PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular
Country/ies:	Chad
Title of Project/Programme:	STRENGTHENING THE RESILIENCE OF FISHERIES AND AQUACULTURE COMMUNITIES TO CLIMATE CHANGE IN CHAD (RECOPAT)
Type of Implementing Entity:	REGIONAL IMPLEMENTING ENTITY (RIE)
Implementing Entity:	Sahara and Sahel Observatory (OSS)
Executing Entity/ies:	Ministry of Environment and Fisheries/ General Directorate of Fisheries and Aquaculture of Chad
Amount of Financing Requested	US$9,600,000 (in U.S Dollars Equivalent)

I- Project / Programme Background and Context:

General Introduction

Chad is a Sahelian country extending over about 1800 km from North to South and 1000 km from East to West. This vast territory of 1 284 000 km is located between the 8th and 23rd northern parallels and the 14th and 24th eastern meridians., ², is. Chad is bordered by Sudan to the East, Cameroon, Nigeria and Niger to the West, Libya to the North, and the Central African Republic to the South. It has the shape of a semi-basin open towards the West and with turned up edges in the North.

Chad's population is estimated at 14 452 543 inhabitants (WB, 2016), with a sex ratio estimated at 0.93 (male(s)/female) in 2016 (CIA, The World Fact book). The population is predominantly rural with an estimated rate of 77,38% (WB, 2016). It is unevenly distributed due to contrasts in climate and physical geography; the highest density is found in the southwest, particularly around Lake Chad and points south. The anthropogenic pressure in this area is accentuated by the strong flow of refugees from Sudan and Central African Republic, which strains Chad's limited resources and create tensions in host communities. (CIA, The World Fact book).

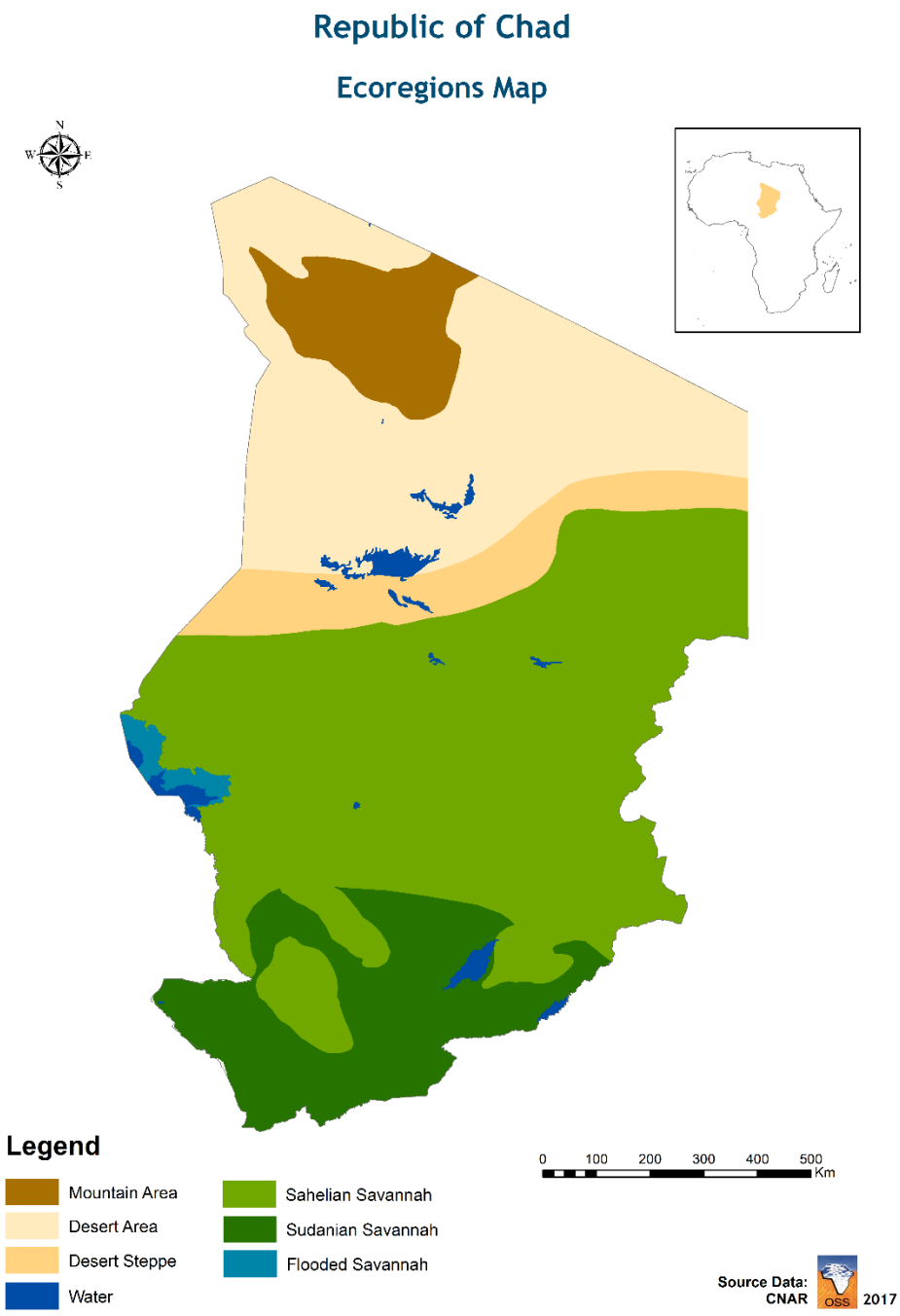
Chad joined the list of oil-producing countries in 2003 and since then its economy has been heavily dependent on oil. The economy, previously agrarian, saw per capita GDP grow from about USD 2,73 billion in 2001/02 to USD 13,92 in 2014. However, the 2014 drop in oil price and the deterioration of the security situation led to a deeper recession in 2016, with poverty expected to rise to 39.8% by 2019 (WB, 2017). Agriculture, livestock, and fisheries remain, under these conditions, the basis of Chad's economic development and the most important sectors for the country in terms of workforce (more than 80% of the population) despite the experienced fluctuations since 2005 due to climatic irregularities, especially drought.

