land access initiatives will advance gender equality, women's leadership, and inclusive participation.
National Strategy to Combat Climate Change (NSCCC, 2017)	MEFSD	Cross-cutting (entire project)	Provides strategic guidance for adaptation and mitigation. Project actions on water, land, and livelihoods align directly with adaptation priorities.
National DRR Action Plan (PAN-RRC, 2015–2020)	Directorate of Civil Protection	Comp. 1 & 2	Provides a framework for integrating disaster risk reduction into development. Project activities on water and land will include DRR measures.
NAPA (2009) & National Development Plan (PND 2022–2026)	Ministry of Planning / MEFSD	Cross-cutting (entire project)	Provides overarching guidance for adaptation, ecosystem restoration, and poverty reduction. Project actions reinforce NAPA priorities and PND's strategic pillars.

F. Project duplication

212. The Chad Oasis Project has been carefully designed to ensure no duplication with existing initiatives, while building strong complementarity with ongoing programmes. Chad has benefited from numerous resilience and development investments supported by IFAD, AfDB, World Bank, UNDP/GEF, FAO, WFP, and other partners. However, the vast majority of these interventions are national in scale, basin-oriented, or concentrated in the central and southern regions. By contrast, the oasis regions of Borkou, Ennedi Ouest, and Wadi Fira in northern Chad home to highly fragile ecosystems and communities that rely on date palm farming, camel milk production, and transhumant pastoralism have received little dedicated investment, despite their strategic importance for food security, livelihoods, and climate adaptation.

213. Large-scale regional initiatives such as the Great Green Wall, PRAPS (2015–2024, US$248m), PARIIS-TD (2017–2023, US$170m), and PIDACC/NB (2018–2025, US$210m) address dryland restoration, irrigation, and pastoral systems across the Sahel, but do not focus on oasis ecosystems. Similarly, IFAD's resilience projects—including the Enhancing Agricultural Ecosystems programme (2015–2022, US$32m) and PROPADER/PROPILAR (2016–2027, US$89m) promote climate-smart agriculture and sustainable land management, but operate mainly in central and southern rural zones. World Bank and AfDB investments, such as the Local Development and Adaptation Project (2020–2025, US$54.5m), PAEPA SU MR Phase 1 (2020–2024, US$36.5m), and PADLFIT (2018–2023, US$85.6m), have advanced local adaptation, WASH, and inclusive finance, but remain outside the fragile oasis corridors.

214. UNDP/GEF-led projects like the NAP Advancement Project (2018–2022, US$33.7m), the Community-based Climate Risk Management project (2020–2024, US$6.25m), and the Lake Chad Resilience Project (2018–2023, US$242.1m) have strengthened institutional capacity and ecosystem resilience at national or basin scales, but again do not address the unique challenges of oases. FAO/WFP resilience efforts, along with the FAO/AF Integrated Water Management project on the Chad–Sudan border (2022–2025, US$14m), remain complementary but geographically distinct.

215. The Chad Oasis Project therefore fills a critical geographic and thematic gap by concentrating on oasis ecosystems in Borkou, Ennedi Ouest, and Wadi Fira, where desertification, dune encroachment, water scarcity, and livelihood fragility are most acute. By introducing solar-powered water infrastructure, sand dune stabilization, sustainable land management practices, and gender-inclusive value chains for camel milk, dates, and other IGAs, the project operationalizes Chad's NDC and NAP priorities in precisely the areas where climate vulnerability is highest and where other programmes have limited reach. Coordination mechanisms established with national and local actors, including the Ministry of Environment and UWFADS, will continue to ensure synergy, coherence, and value addition throughout implementation.

216. In this way, the project is not a duplication, but a strategic complement that localizes and scales lessons from broader initiatives, ensuring that resilience building reaches Chad's most vulnerable oasis populations. The proposed project fills this critical gap, leveraging cross-cutting approaches and Results-Based Management (RBM) to enhance the impact of collective efforts and is presented in table 3 below.

Table3: List of complementary projects to the proposed project, featuring cross-cutting factors and RBM across various regions of Chad.

Project / Programme	Years / Amount	Objectives / Focus	Synergies with Chad Oasis	Lessons Learned & Considerations for Design	Complementarity / No Duplication
Great Green Wall (GGW) – Chad segment	2007–ongoing; >US$1.1bn Sahel-wide, Chad share ~€50m	Restore degraded lands, combat desertification, create green jobs.	Chad Oasis targets oasis-specific ecosystems within GGW corridors.	Combine dune fixation with water/forage systems; ensure local ownership.	**Complementarity** – GGW is broad; Oasis fills oasis niche.
IFAD / GEF – Enhancing the Resilience of Agricultural Ecosystems	2015–2022; US$32m	CSA, ecosystem resilience, farmer support.	Oasis project scales CSA practices into oasis zones.	Importance of linking resilience to market access.	**No Duplication** – geographic/sectoral distinction.
IFAD – PROPADER / PROPILAR	2016–2027; US$89m	Food security, CSA, SLM, rural livelihoods.	Oasis project applies SLM to northern oases (not covered by IFAD).	Strengthen cooperatives, focus on women/youth.	**No Duplication** – IFAD covers central/south.
World Bank – Sahel Irrigation Initiative (SIIP)	2018–ongoing; US$170m (regional)	Expand sustainable irrigation.	Oasis project introduces solar irrigation, aquifer recharge.	Low-cost irrigation, aquifer protection.	**Complementarity** – adapts SIIP to oases.
World Bank – Chad Local Development and	2020–2025; US$54.5m	Strengthen local adaptation, community resilience.	Oasis project builds oasis-focused value chains and DRR.	Decentralized governance enhances ownership.	**Complementarity** – broader local dev focus; Oasis is ecosystem-specific.

Adaptation Project					
FAO/WFP Resilience & Food Security Programmes	2013–ongoing; ~US$20–40m/year	Food security, resilience, CSA promotion.	Oasis project adds camel milk, dates, IGAs.	Nutrition-sensitive IGAs diversify diets & income.	**Complementarity** – FAO/WFP is national; Oasis is niche.
FAO/AF – Strengthening Resilience to Climate & Covid-19 Shocks (SCCIWM)	2022–2025; US$14m	Integrated water management on Chad–Sudan border.	Oasis project applies similar approaches in northern oasis aquifers.	Community-led water mgmt is critical.	**No Duplication** – SCCIWM is border-specific.
UNDP / LDCF Projects	2014–2022; US$8–15m each	Climate resilience, DRR, adaptation.	Oasis project focuses on oasis ecosystems.	Strengthen institutional/legal frameworks.	**Complementarity** – national focus vs. oasis.
UNDP / GEF – Chad NAP Advancement Project	2018–2022; US$33.7m	Advance NAP implementation.	Oasis project operationalizes NAP priorities in oases.	Embed adaptation in local planning.	**Complementarity** – Oasis is implementation-level.
UNDP/GEF – Community-based climate risk management	2020–2024; US$6.25m	Local risk management.	Oasis project adds ecosystem-based DRR.	Risk mapping + local committees are effective.	**Complementarity** – Oasis extends risk mgmt to ecosystems.
UNDP/GEF – Lake Chad climate resilience	2018–2023; US$242.1m	Resilience in Lake Chad Basin.	Oasis project focuses on northern oasis corridors, not the basin.	Regional integration lessons.	**No Duplication** – different geography.
AfDB – PARSAT	2018–2023; US$35m	Water, agri resilience infrastructure.	Oasis project adds solar water points, dune stabilization.	Use community committees for infrastructure.	**Complementarity** – national-scale vs. oasis-scale.
AfDB / GEF – PAEPA SU MR Phase 1	2020–2024; US$36.5m	Rural/urban resilience via water & sanitation.	Oasis project complements by focusing on oasis water governance.	Water mgmt must be tied to ecosystem health.	**Complementarity** – PAEPA is WASH, Oasis is ecosystem.
AfDB / GCF – PIDACC/NB	2018–2025; US$210m	Integrated development & adaptation in Niger Basin.	Oasis project complements by covering northern Chad oases.	Ecosystem-based adaptation works when scaled.	**No Duplication** – PIDACC is Niger Basin.
PADLFIT – Local Development & Inclusive Finance	2018–2023; US$85.6m	Local finance & development support.	Oasis project integrates SACCOs & revolving funds.	Blend finance with capacity-building.	**Complementarity** – PADLFIT is finance-focused; Oasis integrates ecological livelihoods.
PASTOR – Agropastoral Development	2020–2026; US$32m	Strengthen agro-pastoral systems.	Oasis project complements with short-cycle livestock + camel milk.	Combine livestock + fodder production.	**Complementarity** – PASTOR is broader; Oasis is niche.
PRAPS – Regional Pastoralism Support	2015–2024; US$248m	Support pastoral systems & resilience.	Oasis project links to transhumance corridors + vet services.	Vet services & conflict resolution essential.	**Complementarity** – PRAPS is regional; Oasis is local/northern.
PARIIS-TD – Irrigation Initiative (Chad component)	2017–2023; US$170m	Irrigation development.	Oasis project uses solar irrigation and dune recharge.	Pair irrigation with aquifer monitoring.	**Complementarity** – Oasis adapts irrigation to fragile oases.
GCF / IFAD – GGW support programme	2021–2027; US$143.3m	Strengthen GGW adaptation & mitigation.	Oasis project complements by focusing on oasis micro-ecosystems.	Large-scale GGW requires local adaptation pilots.	**Complementarity** – GGW-wide; Oasis fills local gaps.

G. Learning and knowledge management

217. The Chad Oasis Project embeds knowledge management (KM) as both a dedicated component and a cross-cutting function. This dual approach ensures that lessons are not only captured and disseminated but also systematically integrated into adaptive management and policy processes, strengthening the resilience of oasis ecosystems in Borkou, Ennedi Ouest, and Wadi Fira.

218. Component 3 is the dedicated KM pillar of the project. It will establish innovative community learning and sharing mechanisms to facilitate replication and scaling of successful practices in other vulnerable communities with similar ecosystems. The KM strategy will ensure that new knowledge, innovative ideas, and lessons learned are captured, documented, and shared with individuals, institutions, and organizations at local, national, and regional levels. Lessons will be communicated through multiple formats, including newsletters, booklets, infographics, posters, awareness campaigns (radio, TV, and videos), and exchange visits. To ensure institutional sustainability, partnerships will be established with line ministries, UWFADS, and other key stakeholders so that KM processes are anchored within existing structures and continue beyond the project's lifespan. OSS, as the Regional Implementing Entity, will further strengthen institutional learning through its oversight and capacity-building role.

219. Beyond Component 3, knowledge generation and sharing are embedded throughout the project's technical activities. Under Component 1, KM is integrated into ecosystem assessments (1.1.1.1) and the deployment of monitoring systems (1.1.1.3), which will generate new baseline evidence on poorly documented oasis ecosystems. These findings will feed directly into community-level adaptation action plans (1.1.1.2) and provide the analytical foundation for governance dialogues (1.1.1.4). Under Component 2, demonstration sites for fodder production (2.2.1.1), sand dune fixation (2.2.1.2), and sustainable land management practices (2.2.1.3) will act as living classrooms, promoting peer-to-peer learning and experiential adoption of climate-smart techniques. Similarly, value chain interventions such as camel milk processing (2.3.2.3) and women-led IGAs (2.3.3.1) will generate lessons on gender-responsive business models that can be scaled up across other oasis regions.

220. A strong dissemination strategy will ensure that lessons extend beyond the project area. Knowledge will be shared at the national level through policy briefs, workshops, and sectoral platforms, strengthening the integration of oasis adaptation priorities into the NDC, NAP, and National Environmental Policy. At the regional and international levels, experiences will be showcased through the Great Green Wall Initiative, AMCEN, Adaptation Fund learning events, and UNFCCC COP side-events, contributing to cross-country learning and replication.

221. For the knowledge generation, learning and dissemination strategy, the following constrains and proposed actions will be taken into account specific to Borkou, Ennedi Ouest, Wadi Fira:

Table4: Knowledge generation, learning and dissemination strategy constrains and proposed actions

Domain	Strategy	Anticipated Constraints (Oasis Context)	Proposed Mitigation Actions
Knowledge Generation	Document and integrate indigenous and scientific knowledge on oasis farming, pastoral mobility, and dune stabilization.	Knowledge concentrated with elders, at risk of being lost; limited formal research on oasis ecosystems.	Undertake participatory mapping and oral histories with elders; partner with universities for research; integrate indigenous practices into training manuals.
Capacity Building & Training	Develop tailored training (modules, handbooks, visual guides, demonstrations) adapted to oasis livelihoods.	Low literacy levels, especially among women; remoteness limits access to formal training centers.	Use visual/interactive tools, local dialects, and mobile training teams; prioritize women- and youth-led sessions; combine theory with field demonstrations in oases.
Information Systems	Establish an Oasis Knowledge Hub (digital/physical) to consolidate data on land, water, biodiversity, and value chains.	Poor internet connectivity in remote desert areas; low digital literacy.	Complement with offline knowledge centers; develop simple, mobile-accessible platforms; provide ICT training for local authorities and cooperatives.
Community Learning & Awareness	Promote awareness via farmer-to-farmer exchanges, mobile theatre, radio, and storytelling.	Nomadic pastoralist communities are hard to reach; radio access uneven in desert settlements.	Partner with community radios; use mobile caravans for outreach; engage youth/women associations as "peer educators."
Institutional Strengthening	Reinforce Ministry of Environment, provincial directorates, and UWFADS through technical training and dialogue.	Weak institutional presence in remote provinces; high staff turnover; limited budget for field deployment.	Establish local coordination units; institutionalize roles with written protocols; provide mentoring and backstopping from OSS as RIE.
Regional & International Knowledge Sharing	Share oasis lessons via GGW platforms, AF events, AMCEN, UNFCCC COP.	Remote geography limits visibility; language barriers (Arabic, French, local dialects).	Budget for translation and representation; support virtual participation; co-develop publications with regional partners for broader dissemination.

Monitoring, Evaluation & Learning (MEL)	Conduct KAP surveys, participatory monitoring, and annual learning reviews.	Sparse baseline data for Borkou/Ennedi/Wadi Fira; difficulty attributing behavioural change in scattered communities.	Strengthen baseline with geospatial mapping; use community monitors; combine household surveys with focus groups to capture nuanced shifts.
Replication & Scaling	Package tested models (solar water systems, dune fixation, camel milk processing) for replication in other oases.	Limited financial and technical resources in northern provinces; low visibility in national policy.	Align results with NAP/NDC priorities; secure government endorsements; advocate for inclusion in GGW scaling; mobilize donor interest in oasis-specific adaptation.

222. The KM process will be continuous and iterative, beginning with baseline studies and KAP surveys, feeding into participatory monitoring and annual reviews, and culminating in endline assessments that capture institutional and behavioural change. This ensures that knowledge does not remain static but evolves with project implementation, supporting adaptive management. Coordination mechanisms established with national and local actors, including the Ministry of Environment, decentralized technical services, and UWFADS, will ensure synergy, coherence, and value addition across all components.

223. Beyond documentation, the project will emphasize awareness generation and community learning. Training and capacity-building initiatives will focus on practical adaptation domains such as climate-resilient agriculture, sustainable water management techniques, dune stabilization, camel milk value chain development, and women-led income-generating activities (IGAs). By linking technical training with communication and awareness efforts, the project will enhance local adaptive capacities while simultaneously promoting the exchange of resilience knowledge at national, regional, and global levels.

224. The following tables summarize the project's knowledge-related activities, including responsibilities and timeframes, as well as the structure of the training plan and Training of Trainers (ToT) framework:

Table 5:Knowledge Management Plan

Knowledge Activities	Learning Objectives / Outputs	Responsible	Time-frame
Knowledge management strategy is implemented	Ensure systematic knowledge generation, documentation, and dissemination	OSS (RIE), Ministry of Environment, UWFADS (EE)	Throughout the project
Project Launch and Closure events	Disseminate information on the Chad Oasis project to all stakeholders	OSS, EE	Launch and closure
Local knowledge hubs are established (linked to UWFADS/community committees)	Serve as centers of knowledge, action, and innovation for climate adaptation in oasis regions	EE, local committees	Year 1
Increasing local knowledge on climate change	Strengthen community and institutional capacity on vulnerability assessment and adaptation planning	EE, hubs	Throughout the project
Development of Commune Adaptation Action Plans (CAAPs)	Consolidate local adaptation planning in strategic documents	EE, local authorities	Throughout the project
Awareness-raising campaigns in communities	Enhance public awareness of climate risks and adaptation options	EE, UWFADS	Throughout the project
Capacity building on climate-resilient agriculture	Provide theoretical and practical skills on sustainable agriculture and oasis farming	EE, research partners	Throughout the project
Capacity building on drought and water management	Strengthen community practices in drought-resilient water use and irrigation	EE, Ministry of Water	Throughout the project
Lessons learned are documented	Capture, analyse, and document successful practices for replication	OSS, EE	Ongoing, mid-term, annual, final review
Case studies are developed	Document local adaptation practices and highlight success stories	EE	Semi-annual
Knowledge is shared with sub-national and national authorities	Ensure lessons inform policies and programming	EE	Annual reporting & PSC meetings
Case studies published in media and online	Reach broader audiences with adaptation practices	EE	Twice per year
Reports shared via websites and social media	Disseminate project results and lessons learned to wide audiences	OSS, EE	Annually
Lessons shared in partner networks	Ensure integration of knowledge into other climate change programmes	OSS, EE	Throughout the project
Lessons shared in regional and international forums	Position Chad's oasis experience in global adaptation dialogues	OSS, EE	COPs, regional events
Universities and research centers engaged	Facilitate research partnerships and enhance academic contribution	EE, universities	After Year 2
Knowledge shared with academia	Ensure data and lessons feed into teaching, research, and policy development	EE, universities	After Year 2

Table 6 : Training Plan

Activity Ref.	Specific Training Theme / Activity	Stakeholders	Training Methods	Responsible Institutions	Timeline (YR)			
					1	2	3	4
1.1.1.1–1.1.1.3	Training on natural resource assessment tools (GIS, remote sensing, ecological surveys) and use of monitoring equipment	Technical staff (MoE, Forestry, Water, Fisheries), provincial services	Hands-on workshops, field surveys, digital labs	OSS, MoE, universities				
1.1.1.4	Multi-stakeholder dialogue facilitation & governance frameworks	Local authorities, community leaders, civil society	Roundtables, role plays, participatory facilitation	MoE, UWFADS				
2.1.1.1–2.1.1.5	Sustainable water management (solar irrigation, groundwater recharge, potable water systems, equitable water allocation)	Farmers, pastoralists, water user associations, women/youth	Farmer field schools, demo plots, peer exchanges	MoE, Ministry of Water, UWFADS				
2.2.1.1–2.2.1.3	SLM practices: fodder production, dune stabilization, agroforestry, soil & water conservation	Farmers, pastoralists, extension agents	Demonstration plots, community planting, farmer-to-farmer	MoE, Forestry Directorate, NGOs				
2.2.2.1–2.2.2.3	Climate-smart agriculture (CSA), seed banking, adaptive practices	Farmers, cooperatives, women's groups	Farmer field schools, seed fairs, experiential visits	Ministry of Agriculture, research institutes				
2.3.1.1–2.3.1.4	Livestock management: transhumance route planning, short-cycle livestock, veterinary services, conflict resolution	Herders, farmers, customary leaders, youth	GIS mapping, ToT for vets, participatory dialogue, simulation	MoE, Livestock Directorate, UWFADS				
2.3.2.1–2.3.2.3	Value chain development (processing/storage of dates, gum Arabic, camel milk hygiene & processing, quality control)	Cooperatives, women & youth entrepreneurs	Processing demos, hygiene protocols, R&D exchanges	MoE, UWFADS, research partners				
2.3.3.1	Strengthening women's associations (cookstoves, camel milk IGAs, land access)	Women's associations (W-SPAG), youth groups	Peer mentoring, hands-on production, negotiation workshops	MoE, local councils, microfinance partners				
2.3.3.2	Entrepreneurial training (business planning, financial literacy, marketing, risk management)	Women and youth IGA groups	Workshops, simulations, case studies, mentorship	OSS, MoE, BDS providers				
2.3.3.3–2.3.3.4	Cooperative governance, SACCO management, revolving fund oversight	SACCO leaders, IGA groups, local authorities	ToT workshops, participatory governance simulations	Ministry of Economy & Planning, OSS				
3.1.1.1–3.1.1.3	Capacity needs assessment methods, KM material development, stakeholder trainings	Local enumerators, extension staff, CSOs	ToT on survey tools, participatory workshops, exchange visits	OSS, MoE, UWFADS				
3.1.1.4–3.1.1.5	Knowledge Management & Communication (media, storytelling, documentation, dissemination)	Journalists, youth groups, CSOs, EE staff	Media training, storytelling, digital platforms	OSS, UWFADS, media partners				

Table 7 : Topics for the training the trainers (ToT)

Section	Training Topic	Objective	Modules	Target Trainers	No. of Trainings
Water Management (Comp. 2.1)	Solar-powered irrigation, groundwater recharge, potable water systems	Build trainer capacity on sustainable water management to cascade to communities	• Principles of solar irrigation • Groundwater monitoring & recharge • Potable water safety & management	Extension agents, water user associations, local technicians	4
Sustainable Land Management (Comp. 2.2.1)	Dune stabilization & fodder production	Train facilitators on land restoration and dune fixation techniques	• Mechanical & biological dune fixation • Fodder banks & pasture management • Community-led land restoration	Forestry agents, CSOs, community leaders	3

Climate-Smart Agriculture (Comp. 2.2.2)	Seed bank management & adaptive agriculture	Strengthen trainer capacity to promote CSA practices and seed sovereignty	• Seed harvesting & conservation • Climate-resilient crops • Agroforestry & perma gardens	Agricultural extension officers, cooperative leaders	3
Livestock & Pastoralism (Comp. 2.3.1)	Short-cycle livestock, veterinary services, conflict resolution	Train para-vets and leaders to deliver sustainable livestock practices	• Short-cycle breeds • Animal health & mobile vet clinics • Resource conflict mediation	Para-veterinarians, herder leaders, chiefs	4
Value Chains (Comp. 2.3.2)	Camel milk hygiene, processing, and marketing	Build trainers to support cooperatives in value addition and safe camel milk handling	• Hygiene protocols & quality testing • Solar cooling & processing • Marketing & certification standards	Cooperative leaders, women/youth entrepreneurs	3
Women & Youth IGAs (Comp. 2.3.3)	Cooperative governance & entrepreneurship	Strengthen W-SPAG and youth leaders to manage IGAs effectively	• Governance & leadership • Business planning & finance • Land access & advocacy	Women's associations, youth groups, SACCO leaders	3
Financial Mechanisms (Comp. 2.3.3)	SACCO management & revolving funds	Build capacity of trainers to strengthen community financial resilience	• SACCO governance • Revolving fund management • Transparency & accountability	SACCO leaders, local finance officers	2
Knowledge Management & Communication (Comp. 3.1)	Storytelling & participatory M&E	Enable trainers to document, package, and disseminate lessons	• Storytelling for resilience • M&E indicators & tools • Community media campaigns	Journalists, CSOs, youth leaders, EE staff	3
Governance & Policy Dialogue (Comp. 1.1.1.4)	Legal frameworks & participatory planning	Strengthen trainers' ability to lead governance dialogues	• Legal frameworks & policies • Inclusive planning tools • Multi-stakeholder facilitation	Local authorities, NGO facilitators	2

225. The project's ToT program is designed as a multiplier mechanism to expand the reach and impact of capacity-building activities. A total of approximately 270 trainers, comprising extension officers, women and youth cooperative leaders, para-veterinarians, SACCO facilitators, and local government representatives, will be directly trained across nine thematic domains. The ToT approach ensures gender and youth inclusion, with at least 45% women and 35% youth participation among trainers. Each trained individual is expected to cascade knowledge and skills to community groups, cooperatives, farmer field schools, and local institutions, reaching an average of 40–60 beneficiaries per trainer depending on the domain. This cascading effect will result in approximately 12,770 people (270 direct trainers and about 12,500 indirect beneficiaries) gaining improved knowledge, tools, and practices for climate adaptation. By building a cadre of locally embedded trainers who can continue transferring skills beyond the life of the project, the ToT ensures both scale and sustainability, making a direct and measurable contribution to AF Core Indicator 2 on enhanced adaptive capacity.

H. Consultative process

226. The consultative process for the *Chad Oasis Project* was implemented progressively throughout both the Concept Note and Full Proposal stages, in line with the AF's participatory approach with emphasis on the FPIC process. This ensured that stakeholders from high-level government institutions to community-based organizations, were actively engaged in the identification, validation, and refinement of project priorities. This approach guaranteed that the project reflected national priorities, local needs, and community-driven solutions for climate resilience in the oasis ecosystems of Borkou, Ennedi Ouest, and Wadi Fira.

227. *Concept Note Stage (2021–2022):* The project concept was first introduced during COP26 in Glasgow, where discussions between the *Chadian delegation* and *OSS officials* laid the foundation for the idea of developing Chad's first Adaptation Fund project. Chad expressed its intent to align the project with the objectives of its Updated Nationally Determined Contributions (NDCs) and the National Adaptation Plan (NAP), focusing on protecting the country's most vulnerable systems i.e., oases and wadis. Following this political commitment, the Ministry of Environment, Fisheries, and Sustainable Development (MEPDD), with support from the Union of Women for the Fight Against Desertification in the Sahel (UFLCDS) and OSS, launched a structured consultation process. Key Consultations included:

- High-level meetings with ministers and senior advisors (Environment, Agriculture, Livestock) to validate national priorities and ensure alignment with policy frameworks.
- Technical sessions with sectoral experts to refine thematic focus areas and identify synergies with ongoing resilience programs.
- Field consultations (September–October 2022) in Arada, Fada, Biltine, and Kalaït to engage with local communities, including women, youth, and traditional leaders, on climate vulnerabilities, natural resource pressures, and livelihood priorities.

- Data was gathered on agro-pastoral practices, vegetation degradation, water scarcity, and exposure to climatic extremes, helping define site selection criteria and adaptation priorities.

228. The outcome of these consultations was a shared understanding of the challenges and opportunities related to oasis ecosystem management, resulting in a Concept Note that captured both national strategies and community-level realities and submitted which was not approved and further resulted in undertaking the various consultations to develop a funding proposal.

229. *Full Proposal Development Stage (2023–2024):* Building on lessons from the Concept Note phase, the Full Proposal stage deepened engagement and strengthened the participatory process. OSS, in collaboration with MEPDD and UFLCDS, organized consultations across three complementary levels to ensure inclusiveness and ownership at all scales.

230. *Planning Mission – February 21–23, 2024:* OSS conducted a planning mission to N'Djamena to launch the Full Proposal formulation process. The mission aimed to:

- Raise awareness of the Adaptation Fund's feedback and requirements following Concept Note approval.
- Identify the roles and responsibilities of all institutions involved.
- Plan field visits and determine key consultation sites and stakeholders.

This mission facilitated strong institutional coordination and reinforced commitment from the Government of Chad and civil society partners.

231. *Local Consultations – August–September 2024*: A multi-day local consultation mission covered the three target regions (Borkou, Ennedi Ouest, and Wadi Fira), engaging over 200 local participants, including community leaders, women's groups, pastoral associations, youth representatives, and technical services. The objectives were to:

- Collect feedback on community needs, climate vulnerabilities, and livelihood priorities.
- Validate proposed activities and potential intervention sites.
- Strengthen local ownership and ensure gender-balanced participation.

Discussions focused on themes such as:

- Sustainable management of water and land resources.
- Climate-resilient agricultural and livestock practices.
- Women and youth empowerment through income-generating activities.

Recommendations gathered were incorporated directly into the final design of project components and activities.

232. *National Consultation Workshop – November 6, 2024*: The process culminated in a National Consultation and Validation Workshop held in N'Djamena, attended by over 60 stakeholders from ministries, research institutions, civil society, and local representatives. The workshop objectives were to:

- Present and discuss findings from local field missions.
- Validate the thematic studies and integration of cross-cutting issues such as gender and environmental safeguards.
- Achieve consensus on priorities for inclusion in the final project proposal.

Stakeholders endorsed the proposed project framework and expressed commitment to supporting its implementation, emphasizing community empowerment, institutional strengthening, and sustainability mechanisms.

233. *Inclusiveness and Gender Considerations:* Throughout all stages, women and youth played an active role in defining project priorities and designing adaptation measures . The UFLCDS facilitated women's participation and leadership, ensuring that gender equality and social inclusion were systematically integrated. Consultations were designed to be **culturally sensitive**, held in local languages, and structured to ensure the participation of marginalized groups, particularly in remote oasis communities.

234. The stakeholder consultation process for the Chad Oasis Project was extensive, participatory, and inclusive, ensuring representation from national, regional, and local levels. In total, *approximately 520 stakeholders* were engaged through successive stages of the project's development from the initial dialogue at COP26 to the national validation workshop in N'Djamena. The process achieved a balanced gender participation, with about *47% women and 53% men*, reflecting the project's strong commitment to gender equality and social inclusion. Consultations were carried out across the three target regions, Borkou, Ennedi Ouest, and Wadi Fira, alongside national-level engagements and an international inception dialogue. The outcomes of these interactions directly influenced the project's design, informing the selection of intervention sites, the definition of concrete adaptation activities, and the integration of gender-responsive and conflict-sensitive measures. The table below provides a consolidated summary of the consultations conducted, highlighting the location and date, consultation themes, stakeholder participation, key outcomes, and the considerations integrated into the final project design.

Summary table of the consultations with the communities and other stakeholders, including dates, number of participants, outcomes and project design considerations

Location / Date	Consultation Topics	List of Attendees (Gender Disaggregated)	Consultation Outcomes / Key Findings	Considerations Integrated into Project Design
Glasgow (COP26, November 2021)	Introductory meeting between Chad's official delegation and OSS on	~10 participants, 3 women, 7 men (Chad	Political commitment to develop a project	Identification of *oasis ecosystems* as the central thematic focus;

	developing a climate adaptation project under the Adaptation Fund focused on oases and wadis.	delegation, OSS officials).	addressing oasis ecosystem degradation and climate-induced vulnerabilities.	Alignment with NDC and NAP priorities.
N'Djamena (October 2022)	High-level policy consultations with Ministries of Environment, Agriculture, Livestock, and State Advisors on project scope and institutional framework.	~25 participants, 5 women, 20 men (ministers, technical directors, OSS, UFLCDS).	Consensus on government leadership and OSS as RIE; emphasized gender and institutional coordination.	Institutional framework confirmed: MEPDD as NEE, OSS as RIE; Integration of a gender-responsive coordination structure with UFLCDS.
Field Visits – Arada, Fada, Biltine, Kalaït (Sept–Oct 2022)	Community-level consultations on vulnerabilities, resource use, and adaptation needs.	~120 participants,45 women, 75 men (farmers, herders, traditional leaders, youth).	Identified priority intervention sites; validated vulnerability hotspots and water scarcity challenges.	Basis for Component 2 design: focus on water resource management, SLM, and community-based adaptation measures.
OSS Planning Mission – N'Djamena (Feb 21–23, 2024)	Launch of full proposal formulation; review of AF feedback; planning field consultations and responsibilities.	~30 participants,10 women, 20 men (OSS, MEPDD, UFLCDS, local coordinators).	Clarified stakeholder roles, coordination arrangements, and consultation itinerary.	Led to establishment of a multi-level coordination mechanism (OSS–MEPDD–UFLCDS–local authorities) for proposal development.
Local Consultations – Borkou, Ennedi Ouest & Wadi Fira (Aug 6–Sept 9, 2024)	Community discussions on water scarcity, oasis degradation, gender roles, and potential IGAs.	~200 participants,90 women, 110 men (community leaders, women's groups, youth, pastoralists).	Collected local adaptation priorities; reinforced gender inclusion and ownership of activities.	Guided activity design for solar-powered water infrastructure, SLM plots, and women-led IGAs; gender parity embedded in outcomes.
Fada (Ennedi Ouest) – Sept 7, 2024	Validation of proposed water and land restoration activities; review of indigenous knowledge systems.	40 participants,15 women, 25 men (community reps, elders, local authorities).	Endorsed solar irrigation and groundwater recharge structures; identified traditional dune stabilization methods.	Integrated indigenous knowledge into Ac. 2.2.2.1 (adaptive agricultural techniques) and Ac.2.2.1.2 (biological dune fixation).
Biltine (Wadi Fira) – Sept 8, 2024	Livestock and conflict management; promotion of pastoral livelihoods.	35 participants,12 women, 23 men (herders, pastoral leaders, local officials).	Requested strengthening of livestock corridors and veterinary access; flagged farmer–herder conflict risks.	Led to Ot. 2.3.1 design: Transhumance route mapping, mobile vet clinics, and conflict management training.
Arada (Batha East) – Sept 9, 2024	Economic resilience and microfinance systems; women's empowerment.	30 participants,18 women, 12 men (women's groups, cooperatives, local traders).	Advocated for revolving funds and women's access to credit for IGAs.	Shaped O. 2.3.3: inclusion of SACCOs and gender-focused revolving funds for women and youth.
National Validation Workshop – N'Djamena (Nov 6, 2024)	Presentation of consultation results; review of thematic studies (legal, gender, ESMP, M&E).	60 participants, 25 women, 35 men (ministries, NGOs, OSS, academia).	Validated project structure and key deliverables; endorsed final project document for submission.	Final adjustments to logframe indicators, gender-disaggregated targets, and ESMP monitoring integration

I. Justification of funding request

235. Chad's northern oasis regions of Borkou, Ennedi Ouest, and Wadi Fira are home to some of the country's most vulnerable populations. Almost all targeted communities live below the poverty line, and Chad as a whole is currently ranked by the World Bank as the poorest country in the world. As a Heavily Indebted Poor Country (HIPC), Chad requires IMF authorization to acquire new debt, while shrinking aid flows and rising debt service obligations further squeeze already overstretched national budgets. This leaves virtually no fiscal space for the government to finance urgent climate adaptation programmes. At the same time, the agricultural sector employs more than 80% of Chad's working population and contributes over 50% of GDP, yet it remains overwhelmingly dependent on rain-fed systems. Rural farmers and pastoralists must contend with prolonged droughts, rainfall deficits, floods, and even locust invasions, shocks that are increasing in frequency and severity due to climate change. Traditional resilience strategies, such as mobility, herd diversification, and shifting cultivation, are no longer sufficient. In parallel, there is a severe lack of reliable environmental data and monitoring systems, combined with weak institutional and governance frameworks for water and land resource management. As a result, fragile ecosystems continue to degrade under anthropogenic pressures, while livelihoods erode and resource conflicts intensify. Without targeted intervention, these communities will remain trapped in cycles of poverty, ecological decline, and food insecurity.

236. AF financing provides the means to reverse this trajectory by funding integrated, climate-resilient solutions that Chad cannot deliver with domestic resources alone. The project will strengthen water security through solar-powered irrigation systems, potable water supply models, and groundwater recharge structures. It will restore degraded lands by stabilizing sand dunes, enhancing soil fertility, and planting indigenous vegetation to reduce erosion and regenerate ecosystems. It will diversify and climate-proof livelihoods by promoting camel milk processing, energy-efficient cookstove production, handicrafts, and eco-tourism, supported by savings cooperatives and revolving funds. Institutional capacity will be enhanced through the establishment of legal and policy frameworks, improved data collection and monitoring systems, and the development of climate adaptation action plans tailored to each oasis commune. Finally, the project will promote knowledge management and

awareness raising (Component 3), by creating training materials, organizing workshops, producing community radio programmes and success story videos, and facilitating inter-regional exchanges. Together, these actions will enable communities not only to withstand climate shocks, but also to harness new opportunities for sustainable and resilient development.

237. It is important to distinguish the adaptation benefits from the broader development co-benefits that the project will generate. Adaptation benefits include improved water security through solar boreholes and groundwater recharge systems; reduced vulnerability to drought and desertification through sustainable land management and dune stabilization; increased food security via climate-resilient crops, livestock, and irrigation; and strengthened governance systems to manage ecosystems adaptively. These interventions directly reduce exposure and sensitivity to climate change impacts. In contrast, development co-benefits will emerge through higher household incomes from climate-resilient value chains, better nutrition and health from reliable food and potable water access, improved market participation through storage and processing facilities, and stronger social cohesion through inclusive financial mechanisms such as SACCOs and revolving funds. By combining these adaptation and development benefits, the project ensures that climate resilience becomes the foundation upon which sustainable local economies can grow.

238. The project's budget reflects this dual emphasis on adaptation and co-benefits. Approximately 20% of resources will be invested in strengthening governance and knowledge systems (Output 1.1.1), ensuring that adaptation planning is data-driven and institutionally anchored. Around 25% of resources (US$2 million) will be allocated to concrete adaptation actions in water, land, and livelihood systems (Outputs 2.3.1–2.3.3), directly addressing the vulnerabilities of farmers, herders, women, and youth. Another US$0.4 million will be dedicated to awareness raising, communication, and knowledge sharing (Output 3.1.1), to foster replication and scale-up across Chad and other Sahelian oases. By aligning investments with national adaptation priorities, the project ensures that immediate community needs are met while building a sustainable foundation for long-term climate resilience.

239. Without external support, oasis communities in Chad will remain locked in cycles of poverty, food insecurity, and ecological decline, with no pathway to resilience. Adaptation Fund support is not just desirable, it is essential. It will unlock the possibility for oasis communities to withstand climate shocks, diversify their livelihoods, and strengthen governance systems, while also delivering broader development dividends. By addressing both the systemic drivers of vulnerability and the immediate needs of local households, the Chad Oasis project represents a catalytic investment in resilience, sustainability, and human security for one of the world's most climate-vulnerable regions.

Table 8: Analysis of the scenarios without the interventions of the project and a justification of the full cost of adaptation with quantifiable impacts

	Baseline: Without any support from the Adaptation Fund	**Impacts of the proposed project: With Adaptation Fund support**	**Quantifiable impacts**
Component 1	Oases in Borkou, Ennedi Ouest, and Wadi Fira remain poorly documented, with fragmented governance systems. No systematic monitoring of water, soil, or biodiversity; weak integration of climate risks in local plans; absence of institutional mechanisms to coordinate adaptation. Communities continue relying on anecdotal knowledge, leaving decision-making reactive and ad hoc.	Establishes a robust knowledge and governance foundation. Comprehensive assessments of oasis ecosystems and socio-economic vulnerabilities are conducted. Adaptation Action Plans are co-developed and validated with communities. Monitoring systems for water, soil, and ecosystems are operationalized. Institutional frameworks are strengthened and dialogue platforms established, ensuring climate change adaptation is mainstreamed into local and national planning.	• Comprehensive baseline assessments of oasis ecosystems completed across 3 regions. • 1 national database and 15 thematic ecosystem maps produced. • 3 Commune-level Adaptation Action Plans co-developed and validated. • 1 national monitoring system equipped with sensors, GIS, and data management tools. • At least 200 local officials and technical staff trained on planning and governance.

Component 2	Communities face worsening drought, desertification, and food insecurity. Water scarcity increases tensions among farmers and herders, while dune encroachment threatens villages and farmland. Livelihoods remain precarious, with limited diversification options. Post-harvest losses are high due to lack of storage and processing facilities. Without intervention, migration, conflict, and poverty deepen.	Climate-resilient water infrastructure (solar boreholes, potable water models, spreading weirs, dams) improves availability and equitable access. Sustainable Land Management (SLM) techniques, dune fixation, and fodder production restore degraded land. Climate-smart agriculture and seed banks strengthen food security. Camel milk value chain and other oasis-based value chains (dates, gum Arabic, handicrafts) reduce post-harvest losses, create jobs, and diversify incomes. Women and youth benefit from tailored IGAs and financial inclusion mechanisms (SACCOs, revolving funds).	• 12 solar-powered water infrastructures (boreholes, pumps, storage tanks) installed. • 5 micro-dams/spreading weirs rehabilitated to recharge groundwater. • 150 hectares stabilized through dune fixation and 80 km of green belts established. • 6 seed production units + 3 seed banks established, benefiting 500 farmers (40% women). • 3 storage/processing units for dates/millet/gum Arabic; 3 camel milk cooperatives operational with solar cooling. • At least 50 IGAs supported, of which 60% are women- and youth-led, generating diversified income. • Post-harvest losses reduced from ~30% to <10%.
Component 3	Communities and institutions lack awareness of climate change risks and adaptation options. Gender gaps persist in access to land, resources, and decision-making. Traditional knowledge is not systematically integrated into planning. Lessons from scattered initiatives are not documented or shared. Local actors remain ill-equipped to design, finance, or monitor adaptation actions.	A comprehensive capacity development and KM strategy is rolled out. Capacity Needs Assessments inform tailored training programmes for local authorities, technical officers, women, and youth. At least 500 stakeholders trained in climate adaptation, SLM, and water governance. Knowledge management system established to capture, document, and disseminate lessons (through newsletters, radio, videos, COP side-events). Communication campaigns increase community awareness of climate risks and adaptation practices. OSS builds fiduciary and technical capacities of the Executing Entity, ensuring long-term institutional strengthening.	• Comprehensive KM plan implemented with 10 training modules, 10 guides, and 6 multimedia tools. • 10 structured training sessions and 20 workshops, reaching 500 stakeholders (50% women, 30% youth). • 3 inter-regional exchange visits + 2 learning forums organized. • Awareness raised in at least 30,000 community members through radio, TV, posters, and social media. • 270 Trainers-of-Trainers (ToTs) cascade knowledge to ~12,770 beneficiaries. • OSS builds EE capacity with inception workshop + quarterly review missions; fiduciary, procurement, MEL systems strengthened.

J. Project sustainability

240. The sustainability of the Chad Oasis Project was embedded from its conception during discussions between OSS and the Government of Chad at the sidelines of COP26. Government representatives highlighted the importance of advancing the objectives of the updated NDC and NAP, particularly in relation to the protection of vulnerable ecosystems such as oases and wadis. This early political ownership created strong alignment between the project and national priorities. The Ministry of Environment, Fisheries and Sustainable Development, together with the Union of Women for the Fight Against Desertification in the Sahel (UWFADS), played a central role in developing the project and will continue to provide political and technical support. This high-level endorsement, complemented by community structures and private/public partnerships, ensures that activities will be upscaled and replicated beyond the project's lifespan.

241. **Institutional Sustainability**: The project will be implemented through existing government structures at both national and local levels, ensuring that results are embedded within permanent institutions. By strengthening the capacity of the Ministry of Environment, its provincial services, and community-level organizations, the project ensures that technical skills, governance mechanisms, and monitoring systems remain functional after project closure. Newly created stakeholder coordination and collaboration platforms will enable continuous knowledge exchange, technical backstopping, and replication of successful approaches. OSS, as RIE, and UWFADS, as a local partner, will ensure that community associations, especially women's groups, are positioned to maintain and scale interventions.

242. **Financial Sustainability**: Financial sustainability is secured through the establishment of SACCOs and community-managed revolving funds, which create self-sustaining financing mechanisms. These structures will provide loans and support investment in IGAs even after project funding ends. Partnerships with microfinance institutions and formal banks will further anchor access to credit. Market linkages for oasis-based value chains (e.g., camel milk, dates, gum Arabic, artisanal products) will generate recurring income streams that reinforce resilience and autonomy. By demonstrating clear economic benefits, the

project will incentivize both public managers and private operators to invest in replication, thus extending financial sustainability.

243. **Social Sustainability**: Social sustainability is embedded in the project through the active participation of local communities, including community organizations of both men and women, in the management of small-scale infrastructure and activities. Women and youth are deliberately empowered through access to resources, leadership roles, and training, ensuring equitable benefits. Capacity development through ToT cascades will institutionalize peer-to-peer learning and strengthen intergenerational knowledge transfer. By embedding gender-sensitive approaches and creating inclusive governance mechanisms, the project promotes community ownership and long-term social cohesion.

244. **Environmental Sustainability**: The project will deliver concrete adaptation actions that protect and restore fragile oasis ecosystems, with long-term benefits extending beyond the project's duration. Dune stabilization, reforestation with drought-resistant species, and water harvesting structures will strengthen soil fertility, groundwater recharge, and ecosystem services. The promotion of climate-smart agriculture and reduced dependence on firewood will further reduce environmental degradation. By increasing food productivity and resilience of agricultural systems, farmers will be able to maintain production even in the face of climate variability. These ecological benefits will continue to support local livelihoods well after the project ends.

245. **Knowledge Sustainability**: A robust Knowledge Management (KM) Plan under Component 3 will ensure that lessons learned are systematically captured, documented, and disseminated. Knowledge will be produced in accessible formats (manuals, toolkits, visual guides, multimedia) and shared through workshops, community radio, exchange visits, and national/international platforms (COPs, regional climate weeks, Adaptation Futures). Universities and research centers will be engaged to ensure scientific validation and long-term integration into academic curricula. This ensures that knowledge is not lost but becomes part of a living system that informs future policies and community practices.

246. **Policy and Programmatic Sustainability**: The project is fully aligned with Chad's NDC, NAP, PND 2022–2026, National Environmental Policy, and sectoral strategies. All interventions will be developed in line with national standards (e.g., EIA guidelines, water and land codes, gender policy) to ensure regulatory compliance. By reinforcing existing policy frameworks and providing evidence-based lessons, the project will strengthen national planning and investment decisions. This alignment with government priorities guarantees that interventions are not isolated but institutionalized, promoting replication in other oasis and dryland ecosystems.

247. **Exit Strategy and Partnerships**: An explicit exit strategy will be put in place, whereby capacities built among local institutions, community groups, and implementing partners will ensure the continuity of interventions. Through MoUs, partnerships, and handovers, project responsibilities will transition smoothly to local actors. The continued presence of implementing partners in the target regions ensures that interventions are incorporated into ongoing programs, reinforcing long-term sustainability.

Table 9: Sustainability Dimensions of the Chad Oasis Project (with Activity Linkages)

Sustainability Pillar	Sustainability Measures	Linked Project Components / Activities	Responsible Actors
Institutional Sustainability	• Use of existing government structures at national and local levels (Ministry of Environment, provincial services). • Capacity building of institutions and technical staff. • Stakeholder coordination platforms for knowledge exchange and replication.	Comp. 1: Strengthening institutional/legal frameworks. Ac. 1.1.1.1 (Natural resource assessment) Ac. 1.1.1.4 (Dialogue on frameworks) Ac. 3.1.1.5 (Capacity building of EE by OSS).	MEFSD, Provincial Services, OSS (RIE), UWFADS, Local Authorities
Financial Sustainability	• Establishment of SACCOs and revolving funds for IGAs. • Partnerships with microfinance institutions and banks. • Strengthening of oasis-based value chains (camel milk, dates, gum Arabic, artisanal products) to generate recurring incomes.	Ac. 2.3.3.3 (SACCOs) Ac. 2.3.3.4 (Revolving funds) Ac. 2.3.2.3 (Camel milk value chain) Ac. 2.3.2.1 (Storage/processing units).	SACCO Committees, UWFADS, Microfinance Institutions, Farmer/Producer Cooperatives
Social Sustainability	• Active participation of men and women in managing infrastructure and activities. • Women's associations and youth groups strengthened. • Training of Trainers (ToT) cascades to sustain peer-to-peer learning. • Gender-sensitive approaches integrated.	Ac. 2.3.3.1 (Strengthen women's associations) Ac. 2.3.3.2 (Entrepreneurial training) Ac. 3.1.1.3 (Training & workshops)ToT training plan under Component 3.	Community Committees, W-SPAG, UWFADS, Youth Groups, Traditional Leaders
Environmental Sustainability	• Restoration of oasis ecosystems (dune fixation, reforestation, water harvesting). • Promotion of climate-smart agriculture and reduced firewood dependence.	Ac. 2.2.1.2 (Dune fixation) Ac. 2.2.1.3 (SLM practices) Ac. 2.1.1.3 (Groundwater recharge structures)	MEFSD, Forestry Directorate, Farmer Cooperatives, Community Groups

	• Increased food productivity and resilient agricultural systems.	Ac. 2.1.1.2 (Solar-powered water infrastructure) Ac. 2.3.3.1 (Energy-saving cookstoves).	
Knowledge Sustainability	• Design and implementation of a robust KM plan (Component 3). • Systematic capture, documentation, and dissemination of lessons learned. • Use of manuals, guides, multimedia, community radio, and exchange visits. • Engagement of universities and research centers for validation and integration.	Comp. 3: Knowledge, awareness, and capacity building. Ac. 3.1.1.2 (Development of KM materials) Ac. 3.1.1.3 (Workshops/exchange visits) Ac. 3.1.1.4 (Communication strategy) Ac. 3.1.1.5 (EE capacity building).	OSS (RIE), EE, Universities, Research Centers, Local Media
Policy and Programmatic Sustainability	• Alignment with Chad's NDC, NAP, PND 2022–2026, Environmental Policy, and sectoral strategies. • Compliance with national standards (EIA, water and land codes, gender policy). • Evidence-based lessons feeding into national planning and programs.	Comp. 1: Institutional/legal frameworks. Ac. 1.1.1.4 (Policy dialogue)Cross-cutting activities on safeguards (EIA, ESMP).	Ministry of Environment, Ministry of Agriculture, Ministry of Water, Ministry of Women and Child Protection
Exit Strategy and Partnerships	• MoUs and formal partnerships with national and local actors. • Handover of responsibilities to local community organizations. • Integration of project activities into ongoing programs of implementing partners. • Public-private partnerships to scale interventions.	Cross-cutting: MoUs with line ministries and local committees. Ac. 2.3.2.2 (Market linkages) Ac. 2.3.2.3 (Camel milk partnerships) Ac. 3.1.1.4 (Partnerships with media, youth groups, traditional leaders).	OSS, EE, UWFADS, Community Organizations, Private Sector Partners

K. Environmental and social impacts and risks

248. The Chad Oasis Project is designed to generate overwhelmingly positive environmental and social impacts by restoring degraded oasis ecosystems, strengthening adaptive capacities of vulnerable communities, and promoting inclusive livelihood diversification. The project's concrete adaptation measures (e.g., sustainable water infrastructure, dune fixation, climate-smart agriculture, camel milk and date value chains, IGAs) directly address land degradation, desertification, and climate-induced vulnerabilities. Socially, the project prioritizes women, youth, and marginalized groups, ensuring equitable access to resources, credit, and decision-making.

249. Despite these benefits, some activities carry potential environmental and social risks, which must be carefully managed to avoid unintended consequences. Risks primarily stem from construction and rehabilitation of water infrastructures, introduction of new agricultural practices, cooperative governance, and financial mechanisms. These risks are moderate and site-specific, placing the project in **Category B**. The project has therefore integrated strong Environmental and Social Management measures, in line with AF ESP and Gender Policy, Chad's legal frameworks, and OSS safeguards. At this stage of development, the identification of Risks and Impacts will be conducted while ensuring the following points: (i) the formalization of USP approach; (ii) a comprehensive risks identification and impact assessment; (iii) the compliance with the ESP and GP for implementation of the project, taking into account the regional dimension; (iv) the adequate allocation of resources for mitigation measures; (v) the project management structure includes an external oversight/advisory component on environmental and social safeguarding. The initial results of screening are presented in the table below.

Table 10 : The E&S principles of the AF that will be triggered by the project in terms of negative impacts and environmental and social risks

Checklist of Environmental and Social Principles	Risk Level	No Further Assessment Required for Compliance	Potential Impacts and Risks – Further Assessment and Management Required for Compliance	Mitigation Measures
1. Compliance with the Law	Low		Minor risk of non-compliance if infrastructure (water points, dams, processing units) is not screened under national EIA procedures.	All infrastructure will undergo EIA screening; MoUs with ministries; OSS safeguard monitoring.
2. Access and Equity	Moderate		Risk of elite capture or exclusion of women, youth, or nomadic groups from benefits.	Transparent beneficiary selection; quotas for women (≥50%) and youth (≥30%); grievance redress mechanism.

3. Marginalized and Vulnerable Groups	Moderate		Risk of exclusion of pastoralists, widows, and nomadic groups due to mobility and cultural barriers.	FPIC consultations; mobile vet and water services; culturally adapted engagement strategies.
4. Human Rights	Low	(The project activities are not discriminatory by tribe, age and gender or, level of education. The project design relied on the consultative approach involving various stakeholders. No activities are identified whose execution is not in line with the established international human rights. Project objectives promote basic human rights for fair and equitable access to resources to enhance their resilience to climate change in the beneficiary countries.)		Gender Action Plan; targeted women's leadership training; enforce gender quotas in cooperatives.
5. Gender Equity and Women's Empowerment	Moderate		Potential risk of men dominating decision-making in cooperatives or overburdening women with unpaid labour.	Gender mainstreaming strategy; gender-responsive budgeting; dedicated women's economic empowerment programs.
6. Core Labour Rights	Low		Risk of unsafe working conditions during construction (water points, storage units).	All contractors bound by ILO-compliant contracts; occupational safety training.
7. Indigenous Peoples	Moderate		Risk of exclusion from benefits due to mobility or cultural norms.	Tailored service delivery (mobile vet clinics, transhumance route mapping); FPIC ensured.
8. Involuntary Resettlement	Low	Project avoids activities that require land acquisition or displacement. The project will work with communities in their locations and on voluntary basis. Therefore, no resettlements or even displacement to new locations is expected		No land acquisition; use of community-negotiated agreements; local validation before works.
9. Protection of Natural Habitats	Moderate		Risk of disturbing fragile ecosystems during infrastructure works. Component 2, will undertake activities related to Carrying out dune fixation works (mechanical and biological fixation) and Developing/rehabilitating runways and corridors around the oases Also, Outputs 2.2.1 and 2.2.2 will enhance lands and soil conservation specifically through Promoting innovative practices for the sustainable management of the oasis soils, Train farmers to sustainable soil management techniques	Site-specific ESIA; avoid critical habitats; use native drought-resistant species.
10. Conservation of Biological Diversity	Low		Risk of monoculture or introduction of non-native species. Deliberate efforts will be taken to ensure that interventions are compliant with all relevant national and international laws on conservation of biological	Seed banks focus on indigenous, drought-tolerant crops; guidance from research institutes.

			diversity. It is important to highlight that no invasive plant species will be planted.)	
11. Climate Change	Low	Project strengthens resilience to climate shocks. Project activities proposed are aimed to enhance the resilience of oasis ecosystems and populations to Climate change focusing on drought effects in the cross-border area along with food security and water management efficiency enhancement		Integrated water management plans; water-efficient irrigation systems; monitoring of groundwater tables.
12. Pollution Prevention and Resource Efficiency	Moderate		Risks from waste in processing units, misuse of agrochemicals.	Training on safe agrochemical use; composting systems; waste management plans in processing units.
13. Public Health	Low	Improved water quality, reduced workload, and better nutrition planned. The project interventions will among others also focus on developing a special awareness plan for communities on Climate Change and adaptation options, with considering endogenous know-how. This will include modules for trainings and capacity building related to all activities of the project, including water management. Communities will be sensitized on the need to reduce water intake and water use, which will contribute to water availability during dry periods and droughts. These efforts lead to avoidance of waterborne diseases and other epidemics hence contributing to public health). In addition, the project will support animal production by strengthening health and quality food systems (inputs and veterinary pharmacies, fattening, cultivation of fodder plants, etc.) through breeders' associations.		Hygiene and certification protocols; solar cooling for milk; regular water testing.
14. Physical and Cultural Heritage	Low		Chance-find risks during infrastructure development.	Chance-find procedures; consultations with local leaders before works.
15. Lands and Soil Conservation	Moderate		Risk of soil degradation if land expansion is unmanaged.	Training on soil fertility management; monitoring land use; community-led SLM committees.

PART III IMPLEMENTATION ARRANGEMENTS

A. Project implementation

250. *The Sahara and Sahel Observatory (OSS)* will serve as the Regional Implementing Entity (RIE) to ensure the supervision of the project in all its financial, administrative, and legal aspects. It will also carry out monitoring, auditing, and supervisory activities, and will ensure the annual reporting to the Adaptation Fund (AF). It will provide technical and management support to the Executing Entity at the national level. It will be responsible for ensuring that project activities comply with the AF's Environmental, Social, and Gender Policies, as well as with the monitoring of the Environmental and Social Management Plan. OSS will also be responsible for managing and supporting the project's grievance mechanism process, ensuring that it is accessible, transparent, impartial, confidential, and predictable for potential complainants. To effectively fulfil this mandate, OSS will establish an internal support team.

251. *General Secretariat of the Ministry of Environment, Fisheries, and Sustainable Development* as the National Executing Entity (NEE) : The project activities will be carried out by the national executing entity, which possesses the necessary knowledge to successfully implement these tasks and whose missions and mandate align with the project's objectives. It will ensure stakeholder ownership of the project, capitalize on other ongoing initiatives, and guarantee the sustainability of project results

by establishing appropriate mechanisms and tools during implementation. It will oversee the collection and consolidation of data from the project's intervention areas. In addition to the technical and financial reports that the national entity will periodically prepare, it will collaborate with the AF-accredited National Implementing Entities for capacity-building and communication efforts. This responsibility will be assumed by the General Secretariat of the Ministry of Environment, Fisheries, and Sustainable Development. However, on an operational level, this responsibility will be delegated to the Directorate General of Forest, Wildlife, and Fisheries Resources (DGFWFR).

252. *The National Steering Committee (NSC)* will play a critical role in overseeing the planning, coordination, and supervision of project execution. The NSC will be composed of multisectoral stakeholders, including representatives from the Ministries responsible for Environment, Agriculture, Water, Decentralization, and Family. Representatives from the private sector and civil society organizations may also be part of this committee. Under the authority of the Minister of Environment, Fisheries, and Sustainable Development, this committee will meet at least twice a year to approve the activity planning, provide strategic guidance, review progress, and address challenges. The NSC will be responsible for: a) providing strategic direction to the EE to ensure that project activities remain aligned with the project document and objectives; b) assessing project progress through the review of biannual Project Progress reports and project execution reviews, ensuring that the project is on track to achieve its planned results; c) providing advice on any issues or obstacles encountered during project execution, proposing solutions and adjustments as needed; and d) fostering collaboration among project partners and facilitate synergies with other relevant programs, projects, and initiatives in the project sites, enhancing the overall impact of the project. The General Secretariat of the Ministry of Environment, Fisheries, and Sustainable Development and NPMU will act as the secretariat to the NSC and will be responsible to convening meetings, logistics, compiling meeting minutes, follow up on the recommendations of the NSC, inter alia. A decree will be issued by the Minister of Environment, Fisheries, and Sustainable Development to establish this committee.

Table 11: The proposed composition of the NSC representatives

NSC Representative	No
OSS	1
Ministry of Environment	2
Ministry of Water	1
Ministry of Agriculture	1
Ministry of Women	1
Ministry of Planning	1
NGO Union of Women for the Fight Against Desertification in the Sahel	2
Representatives of the project's intervention areas	3
Resource persons	2
Total	**14**

253. *The National Project Management Unit (NPMU)* will ensure the day-to-day management of the project and will be placed under the responsibility of the national executing entity. The number and profile of the NPMU members will be developed based on the project's needs as defined in the Project Implementation Manual (PIM) and on the evaluation conducted at the start of the project. The terms of reference for the team and its operational modalities will be submitted to the OSS for Non-Objection. However, in general, the NPMU may include a national coordinator, a monitoring and evaluation expert, a gender expert, and an administrative and financial expert.

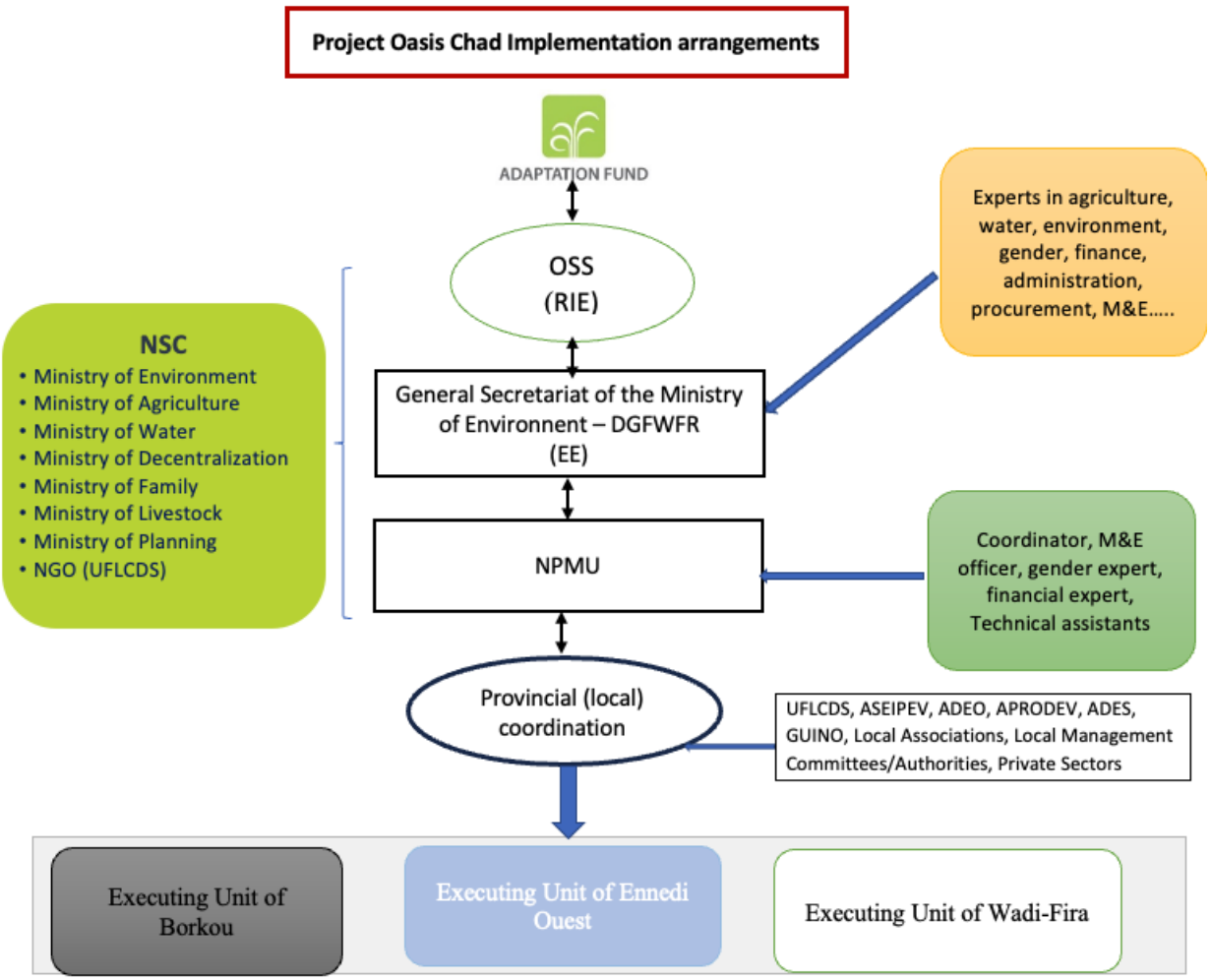
254. *Local Coordination -* At the level of each of the three regions (Borkou, Ennedi Ouest, and Wadi-Fira), a local project management unit will be established. Each local unit, under the NPMU, will ensure the day-to-day management of the project within its region of responsibility. Annual meetings will be organized at the regional level, inviting local and community representatives, including women, youth, and vulnerable groups, to assess and plan the activities to be carried out each year. Each local unit will be led by a local coordinator. In addition to the local coordinator, the other members of the local coordination unit will be defined in agreement with all stakeholders, taking into account the specificities of the project.

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

Table 12 : Roles and responsibilities related to each actor

Entity	Roles and responsibilities
OSS	- Review and approval of annual work plan & budget; - Review and approval of annual progress and completion reports; - Monitoring of the recommendations' implementation; - Orientation and/or management decision-making

National Steering committee	- Review and validation of annual work and budget plans; - Coordination and decision-making related to the implementation of the program and the annual work - plan and budget; - Continuous consultations with key stakeholders; - Review and validation of annual progress reports;
General Secretariat of the Ministry of Environment, Fisheries, and Sustainable Development	- Identify and allocate necessary technical resources, including personnel, equipment, and materials required for project execution.; - Support in development and management of detailed project schedules, ensuring alignment with overall project timelines and milestones; - Act as a central point of communication between different departments; - Implement quality control measures to ensure that project outputs meet specified standards and objectives; - Monitor project budgets, ensuring efficient use of financial resources and compliance with funding requirements; - Manage the procurement of technical equipment, materials, and services needed for project implementation; - Ensure that all project activities comply with relevant environmental, health, safety, and regulatory standards;
NPMU	- Development of the project's operations plan and the annual work plan and budget; - Follow-up of the project's operations plan and the annual work plan and budget execution; - Development of data collection, treatment, analysis and dissemination tools; - Coordination of collection, treatment, analysis and dissemination of data and information; - Preparation and consolidation of activity reports, annual progress reports, and project completion report; - Dissemination of project evaluation and monitoring reports; - Implementation of decisions and corrective actions; - Document and share lessons learned from project execution to inform future projects and enhance institutional knowledge.
Local actors (local governments, community structures	- 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



256. Gender-responsiveness of project implementation : The Regional Implementing Entity (OSS) and the National Executing Entity (NEE) have both a dedicated staff member specialized on gender that will be part of the project team and ensure that project approaches are effectively integrating the gender-perspective in all project activities. There is vast experience with managing and implementing projects that mainstream gender in their activities, for instance for various technical and financial partners (World Bank, GIZ, European Union, FAO, UNDP, etc.) who work with gender-inclusiveness and responsiveness throughout their project implementation processes. The NEE has also the responsibility to implement the gender action plan of the Chad oasis project, in addition to the governmental strategies on gender. The project oasis Chad implementation arrangements, including the institutional programming and the project evaluation system, are set up to disaggregate indicators by gender and youth. The project's implementation arrangements from local to regional level offer also opportunities during annual or more frequent meetings to monitor the implementation of the gender action plan. Indeed, a gender focal point responsible for gender aspects will be designated by the regional implementing entity and will work with the gender responsible at EE level to ascertain engendering of the project activities at all levels.

B. Financial and project risk management.

257. This project, which focuses on oases, is multisectoral. Consequently, financial and management risks are expected during its implementation. The Project faces manageable but complex risks, primarily around governance, conflict sensitivity, and institutional coordination with some difficulties exacerbated by potential political instability in the country. The critical quadrant risks (political instability and resource conflicts) require continuous monitoring and adaptive management, while financial, operational, and institutional risks can be managed through OSS's RIE oversight, strong NEE anchoring, and community participation. The risk management system is robust and consistent with AF requirements, ensuring that risks are not only mitigated but also transformed into opportunities for strengthening local governance and resilience. Overall, the anticipated project risks, as well as the planned response, corresponding mitigation measures and responsible, are summarized in the table below :

Table 13 : Primary financial, project, and institutional risks, along with corresponding response anticipated and mitigation measures

Risk and Category	Likelihood / Rating	Risk Mitigation Measure	Responsible
Institutional Risks			
Low collaboration among technical institutions	Medium – *Residual Low*	Maintain continuous engagement; apply signed MoU between MEFSD & UWFADS; agree on activities with line departments; joint reviews at milestones	MEFSD, UWFADS, OSS
Institutional anchoring of NEE	Medium – *Residual Low*	Roles clarified between MEFSD and Directorate of Forestry; continuous dialogue on responsibilities	MEFSD, Directorate of Forestry, OSS
Staff turnover in municipalities, partners, NPMU	Low – *Residual Low*	Build institutional (not individual) relationships; contracts with trained beneficiaries; competitive recruitment; strong HR practices	NPMU, Municipalities, OSS
Lack of expertise & insufficient time	Medium – *Residual Low*	Establish NPMU with experts; deliver capacity-building for project management, finance, M&E	NPMU, OSS
Operational Risks			
Access difficulties in remote project areas	Medium – *Residual Medium*	Align activity planning with seasonal accessibility; establish decentralized local units	NPMU, Local Authorities, UWFADS
Delays in implementation of activities	Medium – *Residual Low*	Prepare AWPB & procurement plans with prioritization; monitoring meetings; use OSS procurement if national procedures are slow	NPMU, OSS
Delays in recruitment/appointment of staff	Low – *Residual Low*	TORs prepared early; staff recruited ahead of inception; induction and orientation provided	NPMU, OSS
Poor monitoring and evaluation	Low – *Residual Low*	Develop participatory M&E framework; regular follow-up by OSS & EE	NPMU, OSS
Financial Risks			
Weak financial management & accountability	Low – *Residual Low*	Apply AF & OSS standards; role separation; robust audits & reporting	NPMU Finance Unit, OSS
Exchange rate fluctuations (USD–XOF)	Medium – *Residual Medium*	Finance unit monitors rates; adaptive budget reallocation in consultation with OSS & MEFSD	NPMU Finance Unit, OSS
Delays in disbursement, procurement, inefficiencies	Low – *Residual Low*	Close collaboration OSS–NEE–NPMU; updated procurement plan; early staff recruitment	OSS, NEE, NPMU
Misuse of SACCOs or revolving funds	Medium – *Residual Low*	Deliver financial literacy & fund management training; transparent rules; formal banking linkages; oversight by OSS & EE	SACCO Boards, NPMU, OSS
Social Inclusion Risks			
Conflicts between pastoralists & farmers	Medium – *Residual Medium*	Engage traditional leaders; awareness campaigns; comply with rules; provide conflict management training	NPMU, UWFADS, Local Leaders
Lack of ownership by vulnerable groups (esp. women/youth)	Low – *Residual Low*	Gender-sensitive participatory planning; guided by Gender/Social Expert; ensure FPIC; integrate traditional knowledge	NPMU, Gender/Social Expert, UWFADS
Climate & Security Risks			
Political instability	Medium – *Residual Medium*	Establish early warning with authorities; maintain communication; extend timelines if necessary	OSS, MEFSD, National Authorities
Extreme climate events (droughts, floods)	High – *Residual Medium*	Promote drought-tolerant crops; groundwater recharge; contingency planning; adaptive scheduling	NPMU, Technical Partners
Security risks in northern regions (Borkou, Ennedi, Wadi Fira)	Medium – *Residual Medium*	Conduct security assessments; remote monitoring; work with trusted local partners; flexible mission planning	OSS, NPMU, Local Authorities

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

258. During the development phase of the Chad Oasis Project, a preliminary environmental and social risk screening was undertaken in accordance with Chad's national environmental laws and in alignment with the Adaptation Fund's Environmental and Social Policy (ESP). Consultations were held with the Ministry of Environment, Fisheries and Sustainable Development (MEFSD), provincial authorities, and the Union des Femmes pour la Lutte Contre la Désertification au Sahel (UFLCDS). The analysis confirmed that the project presents no significant irreversible impacts. Potential impacts are localized, small-scale,

and manageable with good practices. On this basis, the project is classified as **Category B**, meaning that risks are low to moderate and can be effectively mitigated.

259. The project commits to periodic environmental and social assessments depending on the scale and location of activities, particularly for water infrastructure and sustainable land management (SLM) interventions. Each activity has been screened against the 15 ESP principles of the Adaptation Fund, with risk ratings applied under the assumption that mitigation measures are implemented. This ensures that interventions are compliant with AF policies, Chad's regulations, and OSS safeguard procedures.

260. Screening identified that principles such as protection of natural habitats, climate change, and access and equity carry moderate risks. Risks stem mainly from potential water over-abstraction, conflicts over land and water resources, or maladaptive agricultural practices. These risks will be addressed through site-specific Environmental and Social Management Plans (ESMPs), community-based monitoring, and strong participatory governance. Mitigation measures are summarized in Table 13 below and further detailed in Annex 4 (ESMP).

Table 14: Mitigation Measures for Identified Risks

Type	Risk Description	Level	Mitigation Strategy
Protection of Natural Habitats	Oasis ecosystems face degradation due to dune movement, drought, and unsustainable land practices. Restoration efforts could be undermined in early phases.	Medium	Prioritize nature-based solutions (dune fixation, greenbelts with native species, FMNR). Focus on high-impact actions benefiting large groups of producers. Ensure no activity occurs in critical natural habitats.
Climate Change	Climate variability and droughts could reduce the effectiveness of some adaptation measures (e.g., crop diversification, irrigation).	Medium	Establish continuous monitoring of climate data in collaboration with MEFSD and provincial services. Adapt interventions accordingly (e.g., drought-tolerant varieties, flexible water use plans).
Access and Equity	Risk of elite capture of resources and exclusion of women, youth, and nomadic groups from project benefits.	Medium	Apply Free, Prior, and Informed Consent (FPIC). Ensure quotas for women (≥50%) and youth (≥30%) in IGAs, SACCOs, and trainings. Transparent beneficiary selection and grievance mechanism.
Pollution and Resource Efficiency	Agro-processing (camel milk, dates, cereals) could generate organic waste and increase use of agrochemicals.	Medium	Promote clean energy stoves, composting systems, solar cooling, and integrated pest management. Train cooperatives on waste management.

261. Risks identified across all 15 Environmental and Social Principles (ESP) of the AF have been carefully analysed and are presented in detail in Section K, Part II of this proposal. Each principle has been screened against the specific activities of the project, with concrete mitigation measures designed to prevent, minimize, or offset potential negative impacts. These risks are moderate in nature and largely manageable, consistent with the project's Category B classification. Importantly, the analysis demonstrates that the project will not generate any significant adverse or irreversible impacts on ecosystems or communities in the target oasis regions of Borkou, Ennedi Ouest, and Wadi Fira.

262. The project also anticipates the implementation of Unidentified Sub-Projects (USPs), particularly small-scale water infrastructure (e.g., boreholes, solar pumps, micro-dams) and SLM interventions such as dune stabilization, reforestation, and pasture rehabilitation. While these interventions are expected to deliver significant adaptation benefits, the exact sites, scope, and technical modalities will only be determined during the inception and early implementation phases following detailed baseline and feasibility assessments. In line with the Adaptation Fund ESP and the AF Gender Policy, all USPs will undergo an additional environmental, social, and gender screening process during implementation. This will include context-specific risk assessments, Environmental and Social Impact Assessments (ESIAs) where required by national law, and the integration of gender and social equity considerations to ensure inclusivity and compliance with safeguard requirements.

263. By adopting this precautionary approach, the Chad Oasis Project ensures that even activities with details yet to be determined will remain fully aligned with international safeguard standards. The safeguard process will be applied consistently throughout the project lifecycle, enabling early identification of potential risks, the design of appropriate mitigation measures, and the monitoring of impacts. This proactive mechanism guarantees that the project not only complies with the AF's ESP and Gender Policy, but also strengthens Chad's own environmental and social governance frameworks, thereby contributing to long-term sustainability and resilience of oasis communities.

Unidentified Sub-Project (USP)

Compliance with AF Policies and OSS ESP safeguards

264. The Chad Oasis Project has been designed in full alignment with the Adaptation Fund's Environmental and Social Policy (ESP) and the Adaptation Fund Gender Policy (2022 update). All activities, including those that are yet to be fully defined at this stage, will undergo systematic screening against the 15 ESP principles, ensuring that potential risks related to biodiversity, IPLCs, land and water resources, public health, gender equality, and cultural heritage are identified, avoided, or effectively

mitigated. The project is also committed to mainstreaming gender, recognizing women's rights as fundamental human rights, and ensuring their equitable participation and access to project benefits.

265. In addition, the project will apply the OSS safeguard system, which is modelled on the IFC Performance Standards on Environmental and Social Sustainability. This framework ensures a continuous process of risk identification, assessment, management, and monitoring across all activities. Through the OSS system, all interventions will be categorized (low, moderate, or high risk), and only those that fall within the **Category B** threshold, small-scale, site-specific impacts that are reversible and manageable will be implemented. Any Unidentified Sub-Projects (USPs) will be subject to the same safeguard rigor as fully defined activities, ensuring that no intervention proceeds without compliance with AF and OSS standards.

266. No USP will move forward until it has undergone this screening and approval process, ensuring that safeguards apply equally to USPs as to pre-identified activities.

Unidentified Sub-Projects (USPs) in the Chad Project

267. The Chad Oasis Project includes activities for which the precise scope, location, or technical design cannot be finalized until after project inception. These are referred to as Unidentified Sub-Projects (USPs). For this project, USPs are most likely to arise under:

- Component 1 (Water Management): boreholes, solar-powered pumps, micro-dams, irrigation schemes, and water harvesting structures.
- Component 2 (Sustainable Land Management and Livelihoods): dune fixation, reforestation, agroforestry, pasture rehabilitation, and fodder bank establishment.
- Component 2.3 (Income-Generating Activities): decentralized value chains such as camel milk processing, date and gum Arabic transformation, and energy-efficient cookstove enterprises.

268. These interventions are crucial for enhancing the resilience of the oasis ecosystems in Borkou, Ennedi Ouest, and Wadi Fira, but they require further technical, environmental, social, and gender assessments before implementation.

269. In line with the AF's 2019 guidance on USPs (Decision B.39/52), the project will apply a stepwise protocol. During inception, feasibility studies, baseline surveys, and participatory consultations will provide the technical details and siting information necessary to operationalize the USP approach. For example, Activity 2.1.2.2 on water harvesting and recharge structures will be implemented early on and will help refine the standards and modalities for subsequent USP activities.

270. Once detailed designs are available, the National Executing Entity (NEE – MEFSD and UFLCDS) will conduct site-specific environmental, social, and gender assessments, including Environmental and Social Impact Assessments (ESIAs) where required under national law, with OSS as the Regional Implementing Entity (RIE) providing technical oversight and final approval. The costs of environmental, social, and gender assessments for USPs will be embedded within the budget lines of their respective activities, ensuring that safeguards are treated as integral elements of project planning and execution rather than add-ons. Institutional responsibilities for USPs are clearly defined:

- The NEE will prepare safeguard documentation, facilitate participatory consultations, and implement mitigation measures.
- OSS (RIE) will review and approve USP safeguards to ensure compliance with AF and OSS policies.
- Local communities and authorities will actively participate in the identification, validation, and monitoring of USP activities, ensuring ownership and accountability.

271. To ensure that all Unidentified Sub-Projects (USPs) under the Chad Oasis Project comply fully with the Adaptation Fund Environmental and Social Policy (ESP), the Adaptation Fund Gender Policy (GP), and OSS safeguard procedures, the following stepwise process will be applied:

Table 15: Operational Procedure for Unidentified Sub-Projects (USPs)

Step	Description	Key Activities	Responsible Parties	Expected Outputs
1. Identification and Initial Scoping	Define USPs during inception based on community needs and feasibility studies.	- Conduct baseline surveys and participatory workshops - Engage women, youth, and traditional leaders in prioritization - Identify potential sites and intervention types	NEE (MEFSD, UFLCDS), Local Authorities, Communities	List of potential USPs with objectives, sites, and beneficiary groups
2. Preliminary Risk Screening	Screen each USP against AF ESP and Gender Policy.	- Apply OSS safeguard tools - Categorize as Low (C), Moderate (B), or High (A)- Exclude Category A	NEE (MEFSD), OSS	Risk classification of each USP
3. Detailed ESP, and GAAP Assessment	Prepare ESMPs or ESIAs for Category B USPs.	- Develop site-specific ESMPs - Conduct ESIA where required by law	NEE (MEFSD, UFLCDS), OSS, Consultants	Approved ESMPs/ESIAs with gender action plans

		- Carry out gender and social inclusion analysis		
4. Validation and Approval	Validate safeguards documentation before implementation.	- Organize community consultations- Review safeguard documentation - Final approval by OSS as RIE	NEE (MEFSD, UFLCDS), Communities, OSS	Endorsed safeguards documentation for each USP
5. Implementation with Safeguard Integration	Integrate safeguards into contracts and activities.	- Enforce water and land-use limits - Use native species only - Apply FPIC processes - Ensure occupational health and safety - Enforce women/youth participation quotas	NEE, Local Authorities, Contractors, Cooperatives	USPs implemented with safeguard and gender measures embedded
6. Monitoring, Reporting, and Adaptive Management	Track compliance and adapt interventions as needed.	- Monitor safeguard indicators - Conduct site visits and supervision - Submit annual safeguard compliance reports - Operate accessible GRM	NEE, OSS, Local Committees	Safeguard compliance reports, grievance records, adaptive management actions

Project Grievance Mechanism

272. The Chad Oasis Project will utilize the existing OSS grievance mechanism, while also establishing accessible channels at the national and community levels in Chad to allow affected populations to raise concerns regarding project activities that may not comply with environmental, social, or gender safeguards.

273. The OSS grievance mechanism is an independent, transparent process that enables individuals, groups, or institutions affected by projects financed or implemented by OSS to submit complaints. The mechanism is publicly available through the OSS website and guidelines and is fully aligned with the Adaptation Fund's Environmental and Social Policy (ESP), Gender Policy, and grievance procedures. It ensures that all grievances, including those related to Unidentified Sub-Projects (USPs), are addressed systematically and fairly.

274. The grievance mechanism's primary objective is to create a constructive dialogue between affected persons and project implementers, ensuring that complaints are resolved in a timely manner without attributing blame. It emphasizes corrective actions, transparency, and continuous engagement.

275. At the OSS (RIE) level: the grievance mechanism is coordinated by the OSS Environmental and Social Committee (OESC). Communities and stakeholders in Chad can submit complaints to OSS via email, postal mail, fax, or phone. If complainants are unsatisfied with the resolution, they may also escalate the matter to the Adaptation Fund's Ad hoc Complaint Handling Mechanism (ACHM).

276. At the national/project level: the National Executing Entity (NEE – MEFSD and UFLCDS) serves as the first point of contact for complaints. The National Project Management Unit (NPMU), supported by OSS, will ensure complaints are assessed and addressed promptly. If a complaint cannot be resolved at the project level, it will be referred to OSS for further handling. Awareness and sensitization campaigns will be conducted during project inception workshops and training sessions to ensure that communities are informed of their rights and the grievance channels available. Contact information and procedures are published on the websites of OSS, and distributed through brochures, posters, and community meetings.

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

277. Complaint submission and registration: Complaints can be submitted through multiple accessible channels, including telephone hotlines, WhatsApp, email, community complaint boxes, project and OSS websites, or directly to local authorities. This ensures accessibility even in remote oasis regions. Upon receipt, the NEE will register the complaint in a traceable logbook/database and classify it as either:

a. Non-sensitive complaints: relating to project operations, delivery methods, or implementation delays.
b. Sensitive complaints: involving issues such as corruption, discrimination, gender-based violence, harassment, or abuse of power.

278. Response and processing: A formal acknowledgment will be provided within seven (7) days of receipt. For valid complaints, two pathways exist:
   a. Direct resolution through corrective actions (e.g., adjusting implementation methods, addressing delays).
   b. Review and investigation, which may include audits, community hearings, or third-party expert assessments, particularly for sensitive complaints.
279. Appeal and resolution: If a complainant is not satisfied with the first response, an appeal process will be available at the project level. Complaints unresolved locally will be elevated to OSS for independent review. A final response and resolution will be provided in writing, with clear actions and timelines.
280. Protection and safeguards: All complaints will be treated with confidentiality, and complainants will be protected from retaliation. Sensitive complaints (e.g., sexual exploitation and abuse, harassment) will be managed according to survivor-cantered protocols and referred to specialized national services if necessary.
281. The diagram and table 16 below illustrates the grievance handling process, showing the cycle from complaint reception, classification, and investigation to resolution and appeal. It emphasizes accessibility, accountability, and responsiveness at all levels from community to national and regional oversight.

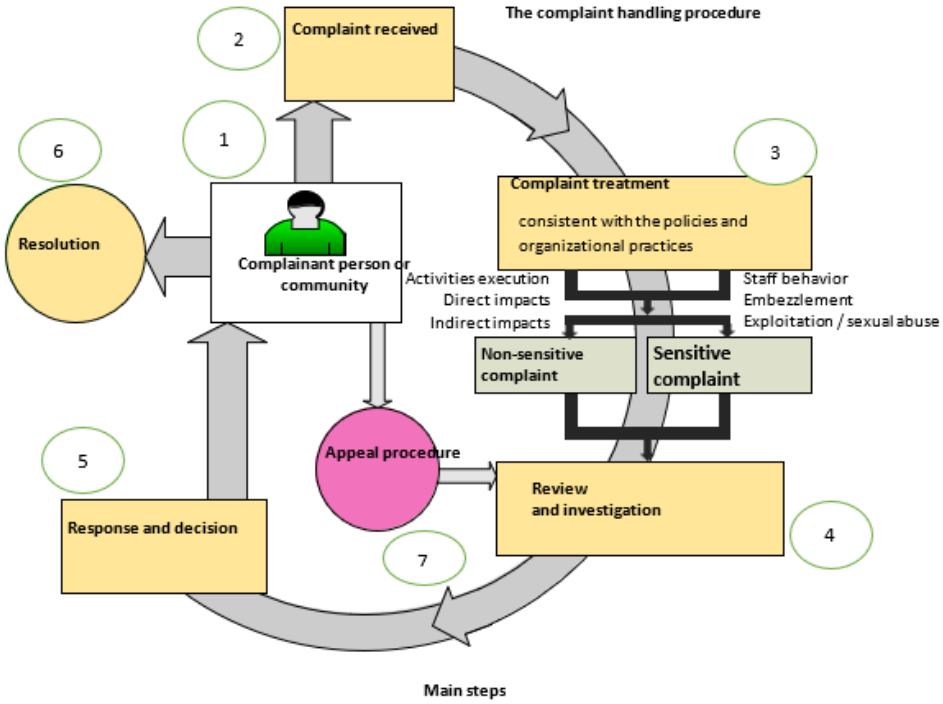


Table 16: Grievance Mechanism Operational Workflow

Step	Action / Process	Responsible Actor(s)	Timeline	Tools & Communication Channels	Outputs / Records
1. Awareness & Access	Disseminate information about the grievance mechanism at inception workshops, training sessions, and community sensitization campaigns. Publish guidelines on OSS & NEE websites.	NEE (MEFSD, UFLCDS), OSS	Project inception & ongoing	Posters, brochures, OSS/NEE websites, community radio, local leaders	Awareness campaign reports
2. Complaint Submission	Complaints lodged by affected persons or groups.	Community members, CBOs, local leaders	Any time	Hotline, WhatsApp, SMS, email, project/OSS website, local complaint boxes, meetings	Complaint record (verbal or written)
3. Receipt & Registration	Complaint logged, assigned ID, and classified (sensitive or non-sensitive).	NEE / NPMU	48 hrs (log)	Complaint database, registry	Traceable complaint record

4.Acknowledgment	Acknowledgement sent to complainant confirming receipt and next steps.	NEE / NPMU	7 days	Letter, email, SMS, phone call	Acknowledgement note
5. Review & Eligibility Check	Complaint assessed to confirm relevance and eligibility.	NEE / NPMU with OSS oversight	14 days	Review meeting, classification protocol	Eligibility assessment note
6. Resolution Pathways	a) **Direct response** for non-sensitive complaints (e.g., project delays, methods).				
	b) **Investigation / audit** for sensitive complaints (e.g., corruption, harassment).	NEE / NPMU (non-sensitive); OSS OESC (sensitive)	30 days	Consultations, field visits, audits, hearings	Corrective action plan or investigation report
7. Response to Complainant	Written/verbal response provided, outlining actions or resolutions.	NEE / OSS depending on case	30–45 days	Letter, email, community meeting, phone	Formal response
8. Appeal Process	If complainant unsatisfied, escalate to OSS OESC or Adaptation Fund ACHM.	OSS OESC; AF ACHM	Case-specific	OSS grievance contact; AF ACHM	Appeal file
9. Monitoring & Closure	Track implementation of resolution and maintain records in M&E system.	NEE / OSS	Continuous	Monitoring reports, follow-ups	

D. Monitoring and evaluation arrangements

282. The CHAD Oasis Project will be guided by a structured and responsive Monitoring and Evaluation (M&E) Framework that ensures systematic tracking of project implementation and results, while adhering to the requirements of the Adaptation Fund's Results-Based Management (RBM) system, including its core indicators, Environmental and Social Policy (ESP), and Gender Policy. The framework will serve as a critical tool for assessing progress toward project objectives, facilitating adaptive management, and ensuring transparency and accountability across all levels of implementation.

283. The M&E framework will be results-oriented and structured around the project's logical results chain, covering inputs, activities, outputs, outcomes, and impact. It will establish clear performance indicators, baselines, targets, data sources, and reporting responsibilities. The framework will integrate Adaptation Fund core indicators such as the number of direct beneficiaries, area of natural assets made more resilient, number of strengthened adaptation assets, and institutional systems improved for adaptation. Indicators will be disaggregated by gender and socio-economic vulnerability, ensuring that equity and inclusion are embedded in project monitoring.

Table 17: M&E plan and budget breakdown

Task	**Responsible**	**Estimated Budget (USD)**	**Timeline**															
			Yr1				Yr2				Yr3				Yr4			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Inception Workshop	NEE & IE	20,000																
Assessments (Baseline CNA, KAP…)*	NEE & IE	90,000																
Design of Project M&E System and Database*	NEE	20,000																
Quarterly Field Monitoring Visits & Community Reports*	NEE & Community Focal Points	65,000																
Annual Independent supervision missions*	IE	60,000																
Monthly & Quarterly Monitoring Reports*	NEE	35,000																
Annual Project Performance Reports (PPRs)	NEE/ IE	25,000																

Project Steering Committee (PSC) meetings	NEE/ IE	35,000		■		■	■			■	■			■	■			■
Mid-Term Review (MTR)*	IE – External Evaluator	40,000								■	■							
Final Evaluation & Completion Report*	IE – External Evaluator	50,000																■
Project Closure & Field Verification Visits*	IE / NEE	20,000																■
Yearly Project Audit	IE – External Auditor	40,000				■				■				■				■
Knowledge Management & Learning Events	NEE / IE	40,000		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Total		**500,000**																

** includes budgets for E&S committee operations, ESMP, GAAP and GRM monitoring of activities*

284. At the operational level, the framework will be implemented through a mix of participatory tools, field-based verification, digital data management systems, and periodic reviews as presented below:

285. *Inception Phase Activities:* The M&E system will be initiated during the Inception Phase, within the first month of implementation. A National Inception Workshop will be organized by OSS in partnership with the Ministry of Environment and the National Executing Entity, convening project stakeholders, technical partners, and community representatives. This workshop will establish clear implementation protocols, finalize inter-institutional roles, and validate the overall execution strategy. During this phase, a 12-month operational plan will be developed, covering early-stage activities such as the baseline survey, capacity needs assessment, and the Knowledge, Attitudes, and Practices (KAP) survey. These initial assessments will inform the development and customization of the project's M&E tools and indicators.

286. *Baseline Study and Assessments:* A comprehensive baseline study will be conducted during the first quarter of implementation to establish benchmarks for all key performance indicators outlined in the project results framework. This will include but not limited to a capacity needs assessment to identify institutional and community-level gaps, and a KAP survey to better understand perceptions, behaviours, and practices related to climate resilience and sustainable land use in the target oasis areas of Borkou, Ennedi Ouest, and Wadi Fira. These studies will generate the evidence base for tracking change and assessing project effectiveness over time.

287. *Routine Monitoring and Coordination:* Project implementation will be supported by regular monthly coordination meetings between the National Project Management Unit (NPMU) and the national executing entity to review progress, resolve implementation issues, and align field activities with overall objectives. Quarterly field missions by OSS and national partners will verify delivery of activities, assess community feedback, and ensure alignment with social and environmental safeguards.

288. *Quarterly and Annual Reporting:* The NPMU will produce Quarterly Progress Reports (QPRs) detailing achievements, implementation challenges, disbursements, and field-level observations. These reports will be shared with stakeholders, including OSS, national authorities, and the Adaptation Fund, to promote transparency and performance tracking. In addition, Annual Project Performance Reports (PPRs) will be prepared and submitted to the Adaptation Fund. These reports will assess progress against AF core indicators and highlight contributions to gender equality, environmental sustainability, and knowledge dissemination.

289. *Mid-Term and Final Evaluation:* An independent Mid-Term Evaluation (MTE) will be conducted by the end of the second year of implementation. The evaluation will review the relevance, efficiency, and effectiveness of project interventions, identify lessons learned, and recommend adjustments to improve results delivery. At the end of the project, a comprehensive Final Evaluation will be conducted to assess overall project performance, achievement of results, sustainability of outcomes, and the replicability of successful practices. Both evaluations will be gender-sensitive and participatory in nature, engaging national and local stakeholders throughout the process.

290. *Field Monitoring and Community Engagement:* Regular field visits will be undertaken by the NPMU, OSS, and implementing partners to monitor on-the-ground progress, verify beneficiary feedback, and ensure alignment with workplans. These missions will be complemented by Focus Group Discussions (FGDs) and in-depth interviews with local stakeholders, including traditional leaders, women's groups, and youth associations. These qualitative tools will provide rich insights into the lived

experiences and adaptive behaviours of communities, as well as help identify implementation bottlenecks or unintended impacts.

291. *Gender-Inclusive Monitoring:* All M&E activities will prioritize gender inclusivity. Data will be sex- and age-disaggregated, and female monitors will be mobilized where needed to ensure women's voices are heard, especially in more culturally sensitive areas. Community consultations and evaluations will be designed to ensure that women and men are equally represented, with a particular focus on understanding gendered barriers to participation, access to resources, and leadership in adaptation processes.

292. *Safeguards Monitoring and USPs:* The M&E Framework will integrate a safeguards monitoring system that screens all activities, especially Unidentified Sub-Projects (USPs) under Outcome 2, against the 15 Environmental and Social Principles of the Adaptation Fund. Site-specific environmental and social impact assessments will be conducted once the technical scope and geographic location of USPs are known. These assessments will ensure compliance with national environmental legislation, OSS's safeguards framework, and AF policies. Risk mitigation measures will be monitored regularly and reflected in safeguard audit reports and annual performance reviews.

293. *Learning, Adaptation, and Knowledge Sharing:* Monitoring findings will inform the project's learning and knowledge strategy. Lessons learned, case studies, and policy briefs will be developed and shared through OSS regional platforms, stakeholder exchanges, and Adaptation Fund learning networks. Results will also be integrated into future project design and national adaptation planning processes.

294. *Institutional Roles and M&E Budget:* OSS will oversee the implementation of the M&E framework, provide technical backstopping, and ensure quality control of reporting. The NPMU will include a dedicated M&E Officer responsible for operational coordination, indicator tracking, and learning synthesis. National and local executing partners will support data collection and validation at the community level.

295. The framework will also include mechanisms for safeguards monitoring. All project activities, especially those classified as Unidentified Sub-Projects (USPs) under Components 2.1 and 2.2, will be screened against the 15 Environmental and Social Principles of the Adaptation Fund. Site-specific environmental, social, and gender assessments will be undertaken as soon as technical designs and locations are determined, in compliance with national environmental laws and OSS's Environmental and Social policy. Regular safeguard audits will ensure risks are mitigated and managed appropriately, with findings incorporated into annual performance reports.

296. The institutional arrangement for implementing the M&E framework will be led by the OSS as the Regional Implementing Entity, responsible for ensuring quality assurance, strategic oversight, and compliance with AF reporting standards. The National Project Management Unit (NPMU) will include a dedicated M&E Officer responsible for the operationalization of the framework, while national and local executing entities will be responsible for field-level data collection, beneficiary feedback, and safeguard tracking. The framework will also integrate tools for documenting and disseminating lessons learned, including knowledge briefs, case studies, and policy recommendations. These products will be shared across stakeholder platforms and contribute to regional learning under OSS's knowledge management strategy.

ESMP monitoring

297. The Environmental and Social Management Plan (ESMP) for the CHAD Oasis Project establishes a comprehensive monitoring framework designed to track the effectiveness of environmental and social mitigation and enhancement measures throughout the project's implementation. The monitoring program defines specific indicators, frequency of data collection, responsibilities, and reporting channels to ensure compliance with the AF's ESP and Gender Policy.

298. *Integration of Key Safeguard Elements:* The ESMP monitoring system integrates the project's cross-cutting priorities, including gender equality, stakeholder participation, and ecosystem-based adaptation. Monitoring and Evaluation (M&E) mechanisms will be aligned with the project's results framework and will include specific environmental and social performance indicators. The system will follow a participatory and inclusive approach, ensuring that local communities particularly women, youth, and vulnerable groups, actively contribute to monitoring, feedback, and corrective actions.

299. *Implementing Entity – Sahara and Sahel Observatory (OSS):* As the Regional Implementing Entity (RIE), OSS will have overall oversight responsibility for environmental and social monitoring in accordance with the Adaptation Fund's ESP. OSS will ensure that identified environmental and social risks are tracked, mitigation measures are implemented effectively, and any emerging issues are promptly addressed. The OSS Environmental and Social Committee (ESCO) will supervise ESMP monitoring, coordinate with the National Executing Entity (NEE), and ensure that monitoring results are integrated into semi-annual and annual progress reports submitted to the Adaptation Fund. OSS will also conduct regular supervision missions to verify compliance with safeguards, ensure adequate allocation of resources to mitigation measures, and review adherence to grievance redress procedures.

300. *Grievance Redress and Compliance:* The OSS ESCO will oversee the operation of the project-level Grievance Redress Mechanism (GRM). All grievances or complaints arising from project implementation will be recorded, reviewed, and addressed in a transparent and timely manner. Annual reports to the Adaptation Fund will summarize the nature and status of grievances received, measures taken to address them, and outcomes achieved. Mid-term and final evaluation reports will

include a dedicated section assessing ESMP implementation effectiveness, the functioning of the GRM, and lessons learned for future safeguard management.

301. *National Executing Entity – Ministry of Environment, Fisheries and Sustainable Development (MEPDD):* The MEPDD, as the NEE, will be responsible for the day-to-day monitoring of ESMP implementation at the national and regional levels. This includes ensuring that all activities comply with national environmental and social standards, conducting quarterly field reviews, and submitting ESMP progress reports to OSS. The NEE will also ensure that all implementing partners, such as the UWFADS, adhere to the 15 principles of the Adaptation Fund's ESP and report any incidents or risks promptly to OSS.

302. *Provincial and Local Partners – UWFADS and Decentralized Technical Services:* UWFADS, in coordination with the provincial directorates of the Ministry of Environment, will support local-level monitoring and community engagement. They will conduct participatory field missions to assess compliance with mitigation measures, document best practices, and identify corrective actions. Quarterly field monitoring visits will be jointly carried out with NEE representatives and OSS supervision missions to ensure consistency and alignment with national environmental and social safeguards. Local stakeholders' feedback will be integrated into ESMP monitoring reports and decision-making.

303. *Project Management Unit (NPMU):* The NPMU, based in N'Djamena, will serve as the operational coordination hub for ESMP monitoring. It will collect, analyse, and consolidate data from provincial offices and community-level reports, maintaining a database of environmental and social indicators. The NPMU will prepare quarterly monitoring reports for submission to the NEE, highlighting progress, challenges, and proposed corrective measures. It will also ensure that ESMP monitoring findings inform adaptive project management and are reflected in the overall M&E framework.

304. *Local Communities:* Community-based monitoring will be a cornerstone of the ESMP. Local communities, including women's groups, youth associations, and traditional leaders, will be trained in environmental and social monitoring techniques and data collection. Their participation will promote ownership, transparency, and accountability in the management of natural resources and project interventions. Regular sensitization sessions will ensure that communities understand project risks, mitigation measures, and grievance redress procedures, empowering them to contribute actively to safeguarding both ecosystems and livelihoods.

The table below outlines the roles and responsibilities for monitoring the ESMP by various actors in the project:

Table 18: Roles and responsibilities in ESMP monitoring and Evaluation

Entity / Actor	Key Responsibilities in ESMP Monitoring & Evaluation
Sahara and Sahel Observatory (OSS) – Regional Implementing Entity (RIE)	• Provide overall oversight of ESMP implementation and compliance with the Adaptation Fund's ESP and Gender Policy. • Lead environmental and social performance monitoring at regional and institutional levels. • Ensure all safeguard indicators are integrated into the project's M&E system. • Review and validate quarterly and annual ESMP monitoring reports submitted by the NEE. • Conduct supervision and verification missions to ensure adherence to mitigation measures and grievance redress procedures. • Prepare consolidated annual ESMP reports and submit them to the Adaptation Fund. • Oversee the functioning of the Environmental and Social Committee (ESCO) responsible for technical backstopping, oversight, and reporting.
Ministry of Environment, Fisheries and Sustainable Development (MEPDD) – National Executing Entity (NEE)	• Coordinate ESMP implementation and monitoring at the national level. • Ensure integration of environmental and social safeguards into all project activities and procurement processes. • Oversee provincial-level reporting and consolidation of monitoring data. • Submit quarterly and annual ESMP reports to OSS. • Ensure compliance with the 15 ESP principles and national environmental regulations. • Facilitate corrective actions and follow-up missions for identified non-compliance cases.
UWFADS and Decentralized Technical Services	• Support the NEE in field-level supervision and local safeguard monitoring. • Conduct participatory monitoring missions and collect site-level data on mitigation measures. • Facilitate stakeholder engagement and capacity building for local partners. • Document community feedback and ensure inclusion in quarterly reports. • Identify and escalate potential environmental or social risks to the NEE for timely action.
National Project Management Unit (NPMU)	• Serve as the operational coordination hub for ESMP monitoring and reporting. • Maintain and update the database of environmental and social performance indicators. • Analyse monitoring data and ensure timely reporting to the NEE. • Coordinate with technical teams and safeguard focal points to ensure consistent data collection. • Integrate ESMP monitoring results into adaptive management decisions and the overall M&E framework.

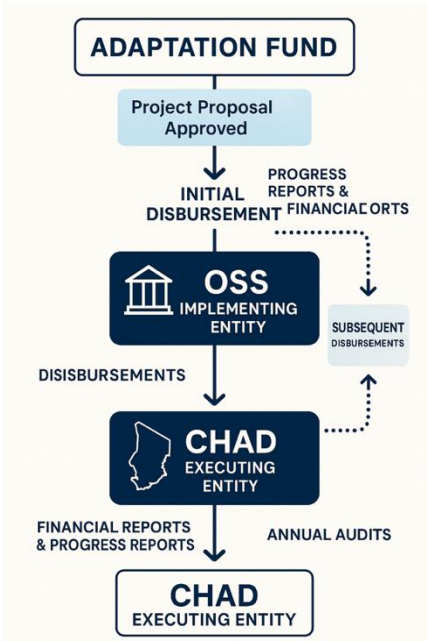
	• Ensure baseline data are established and used to track progress.
Environmental and Social Committee (ESCO) – OSS	• Provide technical guidance on E&S risk management and compliance. • Oversee the functioning of the grievance redress mechanism (GRM). • Ensure consistency in safeguard reporting across all components. • Review and validate corrective measures proposed by implementing partners. • Facilitate internal audits and knowledge sharing on safeguard lessons learned.
Local Communities and Beneficiary Committees (e.g., WUAs, Cooperatives, Women's Groups)	• Participate in participatory environmental and social monitoring at the community level. • Report incidents, grievances, or non-compliance through the established GRM channels. • Contribute local data and traditional knowledge for tracking ecosystem and social changes. • Take part in awareness sessions and capacity building on ESMP principles. • Support the maintenance and protection of project infrastructure and restored ecosystems.
Independent Evaluators / Consultants (as needed)	• Conduct mid-term and final environmental and social evaluations. • Assess the effectiveness of mitigation and enhancement measures. • Verify compliance with the Adaptation Fund's ESP and Gender Policy. • Provide external validation and lessons learned to inform future project design and scaling.

305. The ESMP is fully integrated into the CHAD Oasis Project's implementation framework to ensure that all activities comply with the ESS of both the AF and the OSS. The ESMP provides the operational foundation for monitoring, mitigation, and compliance measures across all components, ensuring the project remains environmentally sound and socially inclusive.

306. While a distinct budget line for ESMP implementation is not established, all related activities are covered under the broader project management and monitoring structure. Specifically, the IE fees estimated at US$ 160,000 and the NEE Project Execution Cost allocated under Monitoring and Evaluation US$ 108,577 to finance ESMP-related actions. These include safeguard monitoring missions, environmental and social compliance assessments, capacity-building on safeguards, and the implementation of mitigation and grievance redress measures. This integrated budgeting approach ensures that environmental and social risk management remains embedded in routine monitoring, reporting, and evaluation processes, promoting efficiency and alignment with AF and OSS fiduciary standards.

Funds flow arrangement

307. *Disbursement from the AF to OSS (IE)*: Upon approval of the CHAD Oasis Project by the Adaptation Fund Board, the initial tranche of funds will be disbursed to the Sahara and Sahel Observatory (OSS) in accordance with the approved disbursement schedule. This schedule will be milestone-based and linked to the implementation plan, reflecting the project's financial needs and cash flow projections. Each disbursement tranche will depend on satisfactory progress reports, evidence of effective fund utilization, and the achievement of key deliverables in line with Adaptation Fund fiduciary and safeguard standards. OSS will manage the funds through a dedicated project account, ensuring full traceability and compliance with its financial management and audit procedures. Quarterly reports on fund utilization and physical progress will be submitted by OSS to the Adaptation Fund, accompanied by supporting documentation. This process guarantees that financial transfers are transparent, justified, and aligned with established milestones.



308. *Disbursement from OSS to the Ministry of Environment, Fisheries and Sustainable Development (NEE):* OSS will transfer funds to the NEE, the Ministry of Environment, Fisheries and Sustainable Development (MEPDD) in tranches aligned with the project's annual work plans and implementation phases. Each transfer will follow the submission of technical and financial progress reports by the NEE, supported by invoices, receipts, and activity records. Before authorizing a new tranches, OSS will verify the achievement of planned milestones, review the quality of implementation, and confirm compliance with procurement and safeguard standards. This structured mechanism ensures that disbursements are performance-based and contingent upon results achieved on the ground. It also strengthens accountability between national partners by linking fund releases to verified outputs and adherence to the project's fiduciary framework.

309. *Financial Reporting and Accountability:* The NPMU, housed within the MEPDD, will maintain an integrated accounting and financial management system consistent with international standards such as IPSAS. It will prepare quarterly, semi-annual, and annual financial reports detailing expenditures by component, activity, and budget line. These reports will include

supporting documentation such as procurement files, receipts, and contracts. OSS will consolidate the NPMU's financial and technical reports and submit verified versions to the AF. OSS bears ultimate fiduciary responsibility for ensuring that all financial transactions are legitimate, that expenditures correspond to approved budget lines, and that financial statements are complete and accurate. Dedicated project bank accounts will be maintained both by OSS and MEPDD to facilitate transparent reconciliation and traceability of all disbursements.

310. *Annual Audits:* Independent annual audits will be carried out by a certified external audit firm accredited under international auditing standards. These audits will review financial transactions, procurement practices, ESMP-related expenditures, and compliance with the Adaptation Fund's fiduciary requirements.

311. The audit reports will include management letters highlighting key observations and recommendations for corrective action. They will be shared with MEPDD, OSS and the AF. The PSC will review the audit findings annually to ensure that any identified weaknesses are promptly addressed and that corrective measures are implemented at all levels of project execution.

CHAD OASIS PROJECT
REPORTING AND COMMUNICATION SCHEDULE

REPORT TYPE	RESPONSIBLE ENTITY	RECIPIENT / AUDIENCE	FREQUENCY / TIMING
INCEPTION REPORT	PMU	OSS	Within 3 months after Inception
QUARTERLY FINANCIAL REPORTS	PMU	MEPDD+ OSS	Every quarter
ESMP & SAFEGUARDS MAN TORING REPORTS	PMU	OSS + AF Secretariat	Semi-annually
ANNUAL PROJECT PERFORMANCE REPORT	OSS	Adaptation Fund	Annual
ANNUAL AUDIT REPORT	External Auditor	OSS + AF MEPDD »	Annual
MID-TERM REVIEW REPORT	Independent Evaluator	OSS, AF, MEPDD	End of Year 2
TERMINAL EVALUATION	Independent Evaluation Team	OSS, AF, MEPDD	End of Year 4
PSC MEETING MINUTES & ACTION PLANS	OSS / PMU	PSC members	Twice per year
KNOWLEDG PRODUCTS AND COMMUNICATION BUTPUTS	PMU / OSS	Public	Semi-annually
FIMAL PROJECT COMPLETION	OSS	Adaptation Fund	Within 8 months after project elesure

BOTTOM-UP (REPORTING) | LATERAL (KNOWLEDGE & VIS/BILITY) | TOP-DOWN (FEEDBACK & GUIDANCE)

312. *Alignment with Institutional and Partner Guidelines:* All financial management, monitoring, and reporting procedures will comply with the regulatory and fiduciary frameworks of the Government of Chad, the OSS, and the AF. This alignment ensures consistency, transparency, and accountability. Specifically, the project will adhere to: the AF's operational and fiduciary standards i.e., ESP, and Gender Policy; OSS's internal financial management and procurement procedures; and National financial regulations and public procurement laws of Chad. By following these frameworks, the CHAD Oasis Project guarantees compliance with both international best practices and national governance systems, enhancing the credibility and sustainability of project operations.

313. *Monitoring and Evaluation (M&E) System Development:* The NEE, supported by OSS, will establish a comprehensive M&E system managed by the NPMU. This system will integrate quantitative and qualitative data from all components, enabling systematic tracking of project performance and results. The M&E framework will include key performance indicators aligned with the project's Results Framework, covering outputs, outcomes, and impacts. It will also monitor gender-disaggregated data, safeguard compliance indicators, and socio-economic benefits. The system will incorporate geospatial monitoring tools (GIS and remote sensing) to assess vegetation cover, land restoration, and water resource trends. A cloud-based data platform will allow provincial focal points and community partners to feed real-time information into a central database managed by OSS. This platform will link with the OSS regional knowledge hub, enabling continuous learning and knowledge sharing across the Sahel region. The M&E framework will also inform the mid-term review and final evaluation conducted by independent experts.

314. *Capacity Building and Institutional Strengthening for M&E and Safeguards:* To ensure the long-term sustainability of monitoring and safeguards functions, the project will prioritize capacity building and institutional strengthening at all levels. The NPMU, provincial technical services, and local stakeholders including the Union of Women for the Fight Against Desertification in the Sahel (UWFADS) will receive tailored training and on-the-job mentoring. Training will cover topics such as M&E methodologies, data collection and validation, environmental and social safeguards, grievance management, gender-responsive evaluation, and digital data management tools. Field teams will also be trained in the use of GIS and mobile data applications for environmental monitoring by OSS technical teams.

315. Periodic workshops and peer-learning sessions will foster horizontal exchange between communities, technical services, and policymakers. These investments will ensure that local actors progressively assume ownership of the M&E and ESMP systems, enabling continuity of results tracking beyond the project's lifetime.

Table 19: CHAD Oasis Project – Reporting and Communication Schedule

Report Type / Communication Output	Purpose / Content	Responsible Entity	Recipient / Audience	Frequency / Timing	Verification & Communication Channels
Inception Report	Confirms project start, institutional setup, first-year work plan, procurement plan, and baseline data.	NPMU / MEPDD	OSS (Implementing Entity)	Within 3 months after project inception	Official signed copy submitted by email; reviewed via inception workshop.
Quarterly Technical Progress Reports (QTPRs)	Summarizes technical progress, activities, challenges, and adaptive measures.	NPMU (consolidating inputs from local partners)	MEPDD, OSS	Every quarter	Online M&E system; discussed in quarterly coordination meetings.
Quarterly Financial Reports (QFRs)	Details expenditures by component, showing variances and justifications.	NPMU (Finance Unit)	MEPDD and OSS Finance Units	Every quarter	Standard AF template; reviewed during OSS–MEPDD joint financial sessions.
ESMP & Safeguards Monitoring Reports	Tracks environmental and social risk management, grievances, and gender indicators.	NPMU / MEPDD Safeguard Officer	OSS E&S Committee and AF Secretariat	Semi-annual	AF ESMP monitoring format; verified through joint field missions.
Annual Project Performance Report (PPR)	Summarizes annual technical, financial, and safeguards performance.	OSS (consolidating from NEE reports)	Adaptation Fund	Annually	Submitted via AF online portal; validated by Project Steering Committee.
Annual Audit Report	Provides independent financial audit and management letter.	External Auditor (commissioned by OSS)	OSS and Adaptation Fund	Annually (Q1 following fiscal year)	Certified audit report; discussed in PSC meeting.
Mid-Term Review (MTR) Report	Evaluates implementation efficiency, results, and safeguard performance.	Independent Evaluator (jointly by OSS & MEPDD)	OSS, AF, MEPDD	End of Year 2	Field missions, stakeholder interviews, validated by PSC workshop.
Terminal Evaluation (TE)	Assesses project impact, sustainability, and lessons learned.	Independent Evaluation Team	OSS, AF, MEPDD	End of Year 4	Dissemination and validation through national learning workshop.
PSC Meeting Minutes & Action Plans	Records strategic and operational decisions and follow-ups.	OSS Secretariat / NPMU	PSC Members (OSS, MEPDD, AF focal point, local reps)	Twice per year	Circulated by email and uploaded to OSS collaborative workspace.
Knowledge Products and Communication Outputs	Produces policy briefs, case studies, newsletters, and success stories.	NPMU Communication Unit / OSS KM Team	Public, donors, national stakeholders	Semi-annual and as needed	OSS website, social media, newsletters, national awareness events.

E. 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 vulnerable communities in Borkou, West Ennedi and Wadi-Fira by building adaptive capacity to recurrent drought risks and promoting the sustainable management of oases and associated ecosystems.	**Number of vulnerable community members in Chad Oases with increased capacity to implement adaptation projects that address risks to extreme environmental hazards.**	**40%**	**55%**	**70%**	**M&E reports.**	**REE and NEE**	**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: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities							
Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced.	Percentage of women actively participating in community consultation processes.	0 (for all)	At least 25% of the community members engaged are women.	At least 40% of the community members engaged are women.	M&E reports.	REE and NEE	**Risks:** • Resistance to change or lack of sustained buy-in from key government institutions after project completion, leading to the non-implementation of updated plans and policies. • Political instability or administrative reorganization disrupts the institutional partnerships and momentum built by the project. • Competition or conflict between different ministries (e.g., Environment, Agriculture, Water) over mandates and resources hinders the integrated application of the new frameworks. **Assumptions:** • National and local institutions remain committed to the principles of integrated water and oasis resource management and will provide the necessary support for implementation. • The data and plans generated are perceived as credible and useful by decision-makers, providing a strong incentive for their continued use. • Local communities and traditional leaders continue to engage with and advocate for the formalized frameworks post-project.
	Percentage of women and youth actively participating in multi-stakeholder dialogue sessions.		At least 30 % multi-stakeholder dialogue participants are women and youth	At least 50 % multi-stakeholder dialogue participants are women and youth			
	Percentage of increase in key institutions reporting access to & using project-upgraded data systems for decision-making		At least 20 % of key institutions reporting access to & using project-upgraded data systems for decision-making	At least 60 % of key institutions reporting access to & using project-upgraded data systems for decision-making			
	Number of revised local/national policies, regulations, or management plans formally integrating project-generated data or CCAP priorities		-	At least 02 revised local/national policies, regulations, or management plans formally integrating project-generated data or CCAP priorities			
	Percentage of target communes implementing at least 2 prioritized adaptation measures from their validated CCAP		03 communes implementing at least 2 prioritized adaptation measures from their validated CCAP	03 communes implementing at least 2 prioritized adaptation measures from their validated CCAP			
	Percentage of environmental monitoring data reports generated using the new systems that incorporate community-collected data/traditional knowledge		At least 30 % of environmental monitoring data reports generated using the new systems that incorporate community-collected data/traditional knowledge	At least 70 % of environmental monitoring data reports generated using the new systems that incorporate community-collected data/traditional knowledge			
Output 1.1.1: Information, legal and institutional frameworks for sustainable management of oasis ecosystems in the project area, are upgraded.	Number of assessment reports developed	0 (for all)	01 assessment report	01 assessment report	Assessment report, training and capacity-building plan maps, Stakeholders engagement minutes and photos	REE and NEE	**Risks:** • Inaccurate or incomplete data from assessments (e.g., water resources, degradation) leads to flawed planning and ineffective managements plans. • Logistical challenges (e.g., remote locations, customs clearance) cause significant delays in procuring and installing monitoring equipment.
	Number of comprehensive climate change adaptation action plan outlining prioritized adaptation measures developed		-	01 comprehensive CCAPs developed	CCAPs reports, consultations reports		
	Number of community specific climate change adaptation action plan developed		03 CCAP developed	03 CCAPs developed			

	Number of climate change adaptation action plan validation workshops held with key stakeholders		-	02 validation workshops held	Workshop reports, list of participants, photos		• Conflicting interests among stakeholders (e.g., farmers vs. pastoralists) during consultations prevent consensus on key elements of the management plans. **Assumptions:** • Stakeholders, including communities and government bodies, are willing to share accurate information and participate openly in the planning process. • Adequate technical expertise is available locally or nationally to conduct high-quality assessments and install complex monitoring systems. • There is sufficient budget and logistical capacity to reach and engage remote communities in the participatory processes.
	Number of participatory workshops held with communities and relevant stakeholders		06 workshops held	06 workshops held			
	Number of insitu monitoring systems and equipment procured, installed, and operational.		06 insitu monitoring systems and equipment procured, installed, and operational.	06 insitu monitoring systems and equipment procured, installed, and operational.	Installation report, data collection database, before and after pictures		
	Number of exsitu monitoring systems and equipment procured, installed, and operational.		06 exsitu monitoring systems and equipment procured, installed, and operational.	06 exsitu monitoring systems and equipment procured, installed, and operational.			
	Number of software and data management systems deployed.		01 software and data management systems deployed	02 software and data management systems deployed			
	Number of technical staff and community members trained in the use and maintenance of monitoring systems.		at least 12 (06 women) technical staff and community members trained	at least 36 (18 women) technical staff and community members trained	Training records		
	Number of MoUs or formal agreements established to clarify institutional roles and ensure effective management and operation of environmental monitoring systems		03 MoUs and/or agreements signed	03 MoUs and/or agreements signed	Signed MoUs and agreements		
	Number of multi-stakeholder dialogue sessions conducted (workshops, roundtables, or consultation meetings..)		04 multi-stakeholder dialogue sessions conducted	08 multi-stakeholder dialogue sessions conducted	Workshop reports, list of participants, photos		
Component 2: Implementation of concrete adaptation measures to improve the resilience of oasis ecosystems and local communities							
Outcome 2.1 Water availability in the oasis is enhanced.	Percentage of women and youth actively participating in stakeholders consultations and validation workshops	0 (for all)	At least 20 % stakeholder consultations participants are women and youth	At least 40 % stakeholder consultations participants are women and youth	M&E reports.	REE and NEE	**Risks**: • More severe than anticipated drought or aquifer depletion undermines the effectiveness of water-saving infrastructure and recharge structures. • Social conflicts arise over the allocation and use of newly available water from improved sources, particularly between different ethnic groups or livelihood systems (agro-pastoralism). • High maintenance costs or a lack of spare parts lead to the rapid deterioration of solar pumps and other water infrastructure after project support ends. **Assumptions**: • Community-based management structures (WUAs, Water Committees) have the capacity and legitimacy to manage and maintain water infrastructure sustainably. • Users (farmers, pastoralists, households) are willing to adopt and pay for sustainable water management practices and technologies introduced by the project. • Climate patterns remain within the projected range of variability for which the infrastructure and plans were designed.
	Percentage of improvement of potable water quality in target area		At least 35 % increase in improvement of potable water quality	At least 75 % increase in improvement of potable water quality			
Output 2.1.1: Water availability for the development of agro-pastoral activities in the intervention sites is promoted.	Number of surface and ground water assessment reports developed.	0 (for all)	01 assessment report	01 assessment report	Approved assessment report	REE and NEE	**Risks:** • Technical failures or poor siting of solar-powered water infrastructure and recharge structures result in underperformance or total failure.
	Number of stakeholders consultations (including local authorities, water user associations and community representatives..) on traditional water management practices and local needs.		03 stakeholders consultations	03 stakeholders consultations	Attendance lists, workshop minutes		

	Number of integrated water resource management (IWRM) plans developed and formally adopted.		03 IWRM developed	03 IWRM developed	Approved report		• Lack of skilled local technicians for the operation and repair of solar systems and monitoring equipment leads to prolonged downtime. • Farmers and pastoralists revert to traditional, less efficient water use methods if the new practices are perceived as too complex or not economically beneficial in the short term. **Assumptions:** • The hydro-geological assessments accurately identify viable sites for water infrastructure and groundwater recharge. • Local partners have the capacity to oversee technically sound construction and installation of infrastructure. • Training and capacity-building are sufficient to ensure local ownership and technical know-how for O&M.
	Number of solar-powered water infrastructures installed and fully operational.		02 solar-powered water infrastructures installed and fully operational.	06 solar-powered water infrastructures installed and fully operational.	Installation reports, operational data and Field verification		
	Number of hectares under improved irrigation practices.		100 ha of land under improved irrigation practices.	250 ha of land under improved irrigation practices	Field verification, project records		
	Number of functional WUAs trained and equipped for O&M.		-	06 WUAs trained and equipped for O&M	Training reports, O&M toolkits		
	Number of functional water resource (groundwater and surface water) monitoring system established		-	01 monitoring system established	Field verification, project records, data logs, database records		
	Number of farmers/pastoralists trained in sustainable water use.		-	1 000 (400 women) farmers/pastoralists trained in sustainable water use.	Training attendance records and training materials		
Output 2.1.2: Access to potable water for target communities is enhanced.	Number of sustainable potable water solutions assessed and identified for targeted areas.	0 (for all)	At least 02 partnerships potable water solutions assessed and identified	At least 02 partnerships potable water solutions assessed and identified	Assessment report	REE and NEE	**Risks:** • Established water points (wells, boreholes) become contaminated or saline over time, reversing health and access gains. • Community Water Committees lack the financial management skills to collect fees and manage funds for long-term operation and maintenance. • Cultural preferences or misconceptions lead to low adoption of new potable water solutions (e.g., distrust of treated water). **Assumptions:** • Communities prioritize access to clean water and are willing to contribute time and/or money to sustain the water points. • Local government authorities provide ongoing technical support and oversight to the Water Committees. • Identified water sources are sustainable and not prone to rapid depletion or contamination.
	Number of woman and youth adopting innovative potable water solutions in target areas.		At least 2 000 woman and youth adopting innovative potable water solutions	At least 4 000 woman and youth adopting innovative potable water solutions	Users testimony and feedback, photos		
	Number of campaigns to promote innovative potable water solutions in target communities.		20 campaigns to promote innovative potable water solutions	50 campaigns to promote innovative potable water solutions	Campaigns reports		
	Number of potable water facilities and infrastructure units (built, rehabilitated and/or equipped) made operational in targeted areas.		02 potable water facilities and infrastructure units operational	06 potable water facilities and infrastructure units operational	Field verification, activity reports		
	Number of water resource management system report developed		01 management report developed	01 management report developed	Management report		
	Number of local water committees created and/or reinforced		06 water committees created and/or reinforced	06 water committees created and/or reinforced	Establishment records and activity reports		
	Number of awareness raising campaigns on responsible water use		20 awareness raising campaigns	60 awareness raising campaigns	Campaigns reports		
	Number of community members trained on responsible water use		500 (200 women) community members trained on responsible water use	1000 (400 women) community members trained on responsible water use	Training reports and attendance sheets		
Outcome 2.2: Sustainable Land Management Practices are promoted.	Percentage of trained farmers actively adopting at least 3 SLM Technologies	0 (for all)	At least 20% of farming households adopting at least 01 SLM technologies	At least 70% trained farmers actively adopting at least 03 SLM technologies	M&E reports.	REE and NEE	**Risks:** • Extreme climate events (e.g., severe sandstorms, flash floods) destroy young green belts, demonstration plots, and other SLM infrastructure, demoralizing communities. • Persistent high pressure from livestock grazing prevents the natural regeneration of vegetation and the establishment of green belts. • Land tenure insecurity discourages farmers from investing labour and

	Percentage of increase in vegetative cover in targeted intervention areas.		-	At least 50% reduction in visibly degraded area within intervention zones			resources in long-term land improvement practices like agroforestry. **Assumptions:** • Farmers and pastoralists see tangible benefits (e.g., increased yields, fodder availability) from adopting SLM practices within a reasonable timeframe. • Traditional land management authorities support and enforce the new SLM rules and boundaries (e.g., for protected areas, grazing schedules). • There is a strong link between project activities and clear economic incentives for communities to preserve the rehabilitated land.
	Percentage of participating farmers reporting increased resilience to climate shocks.		At least 30% of farmers reporting increased resilience to climate shocks.	At least 70% of farmers reporting increased resilience to climate shocks.			
Output 2.2.1: Land and dune management systems are reinforced.	Number of demonstration plots established on improved fodder production techniques	0 (for all)	06 demonstration plots established	12 demonstration plots established	Activity reports, technical plot sheets, before and after photos	REE and NEE	**Risks:** • Insufficient community participation in the maintenance of mechanical and biological dune stabilization structures leads to their rapid degradation. • Use of inappropriate tree or grass species for green belts results in low survival rates and failure to stabilize sand dunes. • Competition for biomass (e.g., for fodder or fuel) limits the availability of materials needed for composting and mulching. **Assumptions:** • Suitable, drought-resistant species for dune fixation are available and can be propagated in sufficient quantities. • Communities are available and willing to contribute labour for the establishment and maintenance of green belts and other structures. • Demonstrated techniques are compatible with local farming systems and do not require unrealistic labour or resource inputs.
	Number of training sessions conducted on integrated fodder and livestock management		05 training sessions	10 trainings sessions	Training reports, signed attendance sheets, training materials		
	Number of agricultural extension services and farmer groups engaged in implementation		15 extension services and farmer groups trained	40 extension services and farmer groups trained	Engagement reports, technical meeting minutes		
	Number of sites selected for the implementation of physical and biological sand dune barriers		12 sites selected for physical and biological sand dune barriers	12 sites selected for physical and biological sand dune barriers	Site selection reports, hazard maps, GPS-tagged site profiles		
	Total length (in kilometres) of physical sand dune barriers installed		10 km of mechanical barriers established.	30 km of mechanical barriers established.	Engineering reports, plantation records, field measurement records, georeferenced maps, before and after photos		
	Total length (in kilometres) of biological barriers (green belts) established		20 km of biological green belts established.	80 km of biological green belts established.			
	Total area (in hectares) of land protected or stabilized through dune fixation interventions		150 hectares of agricultural and community land protected.	700 hectares of agricultural and community land protected.			
	Number of farmers trained on sustainable land management and agroforestry practices		200 farmers (50 women) trained in different topics	500 farmers (200 women) trained in different topics	Training materials and reports, signed attendance sheets, capacity-building records		
	Number of community-based composting units established		06 community-based composting units established	12 community-based composting units established	Site verification reports, photos, community management plans		
	Number of innovative water-saving practices adopted by targeted farmers		200 instances of adoption	500 instances of adoption	Adoption surveys, field monitoring visits, farmer self-reporting forms		
	Number of visits conducted to demonstration plots showcasing sustainable land and water management practices		10 visits conducted to demonstration plots	20 visits conducted to demonstration plots	Visit logs, attendance registers, feedback forms, visual documentation		

Output 2.2.2: Climate resilient Agricultural practices are adopted.	Number of evaluation reports produced on traditional agricultural practices	0 (for all)	01 evaluation report	01 evaluation report	Evaluation report	REE and NEE	**Risks:** • Saved seeds from community seed banks lose viability or are lost to pests and diseases due to inadequate storage conditions or management. • New crop varieties or practices, while climate-resilient, are not accepted by local consumers or markets, reducing farmers' incentive to adopt them. • High cost or unavailability of specific agricultural tools and equipment recommended by the project prevents widespread adoption. **Assumptions:** • Partner research institutions provide relevant, high-quality, and well-adapted planting material. • Farmers have access to the necessary complementary inputs (e.g., water, organic manure) to make the new practices successful. • Traditional knowledge holders are respected and effectively engaged, ensuring a harmonious blend of traditional and modern practices.
	Number of participatory engagement sessions conducted with local communities and traditional knowledge holders		12 participatory engagement sessions conducted	12 participatory engagement sessions conducted	Meeting minutes, attendance sheets, photos, summary briefs		
	Number of local participants involved in participatory engagements (disaggregated by gender and category: farmers, elders, youth, etc.)		300 participants (at least 40% women)	300 participants (at least 40% women)			
	Number of workshops organized for knowledge exchange on traditional and modern agricultural innovations		-	06 workshops organized	Workshop agendas, reports, signed attendance registers		
	Number of sites selected to establish seed banks and seed production unites		06 sites selected	06 sites selected	Community consultations and site selection reports		
	Number of decentralized seed production units established and operationalized		06 seed production units established	06 seed production units established	Project activity reports, construction logs, geo-referenced photos, equipment delivery receipts.		
	Number of community-managed seed banks established and actively managed by farmer cooperatives		03 seed banks established	03 seed banks established	Community meeting minutes, seed bank governance documents, cooperative registration certificates.		
	Number of farming households accessing seeds from community-managed seed banks annually		-	500 farming households accessing seeds from community-managed seed banks	Distribution records, household surveys, cooperative beneficiary registries.		
	Number of storage infrastructures built		03 storage unites	03 storage unites	Before and after photos		
	Number of farmers trained on seed harvesting, preservation, and quality control		100 (50 women) farmers trained	500 (200 women) farmers trained	Training materials and reports, signed attendance sheets		
	Number of partnerships signed with research institutions		02 partnership signed	02 partnership signed	Partnership documents, research documents		
	Number of consultations held with farmers, local farmer cooperatives, agricultural extension services, and local authorities to identify selection and distribution criteria for equipment		06 consultations held	12 consultations held	Consultations reports, participants list		
	Number of no-till seeders and threshing machines procured for local farmer cooperatives		-	06 no-till seeders and 06 threshing machines procured	Procurement records and cooperative acknowledgment receipts		
	Number of farmers trained on the use of the equipment		-	500 (200 women) farmers trained	Training reports, materials and attendance sheets		

Outcome 2.3: Climate resilient livelihood are strengthened.	Percentage of increase in average household income from project-supported value chains and IGAs.	0 (for all)	At least 15% increase in average household income from project-supported value chains and IGAs.	At least 40% increase in average household income from project-supported value chains and IGAs.	Household surveys and M&E reports	REE and NEE	**Risks:** • Price volatility in local and regional markets for oasis products (e.g., dates, camel milk) undermines the economic viability of the supported value chains and IGAs. • Negative spillover effects from regional instability or conflict disrupt trade routes, transhumance movements, and overall economic activity. **Assumptions:** • The national and regional economic environment remains sufficiently stable to allow for the development of markets and enterprises. • Beneficiaries have the basic numeracy and literacy skills required to manage a small business and engage with financial services. • There is a sustained local demand for the products and services generated by the new IGAs.
	Percentage of targeted women and youth reporting increased decision-making power over income and assets.		At least 25% of targeted women and youth reporting increased decision-making power over income and assets.	At least 60% of targeted women and youth reporting increased decision-making power over income and assets.	M&E reports		
	Percentage of supported households reporting a reduction in climate-related losses.		At least 20 % of supported households reporting a reduction in climate-related losses.	At least 50 % of supported households reporting a reduction in climate-related losses.	M&E reports		
Output 2.3.1: Livestock production practices are improved.	Number of Transhumance Route Management and Action Plan developed	0 (for all)	01 Transhumance Route Management and Action Plan report developed	01 Transhumance Route Management and Action Plan report developed	Transhumance Route Management and Action Plan report	REE and NEE	**Risks:** • Formalized transhumance corridors and plans are ignored by herders due to lack of enforcement or conflict with traditional, flexible routes. • Introduced short-cycle livestock breeds are not accepted by pastoralists due to cultural preferences for traditional breeds or unforeseen health issues. • Mobile veterinary services are not financially sustainable post-project, leading to a lapse in animal healthcare. **Assumptions:** • Pastoralists and farmers see the value in conflict resolution mechanisms and adhere to agreed-upon protocols. • Local authorities are willing and able to play a role in mediating conflicts and supporting transhumance management. • The animal health system (public or private) can absorb and sustain the trained para-veterinarians after the project.
	Number of workshops held to validate Transhumance Route Management and Action Plan		01 validation workshop	01 validation workshop	Workshop reports, list of participants, photos		
	Number of consultations held key local actors including cattle herders, pastoralists, community leaders, local authorities, and technical services		06 consultations held	06 consultations held	Consultations reports, participants list, surveys		
	Number of drought-tolerant SCL species selected and prioritized		At least 03 species selected	At least 03 species selected	Technical selection reports, reports from animal research centers		
	Number of farmers who received short cycle livestock (40% women)		250 farmers (100 women) received short cycle livestock	500 farmers (200 women) received short cycle livestock	Signed beneficiary lists, distribution records, M&E database		
	Number of technical training sessions conducted on husbandry, breed management and basic animal healthcare		10 trainings organized	30 trainings organized	Training materials and attendance list		
	Number of mobile veterinary clinics established and operational		03 mobile clinics	03 mobile clinics	Procurement and installation reports, operational status reports, clinic activity logs		
	Number of partnerships established with veterinary professionals and animal health institutions		At least 03 formal partnerships	At least 03 formal partnerships	Signed MoUs, partnership agreements, reports of joint interventions (e.g., vaccination campaigns)		
	Number of community para-veterinarians trained to deliver first-line animal health services		12 trained para-veterinarians	12 trained para-veterinarians	Training materials, reports and attendance sheets		
	Number of participants trained on conflict management		400 (160 women) trained on conflict management	1000 (400 women) trained on conflict management			

	Number of community dialogue platforms established or strengthened		06 community dialogue platforms established or strengthened	06 community dialogue platforms established or strengthened	Platform establishment reports, meeting records and attendance lists (at least 40% women)		
Output 2.3.2: Oasis value chain is strengthened.	Number of sites selected to establish community led storage and processing units	0 (for all)	03 sites selected	03 sites selected	Site selection reports, and MoU, GPS-tagged site profiles	REE and NEE	**Risks:** • Established processing units operate below capacity due to inconsistent or insufficient supply of raw materials from farmers. • Private sector partners withdraw from agreements due to changes in market conditions or dissatisfaction with the quality/quantity of products. • The digital platform for market access fails due to low digital literacy, poor internet connectivity, or lack of ongoing content management. **Assumptions:** • Producer cooperatives have the internal governance and management capacity to run businesses effectively and transparently. • The quality of value-added products (e.g., processed camel milk) meets the standards required by target markets.
	Number of community led storage and processing units established		-	03 community led storage and processing units established	Signed equipment delivery and installation records, operationalization reports and before and after photos		
	Number of community members, disaggregated by sex and age group, trained and actively engaged in the management and operation of storage and processing units.		-	150 (75 women) community member trained	Training reports, materials and attendance sheets		
	Number of trade fairs organized		03 trade fairs organized	12 trade fairs organized	Official event reports and lists of participants/beneficiaries		
	Percentage of women producers actively participating in trade fairs		At least 20% of producers actively participating in trade fairs are women	At least 40% of producers actively participating in trade fairs are women			
	Number of producer cooperatives created		09 producer cooperatives created (03 women led)	09 producer cooperatives created (03 women led)	Official cooperative registration documents, governance and operational manuals or internal regulations and meeting minutes and election reports		
	Number of digital platform for market access developed		01 digital platform developed	01 digital platform developed	Platform and platform establishment reports		
	Number of capacity-building sessions organized to enhance producers' knowledge of market standards, branding, and negotiation skills		03 capacity-building sessions organized	10 capacity-building sessions organized	Training reports, materials and attendance sheets		
	Number of partnerships signed with private sector actors and retailers		At least 02 partnerships signed	At least 04 partnerships signed	MoUs signed		
	Number of cooperative established and operational on camel milk value chain		03 cooperative established and operational on camel milk value chain	03 cooperative established and operational on camel milk value chain	Legal registration documents, meeting minutes and governance records and MoUs with stakeholders or buyers		
	Number of solar-powered milk cooling technologies will be piloted and scaled		03 solar-powered milk cooling technologies will be piloted and scaled	03 solar-powered milk cooling technologies will be piloted and scaled	Procurement and delivery records		
	Number of motorbikes procured for the CMVC cooperatives		06 motorbikes procured	06 motorbikes procured			
	Number of partnerships signed with national, regional or international research institution to support CMVC research and development		At least 01 partnership	At least 01 partnership	MoUs signed		

	Number of camel milk producers and cooperative members participated in capacity development sessions		At least 70 (50% women and youth) camel milk producers and cooperative members participated in capacity development sessions	At least 150 (50% women and youth) camel milk producers and cooperative members participated in capacity development sessions	Training reports, materials and attendance sheets		
Output 2.3.3: Community livelihoods resilience is enhanced through adoption of Income-Generating Activities (IGAs).	Number of women's associations strengthened to engage in IGAs	0 (for all)	At least 06 women's associations strengthened to engage in IGAs	At least 06 women's associations strengthened to engage in IGAs	Training reports and attendance sheets, lists of supported associations, activity completion reports and M&E dashboards	REE and NEE	**Risks:** • Revolving funds and SACCOs experience high default rates on loans, causing the funds to collapse and creating social tension within communities. • IGAs supported by the project face stiff competition from existing businesses, leading to market saturation and failure. • Social and cultural norms (e.g., restrictions on women's mobility) persist and limit the ability of women and youth to fully participate in and benefit from IGAs. **Assumptions:** • IGA beneficiaries have the basic entrepreneurship skills and dedication to manage their small enterprises successfully. • Community members trust the financial management of the SACCOs and revolving funds and are willing to save and borrow from them. • There is adequate follow-up support and mentorship to help IGA starters overcome initial business challenges.
	Number of mentorship programs implemented, providing ongoing guidance.		02 mentorship programs implemented.	02 mentorship programs implemented.	Mentorship reports including participant details.		
	Number of business plans developed for community members or groups engaging in alternative IGAs.		At least 07 business plans developed for community members or groups engaging in alternative IGAs with at least 03 for direct women led IGAS	At least 15 business plans developed for community members or groups engaging in alternative IGAs with at least 07 for direct women led IGAS	Number of detailed business plans completed and approved for alternative IGAs. (Target includes 50% women and 30% youth beneficiaries)		
	Number of community-led SACCOs created and institutionalized		06 community-led SACCOs created and institutionalized	06 community-led SACCOs created and institutionalized	Legal registration documents and establishment records for each SACCO.		
	Number of agreements, partnerships and/or MoUs signed with formal financial institutions and microfinance actors		01 agreements, partnerships and/or MoUs signed	02 agreements, partnerships and/or MoUs signed	Signed agreements, partnerships and/or MoUs		
	Number of micro-loans disbursed to support the creation or scaling-up of IGAs in priority sectors, namely agri-processing (e.g., camel milk, dates, gum Arabic), artisanal production, and climate-resilient service-based enterprises, in targeted geographic areas.		25 micro-loans disbursed to support the creation or scaling-up of IGAs in priority sectors	50 micro-loans disbursed to support the creation or scaling-up of IGAs in priority sectors	Loan disbursement records and gender/youth beneficiary tracking		
	Number of capacity-building organized to accompany fund deployment, focusing on fund governance, financial accountability, conflict resolution, and inclusive decision-making		10 capacity-building organized	20 capacity-building organized	Training reports, materials and attendance sheets		
	Number of camel milk micro processing unites supported through SACCO loans and financial services		-	At least 10 camel milk micro processing unites supported through SACCO loans and financial services	Business support records and impact assessments on eco-tourism ventures.		
	Number of revolving fund scheme framework developed with a focus on women and youth IGAs.		01 revolving fund scheme framework developed with a focus on women and youth IGAs.	01 revolving fund scheme framework developed with a focus on women and youth IGAs.	Framework document outlining fund management, eligibility criteria, and loan terms completed.		

	Number of marketing campaigns conducted to promote community products and services in both local and regional markets.		-	3 marketing campaigns conducted to promote community products and services in both local and regional markets.	Marketing campaign reports, reach statistics, and feedback from consumers.		
Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders.							
Outcome 3.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted populations	Percentage of increase in population demonstrating improved knowledge of climate risks/adaptation.	0 (for all)	At least 20% increase in population demonstrating improved knowledge of climate risks/adaptation.	At least 60% increase in population demonstrating improved knowledge of climate risks/adaptation.	M&E reports.	REE and NEE	**Risks:** • Project fatigue or over-saturation of messages leads to disengagement from communities, reducing the effectiveness of awareness campaigns. **Assumptions:** • Local leaders (traditional, religious, administrative) champion the climate adaptation messages, lending them credibility and weight. • Participants in capacity-building have the authority or opportunity to apply their new knowledge in their professional or personal contexts.
	Percentage of trained stakeholders applying new knowledge/skills.		At least 40% of trained stakeholders applying new knowledge/skills.	At least 75% of trained stakeholders applying new knowledge/skills.			
Output 3.1.1: Knowledge and awareness on adaptation and climate risk reduction issues in oasis are developed and disseminated.	Number of Number of baseline CNA and KAP surveys completed.	0 (for all)	01 Capacity Needs Assessment 01 Baseline report developed 01 KAP surveys established	01 Capacity Needs Assessment 01 Baseline report developed 02 KAP surveys established	Baseline CNA and KAP surveys reports	REE and NEE	**Risks:** Training materials are too technical or not available in local languages, rendering them inaccessible to the intended audiences. High turnover of trained government staff leads to a loss of institutional memory and capacity. Key messages are distorted or lost as they are passed down through various communication channels to the grassroots level. **Assumptions:** Sufficient funding and resources are available to translate and adapt communication materials for different audiences. Media partners and community radios are reliable and effective channels for disseminating information.
	Number of communication and knowledge management strategies developed,		01 communication and knowledge management strategies developed	01 communication and knowledge management strategies developed	Strategy report		
	Number of knowledge-sharing events held.		02 knowledge-sharing events held.	04 knowledge-sharing events held.	Attendance lists, workshop minutes		
	Number of webinars/online campaigns conducted.		02 webinars/online campaigns conducted,	04 webinars/online campaigns conducted,	Webinar records, analytics reports, attendance lists		
	Number of customized capacity-building modules developed.		10 capacity-building modules developed.	10 capacity-building modules developed.	Training packages, manuals		
	Number of organized trainings on capacity building for extension services on climate change adaptation and water management planning		03 trainings organized	06 trainings organized	Trainings support materials, training reports, attendance lists, survey and photos.		
	Number of exchange visits/peer-learning forums conducted.		-	05 (03 visits + 02 forums) exchange visits/peer-learning forums conducted.	attendance lists, photos and visits reports and outcomes		

F. Alignment with Results Framework of the Adaptation Fund

Project Objective(s)[30]	Project Objective Indicato	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Strengthening the resilience of vulnerable communities in Borkou, Ennedi Ouest and Wadi Fira by developing their adaptation capacity to recurrent drought risks and by promoting the sustainable management of oases and related ecosystems	Number of staff trained in the production and analysis of environmental and climate data for more effective management of oasis ecosystems.	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic & environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	**8,341,013**
	Number of communties sensitized and aware of predicted adverse impacts of climate change	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.2 Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	
	Improved Infrastructure to strengthen the adaptative capacity of oasis ecosystem	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	
	Number of communities (by gender) strenghtened in relation to climate change impacts.	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1. Percentage of targeted population with sustained climate-resilient alternative livelihoods	

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Component 1: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities.				
Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced.	Percentage of oases threatened by climate change in the project area	Output 1.1: Risk and vulnerability assessments conducted and updated	1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)	**1,500,000**
	Number of vulnerable people identified, including IPLC (men, women).			
	Number of local adaptation plans developed	Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to	1.2 No. of early warning systems (by scale) and no. of beneficiaries covered	
	Number of equipment acquired for data collection		2.1.1. No. of staff trained to respond to, and mitigate impacts	

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

	Number of stakeholders trained and sensitized through capacity building activities	extreme weather events	of, climate-related events (by gender)	
			2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
	Number of legal/institutional frameworks put in place or updated.			
Component 2: Implementation of concrete adaptation measures to improve the resilience of oasis ecosystems and vulnerable local communities				
Outcome 2.1: Water availability in the oasis is enhanced	Number of improved water access infrastructures for the communities.	Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of development sector services modified to respond to new conditions resulting from climate variability and change (by sector and scale)	**6,550,000**
			4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
Outcome 2.2: Sustainable Land and agricultural Management Practices are promoted	Number of farmers (by gender) benefiting from climate-resilient practices	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)	
	Number of hectares preserved through sustainable land management practices			
Outcome 2.3: Climate resilient livelihood are strengthened	Number of households/population benefiting of the implemented IGAs (by gender)	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	
			6.2.1. Type of income sources for households generated under climate change scenario	
Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders				
Outcome 3.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted populations	Number of stakeholders (technical staff and communities) trained and sensitized through communication and capacity building activities	Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. of news outlets in the local press and media that have covered the topic	**400,000**
		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	
			3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	

G. Detailed budget

Outcome/Output/Activity	Y1	Y2	Y3	Y4	Budget (USD)	Budget Notes
Component 1: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities.					**1,501,382**	
Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced.						
Output 1.1.1: Information, legal and institutional frameworks for sustainable management of oasis ecosystems in the project area, are upgraded.	**425,000**	**525,000**	**375,000**	**176,382**	**1,501,382**	
1.1.1.1 Undertake assessment of the natural resources' assets of the oasis ecosystem, including the state of degradation and the climate change impacts in the project area	250,000	50,000	25,000		325,000	• Trainings & Capacity Building: 35,000 (community data collection + M&E skills) • Development of Dissemination Materials: 30,000 (baseline reports, maps, policy briefs) • O&M: 20,000 (field missions, vehicle use) • Consultancy & data acquisition: 240,000 (GIS analysis, remote sensing data procurement, survey execution)
1.1.1.2 Develop a climate change adaptation action plan for sustainable management practices of oasis ecosystems.		175,000	100,000	25000	300,000	• Trainings & Capacity Building: 35,000 (workshops in each region to prioritize adaptation actions) • Platforms: 38,000 (stakeholder coordination committees setup and consultation forums) • Development of Dissemination Materials: 30,000 (printing, translation, graphics for communal plans) • Consulting services & validation: 197,000 (planning firm + provincial validation workshops)
1.1.1.3 Provide/upgrade systems and equipment for monitoring and collection of data (insitu and exsitu) on oasis ecosystems	150,000	250,000	200,000	100,000	700,000	• Construction & Installation: 260,000 (sensor stations, borehole monitoring sheds, storage rooms) • Equipment (2 Pickups): 67,000 (vehicles for field data teams) • O&M: 20,000 (maintenance contracts for stations and vehicles) • Trainings & Capacity Building: 35,000 (technicians trained on hardware and data management) • Development of Dissemination Materials: 30,000 (system manuals and protocols) • Awareness: 30,000 (community sensitization on data use) • 258,000: software licenses, servers, technical support contracts & expert consulting
1.1.1.4 Provide fora for dialogue on the legal and institutional frameworks for the management of natural resources and oasis ecosystems.	25,000	50,000	50,000	51,382	176,382	• Platforms: 38,000 (national and regional policy dialogues, stakeholder committees) • Awareness: 30,000 (media briefs, policy advocacy events) • Trainings & Capacity Building: 35,000 (legal review and institutional capacity sessions) • Development of Dissemination Materials: 30,000 (publications on revised frameworks and MoUs) • Consultant inputs and venue logistics: 43,382 (facilitation and travel support)
Subtotal C1	**425,000**	**525,000**	**375,000**	**176,382**	**1,501,382**	

Component 2: Implementation of concrete adaptation measures to improve the resilience of the oasis ecosystems and local communities.					**6,005,529**	
Outcome 2.1: Water availability in the oasis is enhanced.						
Output 2.1.1: Water availability for the development of agro-pastoral activities in the intervention sites is promoted.	**175,000**	**400,000**	**155,000**	**70,000**	**800,000**	
2.1.1.1 Assess the potential, availability, and use of water resources (surface and groundwater) and develop water management plans.	65,000	0	20,000	0	85,000	• Trainings & Capacity Building: 35,000 (hydro-data collection, GIS, and hydro-modelling) • Development of Dissemination Materials: 20,000 (baseline maps, water balance sheets, risk maps) • M&E & ESMP monitoring: 5,000 (site-level monitoring of survey activities and stakeholder engagement inclusion) • O&M: 10,000 (field logistics, data transport) • Consultancy: 5,000 (remote sensing, database setup).
2.1.1.2 Establish and equip solar powered water infrastructures for agriculture and pastoralism.	0	200,000	30,000	20,000	250,000	• Construction & Installation: 180,000 (boreholes, solar pumps, tanks, and distribution lines) • Equipment (2 pickups): 67,000 (for field supervision and monitoring) • M&E & ESMP monitoring: 20,000 (water quality checks, environmental safeguards supervision) • O&M: 20,000 (maintenance and repairs) • Awareness: 30,000 (community sensitization on water use and governance) • Trainings: 35,000 (on system operation, maintenance, and energy safety).
2.1.1.3 Construct and/or rehabilitate spreading weirs, micro-dams, and dams to promote groundwater recharge	100,000	150,000	75,000	25,000	350,000	• Construction & Civil Works: 260,000 (weirs, gabion barriers, recharge ponds) • M&E & ESMP monitoring: 25,000 (environmental supervision, sedimentation control, safety audits) • Trainings & Capacity Building: 35,000 (maintenance, climate risk screening, safety) • O&M: 20,000 (tools, protective gear) • Awareness: 30,000 (community participation & environmental awareness) • Dissemination: 5,000 (as-built documentation).
2.1.1.4 Establish a monitoring system for groundwater and surface water resources	0	50,000	30,000	25,000	105,000	• Equipment: 67,000 (piezometers, loggers, and automatic stations) • Construction: 30,000 (installation works and protective enclosures) • M&E: 5,000 (data verification and quality assurance) • ESMP monitoring: 5,000 (site safety and environmental checks) • Trainings: 35,000 (technicians on data recording, calibration, and interpretation).

2.1.1.5 Build capacity of farmers and pastoralists on sustainable water management and use	10,000				10,000	• Trainings & Capacity Building: 35,000 (irrigation management, efficient livestock watering) • Awareness: 30,000 (radio and theatre campaigns on responsible water use) • Development of Dissemination Materials: 10,000 (illustrated manuals, posters) • M&E: 5,000 (tracking participant adoption and gender inclusion).
Output 2.1.2: Access to potable water for target communities is enhanced.	**70,000**	**315,000**	**250,000**	**165,000**	**800,000**	
2.1.2.1 Assess, select and promote the most viable potable water solutions	70,000	25,000	0	0	95,000	• Trainings & Capacity Building: 35 000 (workshops on technological options and community preferences) • Development of Dissemination Materials: 30 000 (technical guides, fact sheets, awareness materials) • M&E & ESMP Monitoring: 10 000 (technical supervision, water-quality testing, social screening of technologies) • O&M: 10 000 (field missions, fuel, and data collection) • Consultancy: 10 000 (technology assessment and viability analysis).
2.1.2.2 Build/rehabilitate and equip potable water models	0	220,000	100,000	30000	350,000	• Construction & Rehabilitation: 260 000 (drilling of boreholes, rehabilitation of wells, storage tanks, and distribution systems) • Equipment: 67 000 (pumps, solar panels, storage units and two field vehicles for supervision) • O&M: 20 000 (maintenance and spare parts) • M&E & ESMP Monitoring: 25 000 (environmental inspection, safety compliance, and gender-sensitive social monitoring) • Awareness: 30 000 (community sensitization on safe water use and sanitation behavior).
2.1.2.3 Develop and implement a water resource management system	0	70,000	150,000	135,000	355,000	• Platforms & Governance Setup: 38 000 (establishment of local water committees and digital registry of water points) • Software & Database Development: 80 000 (data management system for water use tracking) • Trainings & Capacity Building: 35 000 (local and regional sessions on water planning and management) • Awareness: 30 000 (communication campaigns on responsible water use and tariff systems) • M&E & ESMP Monitoring: 20 000 (evaluation of water-resource use, grievance follow-up, environmental compliance) • Development of Dissemination Materials: 30 000 (operational manuals, community guidelines, policy briefs) • O&M: 22 000 (system hosting and field follow-up logistics).
Subtotal O2.1	**245,000**	**715,000**	**405,000**	**235,000**	**1,600,000**	

Outcome 2.2: Sustainable Land Management (SLM) practices are promoted.						
Output 2.2.1: Land and dune management systems are reinforced	**200,000**	**235,000**	**185,000**	**80,000**	**700,000**	
2.2.1.1 Improve the production of fodder for livestock to complement and strengthen the livestock activities.	70,000	60,000	50,000	20000	200,000	• Construction (Fodder plots & storage units): 120,000 (establish demo plots, irrigation lines, and storage for hay) • Trainings & Capacity Building: 35,000 (fodder production techniques, composting, pasture management) • Awareness: 20,000 (community radio, visual campaigns on forage use and maintenance) • Development of Dissemination Materials: 10,000 (technical bulletins, visual manuals) • M&E & ESMP Monitoring: 10,000 (environmental compliance, water-use monitoring, soil fertility tracking) • O&M: 5,000 (tools and inputs maintenance).
2.2.1.2 Establish mechanical and biological fixation of sand dune movement management	100,000	150,000	120,000	50000	420,000	• Construction: 260,000 (installation of gabion barriers, contour bunds, fencing, protective shelters) • Biological Restoration: 80,000 (seedlings, nurseries, and drought-tolerant species for green belts) • Trainings & Capacity Building: 35,000 (community-led dune fixation, nursery management, and green belt maintenance) • M&E & ESMP Monitoring: 25,000 (erosion and vegetation cover monitoring, biodiversity safety checks, occupational safety) • Awareness: 15,000 (community mobilization, public information on dune management) • O&M: 5,000 (maintenance of dune stabilization sites).
2.2.1.3 Promote SLM practices and technical pathways e.g., soil fertility, water conservation, agroforestry…	30,000	25,000	15,000	10,000	80,000	• Trainings & Capacity Building: 35,000 (agroforestry, soil conservation, integrated crop-livestock systems) • Awareness: 20,000 (campaigns on sustainable agriculture practices) • Development of Dissemination Materials: 10,000 (visual guides, SLM manuals) • M&E & ESMP Monitoring: 10,000 (tracking adoption rate, soil quality, and livelihood benefits) • O&M: 5,000 (follow-up visits, demo site upkeep).
Output 2.2.2: Climate resilient Agricultural practices are adopted.	**450,000**	**670,000**	**430,000**	**200,000**	**1,750,000**	
2.2.2.1 Assess and integrate indigenous agricultural practice with adaptive agriculture techniques in the target areas	100,000	70,000	30,000	0	200,000	• Consultancy & Research Studies: 70,000 (documentation of traditional techniques and integration with adaptive methods) • Trainings & Capacity Building: 35,000 (community consultations, co-design of adaptive pathways) • Development of Dissemination Materials: 30,000 (manuals, knowledge briefs on hybrid practices) • Awareness: 20,000 (local radio campaigns, cultural

						engagement on innovation adoption) • M&E & ESMP Monitoring: 25,000 (tracking gender inclusion, soil health impact, and traditional knowledge protection) • O&M: 20,000 (field missions, logistics, tools).
2.2.2.2 Create seed production units and seed banks for agricultural products	150,000	300,000	200,000	100,000	750,000	• Construction: 260,000 (seed storage infrastructure, small warehouses, community storage units) • Equipment: 67,000 (seed cleaners, packaging machines, moisture testers, toolkits) • Trainings & Capacity Building: 35,000 (quality control, seed harvesting, preservation, and certification) • Awareness: 30,000 (seed fair events and campaigns promoting improved varieties) • Development of Dissemination Materials: 30,000 (seed catalogues, farmer guides) • M&E & ESMP Monitoring: 20,000 (environmental impact checks, seed variety performance evaluation) • O&M: 8,000 (maintenance of storage and equipment) • Partnerships & Technical Assistance: 300,000 (agreements with agricultural research centers and farmer cooperatives).
2.2.2.3 Provide the farmers with agricultural equipment to enhance production	200,000	300,000	200,000	100000	800,000	• Procurement of Agricultural Equipment: 400,000 (no-till seeders, threshing machines, small irrigation kits, ploughs, tractors, and solar dryers) • Construction (demonstration units): 80,000 (on-site training plots and small demo infrastructure) • Trainings & Capacity Building: 35,000 (farmers on safe equipment use, maintenance, and collective ownership) • M&E & ESMP Monitoring: 25,000 (safety audits, waste management, emission control compliance) • O&M: 20,000 (fuel, spares, repairs) • Awareness & Dissemination Materials: 30,000 (demonstration events, illustrated manuals) • Subsidy Support for Women & Youth Cooperatives: 210,000 (partial financing mechanism for access to mechanization tools).
Subtotal O2.2	**650,000**	**905,000**	**615,000**	**280,000**	**2,450,000**	
Outcome 2.3: Climate resilient livelihood are strengthened.						
Output 2.3.1: Livestock production practices are improved.	**170,000**	**210,000**	**90,000**	**30,000**	**500,000**	
2.3.1.1 Identify, map and develop a management and action plan for transhumance routes and rest areas in target areas	70,000	50,000	0	0	120,000	• Consultancy & GIS mapping: 50 000 (for corridor surveying, geo-referencing, and action plan drafting) • Trainings & Capacity Building: 30 000 (on sustainable rangeland and pastoral resource management) • Awareness: 20 000 (community sessions on pasture

						preservation and route use) • Development of Dissemination Materials: 10 000 (maps, guidelines, toolkits) • M&E & ESMP Monitoring: 15 000 (environmental screening, social acceptance monitoring, and GIS updates)
2.3.1.2 Promote and provide short life cycle livestock to target communities (40% women)	50,000	100,000	50,000	0	200,000	• Procurement of short-cycle breeds: 100 000 (goats, sheep and poultry distribution to beneficiaries) • Trainings & Capacity Building: 35 000 (husbandry, feed management and disease prevention) • Awareness: 20 000 (on animal health and breeding practices) • Development of Dissemination Materials: 10 000 (manuals on improved livestock care) • M&E & ESMP Monitoring: 20 000 (animal welfare, gender tracking, and bio-security compliance) • O&M: 15 000 (feed and transport support for initial rotation).
2.3.1.3 Facilitate access to veterinary services	30,000	40,000	20,000	10,000	100,000	• Construction / Equipment: 67 000 (mobile vet clinics and cold-chain equipment for vaccines) • Partnership Agreements: 10 000 (with local vet institutions and para-vets) • Trainings & Capacity Building: 10 000 (on animal health management and disease control) • M&E & ESMP Monitoring: 8 000 (vet waste disposal and bio-safety supervision) • O&M: 5 000 (spare parts, maintenance of kits).
2.3.1.4 Sensitize and provide conflict management trainings for cattle herders, farmers and local authorities near transhumance corridors	20,000	20,000	20,000	20,000	80,000	• Trainings & Capacity Building: 30 000 (conflict-resolution workshops for herders and farmers) • Awareness: 30 000 (social cohesion campaigns and dialogue sessions) • Development of Dissemination Materials: 10 000 (community charters and code of conduct booklets) • M&E & ESMP Monitoring: 10 000 (social impact tracking, gender and youth participation audits)
Output 2.3.2: Oasis value chain is strengthened.	**120,000**	**205,000**	**145,000**	**30,000**	**500,000**	
2.3.2.1 Establish storage and processing units for agricultural products in the target areas	100,000	145,000	100,000	10,000	355,000	• Construction: 250 000 (three storage & processing facilities built or rehabilitated for date, cereal, and gum Arabic value chains). • Equipment: 67 000 (processing machines, solar dryers, packaging tools). • Trainings & Capacity Building: 25 000 (community O&M, hygiene, and quality control). • Development of Dissemination Materials: 5 000 (posters, manuals). • M&E & ESMP Monitoring: 5 000 (construction ESMP compliance, waste management). • O&M: 3 000 (maintenance and fuel).

2.3.2.2 Establish/enhance a market linkage for climate resilient value chains	0	30,000	20,000	10,000	60,000	• Platforms: 38 000 (set-up of online and physical market access networks, trade fair participation). • Trainings & Capacity Building: 25 000 (branding, packaging, pricing). • Awareness: 10 000 (market information sessions, women/youth outreach). • M&E & ESMP Monitoring: 7 000 (value-chain inclusion and income tracking). • O&M: 5 000 (travel and logistics).
2.3.2.3 Establish, operationalization and strengthen camel milk value chain in target area	20,000	30,000	25,000	10,000	85,000	• Equipment & Infrastructure: 40 000 (solar milk-cooling units, mini-labs, collection points). • Trainings & Capacity Building: 25 000 (milk hygiene, cooperative governance). • Awareness: 10 000 (on nutrition & women's economic roles). • M&E & ESMP Monitoring: 7 000 (product-quality, waste, and animal-welfare supervision). • O&M: 3 000 (maintenance of solar units).
Output 2.3.3: Community livelihoods resilience is enhanced through adoption of (IGAs).	**242,210**	**348,319**	**270,000**	**95,000**	**955,529**	
2.3.3.1 Strengthen women's associations for IGA activities (e.g., energy saving cook stove production support for land access)	90,000	120,000	80,000	35,000	325,000	• Construction / Equipment: 100 000 (workshops for cookstoves and handicraft production units). • Trainings & Capacity Building: 35 000 (on production skills and organizational management). • Awareness: 25 000 (on clean energy and women's empowerment). • Development of Materials: 20 000 (manuals and entrepreneurship kits). • Platforms: 25 000 (network forums for women's cooperatives). • M&E & ESMP Monitoring: 15 000 (gender and environmental tracking). • O&M: 5 000 (field logistics and maintenance).
2.3.3.2 Develop/implement entrepreneurial training for income generating activities for beneficiaries	55,000	75,000	55,000	15,000	200,000	• Trainings & Capacity Building: 70 000 (entrepreneurship, financial literacy, marketing). • Awareness: 20 000 (economic empowerment campaigns). • Development of Materials: 15 000 (training modules). • Platforms: 20 000 (mentorship and exchange sessions). • M&E & ESMP Monitoring: 10 000 (progress tracking on youth and gender impact). • O&M: 5 000 (logistics and supplies).
2.3.3.3 Establish and Support Formalization of Savings and Credit Cooperative Societies (SACCOs)	35,000	60,000	45,000	10,000	150,000	• Equipment / ICT systems: 40 000 (accounting and digital register tools). • Trainings & Capacity Building: 25 000 (financial management and cooperative governance). • Platforms: 20 000 (coordination with microfinance partners). • Awareness: 10 000 (financial literacy campaigns). • M&E & ESMP Monitoring: 10 000 (financial integrity audits).

						• O&M: 5 000 (audit logistics and support). • Partnership development: 40 000 (linkages with financial institutions).
2.3.3.4 Establish Revolving Fund Schemes with a Gender Focus	62,210	93,319	90,000	35,000	280,529	• Fund Capitalization: 400 000 (initial seed capital for women and youth IGAs). • Trainings & Capacity Building: 35 000 (fund management, loan governance, financial accountability). • Awareness: 30 000 (promoting responsible lending and repayment culture). • Development of Dissemination Materials: 20 000 (fund manuals and loan application guides). • M&E & ESMP Monitoring: 25 000 (audit and environmental/social safeguard tracking). • O&M: 15 000 (audit fees and supervision costs). • Platforms: 38 000 (linking revolving fund committees to local authorities and financial institutions). • Development of ICT systems: 37 000 (simple digital tracking of loans and repayments).
Subtotal O2.3	**532,210**	**763,319**	**505,000**	**155,000**	**1,955,529**	
Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders					**834,101**	
Outcome 3.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted populations						
Output 3.1.1: Knowledge and awareness on adaptation and climate risk reduction issues in oasis are developed and disseminated.	**320,000**	**220,000**	**204,000**	**90,101**	**834,101**	
3.1.1.1 Undertake CNA and KAP survey to identify the gaps and hinderances of the project stakeholders	100,000		40,000	10,000	150,000	• Consultant Services & Data Collection: 80,000 (assessment, Capacity Needs Assessment + Knowledge, Attitude, Practice survey in 3 regions). • Field Logistics & Enumerator Training: 30,000 (transport, accommodation, field teams). • Awareness Workshops: 10,000 (introducing survey purpose to stakeholders). • M&E & ESMP Monitoring: 20,000 (safeguard oversight and data validation). • O&M: 10,000 (data cleaning, verification, and documentation).
3.1.1.2 Develop capacity-building materials for all project activities	80,000	40,000	24,000	10,000	154,000	• Development of Training Modules: 60,000 (curricula on water, land, gender, and SLM best practices). • Graphic Design & Translation: 25,000 (Arabic/French/local languages). • Printing & Dissemination: 20,000 (manuals, toolkits, visual aids). • M&E & ESMP Monitoring: 10,000 (review and validation for inclusivity and environmental safety). • O&M: 5,000 (distribution and archiving).

3.1.1.3 Organize training and capacity building sessions for targeted stakeholders	80,000	100,000	60,000	30,000	270,000	• Training Workshops: 120,000 (12 regional and national sessions for local government, CSOs, and youth). • Awareness & Outreach Campaigns: 40,000 (community radio, IEC events). • Logistics & Refreshments: 25,000 (venues, transport, materials). • Development of Dissemination Materials: 15,000 (training kits, certificates). • M&E & ESMP Monitoring: 20,000 (tracking participation and safeguards compliance). • O&M: 10,000 (coordination, follow-up visits). • Platforms: 40,000 (interactive online platform and peer learning exchange).
3.1.1.4 Develop and implement the project communication strategy and plan	60,000	80,000	80,000	40,101	260,101	• Strategy Development: 35,000 (consultant, stakeholder input, validation). • Communication Tools & Materials: 80,000 (press kits, documentaries, audio-visual media, infographics). • Campaigns & Media Partnerships: 60,000 (TV, community radio, social media). • Workshops & Awareness Events: 25,000 (launch events, school competitions, and exhibitions). • M&E & ESMP Monitoring: 20,000 (tracking reach and inclusiveness). • O&M: 10,000 (content updating, translation, and dissemination). • Platforms: 30,101 (project website, online newsletter, social channels).
Subtotal O3	**320,000**	**220,000**	**204,000**	**90,101**	**834,101**	
Project Execution Cost (EE) 9.5%					**875,577**	
Project Inception&launch	50,000				50,000	Project launch and related activities i.e., Setting up of NPMU, Steering Committee first meeting…
Project coordination and Management Fees	90,000	110,000	122,000	90,000	412,000	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	45,000	70,000	45,000	25,000	185,000	Travel expenses for monitoring: Costs of missions, participation in steering committee meetings, and participation in workshops…
Equipment	60,000		20,000		80,000	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…

Audit	10,000	10,000	10,000	10,000	40,000	Audit costs
Monitoring & Evaluation	28,000	30,000	25,000	25,577	108,577	M&E and ESMP monitoring and application
Subtotal EE	**283,000**	**220,000**	**222,000**	**150,577**	**875,577**	
Total project Cost (Components+ EE)					**9,216,590**	
IE Fees (8.5%)					**783,410**	
Project coordination and Management Fees: Project management, Reporting, Outreach and knowledge sharing	85,000	95,000	90,000	80,000	350,000	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	25,000	30,000	25,000	20,000	100,000	Supervision and travel expenses for monitoring: Costs of supervision missions, participation in steering committee meetings, and participation in workshops, M&E…
Equipment & infrastructure	20,000	5,000	15,000		40,000	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 & audits	10,000	35,000	10000	40000	95,000	Baseline, External audits, Project completion, mid-term and final evaluation…
Fiduciary aspects	25,000	30,000	30,000	25,000	110,000	Administration, finance, accountability, procurement, legal, financial management and quality insurance…
Monitoring & Evaluation	30,000	25,000	20,000	13,410	88,410	M&E and ESMP monitoring and application
Subtotal IE	**195,000**	**220,000**	**190,000**	**178,410**	**783,410**	
Amount of financing Requested					**10,000,000**	

H. Disbursement schedule with time-bound milestones

Category /	Upon Agreement Signature	End of Y2	End of Y3	End of Y4	Totals
Scheduled Date	*December 2026*	*November 2027*	*November 2028*	*November 2029*	
Project Funds (USD)	2,000,000	2,300,000	2,400,000	2,516,590	9,216,590
Implementing Entity Fees (USD)	200,000	200,000	200,000	183,410	783,410
Totals (USD)	**2,200,000**	**2,500,000**	**2,600,000**	**2,700,000**	**10,000,000**

PART IV ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government

Kodou Choukou TIDJANI, Adaptation Fund National Designated *Authority, Ministry of Environment, Fishery and Sustainable Development, Chad*	*Date: January 15th, 2026*

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 (NAPA, NAP, NDC,..) and subject to the approval by the Adaptation Fund Board, commit to implementing the project in compliance with the Environmental and Social 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 Coordinator*

Date: **February 20th, 2026**	Tel.: **(+216) 71 206 633** Email: boc@oss.org.tn
Project Contact Person: **Ms. Khaoula JAOUI**	
Tel. and Email: **(+216) 71 206 633 –** khaoula.jaoui@oss.org.tn	

Annexes

Annex 1: Endorsement Letter

ADAPTATION FUND

Letter of Endorsement by Government

Of Chad

N'Djamena, le 15 Janvier 2026

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

Subject: "Reversing the degradation trend in the oases of Borkou, Ennedi West and Wadi Fira through strengthening adaptation measures and improving resilience to climate change of vulnerable communities".

In my capacity as designated authority for the Adaptation Fund in Chad, 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 the Chad (Borkou, Ennedi West and Wadi Fira).

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the Sahara and Sahel Observatory (OSS) and executed by Ministry of Environment, Fisheries and Sustainable Development through the General Directorate of Forestry, Wildlife and Fisheries Resources; in collaboration with the Union of Women for the Fight against Desertification in the Sahel.

Sincerely,

KODOU CHOUKOU TIDJANI

Adaptation Fund National Designated Authority Ministry of Environment, Fishery and Sustainable Development

Annex 2: Reports of the different consultations with stakeholders

The consultation process adopted during the various stages of preparation of this project was a process that succeeded in bringing together all the key actors in Chad. High-level meetings, technical consultation meetings with experts from the various ministries involved or local consultation processes with the inhabitants of the project sites, including women and young people, all resulted in a consensus on the problems and challenges but also on the measures to be adopted in perfect harmony with the expectations of the local population and the priorities of the country at the national level.

The consultation process with stakeholders was conducted in four key steps. This process began on the sidelines of COP26. The project idea was discussed between representative from the Chad official delegation and OSS officials. CHAD expressed the country's desire to formulate its first project with the Adaptation Fund noting that no project had been initiated with the AF until then. The government representatives present at the COP also highlighted the efforts made by Chad in the fight against climate change, in particular the two ongoing processes of developing the updated NDC and the national adaptation plan. Chad expressed its intention to advance and concretize the objectives set out in these two plans through an adaptation project dedicated to the protection of the most vulnerable systems in Chad, namely the oases and wadis.

Figure 1 Meetings with representatives of the Chadian delegation with the OSS on the sidelines of the COP 26

After numerous stakeholders exchanges the ideas were then concretized by the Ministry of Environment, Fisheries and Sustainable Development with the support of the Woman Union for the fight against desertification (Union des Femmes pour la Lutte Contre la Désertification au Sahel "**UFLCDS**") this led to a series of well-planned and organized consultations, and field visits during September 2022, with the broad objective to identify potential beneficiaries of the climate change resilience and adaptation project, analyse local resources in order to better adapt the project development strategy and to highlight certain vulnerability criteria for resilience to climate change. The consulted stakeholders included:

i. Local communities: The local communities are involved in project design particularly in identifying problems, specific needs related to resilience to climate change, sites for project implementation and the role they play in project implementation;
ii. Local and regional Government Authorities.
iii. Government Ministries and Institutions.

Figure 2 Working meeting between OSS, Ministry of Environment and UFLCDS

Figure 3 Images of the different sites visited during the preparatory mission of this project

During the various exchanges and consultations with the key actors, including the local population, and by ensuring the active participation of women and youth, a list of criteria was adopted in order to refine the choice of the project's areas of intervention and to identify the priorities in terms of intervention, with a view to achieving tangible results from the project with a strong involvement and appreciation of the local population. key information was collected on the number of farmers in the sites, the number of spaces that can contain about 10 groups on an oasis , the rainfall in the area , the number of people concerned by the project, the food crisis in the locality and some information on the vulnerability such as the degree of exposure to climate change the potential of Reduction of greenhouse gas emissions by developing vegetable crops in the vegetable crops in the country's ouadi and oasis producing areas, the Sensitivity to change, the burning heat, the Rainfall variability, Food insecurity, Resilience to extreme events;

Figure 3 Very active participation of women in the different consultation processes

A preparatory mission for the elaboration of the Concept Note of the Chad oasis project to be submitted to the Adaptation Fund was conducted in October 2022 by OSS. This mission allowed to validate and finalize several aspects and crucial points regarding the process of elaboration of the concept note and to better sensitize the technical partners of a project in order to provide clear and accurate information. It also allowed for better sensitization and involvement of high-level decision-makers, notably the Minister of the Environment, Fisheries and Sustainable Development, the Minister of Agricultural Development and the State Counsellor in charge of Agriculture and Livestock, and the Environment Counsellor. As this is Chad's first project submission to the Adaptation Fund, this mission allowed for a good discussion of the Adaptation Fund's requirements in terms of project development and the next steps.

Figure 4 : Biltine Images Wadi Taouss et Langar de Bokoy

Figure 5 : Commune d'Arada

Figure 6 : Commune de Kalaït : Wadis Soukaya

Figure 7(a) : Commune de Fada : Wadis INOU

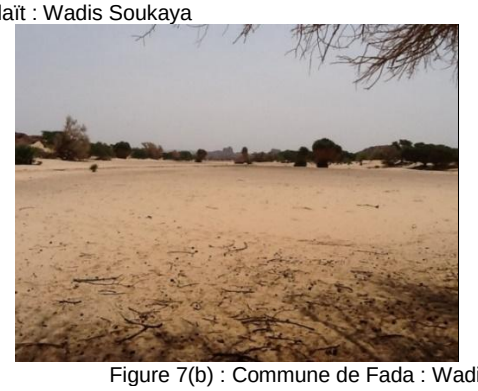


Figure 7(b) : Commune de Fada : Wadis OKOU

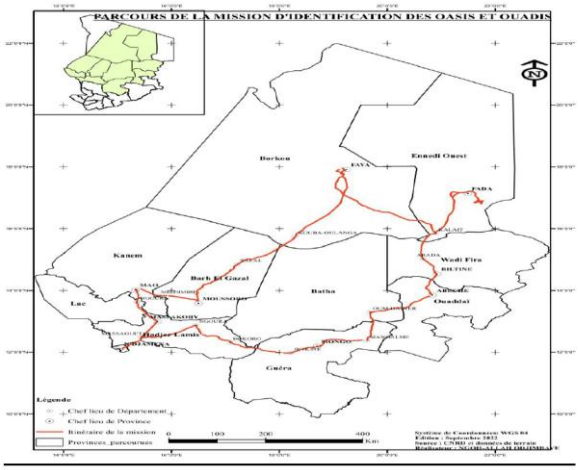
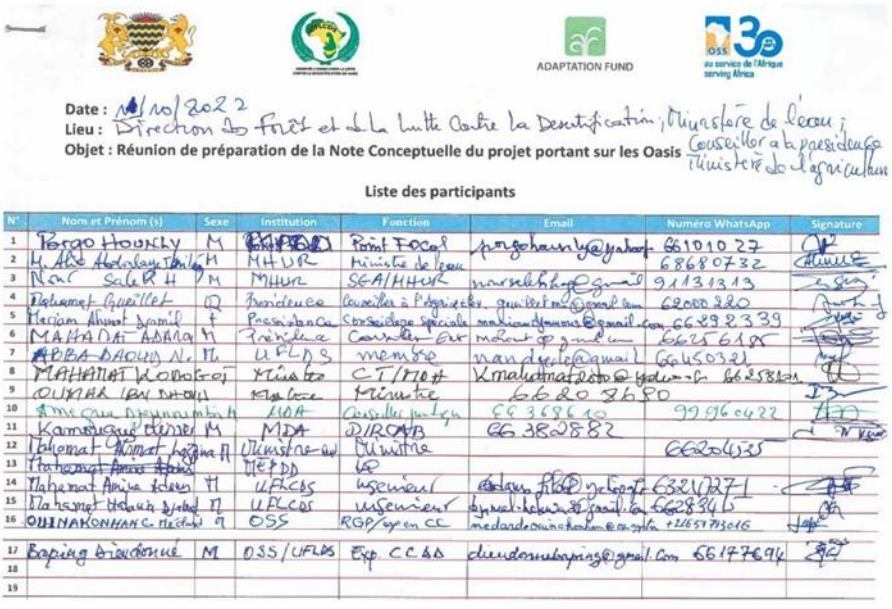


Figure 8 Map of the itinerary of visited cities

The lists of participants in these meetings are presented below:



Date : 14/10/2022
Lieu : Direction des Forêt et de La lutte Contre la Desertification ; Ministère de l'eau ; Conseiller a la presidence ; Ministère de l'agriculture
Objet : Réunion de préparation de la Note Conceptuelle du projet portant sur les Oasis

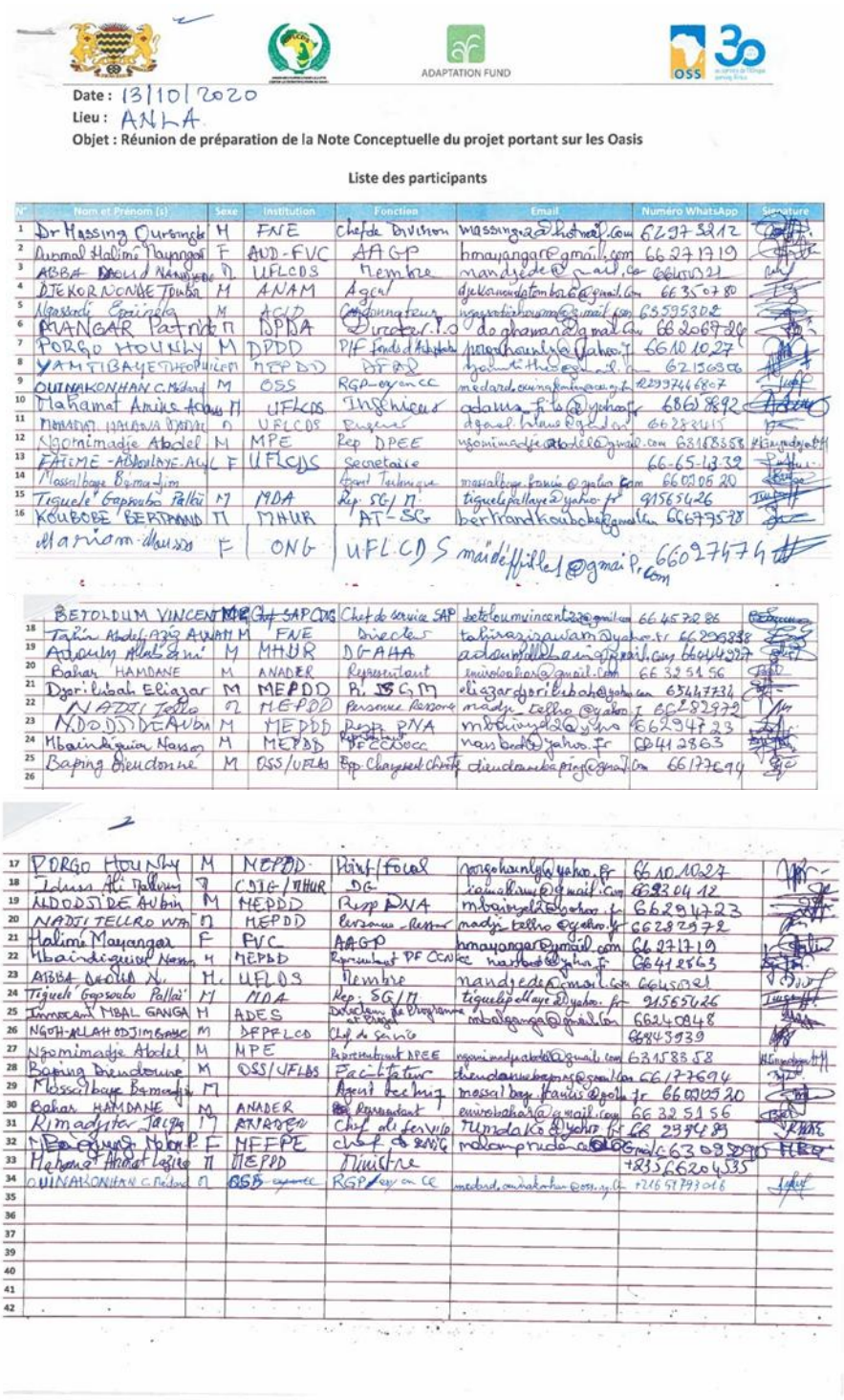
Liste des participants

N°	Nom et Prénom (s)	Sexe	Institution	Fonction	Email	Numéro WhatsApp	Signature
1	Targo Hourdy	M	[illegible]	Point Focal	[illegible]	66101027	
2	M. Ahit Abdelaye Tahir	M	MHUR	Ministre de l'eau		68680732	
3	Nar Saleh	M	MHUR	SG/MHUR		91131313	
4	Djimet Gueillet	M	Présidence	Conseiller à l'agriculture		62000220	
5	Mariam Ahmat Ismail	F	Présidence	Conseillère Spéciale		66892339	
6	MAHAMAT ADAMA	M	Présidence	Conseiller Env		66256185	
7	ABBA DAOUD N.	M	UFLDS	membre		66450321	
8	MAHAMAT MOUSSA	M	Ministère	CT/MEP		66258821	
9	OUMAR IBN DAOUD	M	Ministre	Ministre		66207650	
10	[illegible]	M	ANA	Conseiller Juridique		99960422	
11	Kamougué Djimet	M	MDA	DIRCAB		66382882	
12	Mahamat Ahmat Hassan	M	Ministre de l'Eau	Ministre		66204535	
13	Mahamat Amine Adam	M	MEPDD	SG			
14	Mahamat Amine Idriss	M	UFLCDS	Ingenieur		63217271	
15	Mahamat Hassan Djibril	M	UFLCDS	Ingenieur		66283465	
16	OUINAKONHAN C. Hermann	M	OSS	RGP/Open CC		+22651733016	
17	Baping Dieudonné	M	OSS/UFLDS	Exp CC&D		66177696	
18							
19							

Date : 12-10-2022
Lieu : ANLA
Objet : Réunion de préparation de la Note Conceptuelle du projet portant sur les Oasis

Liste des participants

N°	Nom et Prénom (s)	Sexe	Institution	Fonction	Email	Numéro WhatsApp	Signature
1	CHERIF ALOUDAT	M	MEPDD	SGA		63299898	
2	Adoum Abderahim	M	MHUR	DGAHH		66461127	
3	Dr Hassine Oussman	M	ENE	Chef de Division		62993212	
4	Pr Bakhoutoul Lamine	M	OFP	Secretaire SG/MHUR		66296407	
5	Tahir Abdel-Aziz Ahmat	M	ENE	Directeur		66299838	
6	KOUBADE BERTRAND	M	MHUR	AT-SG		66675528	
7	Abdelmajid Adam	M	ANAM	DSSE		66211769	
8	DEKORNONDE Tombé	M	ANAM	Agroclimatologue		66350780	
9	ZARA MAHAMAT H.	F	CELIAF	Chef de Projet		66299477	
10	Mariam Abdelkerim Abdallah	F	UFLCDS	[illegible]		66027474	
11	BONGIBE NGAR Ngalbé	M	DFLCD	[illegible]		66075783	
12	Abakar Ibrahim	M	ACID	Coordonnateur		63555302	
13	Djori Lubaly Eliezer	M	MEPDD	D.S.G.M		65447734	
14	MANGAR Fatimé	M	DPAVP	Directeur		66206724	
15	MBAIHOULAM GADO K.	M	MEPDD	PF CNULCD		66-23-33-00	
16	YAMTIBAYE THEOPHILE	M	MEPDD	DFAP		62196906	



Date : 13/10/2020
Lieu : ANLA
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Annex 3: Summary of the Gender Assessment in line with the Fund's Gender Policy

Background and purpose of the assessment

The current report on the gender assessment is a desk and consultation-based analysis of the gender situation for the Chad Republic. It is being prepared in light of the proposed project «**Reversing the degradation trend in the oases of Borkou, Ennedi West and Wadi Fira through strengthening adaptation measures and improving resilience to climate change of vulnerable communities**» that is being funded by the Adaptation Fund. The project aims to the overall objective of the project is to strengthen the resilience of vulnerable communities in Borkou, West Ennedi and Wadi-Fira through the development of adaptive capacity to recurrent drought risks and by promoting sustainable management of oases and related ecosystems. This will be done through the three components below:

- **Component 1**: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities;
- **Component 2**: Implementation of concrete adaptation measures to improve the resilience of oasis ecosystems and vulnerable local communities;
- **Component 3**: Capacity building, knowledge sharing and awareness raising of all stakeholders.

All the data and information gathered allows to provide a global overview of the vulnerability degree as well as the resilience to external influencing factors, in particular climatic risks. As all the data and information required for the gender analysis is not specifically available for the basin at this time, such data from the target countries, will be exploited instead. The outcome of this initial gender assessment is to make more gender-sensitive contributions throughout the project. A specific Gender Assessment and Action Plan (GAAP) (with clear timelines, responsible parties, indicators and budget allocations) will be developed during the preparation of the full project proposal. The GAAP will ensure that project results are achieved with gender-sensitive targets, and that environmental benefits are distributed inclusively across the project activities.

This report is organized as follow: ***(i)*** Basic overview gender-related information in the countries (health, education; level of women's involvement in socio-economic and development activities and gender based violence in the countries, etc.), ***(ii)*** Gender-responsive considerations for the Project outcomes and ***(iii)*** a summary of the legal-institutional instruments and initiatives aimed at strengthening women's empowerment is also provided and ***(iv)*** Gender vis-a-vis the Project outcomes and activities.

Basic gender related socio-economic characteristics in the countries

Global indicators

Indicators have been developed to objectively compare gender parity in different countries.

- *The Gender Inequality Index (GII)* is a three-dimensional composite measure (reproductive health, empowerment, and labour) established by the United Nations Development Program in 2010. Most of the countries have improved since 2000; In 2021, the Republic of Chad was ranked 165 out of 189 with a GII index of 0.65231.
- Another similar indicator is the Gender Gap Index (GGI), calculated annually by the World Economic Forum, which highlights the gap between men and women in each country. *The Global Gender Gap* Index benchmarks the current state and evolution of gender parity across four key dimensions (Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment). It is the longest-standing index which tracks progress towards closing these gaps over time since its

[31] https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQjw08aYBhDIARIsAA_gb0ctkAjrxNBna7u04GQyM3B1J6Quw25kzw7ICz-MpPzxrc-rD-C6Z-oaApwZEALw_wcB#/indicies/GII

inception in 2006 (World Economic Forum, 2021). **The GGI score for Chad republic is 0.579 (rank 142th out of 146) in the 2022. Figure 1** shows the situation of this indicator in the country

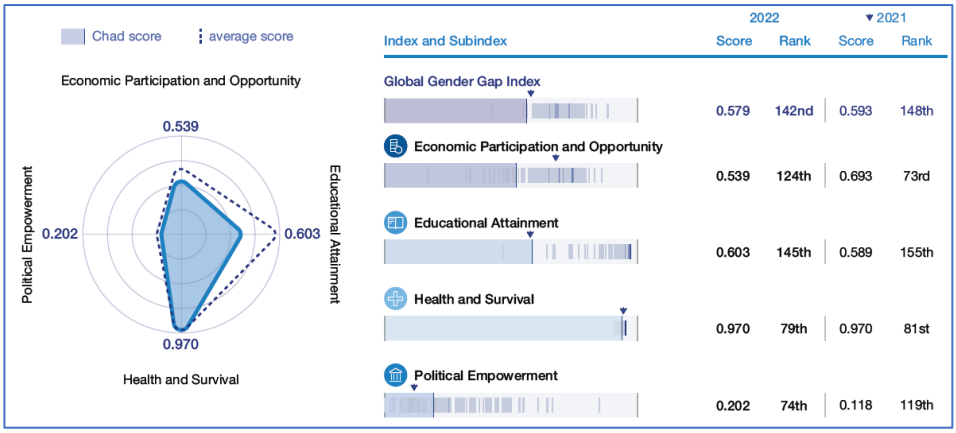

Figure 1: Scores for the four sub-indicators of the GGI for the years 2021 and 2022 (Source: WEF 2022[32])

Demography

The most recent population estimation for the country is reported in the table 1. It is estimated that an average of 50.08% of the population in the countries are women. Population structure by gender is presented in the figure below (Figure 10).

Table1: Demography characteristics in 2022 (Source: WEF, 2022)

Parameters	Value
Population (millions of inhabitants)	16.43
Density (Persons per sq. km.)	13.22
Average Annual Growth Rate (%) – 1961 to 2021	3.26
Total Fertility Rate (Births per woman)	5.65
Under 5 Mortality Rate (Per 1,000)	110
Life Expectancy at Birth, Both Sexes (Years)	55.95

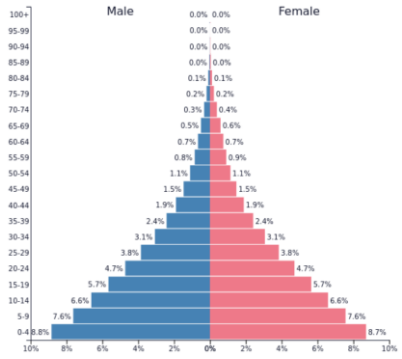

Figure 2 Population pyramid by age and gender (Source: CIA 2022)

Female headed households amount for the year 2018 is **22.1 %** (World Bank Group, 2022). Female-headed households are more common among women with higher levels of education, and while they are not always well integrated in rural areas, they are increasingly common in urban locations.

Health

[32] https://www3.weforum.org/docs/WEF_GGGR_2022.pdf

As indicated in the section above, life expectancy is quiet low compared to other African countries even a slight increase is observed during the last years. Family planning is not a common practice in Chad. Indeed, the contraceptive prevalence, considering any method (% of married women ages 15-49) is 8%[33]. Regarding the maternal mortality rates, the current highest value is 110/1000. Recent figures from the world Bank (2022) indicate that 1,140 women die per 100,000 live births due to pregnancy-related causes.

Gender consideration in education systems

Access to education for girls is currently quite weak in Chad. Population with at least some secondary education[34] is estimated at 7.7% in 2022 for female whereas for male it is almost three times higher (24.4%). It is interesting to note that over half of the primary students are females, with numbers dropping in secondary and tertiary (**Table 2**). Female representation in tertiary education is dismally low in all the country like in several countries in the region. However, it should be noted that these figures have been growing steadily for the past 40 years.

Table 2 Female education enrolment figures for the four countries (Source: World Bank Group, 2022)

Degree	Value
Primary enrolment	83%
Secondary enrolment	14%
Tertiary enrolment	3%

Women in economic activities

According to the UN Women, some progress on women's rights has been globally achieved even some work still needs to be done to achieve gender equality. Indeed, women, especially in rural areas, still face constraints related to their position in comparison to men. They are often assigned an inferior position and this situation considerably limits their ability to engage in economic and profit-making activities. Their role is sometimes limited to providing labour for their husbands or fathers. Their access to land and credit is sometimes limited even if this situation is not supported by official laws or rules. Women in polygamous unions are often heads of households since it is each woman alone who is responsible for herself and her children with sporadic assistance from the husband[35]. Some of indicators giving an overview on women participation rate in the labour force (estimation of year 2019) in the country are presented in the table 3 below. The figures show that in the country, only half of women participate in the labor force in contrast with nearly three-quarters of men.

Table 3: Overview on women participation rate in the labour force in the country (Source: World Bank Group, 2022)

Indicators	Female	Male
Labor force, female (% of total labour force)	40.4	-
Ratio of female to male labour force participation rate (%)	67.7	-
Firms with female top manager (% of firms)	12	-
Labor force participation rate (% population ages 15+)	49.3	72.8

In 2019, the situation of **female employment** in the main activities sectors (agriculture, industry and services is as follow (World Bank Group, 2022):**Agriculture**: 73%; **Industry:** 1% and **Services:** 26%.Given the above-described situation, the government of Chad have made significant efforts to reverse the trend. Gender equality is being considered as a driver of economic inclusion and a development goal in the country. This recognition is in line with the regional strategies and regulations which call on "Member States" to formulate, harmonise, coordinate and implement the appropriate policies and mechanisms to improve the economic, social and cultural conditions of women.

Gender-Based Violence

Gender based violence (GBV) is an important issue in Chad as Violence against Women and Girls (VAWG) is still occurring. A survey from USAID reported that an average of nearly 70 percent of women will be victims of gender-

[33] Indicator: Women making their own informed decisions regarding sexual relations, contraceptive use and reproductive health care (% of women age 15-49).

[34] Percentage of the population ages 25 and older that has reached (but not necessarily completed) a secondary

[35] World Bank (2002). STRATEGIC COUNTRY GENDER ASSESSMENT. 35p.

based violence in their lifetimes in Chad. The UN Women most recent data (2018) on different forms of violence against women in the countries are reported in the **table 4** below.

Table 4 Different forms of violence against women in the four countries (Source: World Bank Group, 2022)

Form of Gender Based Violence	Rate (%)
Child Marriage (under 15 years)	29.7
Child Marriage (20 to 24 years)	60.6
Female Genital Mutilation/Cutting	34,1
Proportion of women subjected to physical and/or sexual violence in the last 12 months[36]	17.5
Lifetime Physical and/or Sexual Intimate Partner Violence	28.6

The above figures are regarded as a prevalent and critical hindering factor for human development and peace building.

In recent years, the country puts in place important legal and institutional arrangements (see Table below) to enhance the fight against gender-based violence (see section 3), though their efficacy is debatable due to a variety of reasons including lack of awareness, social stigma, etc.

Several national and international civil society organizations are active in the region with scope to fight against gender-based violence.

Gender Policy and Legislation

The **tables 5 and 6** below highlight the country stance towards key international, regional and national gender rights text.

Table 5 International protocols and frameworks ratified by countries in support of gender equality, women's empowerment and Human Rights

International
UN Declaration on Human Rights (1948)
Protocol II Additional to the Geneva Conventions of 12 August 1949 on the Protection of Victims of non-international ArmedConflict
UN International Covenant on Economic, Social and Cultural Rights (1966)
UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1979)
UN International Covenant on Civil and Political Rights
Convention on the Rights of the Child (1989)
Vienna Declaration and Program of Action from the Vienna World Conference on Human Rights (1993)
Beijing Declaration and Platform for Action (1995)
UN Security Council Resolution 1325 on Women, Peace and Security (2000)
Convention on the Rights of Persons with Disabilities (2008)
The Sendai Framework for Disaster Risk Reduction (SFDRR)
The Adaptation Fund Gender Policy AND Gender Action Plan (2021)
United Nations Framework Convention on Climate Change and its Gender Action Plan
Regional
African Charter on Human and Peoples' Rights (1981)
African Charter on the Rights and Welfare of the Child (1990)
African Union's Protocol to the African Charter on Human and People's Rights on the Rights of Women (Maputo Protocol, 2003)
Solemn Declaration of Gender Equality in Africa (2004)
Action Plan for Implementation of the Central Africa Gender Responsive Regional Strategy for Risk Prevention, Disaster Management and Climate Change Adaptation (2015)
Draft Africa climate change strategy (2020 – 2030)
The AU Gender Policy (2009)
The 2018-2027 AU Strategy for Gender Equality and Women's Empowerment (GEWE)
AU Agenda 2063 (2014)
Regional Agreement against Trafficking in Persons, Especially Trafficking in Women and Children

[36] % of ever-partnered women ages 15-49; Data is from year 2015

The national frameworks, policies, plans and programs on gender equality have been identified as follows: i)The National Gender Policy (NGP);ii)National Strategy to Combat Gender-Based Violence; iii)National Plan to Fight Against Trafficking and Sexual Exploitation of Minors; iv)Law No. 19 on HIV/AIDS; v)Listening Center; vi)Article 18 & 20 of the Constitution; vii)Law on the Promotion of Reproductive Health (FGM, Early Marriage); viii)Legal Clinics; ix)Campaign Against Female Genital Mutilation; x)Criminal Code; xi)Diagnostic Study on Gender-Based Violence; and xii)Project for Assistance to Women and Girls Victims of Sexual Abuse

Gender vis-a-vis the Project outcomes and activities

Gender and Land: Women's rights to land ownership are guaranteed by the Chadian Civil Code and Constitution. Access to land is specifically governed by laws 23, 24 and 25 of July 22, 1967, which guarantee the right to free possession. These laws were reinforced by Law No 7 of 5 June 2012 which strengthens the capacities of rural communities in the management of natural resources and Decree No 215 of April 24, 2002 which establishes a national land observatory. Nevertheless, discriminatory inheritance practices are major obstacles to women's land ownership. According to the government this is due to social and cultural norms prevented women from accessing land and that women were further disadvantaged by their low economic status. There is currently no data on the exact gap in land ownership between men and women[37].

Water: In general, women are mainly responsible for daily water related chores, including sourcing, transporting and stocking it. They are also viewed as the main water users as they are also responsible for most daily domestic chores including cooking, cleaning, health, food processing, etc. In certain rural area, it has been reported that men tend to be the ones with decision wielding power over water management despite women being more involved in water usage even if sometimes the election of women in key decision-making position are encouraged.

Gender and rural agricultural labour: Women play a major role in agricultural production and are responsible for subsistence farming, while men participate in both subsistence and commercial agriculture. In the pastoral sector and traditional rainfed agriculture, women play an important role. Their role specifically involves farming, primarily on household or spousal farms, where they grow crops that are largely used for family consumption (green vegetables, tomatoes, cowpeas, okra, millet, corn, etc.). In terms of the provision of labour, women and men work side-by-side in almost all the agricultural tasks on the land, while men are responsible for marketing the agricultural products. It is also reported that “in terms of agricultural and general economic activity, a woman is not solely in charge of her income. The husband has a right of inspection and management over the income of his wife and only rarely does that income serve for the personal fulfilment of the woman at home

Gender and adaptation to climate risks: The actual and potential climate risks remain a serious challenge to inclusive socio-economic development, peace, and security in the basin. They aggravate pre-existing social inequalities. Indeed, women and other marginalized groups (the elderly and/or disabled) are often the most affected by the effects of climate change and disasters such as floods because of their limited access to resources and their dependence on agriculture and natural resources for their livelihoods, which are also highly sensitive to climate variability. This vulnerable group faces many gender-specific barriers that limit their ability to cooperate and adapt to climate change. Nevertheless, women and other marginalized groups continue to be nominal stakeholders in decision-making in the implementation of projects and programs in Chad. Under this project, actions will be put in place to reduce the damage caused by these climate risks. The implementation of the planned activities will fully involve vulnerable groups (women and marginalized groups) by adapting the intervention strategy that will respect the habits and customs of the basin populations. The integration activities will mainly concern the involvement of women and marginalized people in the monitoring of climate risks and in the collection of data as well as the dissemination of climate information.

[37] https://www.genderindex.org/wp-content/uploads/files/datasheets/TD.pdf

Gender and ecosystems preservation, management and valorisation: Component 2 which is the most important targeting adaptation measures implementation on the ground focuses on the resilience of oasis ecosystems and vulnerable local communities. As it can be seen from the information reported above, the most vulnerable groups to climate change in the basin are women and are more impacted by the adverse effect of climate change. Indeed, a significant effort will be made to take gender into account in the implementation of these activities. It is thus important to identify gender-sensitive strategies that respond to these crises for women to improve gender mainstreaming in these activities.

Gender and paradigm shift for climate risks management: The involvement of gender (women and marginalized groups) is essential for a paradigm shift in climate risk management in the project areas. According to Margareta Wahlström (UN Secretary General for Disaster Risk Reduction), "Countries that do not actively promote women's full participation in education, politics and the workforce will find it harder than ever to reduce risk and adapt to climate change. In the Chad Republic, beyond social inequalities, women play a very crucial role in the education of children (and therefore of nations) and in socio-economic development. They can also help relay information to households. Within the framework of the current project, capacity-building and awareness-raising activities on climate risk adaptation practices are planned. These activities will benefit both men and women as well as marginalized groups.

Conclusion

The climate variability and change impacts felt particularly through extreme and recurrent flooding events contribute to the exacerbation of gender-related vulnerability in the various countries. The solutions being proposed by this project will strengthen and operationalize an enabling and transformative gender environment to reduce this differentiated vulnerability, particularly of women, girls and children. The project activities implementation will necessarily include gender mainstreaming.

Below is the GAAP for the Chad Oasis Project:

Project Component / Gender Objective	Gender-Responsive Actions	Indicators (Sex-Disaggregated)	AF GP Principle alignment	Baseline	Target	Responsible Entities	Timeline	Estimated Budget Allocation
COMPONENT 1: Legal & Institutional Frameworks								
Strengthen gender-responsive governance of oasis ecosystems	• Integrate gender-responsive provisions into CCAPs and policy documents. • Ensure min. 40% women involvement in all local/national consultations. • Develop gender guidelines for legal & institutional frameworks.	• No. of CCAPs with gender measures • % of women & youth in consultations • Gender guidelines validated by stakeholders	P1,P2,P4	Gender not systematically integrated Women participation <20%	• 100% CCAPs integrate gender • ≥40% women participation Guidelines adopted	OSS, NEE (Ministry of Environment), UFLCDS, Local Authorities	Y1–Y2	USD 15,000
Build institutional capacity on gender mainstreaming	• Train national/local institutions on gender in natural resources management. • Strengthen leaders' knowledge on women's rights to land, water, and ecosystem assets.	• No. people trained (40% women) • % of institutions applying gender audits/checklists	P2,P3	Limited institutional gender capacity	• ≥200 staff trained • ≥60% institutions apply checklist	OSS Gender Team, NPMU, Ministry of Environment	Y1–Y3	USD 7,000
COMPONENT 2: Concrete Adaptation Measures								
Outcome 2.1: Water Availability Enhanced								
Reduce women's workload & strengthen their role in water governance	• Prioritize women's needs when locating water infrastructure. • Ensure 40–50% women in Water User Associations (WUAs). • Train women in water quality monitoring, solar pump O&M.	• % reduction in time spent collecting water • % women in WUAs • No. women trained in O&M	P3,P4,P5	Women in WUAs <15% High time burden	•≥40% women in WUAs •≥30% time reduction •≥150 women trained	NPMU, Ministry of Water, Local WUAs	Y1–Y4	USD 6,000
Outcome 2.2: Sustainable Land Management								
Increase women's participation in land restoration	• Ensure minimum 40% women in SLM trainings. • Establish women-led nurseries & composting units.	• No. women participating in SLM • No. women-led SLM nurseries	P3,P5,P7	Women rarely access land <25% in SLM	•≥40% participation •≥10 women-led nurseries	NPMU, Agriculture Services, UFLCDS	Y2–Y4	USD 7,000

	• Facilitate land-use agreements for women for SLM plots.	• No. women with access to land			•≥100 women gain land access			
Outcome 2.3: Climate-Resilient Livelihoods Enhanced								
Strengthen women's climate-resilient IGAs and value chain access	• Train & support women-led cooperatives (camel milk, dates, processing). • Ensure 50% women in IGA trainings. • Prioritize women for SACCO & revolving fund access (min. 60%). • Develop women-focused entrepreneurship materials.	• % women receiving loans • No. women-led cooperatives • Increased income among women by end-of-project	P3,P5,P6	Women access to finance <20%	•≥60% women access funds •≥15 cooperatives •≥20% income increase	NPMU, SACCOs, Ministry of Economy	Y2–Y4	USD 10,000
Reduce gender-related conflict around transhumance	• Train women as conflict mediators. • Develop women-safe engagement protocols in transhumance routes.	• No. women mediators trained • Reduction in GBV-linked conflict cases	P4,P6,P7	Women rarely involved in mediation	•≥40 women mediators •GBV-sensitive protocols adopted	Ministry of Livestock, Local Authorities	Y2–Y3	USD 6,000
COMPONENT 3: Capacity Building, Knowledge & Awareness								
Strengthen gender-responsive climate knowledge & communication	• Integrate gender-disaggregated data into CNA and KAP surveys. • Develop gender-tailored communication materials (Arabic/local languages). • Ensure 40–50% women in all capacity-building trainings.	• No. gender-sensitive materials produced • % women trained • CNA/KAP gender analytics completed	P1,P2,P5	No systematic gender climate data	•CNA/KAP includes gender analysis •≥50% women trained	OSS/NPMU/UFLCDS	Y1–Y4	USD 4,000
Promote inclusion of women and youth champions	• Create women & youth climate leadership groups. • Organize peer-learning exchanges for women cooperatives.	• No. champions trained • No. peer learning sessions held	P3,P4	CNA/KAP includes gender analysis ≥50% women trained	•≥30 champions trained •≥6 exchanges	OSS, Local NGOs, NPMU	Y2–Y4	USD 5,000
TOTAL								**USD 60,000**

Annex 4: Environmental and Social Management Plan

The present project is for the development of the integrated agricultural production site in the provinces of Borkou, Ennedi West and Wadi-Fira.

The development of this integrated agricultural production site aims for the sustainable improvement of the state of hydro-agricultural systems, the quality of which is an important factor in increasing productivity in order to revive the production of crops which have the potential to serve as a basis for agricultural transformation.

The objectives of this study are to identify and analyse all major direct, cumulative, indirect, and induced environmental and social impacts and to propose short-, medium-, and long-term safeguards to improve the project environment. It also aims to verify the compliance of the planned actions with the regulations in force in Chad and the procedures of the Adaptation Fund, to propose corrective measures to be implemented if any discrepancies are identified, and to establish a fair and rational environmental and social management plan involving all stakeholders.

In light of the political, strategic, legal, and institutional framework for environmental and social management, the study conducted a comprehensive analysis of the regulatory, legislative, and institutional environment that must govern the project's implementation. This involved a thorough review of Chad's environmental policy, as well as, and perhaps more importantly, national regulations and institutional norms relevant to the project. This framework reflects and incorporates the environmental and social guidelines and procedures of the Adaptation Fund (particularly the Environmental and Social Safeguards System and the Environmental and Social Assessment Procedures), as well as international instruments ratified by Chad that may be relevant to managing the probable impacts and risks during the implementation of the Oasis Chad Project.

In terms of Classification and safeguard policies triggered by the Project: In terms of classification, the Oasis Chad Project is classified in category 2 or B due to the nature and scope (or importance) of the planned investments.

Within the framework of the Project, the safeguard policies triggered by the project are:

- Principle 1:Compliance with legislation.
- Principle 9:Protection of natural habitats.
- Principle 10:Preservation of biodiversity.
- Principle 11:Climate change.
- Principle 15:Land and soil conservation.

Regarding the institutional capacities for managing environmental and social measures, the management of the Oasis project mobilizes the following actors: Project Coordination, which ensures the coordination and steering of the project; the Ministry of Environment, Fisheries and Sustainable Development (MEPDD); the Provincial Environment Delegation; the Forestry sectors of the Communes of Biltine, Arada, Faya, Fada and Kalait; the agencies implementing the works (Company/SME, NGO, etc.), as well as any stakeholder involved in environmental protection in the project area.

The Project Coordination team may also recruit specialized individual consultants for specific needs related to monitoring environmental measures, studies, audits, evaluations, or training and awareness-raising activities. Certain stakeholders (delegations and sectors) already possess the necessary skills in environmental and social management, but these can be strengthened, if necessary, to ensure effective management of mitigation measures, in accordance with the project objectives.

Regarding the public consultations organized as part of the Environmental and Social Impact Assessment (ESIA), these took place in the municipalities of Biltine, Arada, Faya, Fada, and Kalait. They involved meeting closely with potential local partners and beneficiaries of the project to encourage their participation in planning project activities, while integrating their opinions and concerns into the process. These consultations focused on: informing the population about the project and its activities, gathering local knowledge and opinions, and

identifying the concerns, proposals, and recommendations expressed by the communities in support of the project.

During the consultation sessions, participants were organized into focus groups, and the discussions, centred on the fundamental elements of the Environmental Impact Assessment (EIA), were very lively and fruitful in each of the municipalities. Targeted exchanges with certain stakeholders and operators (resource persons from key local sectors and market gardening) were also organized during these sessions to gather relevant information.

Based on a general analysis of the consultation results, the study concluded that the nature and challenges of the project necessitate the development of an employability plan to promote the use of local labour. This plan must also include a commitment to respecting local customs and traditions, managing infrastructure, redistributing reclaimed or developed land, and guaranteeing women's access to resources. It must be prepared to guide the implementation of all activities. This tool will help prevent potential crises or tensions with stakeholders. Furthermore, the Adaptation Fund must be informed in advance by the borrower of the actions that will be taken to develop this plan.

The study conducted an options analysis, examining different scenarios based on whether or not the project was developed. This analysis concluded that the option of not developing the project should be rejected, as it does not contribute to the growth and development of the oases and wadis (riverbeds), the receptacles of oasis crops, nor to food security in the area. Conversely, the development option is clearly advantageous from a socio-environmental perspective. It represents a genuine opportunity for socio-economic development in the municipalities and surrounding areas affected by the project. Thus, the socio-economic and environmental conditions of the project area will see a real improvement through the implementation of environmental and social measures.

The main environmental and social issues of the project were identified through a sensitivity analysis that established the characteristics of the initial state of the area. This analysis revealed that the project's receiving environment faces major challenges, including
From an environmental perspective:

- The preservation of water resources, soils and biodiversity;
- The preservation of plant and animal ecosystems;

From a socio-economic and human perspective:

- The development of waterborne and other endemic diseases;
- Protecting the health and safety of local communities and workers in the project area: Managing conflicts between farmers and herders related to transhumance;
- The management of land conflicts related to land declassification;
- Strengthening the organizational dynamics of agriculture in the project area: The involvement of women and young people in the agricultural activities of the project.

The environmental and social impacts were examined in the study, which identified the main sources of impact of the project. These mainly concern the rehabilitation and development of oasis or wadi facilities, the construction of hydraulic and agricultural infrastructure, as well as the development of biological and mechanical structures to combat erosion and strong winds.

The study also revealed that the project's implementation will significantly contribute to local socioeconomic development in the provinces of Biltine, Arada, Faya, Fada, and Kalait. Indeed, thanks to planned investments in wadis and other areas to be rehabilitated and developed, as well as the construction of agricultural infrastructure, this project will contribute significantly to achieving, firstly, the objectives set by the National Climate Change Adaptation Plans (NCAPs), and secondly, the ambitions outlined in the Nationally Determined Contribution (NDC) and other programmatic documents such as the National Development Plan (NDP). It is also consistent with strategies to combat food insecurity and to empower women and youth through job creation. This positive impact is manifested by:

From an environmental perspective, the project will contribute to:

- Better management of the irrigable potential of the project area;
- Good water management through suitable and appropriate (environmentally friendly) developments and with irrigation and drainage networks;
- Improved management of soil and water resources, through technical guidance on irrigation methods and rational water distribution to farmers; thus, limiting their overexploitation and degradation;
- The reduction of agricultural land degradation, the conservation of water and soil, and the development of vegetation cover, thanks to the implementation of new developments with total water control and the installation of anti-erosion structures; This will limit the phenomena of erosion and silting of wadis; thus, contributing to the increase of agricultural areas and therefore the productivity of the environment.

From a social perspective, the positive impacts of the project's activities include:

- The improvement of vegetable production techniques and systems;
- Reducing post-harvest losses;
- Improving producers' incomes and marketing conditions;
- Better valorisation of production through transformation;
- The enhancement of agricultural production capacities, through the introduction of modern techniques.

Furthermore, the study also identified potential negative environmental and social impacts that could arise from these investments, and general and specific measures, as well as an implementation mechanism, were considered. One of the general measures of the project will be to integrate, in addition to the provisions of the project's ESMP, the management measures provided for in the management plans of these protected resources of great importance.

At this level, the project will not encounter any difficulties, as the environmental services of the municipalities and provinces are sufficiently equipped to implement management plans for these areas.

Furthermore, it should be noted that the watershed protection activities included in the project, such as reforestation of wadi banks and the installation of certain erosion control measures (stone barriers, etc.), fall within the overall framework of implementing the project's Environmental and Social Management Plan (ESMP). These activities directly contribute to the protection of the rehabilitated structures and agricultural infrastructure built by the project, while also having a positive impact on the protection of the entire oasis ecosystem. Among the general measures, the following elements must be added:

The Coordination, through the MEPDD and the decentralized environmental services of Biltine, Arada, Faya, Fada and Kalait, must ensure that the SMEs that will carry out the work and the Works Control Service comply with all

the clauses and remain subject to all the laws and regulations in force in the Republic of Chad concerning environmental protection as well as the environmental and social safeguard procedures of the Adaptation Fund. The specific mitigation measures recommended in the environmental and social impact assessment must also be integrated into the project, and their implementation must be ensured during the works by the implementing agencies (SMEs, etc.). This is the case for:

- The adoption of market gardening layout types as well as agricultural production and processing techniques, minimizing environmental risks;
- Strengthening producers' skills in managing risks related to water management, mastering technical production processes, and using pesticides and mineral fertilizers;
- The incorporation into the specifications of the implementing agencies of a priority given to the recruitment of skilled labourers and workers from the local community in order to enable them to benefit from the economic benefits of the project;
- Information, education and communication (IEC) for implementing agencies on various topics (practices and attitudes to adopt, road safety, etc.) and to local and transhumant livestock farmers in order to limit the straying of animals on the rehabilitated/developed agricultural areas;
- Implementing agencies must raise awareness among their employees to report any chance discoveries of archaeological objects to the competent authorities.

The implementation of these measures falls under the responsibility of the implementing agencies, the Ministry of the Environment, and/or UFLCDS as the project owner, represented by the Coordination team, which must ensure their application. To this end, the Coordination team will rely on an environmental consultant, the Ministry of Environment, Sustainable Development and Energy (MEPDD), the decentralized environmental services of the municipalities concerned, and the forestry sector. However, to maximize the effectiveness of the action, it is also desirable to actively collaborate with local authorities, local technical services, community leaders, and local radio stations in the municipalities where the project is implemented.

In addition to these general measures, specific measures addressing the potential negative impacts of the project's investments have been established. These measures concern the

Receptors of biophysical and socioeconomic/human impacts, both during the construction and equipment installation phases and during the operational phase of the facilities. Safeguard measures have also been established for certain hazards that have also been analysed. This is the case for hazards related to:

To the substances and products stored: Ammonium phosphate, urea, zinc, pesticides, the input storage store;

Operating conditions and equipment: agricultural equipment, maintenance operations at the workshop level, water storage structures (water tower and irrigation basin), product dryer, river flooding, strong winds and heavy rains.

These elements are detailed in the EIES, accompanied by an ESMP, developed as part of the project preparation. The table below the provide the ESMP that has been further elaborated in the FULL ESMP

Impact	Mitigation & Compensation Measures	Implementation Measure	Responsible for Monitoring / Control	Implementation Period
1. Soil degradation in work zones (borrow pits, storage sites, machinery areas, worker camps)	• Include restoration clauses in contractor TORs. • Enforce revegetation and planting of stabilizing shrubs and herbaceous species. • Restore all disturbed areas after completion. • Apply biological erosion-control measures where needed.	Coordination Unit (Company/NGO)	Project Coordinator, Environmental Consultant, CAD	Preparation + during works
2. Soil and water pollution due to hydrocarbons (refueling, oil changes, machinery leaks)	• Implement solid & liquid waste management system. • Designate controlled areas for fuel storage, refueling & maintenance. • Install sealed containment basins for fuel tanks. • Prevent spills through training & daily supervision.	Contractor / NGO / Consulting Engineer	Sanitation & Pollution Control Department	Before + during works
3. Loss of fertile topsoil during excavation	• Perform selective removal of topsoil. • Store fertile soil separate from subsoil. • Reapply topsoil for land rehabilitation after construction.	NGO / Consulting Engineer	Work Supervision Engineer	During excavation
4. Solid & liquid waste generation from workers and construction sites	• Establish waste sorting, collection and disposal system. • Monitor waste points daily. • Prohibit dumping of untreated waste.	Contractor / NGO	Environmental Unit (MEPDD, CAD)	Entire works period
5. Loss of vegetation due to site clearing	• Restrict clearing to minimum required footprint. • Restore cleared areas through planting programs.	Contractor / Local Authorities	Environmental Consultant	Construction phase
6. Air-quality degradation (dust, machinery emissions)	• Use tarpaulins on trucks transporting materials. • Regularly water access tracks. • Maintain machinery to reduce emissions. • Provide PPE (masks, goggles) to workers.	Contractor	Environmental & Safety Officers	Construction phase (especially windy periods)
7. Noise pollution & vibration from machinery	• Limit work to daytime hours. • Notify local communities of noisy activities. • Maintain equipment to reduce noise levels.	Contractor	Environmental Consultant	During works
8. Water pollution (sediments, wastewater, chemical discharges, nitrates)	• Establish a system for collection & management of wastewater. • Avoid discharge of untreated liquid waste into wadis.	Contractor / Coordination (Water Services)	Water Quality Lab, Local Authorities	Before + during works + operation

	• Monitor water quality (nitrates, pesticides, coliforms) using laboratory tests.			
9. Loss of habitat, fauna disturbance, and biodiversity impacts	• Limit vegetation clearance. • Avoid sensitive habitats and gallery forests. • Supervise works in forested/wildlife areas. • Replant native species.	Contractor / Provincial Forestry Services	Environmental Consultant & Forest Services	Construction + restoration
10. Erosion and sedimentation of rivers/wadis	• Construct anti-erosion structures (stone bunds, barriers). • Reforest wadi banks. • Manage runoff from construction sites.	Coordination / Forest Sector	Local Environmental Services	Construction + operation
11. Increased greenhouse gas emissions and dust from traffic	• Limit circulation of heavy trucks. • Maintain equipment. • Prioritize low-emission machinery where possible.	Contractor	Environmental Consultant	Construction phase
12. Accidents, occupational hazards & worker/community safety	• Install safety signage. • Provide PPE (helmets, gloves, boots, masks). • Control access to worksites. • Conduct toolbox safety meetings daily.	Contractor	Health & Safety Unit	Throughout construction
13. Risk of drowning (water structures, irrigation basins)	• Fence off hazardous zones. • Put visual warning signs. • Train communities in risk prevention.	Contractor / Local Authorities	CAD / Safety Officers	Entire project
14. Social conflicts (resource competition, land access)	• Implement community dialogue mechanism. • Organize IEC campaigns (communication, sensitization). • Clarify access rights during works.	Coordination Unit / Local Leaders	Coordination + Local Authorities	Entire project
15. Loss of income due to restricted access during drilling/excavation	• Inform farmers prior to works. • Implement temporary access alternatives. • Compensate for temporary economic losses if any.	Project Coordination	Local Authorities	Construction phase
16. Water-table depletion (over-pumping)	• Properly size water-mobilization structures. • Train farmers on sustainable water management. • Monitor groundwater levels regularly.	Water Delegations / Coordination	Environmental Consultant	Operation phase
17. Health risks (malaria, bilharzia in stagnant water)	• Ensure drainage of stagnant water. • Promote mosquito-control measures. • Community sensitization.	Contractor / Health Services	Local Health Services	Construction + operation
18. Misuse of fertilizers and pesticides	• Implement Pesticide & Fertilizer Management Plan. • Train farmers on safe handling and application.	Coordination / NGOs	Agricultural Extension Services	Operation phase
19. Cultural heritage / chance finds	• Apply chance-find procedures. • Stop work immediately and notify authorities.	Contractor	Provincial Cultural Authorities	Construction phase

Annex 5: Cost effectiveness

Executive summary

The Oasis Chad Project is an integrated and strategic response to accelerating climate, environmental, and socio-economic pressures in the northern provinces of Borkou, Ennedi Ouest, and Wadi Fira. These arid and semi-arid regions face persistent drought, high temperatures, erratic rainfall, sand dune encroachment, and overexploited groundwater, which severely constrain agriculture, water availability, and livelihoods. Agro-pastoral communities particularly women, youth, and nomadic pastoralists are increasingly vulnerable to food insecurity, poverty, and marginalization.

The project aims to reverse these trends through improved water resource management, restoration of degraded land, diversification of incomes, and strengthening of institutional and community adaptive capacity.

Alignment with National and Regional Priorities

The Oasis Chad Project is fully aligned with Chad's national climate adaptation priorities, the National Development Plan, and commitments under the Great Green Wall Initiative. It supports the Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) by addressing land degradation, desertification, and rural poverty through ecosystem-based adaptation. Its design reflects the realities of fragile oasis ecosystems while contributing to broader Sahelian development frameworks.

Long-Term Effectiveness

The project is designed not only for immediate impact but also for long-term sustainability. By combining participatory governance, community-led water management, climate-smart agriculture, and inclusive value chains, it creates self-sustaining systems that reduce dependence on external support. Strengthened legal frameworks, local adaptation plans, and capacity building ensure that benefits are maintained and scaled after project completion. This foundation for resilience is expected to endure well beyond the four-year implementation period.

Economic Analysis: Baseline vs. Project Scenario

The comparison between the baseline scenario and the Oasis Chad Project clearly highlights the project's substantial added value. Without the project, the Cost-Effectiveness Ratio (CER) stands at 2.10, meaning each dollar invested generates just over two dollars in return. With the Oasis Chad Project in place, the CER rises significantly to 3.93, confirming its high economic efficiency and strong return on investment.

The Net Present Value (NPV) also shows a remarkable increase from 304 724.51 USD under the baseline scenario to 25 935 767.06 USD with the project demonstrating the transformative long-term financial gains achieved through its integrated approach to water management, ecosystem restoration, livelihood diversification, and institutional strengthening.

Table 6: comparison between the baseline scenario (without the project) and with the Oasis Tchad Project

	Without the Project (base line scenario)	With the project
Benefit Cost Ratio (CER)	2.10	3.93
Net Present Value (NPV)	304 724.51	25 935 767.06

Cost effectiveness analysis

The Oasis Chad Project demonstrates strong economic efficiency and strategic relevance, transforming a total investment of USD 9.21 million into an estimated USD 36.23 million in returns yielding a substantial net benefit of USD 27.34 million. The overall Cost-Effectiveness Ratio (CER) stands at 3.93, meaning each dollar invested generates nearly four dollars in measurable economic returns. This performance reflects the integrated design of the project, where governance reform, natural resource restoration, and livelihood diversification reinforce one another to deliver lasting benefits.

Component 1 with an investment of USD 1.50 million, generates returns of USD 7.25 million, producing a net benefit of USD 5.74 million and a CER of 4.83. The high ratio reflects the efficiency of investments in legal and institutional frameworks, local adaptation planning, and monitoring systems that enhance the management of fragile oasis ecosystems. These reforms have a multiplier effect by enabling better coordination among stakeholders, improving compliance with environmental regulations, and ensuring that climate adaptation strategies are implemented effectively. The component also invests in targeted capacity-

building for local authorities, community leaders, and technical services, laying the foundation for durable governance systems that safeguard both natural and socio-economic assets.

Component 2 the largest investment area, allocates USD 6.01 million to activities that yield USD 25.36 million in returns, resulting in a net benefit of USD 19.35 million and a CER of 4.22. The component delivers climate adaptation at scale through the rehabilitation of degraded land, dune stabilization, reforestation, and the deployment of solar-powered boreholes and micro-dams to secure water for both agriculture and livestock. It also promotes drought-tolerant crops, sustainable irrigation techniques, and improved pasture management, alongside income-generating activities with short return cycles. These initiatives particularly target women and youth, fostering both employment and entrepreneurship while reducing reliance on climate-sensitive livelihoods. The combined impact of ecological restoration, improved water access, and economic diversification creates a strong economic and environmental return, supporting food security and resource sustainability in the targeted provinces.

For component 3, although the smallest in terms of investment at USD 0.83 million, generates USD 3.62 million in returns, yielding a net benefit of USD 2.78 million and the highest CER of 4.34. This performance is driven by targeted capacity-building, institutional coordination, and knowledge management. The component strengthens technical capacities of stakeholders, promotes awareness and education on sustainable practices, and supports the dissemination of lessons learned and best practices. By empowering local institutions and enhancing community engagement, it amplifies the effectiveness and sustainability of the other components, ensuring that project benefits are sustained well beyond the implementation period.

The project's strong Cost-Effectiveness Ratio (CER) of 3.93 reflects the strength of a well-balanced and integrated portfolio. Component 1, focused on developing and strengthening legal and institutional frameworks, ensures long-term governance and sustainability. Component 2, dedicated to the implementation of concrete adaptation measures, delivers large-scale environmental restoration and sustained productivity gains. Component 3, centred on capacity building, knowledge sharing, and awareness raising, enhances stakeholder engagement and secures rapid, high-impact returns. Together, these interlinked components create powerful economic, environmental, and social synergies, positioning the Oasis Chad Project as a model for cost-efficient, climate-resilient development in arid and fragile regions.

Table 7: Summary of the CEA of all the project and for each component

Metric	All the Project (USD)	Component 1 (USD)	Component 2 (USD)	Component 3 (USD)
Total Cost	9 216 589.71	1 500 212	6 006 699.71	834 101
Total Estimated Return	36 235 302.44	7 247 060.49	25 364 711.71	3 623 530.24
Net Benefit	27 018 712.72	5 746 848.49	19 358 011.99	2 789 429.24
Cost-Effectiveness Ratio (CER)	3.93	4.83	4.22	4.34

Financial Analysis

The financial analysis of the Oasis Chad Project confirms its strong cost-efficiency and long-term economic viability. Over the four-year implementation period, total project costs amount to 9.21 million USD, while cumulative financial benefits are projected to reach 36.23 million USD, yielding a solid Cost-Effectiveness Ratio (CER) of 3.93.

The Net Present Value (NPV) of 25.93 million USD demonstrates that the present value of the benefits significantly exceeds the investment costs, while an Internal Rate of Return (IRR) of 33% after four years and 65% after 20 years confirms the project's financial soundness in line with, and exceeding, international development benchmarks.

Cash flows remain consistently positive throughout implementation, with a pronounced increase in Year 4, when major infrastructures such as solar-powered boreholes, micro-dams, and restored agricultural lands become fully operational. This coincides with the scaling up of income-generating activities, resulting in a peak CER for that year.

These results underscore the project's strategic design: early investments in water resource management, land restoration, climate-resilient agriculture, and institutional strengthening lay the foundation for sustainable and locally managed income streams.

The Oasis Chad Project is expected to continue generating substantial economic and social returns well beyond the implementation phase. The durability of physical infrastructure, the institutionalization of governance mechanisms, and the resilience of community-based livelihoods ensure that the project's impact will extend into the long term, making it a scalable and replicable model for other fragile oasis and dryland environments across the Sahel.

Table 8: Financial Analysis

	Year 1	Year 2	Year 3	Year 4	Total
Component 1	615962.20	622752.10	203387.10	58110.60	1500212.00
Component 2	1530176.75	2062922.77	1326037.60	1087562.60	6006699.71
Component 3	232300.50	117610.12	83194.12	83194.12	401608.49
Execution costs (management units)	218894.25	218894.25	218894.25	218894.25	875577.00
Total costs (A)	2597333.70	3136869.62	1933068.95	1549317.45	9216589.71
Total financial benefits (B)	4669340.53	5805603.56	10979513.63	14780844.72	36235302.44
Cash flow (BA)	2072006.83	2668733.93	9046444.69	13231527.28	27018712.72
Cost-Effectiveness Rate (CER)	1.80	1.85	5.68	9.54	3.93
Net Present Value (NPV)	5.2				25 935 767
Internal Rate of Return (IRR)(after 4 years)					33%
Internal Rate of Return (IRR)(after 20 years)					65%

The Climate-Resilient Oasis Agroecosystem (CROA) system demonstrates exceptional long-term economic performance, with an Internal Rate of Return (IRR) reaching 33% by Year 4 and steadily increasing to 65% by Year 20. This strong trajectory reflects the system's integrated design, which combines water-efficient infrastructure, climate-resilient crops, agroforestry, and diversified income-generating activities. Early gains are driven by fast-maturing crops and value chain activities, while medium- and long-term returns benefit from the progressive productivity of date palms, restored rangelands, and stabilized ecosystems. The CROA model not only ensures rapid cost recovery but also maintains high profitability and resilience well beyond the project's implementation phase.

In the Chad Oasis Project, livelihood activities show strong Internal Rates of Return (IRR), confirming both quick gains and long-term viability. Short-cycle livestock such as poultry, sheep, and goat farming deliver rapid returns up to 46%, 36%, and 17% respectively after four years while vegetable farming leads with 52% in the short term. Longer-term investments like the camel milk value chain reach 35% by year ten. Together, these activities diversify incomes, strengthen food security, and enhance resilience in oasis communities.

Conclusion

The Oasis Chad Project demonstrates that well-designed and inclusive climate adaptation interventions can deliver strong economic returns while tackling environmental degradation and social vulnerability. By integrating governance reforms, sustainable resource management, climate-smart livelihoods, and inclusive economic empowerment, it ensures lasting benefits for communities and ecosystems. The project provides a scalable model for building resilience in arid zones and contributes directly to Chad's national climate adaptation and sustainable development goals.

Introduction

Chad, a landlocked country in Central Africa, faces increasing environmental and socio-economic pressures driven by climate change, desertification, water scarcity, and widespread poverty, particularly in its northern regions. The provinces of Borkou, Ennedi Ouest, and Wadi Fira characterized by arid and semi-arid climates host fragile oasis ecosystems that support agro-pastoral communities highly dependent on limited natural resources for survival. These areas experience high temperatures, low and erratic rainfall, dune encroachment, and overexploited groundwater, all of which severely constrain local agriculture, water availability, and livelihoods.

Local populations especially women, youth, and nomadic pastoralists face a combination of chronic poverty, weak infrastructure, limited access to basic services, and declining agricultural productivity. Traditional oasis-based farming and livestock systems are increasingly under strain, and food insecurity remains a persistent challenge. In this fragile context, proactive and inclusive resilience-building strategies are urgently needed.

In response to these challenges, the Oasis Chad Project was designed as a comprehensive and integrated initiative to address the multiple vulnerabilities threatening oasis communities in the country's northern regions. The project builds on Chad's national climate adaptation priorities, the country's engagement in the Great Green Wall Initiative, and extensive experience from local institutions and development partners in natural resource management, food security, and resilience-building.

The initiative targets the degradation of oasis ecosystems, increasing scarcity of water resources, and the economic marginalization of rural populations, especially women, youth, and agro-pastoralists. Through a participatory, ecosystem-based adaptation approach, the project seeks to restore productive capacities, reduce climate-related risks, and enhance the adaptive capacity of local populations by mobilizing traditional knowledge and strengthening institutions.

The Oasis Chad Project supports national development policies focused on decentralization, gender equality, and sustainable rural development. It promotes the revitalization of oasis-based agro-ecosystems, fosters sustainable land and water use, and creates income-generating opportunities to improve livelihoods in the face of increasing climate pressures. The project particularly emphasizes social inclusion, ensuring that women and youth play a central role in planning, implementation, and benefit-sharing.

The overall objective of the project is to strengthen the resilience of oasis communities in northern Chad to the impacts of climate change by promoting the sustainable management of water, soils, and natural resources, and by improving livelihoods and institutional capacities, with a particular focus on women and youth.

The specific objectives are to:

- Ensure sustainable access to and management of water resources in oasis environments
- Implement concrete climate adaptation measures to restore degraded land and stabilize ecosystems
- Promote income diversification and economic empowerment for vulnerable populations, especially women and youth
- Strengthen institutional, technical, and community capacities, promote knowledge sharing, and integrate climate adaptation into local governance.

Project Components are:

Component 1: Governance and Institutional Capacity

Focuses on strengthening legal, policy, and institutional frameworks to ensure effective long-term management of oasis ecosystems. Activities include the development and implementation of local adaptation plans, updating regulations, establishing monitoring systems, and providing targeted training for authorities, technical services, and communities, in collaboration with national ministries (Agriculture, Environment, Hydraulics).

Component 2: Climate Adaptation and Sustainable Production

Aims to enhance the resilience of oasis-based agriculture and pastoralism through large-scale land restoration, dune stabilization, reforestation, and the deployment of solar-powered water infrastructure. The component promotes drought-tolerant crops, improved livestock systems, and value chains for camel milk, supported by farmer and pastoralist training to improve productivity, food security, and climate resilience.

Component 3: Knowledge Management and Scaling Up

Strengthens stakeholder capacities and fosters knowledge sharing on climate adaptation and risk reduction in oasis environments. This includes developing and disseminating good practices, implementing participatory monitoring, and promoting awareness campaigns. Exchange visits and communication initiatives will support the replication of successful climate-resilient oasis management models at regional and national levels.

Why the Tchad Project is important

The Chad project is critical because it directly addresses the urgent and multidimensional challenges facing vulnerable populations in the fragile oasis ecosystems of Borkou, Ennedi Ouest, and Wadi Fira. These regions are highly exposed to climate change impacts, including increased temperatures, prolonged droughts, declining water tables, and progressive degradation of arable land and biodiversity. Communities in these zones largely dependent on small-scale oasis agriculture and pastoralism face escalating risks to food security, livelihoods, and social cohesion due to the combined effects of environmental stress, limited infrastructure, and weak institutional frameworks.

The project is important because it delivers integrated, locally adapted solutions that combine short-term relief with long-term climate resilience. It strengthens institutional capacities for natural resource governance, improves access to climate information and planning tools, and promotes the sustainable management of water and land resources. Through targeted investments in solar-powered water infrastructure, dune stabilization, sustainable agriculture, and value chain development, it builds both environmental sustainability and economic opportunity.

In addition, the project places a strong emphasis on gender equality and youth inclusion, by supporting income-generating activities, value-added processing of oasis products, and access to micro-finance and training. This ensures that the most vulnerable groups notably women and youth benefit from climate adaptation and livelihood diversification efforts.

By reinforcing local capacities and ecosystems while reducing dependence on emergency aid, the project contributes directly to stability, food security, and climate adaptation goals at both local and national levels. It also aligns with Chad's national adaptation plans, the Great Green Wall Initiative, and several Sustainable Development Goals (SDGs), making it a highly relevant and timely investment for partners and donors seeking high-impact interventions in the Sahel.

Alternatives considered for the cost-effectiveness study

1.1. The Oasis Tchad Project is not implemented

If the Oasis Chad Project is not implemented, the vulnerable populations of Borkou, Ennedi Ouest, and Wadi Fira will remain exposed to intensifying climate risks, environmental degradation, and deepening poverty. In the absence of planned interventions, the current dynamics of land degradation, water scarcity, and loss of oasis ecosystems will continue unchecked. Agricultural and pastoral systems will remain under-productive, increasingly fragile, and unable to meet the growing needs of local communities.

1.1.1. Impact of Climate Change

Without the project's climate-resilient measures such as dune stabilization, sustainable land management, and solar-powered water infrastructure these regions will face worsening desertification, groundwater depletion, and rising temperatures. Traditional oasis systems are already suffering from reduced rainfall, increased evapotranspiration, and loss of vegetation cover. This will exacerbate food insecurity, reduce water availability for both human and animal use, and increase reliance on emergency aid.

1.1.2. Vulnerability of Current Practices

Current agricultural practices rely heavily on outdated tools, erratic rainfall, and degraded land. Without support for sustainable intensification and access to inputs, productivity will remain low. Oases are particularly vulnerable due to silting, pest outbreaks, aging plantations, and a lack of technical and financial support. If no action is taken, traditional systems like date palm cultivation and market gardening will decline further, leading to the loss of livelihoods and agro-biodiversity.

1.1.3. Impact on Livelihoods and Local Economies

Without project activities that promote income-generating opportunities especially for women and youth rural populations will continue to face high levels of unemployment, low income, and limited economic diversification. The absence of support for value chain development and post-harvest processing will reinforce a cycle of low returns, weak market access, and high post-harvest losses, particularly for strategic oasis products like dates, cereals, and medicinal plants.

1.1.4. Environmental Impacts

Failing to implement dune stabilization, tree planting, or water-efficient irrigation will result in worsening soil erosion, dune encroachment, and ecosystem collapse. The degradation of natural vegetation, overuse of fragile groundwater, and unsustainable land use will push local ecosystems beyond recovery, threatening not only agriculture but also the biodiversity and microclimatic balance provided by oasis systems.

1.1.5. Social and Institutional Impacts

Without investment in local governance, climate planning, and early warning systems, local communities will remain unprepared and unequipped to face future climate shocks. The lack of institutional capacity, coordination, and financial services will leave local actors unable to scale adaptation practices. Youth may migrate in search of opportunities, while rural communities especially women will become more marginalized, deepening inequalities and eroding social cohesion.

1.2. Alternative with the Tchad Oasis Project

1.2.1. Climate-Resilient Oasis Agroecosystem (CROA) Model

To address the deepening impacts of climate change, land degradation, and water scarcity affecting oasis communities in northern Chad, the project proposes the Climate-Resilient Oasis Agroecosystem (CROA) Model as a transformative and

integrated alternative. This model is conceived as a holistic, community-led system designed to restore ecological functions, enhance food and water security, and support sustainable livelihoods in oasis environments. It is fully aligned with national priorities such as the National Adaptation Plan (NAP), Chad's updated Nationally Determined Contribution (NDC), and the national environmental strategy.

The CROA model promotes a new approach to oasis management that brings together sustainable water infrastructure, resilient agriculture, agroforestry, ecosystem restoration, and inclusive governance. Water access is enhanced through the deployment of solar-powered boreholes, micro-dams, and small-scale water harvesting systems tailored to the hydrological characteristics of each commune. Groundwater recharge structures are designed to support oasis agriculture while reducing pressure on non-renewable aquifers.

Agricultural systems under the CROA model emphasize climate-resilient and drought-tolerant crops such as, sorghum, cowpea, tomato, onion, and sesame, combined with the strengthening of traditional oasis crops like date palms. Crop diversification is promoted alongside soil fertility restoration through composting, organic fertilization, and agroecological practices such as millet intercropping and mulching. In addition, the model incorporates the establishment of agroforestry systems using native species like Acacia Senegal, Balanites aegyptiaca, and Ziziphus mauritiana, which contribute to soil stabilization, shade provision, fodder, and income generation.

Livestock systems are integrated within the CROA framework and adapted to the oasis context. They include sheep, goats, camels, and poultry activities. These systems are managed through rotational grazing and fodder production to reduce overgrazing and restore degraded rangelands. Animal health services, feed storage, and veterinary outreach are supported to enhance productivity and resilience.

Ecosystem restoration forms a central element of the model, focusing on assisted natural regeneration, sand dune stabilization with native grasses, and the protection of biodiversity in and around oases. Strategic planting of vegetative barriers and windbreaks helps reduce erosion and protects agricultural plots. Restoration efforts are combined with the protection of critical wetland and wadi ecosystems, ensuring ecological connectivity and long-term sustainability.

The model also introduces income diversification activities specifically targeting women and youth.

Capacity building is woven into every aspect of the Oasis Tchad Project. The project will establish and train natural resource management committees at the local level to govern water use, land access, and ecosystem protection. Local governance platforms will be strengthened to promote inclusive decision-making and ensure coordination between community structures and government authorities.

The CROA model represents a practical, climate-resilient approach that addresses the multiple, interconnected challenges facing oasis communities. By linking environmental restoration with improved livelihoods, water access, and inclusive governance, the model offers a viable pathway for the long-term sustainability and resilience of oasis ecosystems in Chad.

1.2.2. Other income activity

In addition to its core focus on agriculture, water management, and ecosystem restoration, the project will support a range of complementary income-generating activities adapted to the socio-economic realities of the targeted oasis communities. These activities aim to diversify household livelihoods, reduce dependence on climate-sensitive sectors, and empower vulnerable groups particularly women and youth by improving access to sustainable economic opportunities.

The project will promote small-scale processing and value addition of local agricultural and forest products, including the camel milk value chain. Short-cycle livestock production particularly poultry, goats, and sheep will be supported through training, veterinary services, and provision of initial stock, with a focus on women and youth beneficiaries. In selected sites, animal fattening units will be introduced to increase revenues from local livestock markets, complemented by support for feed storage and improved water access.

Training and equipment will also be provided for the sustainable harvesting, processing, and commercialization of local products. All activities will be implemented in close coordination with local resource management structures to ensure ecological sustainability and equitable benefit-sharing.

These diversified income-generating activities are intended not only to reduce economic vulnerability and seasonal migration pressures but also to stimulate local economic development and reinforce community ownership of environmental conservation efforts. They will be accompanied by targeted capacity building in entrepreneurship, financial literacy, and cooperative

governance, and integrated into broader strategies to strengthen value chains and improve access to national and cross-border market.

Comparison between implementing and not implementing the Oasis Chad Project

The implementation of the Oasis Tchad Project will deliver significant environmental, social, and economic benefits while enhancing the resilience of vulnerable oasis communities in the Borkou, Ennedi Ouest, and Wadi Fira regions. Designed to address climate change vulnerabilities and ecosystem degradation, the project promotes sustainable land and water use, value chain development, and community empowerment.

Environmental Effectiveness:

- Protection and restoration of oasis ecosystems through improved land and water management, including biological and mechanical dune fixation, to prevent desertification and soil erosion.
- Enhancement of water availability via solar-powered boreholes, micro-dams, and water infrastructure to support agro-pastoral activities and reduce pressure on fragile resources.
- Promotion of climate-resilient agricultural practices (e.g., drought-resistant crops, efficient irrigation, improved soil fertility) that strengthen ecosystem services and reduce climate risks.
- Development of sustainable fodder production systems to reduce overgrazing and support livestock systems, contributing to ecological balance.

Social Benefits:

- Improved food and water security through increased agricultural productivity and better access to potable water in remote communities.
- Empowerment of women and youth through targeted support to income-generating activities (e.g., poultry farming, beekeeping), vocational training, and market access.
- Strengthening of local livelihoods and resilience by diversifying income sources, enhancing adaptive capacity, and reducing community vulnerability to climate shocks.
- Improved health and sanitation outcomes due to reduced time spent collecting water and improved hygiene through water access infrastructure.

Economic Benefits:

- Development of oasis-based value chains including dates, camel milk, and artisanal products, increasing local income generation and reducing post-harvest losses.
- Job creation in water infrastructure, agriculture, processing, and value chain development, particularly benefiting women and youth in marginalized areas.
- Stimulation of rural economies through improved access to markets, support to cooperatives, and provision of productive assets and training for entrepreneurs.

Institutional and Capacity Development:

- Strengthening of local governance and institutional coordination through the development of local adaptation plans, regulatory frameworks, and environmental monitoring systems.
- Capacity building of local authorities, extension agents, and producers through targeted training, awareness campaigns, and participatory planning processes.
- Integration of climate adaptation and sustainable resource management into community-level development plans, reinforcing long-term institutional ownership.

Long-Term Effectiveness and Sustainability:

- The project adopts a participatory, inclusive, and ecosystem-based adaptation approach, ensuring strong local ownership and alignment with community needs.
- All interventions are aligned with Chad's national adaptation strategies and the Great Green Wall Initiative, enhancing sustainability and policy coherence.

The Oasis Tchad project has clear benefits in the results to be achieved for each component of the project (figure 1).

Components	Outcomes	Outputs	With the project	Without the project
Component 1: Developing and strengthening the legal and institutional framework to support the sustainable management of oasis ecosystems and the adaptation of vulnerable communities	**Outcome 1.1: Information, legal and institutional frameworks of the oases and related ecosystems of the Borkou, Ennedi Ouest and Wadi Fira regions, are enhanced**	**Output 1.1.1: Information, legal and institutional frameworks for sustainable management of oasis ecosystems in the project area, are upgraded**	Legal and institutional frameworks will be strengthened through the development of local adaptation plans, improved environmental regulations, and enhanced monitoring systems, contributing to more effective and sustainable oasis ecosystem management.	Without the project, institutional fragmentation and lack of adaptation plans will persist, limiting coordinated response to ecosystem degradation and increasing vulnerability of oasis communities.
Component 2: Implementation of concrete adaptation measures to improve the resilience of oasis ecosystems and local communities	**Outcome2.1: Water availability in the oasis is enhanced**	**Output 2.1.1: Water availability for the development of agro-pastoral activities in the intervention sites is promoted**	Solar-powered boreholes and micro-dams will be constructed, improving access to water for irrigation and livestock, enhancing productivity and reducing resource conflicts.	Without the project, insufficient water infrastructure will continue to limit agro-pastoral activities, exacerbating food insecurity and overexploitation of scarce resources.
		Output 2.1.2. Access to potable water for target communities is enhanced.	New or rehabilitated water points will reduce time spent collecting water and improve public health in targeted communities.	Without the project, access to potable water will remain limited, disproportionately affecting women and children and worsening hygiene-related diseases.
	Outcome 2.2. Sustainable Land Management Practices are promoted	**Output 2.2.1. Land and dune management systems are reinforced.**	Implementation of dune fixation techniques (biological and mechanical) will reduce sand encroachment, protect farmland,	Without the project, desertification will advance, threatening productive land and worsening living conditions for oasis communities.
		Output 2.2.2. Climate resilient Agricultural practices are adopted.	Farmers will adopt drought-resistant crops, improved irrigation, and soil management practices, increasing yields and resilience to climate shocks.	Without the project, traditional farming will continue to suffer from poor productivity and exposure to erratic rainfall and land degradation.
	Outcome2.3. Climate resilient livelihood are strengthened.	**Output 2.3.1. Livestock production practices are improved.**	Support for sustainable livestock and crop systems, including capacity building and market access, will diversify income sources and reduce vulnerability.	Without the project, households will continue to rely on fragile subsistence activities, increasing exposure to economic and climate risks.
		Output 2.3.2. Oasis value chain is strengthened.	Value addition to products like dates, camel milk, and artisanal goods will improve income opportunities and market integration for producers.	Without the project, post-harvest losses and lack of market access will persist, limiting income from oasis-based products.
		Output 2.3.3. Community livelihoods resilience is enhanced through adoption of Income-Generating Activities (IGAs).	Targeted support for IGAs such as beekeeping, poultry, soap production, and handicrafts will boost self-employment and women's empowerment.	Without the project, limited economic alternatives will lead to high unemployment, particularly among women and youth.
Component 3: Capacity building, knowledge sharing and awareness raising of all stakeholders.	**Outcome 3.1. Enhanced awareness and ownership of adaptation and climate risk reduction processes of the targeted population**	**Output 3.1.1. Knowledge and awareness on adaptation and climate risk reduction issues in oasis are developed and disseminated.**	Awareness campaigns and training will improve understanding of climate risks, fostering proactive adaptation and long-term sustainability.	Without the project, low awareness of climate risks will persist, reducing preparedness and increasing dependence on emergency aid.

Figure 9: Comparison between the benefits created by the project and the no-intervention of the project

The comparison between the baseline scenario (without the project) and the implementation of the Oasis Tchad Project clearly highlights the transformative economic potential of the intervention. Without the project, the Cost-Effectiveness Ratio (CER) stands at 2.10, indicating that each dollar invested would yield 2.1 USD in return. With the project, the CER increases sharply to 3.93, confirming a substantial improvement in investment efficiency and demonstrating that every dollar spent generates nearly 3.93 USD in measurable economic benefits. The difference in Net Present Value (NPV) is even more striking: from only

304 721.81 USD in the baseline scenario to 25 935 767.06 USD with the project, underscoring the scale of economic value added through the proposed interventions.

This result clearly demonstrates the project's capacity to multiply the returns on investment and ensure a lasting economic impact in the targeted regions of Borkou, Ennedi Ouest, and Wadi Fira. By revitalizing degraded oasis ecosystems, improving water resource management through small-scale hydraulic works and solar-powered irrigation, and diversifying income sources via climate-resilient crops, livestock value chains, and date palm development, the project generates sustained economic growth well beyond its implementation period. The significant increase in NPV reflects not only the direct monetary gains from higher agricultural productivity and value-added processing but also the indirect benefits of reduced vulnerability to climate shocks, lower production costs through efficient resource use, and enhanced market access for rural producers. Over time, these interventions create a reinforcing cycle of resilience and prosperity, enabling local communities to maintain and build upon these gains, thereby ensuring that the economic benefits continue to accumulate long after the project's conclusion.

Table 9: comparison between the baseline scenario (without the project) and with the Oasis Tchad Project

	Without the Project (base line scenario)	With the project
Benefit Cost Ratio (CER)	2.10	3.93
Net Present Value (NPV)	304 721.81	25 935 767.06

Specific analysis of project cost-effectiveness

1.3. Cost-Effectiveness of components 1

Component 1 of the Oasis Tchad Project demonstrates strong cost-effectiveness and economic viability over the four-year implementation period. With a total investment of 1 500 212 USD, the interventions under this component are projected to generate an estimated return of USD 7 247 060, resulting in a substantial net economic benefit 5 746 848 USD.

This performance is driven by a well-integrated mix of legal, institutional, and capacity-building measures that enhance the adaptive capacity of oasis communities in Borkou, Ennedi Ouest, and Wadi Fira. Investments include strengthening legal and institutional frameworks for sustainable oasis management, developing local adaptation plans, updating environmental regulations, and improving monitoring systems. These reforms provide the foundation for coordinated and durable responses to climate threats. Complementary technical assistance and targeted training equip local institutions and stakeholders to manage natural resources more effectively, ensuring long-term sustainability and resilience to future climate shocks.

The high CER achieved by this component highlights the strategic value of governance reform, ecosystem stewardship, and institutional strengthening as core elements of climate adaptation in arid and fragile environments such as northern Chad.

Table 10: Cost Effectiveness Analysis of Component 1

Metric	Value (USD)
Total Cost	1 500 212.00
Total Estimated Return	7 247 060.49
Net Benefit	5 746 848.49
Cost-Effectiveness Ratio (CER)	4.83

1.4. Cost-Effectiveness of components 2

Component 2 of the Oasis Tchad Project demonstrates strong cost-effectiveness and a high degree of financial and developmental relevance. With a total investment of 6 006 799.71 USD, the component is projected to yield 25 364 711.71 USD in total returns, generating a substantial net benefit of 19 358 011.99USD over the project cycle. This results in a Cost-Effectiveness Ratio (CER) of 4.22, indicating that each dollar invested under this component generates nearly four dollars in economic return.

The strong performance of this component is underpinned by a comprehensive set of climate adaptation and sustainable land use activities. These include the construction of solar-powered boreholes and micro-dams to enhance water availability for irrigation and livestock; the rehabilitation of degraded lands and dunes through biological and mechanical stabilization techniques; and the promotion of drought-tolerant crops and improved agricultural practices that increase yields and reduce vulnerability to climate shocks.

Equally important are the activities focused on supporting sustainable livestock systems, including the provision of fodder banks and improved veterinary care, as well as the development of local value chains for key oasis products such as dates and camel milk. Community members also benefit from training and extension services that improve farming techniques and encourage the adoption of resource-conserving technologies.

By integrating these activities into a coherent approach, the component not only boosts productivity but also improves food security, reduces pressure on natural resources, and enhances the adaptive capacity of vulnerable households. The inclusion of income-generating opportunities, particularly for women and youth, further strengthens its socio-economic impact.

This component demonstrates the strategic value of investing in integrated land and water management, climate-resilient agriculture, and livelihood diversification. Its financial viability and far-reaching impact confirm the importance of this pillar in building sustainable and self-reliant oasis communities in the face of climate and environmental risks.

Table 11: Cost Effectiveness Analysis of Component 2

Metric	Value (USD)
Total Cost	6 006 699.71
Total Estimated Return	25 364 711.71
Net Benefit	19 358 011.99
Cost-Effectiveness Ratio (CER)	4.22

1.5. Cost-Effectiveness of components 3

Component 3 of the Oasis Tchad Project demonstrates exceptionally high cost-effectiveness and a strong return on investment relative to its budget size. With a total investment of USD 834 101, the component is projected to generate 3 623 530.24 USD in total returns, resulting in a substantial net economic benefit of 2 789 429.24 USD. This translates into a Cost-Effectiveness Ratio (CER) of 4.34, meaning that every dollar invested under this component produces more than nine dollars in measurable economic return.

This outstanding performance is driven by targeted capacity building, knowledge sharing, and awareness-raising interventions designed to strengthen climate resilience in the oasis communities of Borkou, Ennedi Ouest, and Wadi Fira. Key activities include community-based training on climate risk reduction, dissemination of best practices in sustainable land and water management, and awareness campaigns that promote behaviour change towards resource conservation and adaptive livelihood strategies.

By improving knowledge and skills, Component 3 creates multiplier effects across all project activities. Trained farmers, pastoralists, and community leaders are better equipped to adopt and sustain improved practices introduced under other components, ensuring that infrastructure investments and ecosystem restoration efforts deliver maximum long-term impact. The participatory approach adopted in these trainings also fosters local ownership, increasing the likelihood that adaptation strategies will be maintained and replicated beyond the project's lifespan.

The high CER reflects not only the relatively low cost of implementing these knowledge-based interventions but also their broad reach and transformative potential. Strengthening human and institutional capacities ensures that climate adaptation is embedded in community decision-making processes, reducing dependency on external assistance and promoting self-reliance.

Table 12: Cost Effectiveness Analysis of Component 3

Metric	Value (USD)
Total Cost	834 101.00
Total Estimated Return	3 623 530.24
Net Benefit	2 789 429.24
Cost-Effectiveness Ratio (CER)	4.34

1.6. Cost-Effectiveness of the Oasis Tchad Project

The Oasis Chad Project demonstrates strong cost-effectiveness and high financial viability, confirming its strategic value as a large-scale climate adaptation and sustainable development intervention. With a total investment of USD 9.21 million, the project is projected to generate USD 36.23 million in total returns, resulting in an impressive net economic benefit of USD

27.018 million over its implementation period. This corresponds to a Cost-Effectiveness Ratio (CER) of 3.93, meaning that every dollar invested yields nearly four dollars in measurable economic return.

This robust performance is the result of an integrated, multi-component approach that combines institutional strengthening, concrete ecosystem restoration and water management measures, climate-resilient agriculture, and targeted livelihood diversification. In the Borkou, Ennedi Ouest, and Wadi Fira regions areas facing acute water scarcity, land degradation, and high socio-economic vulnerability the project delivers coordinated interventions that address both environmental and human resilience.

Key project-wide activities include:

- Reinforcing legal and institutional frameworks to ensure long-term governance of oasis ecosystems.
- Investing in water infrastructure such as solar-powered boreholes, micro-dams, and potable water points to improve irrigation, livestock watering, and household access.
- Restoring degraded lands through dune fixation and improved soil and vegetation management.
- Promoting drought-tolerant crops and sustainable livestock systems to strengthen food security and reduce climate vulnerability.
- Supporting local value chains for key oasis products like dates, camel milk, and artisanal goods to boost rural incomes and market integration.
- Building community capacity through training, awareness campaigns, and support for women's and youth-led income-generating activities.

By integrating infrastructure development, ecosystem restoration, and socio-economic empowerment, the Oasis Tchad Project creates synergies across components that magnify impact and ensure that benefits reach both direct and indirect beneficiaries. The project not only generates immediate economic returns but also lays the groundwork for sustained, self-reliant development in one of Chad's most climate-vulnerable regions.

The CER of 3.93 underscores the efficiency of the project in converting investment into tangible and lasting benefits. Beyond the financial metrics, the project delivers transformational change by enhancing community resilience, safeguarding critical ecosystems, and fostering inclusive economic growth ensuring that the positive impacts will persist well beyond the formal project period.

Table 13: Cost Effectiveness Analysis of the Oasis Tchad Project

Metric	Value (USD)
Total Cost	9 216 589.71
Total Estimated Return	36 235 302.44
Net Benefit	27 018 712.72
Cost-Effectiveness Ratio (CER)	3.93

2. Financial Analysis

The financial analysis of the Oasis Tchad Project over its four-year implementation period demonstrates a very strong economic return, validating the project's strategic design focused on ecosystem resilience, sustainable livelihoods, and institutional strengthening in arid regions.

With total expenditures amounting to 9.21 million USD, and projected cumulative benefits reaching 36.23 million USD, the project achieves a robust Cost-Effectiveness Ratio (CER) of 3.93, indicating that each dollar invested generates nearly 3.93 USD in measurable economic return. This performance is supported by a steadily increasing annual cash flow, which peaks in Year 4 as critical infrastructures and production systems become fully operational. In that year alone, the CER reaches 9.54, reflecting the full maturity of income-generating activities and productive assets.

The project also generates a Net Present Value (NPV) of 25.93 million USD, further confirming that the present value of expected financial benefits far outweighs the initial investment costs.

The Internal Rate of Return (IRR) stands at 33% after 4 years, and reaches 65% over a 20-year period, far exceeding standard benchmarks for development project profitability. These figures reflect not only sound financial performance but also long-term sustainability and scalability of the intervention model.

This cost-effectiveness is largely driven by the investments under Component 2, which focuses on water access, sustainable land management, climate-resilient agricultural practices, livestock development, and value chain enhancement. Complementary investments under Component 1 (legal/institutional strengthening) and Component 3 (capacity building) contribute to the enabling environment and long-term sustainability.

Table 14: Financial analysis of the Oasis Tchad Project

	Year 1	Year 2	Year 3	Year 4	Total
Component 1	615962.20	622752.10	203387.10	58110.60	1500212.00
Component 2	1530176.75	2062922.77	1326037.60	1087562.60	6006699.71
Component 3	232300.50	117610.12	83194.12	83194.12	401608.49
Execution costs (management units)	218894.25	218894.25	218894.25	218894.25	875577.00
Total costs (A)	2597333.70	3136869.62	1933068.95	1549317.45	9216589.71
Total financial benefits (B)	4669340.53	5805603.56	10979513.63	14780844.72	36235302.44
Cash flow (BA)	2072006.83	2668733.93	9046444.69	13231527.28	27018712.72
Cost-Effectiveness Rate (CER)	1.80	1.85	5.68	9.54	3.93
Net Present Value (NPV)	5.2				25 935 767
Internal Rate of Return (IRR)(after 4 years)					33%
Internal Rate of Return (IRR)(after 20 years)					65%

2.1. The Internal Rate of Return (IRR) of the alternative: Climate-Resilient Oasis Agroecosystem (CROA)

The Internal Rate of Return (IRR) curve for the Climate-Resilient Oasis Agroecosystem (CROA) model highlights a highly profitable and sustainable investment pathway, particularly for arid and vulnerable regions such as those targeted by the Oasis Tchad Project. The curve shows a rapid rise in profitability during the first decade, with the IRR reaching approximately 63% by year 10, and stabilizing around 65% from year 15 onward, indicating strong and sustained financial performance over the 20-year period.

This early acceleration reflects the combined effects of climate-smart interventions such as:

- The introduction of high-value, drought-resilient crops (e.g., vegetables, legumes),
- The improvement of livestock systems (e.g., camel milk, poultry),
- The diversification of income-generating activities

During the early years, fast-yielding components such as vegetable farming and poultry production generate quick cash returns, which help farmers cover initial costs, reduce investment risks, and build early confidence in the system. This rapid payback period is a key driver of adoption and scalability.

As the system matures, longer-cycle components like date palms, camel milk value chains, and agroforestry trees begin to contribute significantly to overall income. These components offer stable, long-term revenues that complement the short-term gains, resulting in diversified and resilient income streams for rural households.

The CROA system also emphasizes resource efficiency through improved irrigation, soil management, and reduced overgrazing pressure allowing for increased productivity without expanding cultivated land or depleting fragile ecosystems. This translates into higher returns per hectare, particularly important in oasis environments where land and water are scarce.

Beyond its financial attractiveness, the model contributes to soil fertility, water retention, and ecosystem restoration, which in turn reduce production costs and dependency on external inputs. These ecological gains reinforce economic sustainability over time.

By year 20, the IRR plateauing at 65% confirms the system's long-term profitability and resilience, making it an ideal model for adaptation in the Sahel. Its high return potential creates strong incentives for adoption, with the added benefit of promoting job creation, food security, and climate resilience in highly vulnerable communities.

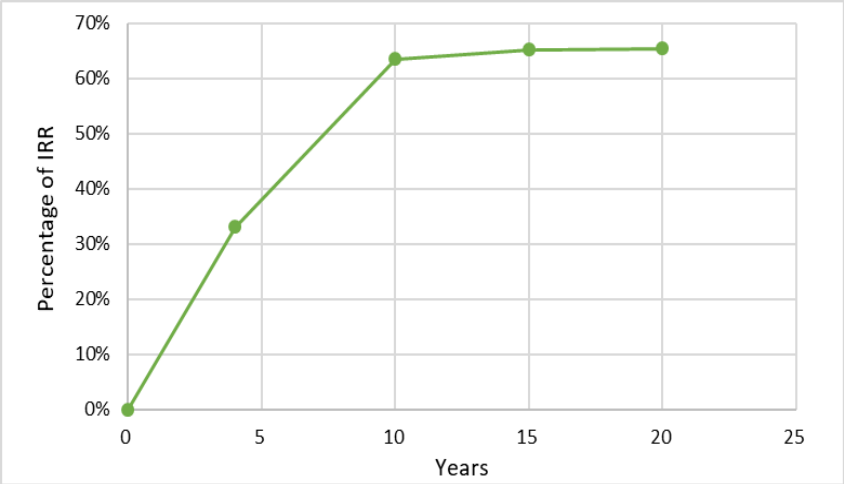

Figure 10: The IRR of the CROA System

Activities generating of income

Some activities supported by the Chad Oasis Project, and which farmers can practice independently, show strong economic performance while contributing to income diversification, food security, and climate resilience in oasis communities. The camel milk value chain, while slower to generate returns in the short term, offers promising long-term profitability, with an IRR of 14% after four years and 35% after ten years. This growth is driven by gradual improvements in herd productivity, milk processing techniques, and market access for high-value dairy products suited to arid environments. Short-cycle livestock activities provide quicker and more frequent income opportunities. Goat farming achieves an IRR of 17% after four years and 43% after ten years, supported by improved breeding, veterinary care, and increasing demand for goat products in local and regional markets. Sheep farming is particularly profitable, with an IRR of 36% after four years and an impressive 77% after ten years, benefiting from high reproduction rates, adaptability to arid grazing conditions, and strong seasonal demand for mutton. Poultry farming, another high-turnover short-cycle livestock activity, delivers rapid and consistent returns, with an IRR of 46% after four years and 67% after ten years, thanks to quick production cycles, low input requirements, and steady market demand for eggs and poultry meat. Vegetable farming delivers the highest short-term returns among all activities, with an IRR of 52% after four years and 65% after ten years. This performance is enabled by fast crop turnover, high prices for fresh produce, and improved irrigation systems that allow off-season cultivation. These activities not only generate diversified income streams but also enhance nutritional security, empower women and youth, and build the economic resilience of oasis communities against climate variability and market shocks.

Table 15: IRR of selected revenue-generating activities

	IRR (after 4 years)	IRR (after 10 years)
Camel Milk Value Chain	14%	35%
Goat farming	17%	43%
sheep Farming	36%	77%
Poultry farming	46%	67%
Vegetable Farming	52%	65%

Long term impact of Oasis Tchad Project

The Oasis Tchad Project is designed not only to address immediate climate and livelihood vulnerabilities but also to generate transformational, long-term impacts that will persist well beyond the four-year implementation phase. Its integrated, ecosystem-based adaptation approach is expected to deliver lasting environmental, social, and economic benefits across the Borkou, Ennedi Ouest, and Wadi Fira regions.

Environmental Sustainability

The project's focus on sustainable land and water management including solar-powered water infrastructure, dune fixation, and climate-resilient agricultural practices will lead to the long-term restoration of degraded oasis ecosystems. These

interventions will strengthen the resilience of agroecosystems against desertification, enhance biodiversity, and improve soil fertility and water retention, contributing to ecosystem regeneration and climate regulation in the Sahel.

Economic Resilience and Livelihood Security

By promoting diversified, market-oriented livelihoods such as camel milk value chains, poultry farming, date palm cultivation, and income-generating activities (IGAs), the project builds a foundation for sustainable rural economies. The development of value chains and improved market access will enable long-term income growth, reduce poverty, and enhance economic self-reliance of oasis communities.

Institutional Strengthening

The enhancement of legal, policy, and institutional frameworks for oasis ecosystem management will improve long-term governance capacity. Strengthened local planning mechanisms, environmental regulations, and climate monitoring systems will enable better coordination and sustainability of future climate adaptation efforts.

Social Inclusion and Empowerment

The project targets vulnerable groups, including women and youth, through participatory planning and targeted livelihood support. Over time, this will increase social cohesion, equity, and inclusion, while also reducing the drivers of out-migration and social instability in remote areas.

Knowledge Transfer and Replicability

The project's investments in awareness raising, capacity building, and community demonstration plots will foster a culture of climate risk management and innovation. These knowledge systems will endure beyond the project's lifespan, supporting scaling up and replication in other oases and semi-arid zones of Chad and the Sahel.

Legacy of Resilience

Ultimately, the Oasis Tchad Project is expected to leave behind strong institutions, revitalized productive ecosystems, and empowered communities capable of adapting to future climate shocks. The project aligns with national and regional priorities (e.g., the Great Green Wall Initiative and NDCs) and thus contributes meaningfully to long-term sustainable development and climate adaptation strategies in Chad.

Conclusion

The Oasis Tchad Project presents a highly cost-effective and strategically relevant intervention to address the escalating environmental, social, and economic challenges facing the northern regions of Chad particularly in Borkou, Ennedi Ouest, and Wadi Fira. With a total net economic benefit exceeding 27.018 million USD and a Cost-Effectiveness Ratio (CER) of 3.93, the project demonstrates strong returns on investment for enhancing climate resilience, sustainable natural resource management, and diversified livelihoods.

Each of the project's components contributes meaningfully to both immediate impact and long-term viability. Component 1 (Governance, legal/institutional, and information systems) strengthens the policy and regulatory framework, builds institutional capacity, and establishes baselines, monitoring systems, and local adaptation plans for sustainable oasis management. Component 2 (Concrete adaptation and livelihoods) delivers on-the-ground measures expanding water access (solar-powered boreholes, micro-dams/spreading weirs), restoring land and stabilizing dunes, promoting climate-resilient agriculture and improved livestock systems, and developing value chains and IGAs. Component 3 (Capacity building, knowledge, and awareness) provides training and extension, facilitates knowledge sharing and awareness campaigns, and supports participatory M&E and replication to embed and scale good practices.

The Oasis Tchad Project has been designed with a long-term sustainability pathway. Beyond physical infrastructure and immediate economic gains, it strengthens local governance systems, builds institutional and technical capacity, and fosters knowledge exchange for climate adaptation at the community level. This ensures that restored ecosystems, productive assets, and governance structures remain fully operational and effective well beyond the project's duration.

After the four-year implementation phase, the Sahara and Sahel Observatory (OSS) will hand over full responsibility for the project to Ministry of Environment, Fisheries and Sustainable Development of Chad, working in close collaboration with local

authorities and community organizations. This transition will secure institutional continuity, ensure national ownership, and align with Chad's broader environmental, climate adaptation, and sustainable development strategies.