The agriculture, livestock, fisheries and mining, are the predominant sectors with a share of 61.2% of GDP in 2011. Agriculture accounts for 10,5% of this share, livestock 9%, the petroleum industry 39,3%, and fishing and mining 2,2%.

Chad has a Saharan climate in the North and Sudano-Guinean one in the South. The rainy season is very short and extends over two months: July and August, with precipitation ranging between 200 mm and 1200 mm. The average temperatures are of the order of 24 ° to 26 ° C in the South and 28 ° to 35 ° C in the North. The country is divided into three geo-climatic zones, which are the desert zone, in the North (covering 48% of the country's national territory), the Sahelian zone, in the Center (covering about 42 % of the country's national territory) and the semi-humid tropical zone, in the South (covering 10 % of the country's territory).

Chad's hydrographical network is composed of two major sets: the Logone-Chari River on one hand and the floodplains and lakes on the other hand, with Lake Chad as the most important one, Located in a zone characterized by low rainfall and intense evaporation, Lake Chad Basin (LCB) is a vast basin with a flat bottom and a depth exceeding generally 4 m. It receives water essentially from the Logone-Chari Rivers feeding it with more than 80% of its annual recharge rate. Given its location in a vast and shallow basin, the Lake's level depends in the major part upon the region's climate and the amount of precipitations received. During periods with normal hydrological conditions, the Lake's area can, sometimes, reach up to 20 000 km² and it can shrink to 3.000 km² in dry periods. Currently, the Lake's level is estimated to be about 13.000 km². Lake Chad Basin crosses three countries: Chad (50 %), Nigeria (25 %), Niger (17 %) and Cameroon (8 %). The Lake's south-east shores and Delta are swampy, its west coast open, whereas its north-east and south-east zone forms an archipelago of several islands. LCB waters are rich with invasive plants constituted of phanerogams in the archipelago zone and of rhizomes and papyrus in its open part. During severe drought periods, plants cover more than 50% of the LCB area and render navigation and fishing more difficult. In general, these plants are very important for the physico-chemical regulation of the Lake's waters. Some of Chad's other smaller lakes include: the Fitri Lake (420 km²), the Iro Lake (200 km²), the Toupouri Lakes (55 km²), the Léré Lake (42 km²) and the Tréné Lake (12 km²). Fishing is also a major activity in all these minor lakes.

Map 1: Chad's Eco-regions



Context

As an African sub-Saharan country, Chad is subject to climate change, which affects the majority of its economic sectors and natural resources, including water resources, and results in an increased vulnerability of the country's fisheries and aquaculture communities.

Despite its continental geographic situation, Chad displays about 135 of ichthyologic species living in lakes and rivers, of which 80% are exploited for commercial purposes. These fish species include mainly catfish (*Clarias, Heterobranchus, Chyisichthys, Bagrus, Clarotes*), Tilapia commonly known *Carpes* (*Oreochromis, Sarotherodon*), and Nile perch (*Latesniloicus*), and several other species such as the *Alestes* and the *Hydrocynus*.

The total number of fishermen in Chad is estimated at 220 000, of which 200 000 are sedentary Chadians fishermen practicing seasonal fishery. Only 20 000 are professionals (full-time occupation), of which 40% are from Nigerian, Malian, Guinean, Beninese origins. A significant number of women, estimated at 3 500, also work in the fisheries sector. Several fishing gears and techniques are used depending on the fishing zone. Nearly 19 000 small boats propelled with paddles were identified. The motorization rate is very low (on the order of 6%).

Fish transformation and marketing is ensured especially by women, counting about 20 000. This activity provides operators with an average annual revenue of 140 000 CFA francs. In these densely populated fisheries, despite the important fish resources, the theoretically possible production potential exceeds 90%, with more than 60% of the captures composed of juvenile fish.

In fact, due to overexploitation, human pressure and climate change, fish production in Chad has significantly decreased and is no longer able to fulfil populations' needs. Consumption per capita decreased from 6,8kg/inhabitant/year in 2003 to 5,3 kg/inhabitant/year in 2007. The productive potential of the Chari-Logone–Lake Chad system has been subject for the last few decades to the combined effects of climate change and anthropogenic pressure due to human concentration in fisheries. This situation of overexploitation is detrimental to the resources replenishment and preservation.

Despite all the efforts made by Chad's government, the aquaculture sector is still inadequately developed. A strategic development framework was validated in June 2010 with a view to ensuring food security and reducing poverty. The country has also resorted to fish framing to increase its fish production. In addition to its nutritional advantages, fisheries products secure revenues for a great number of fishermen, processors, and merchants. It contributes also to food security and to improving populations' livelihoods and socio-economic condition.

With the aim of improving the fisheries and aquaculture sector and implementing adaptation measures and actions to climate change, Chad aspires to launch a project, which will enable to provide proposals and solutions.

- The project will give the possibility of addressing issues at both National level (legal and institutional aspects, surveillance, communication and awareness raising) and local level (three targeted regions (Tandjilé, Guera and Hadjer Lamis).

Major Issues and Constraints of the Fisheries and Aquaculture Sector in Chad:

As mentioned above, the fisheries sector in Chad faces several challenges, mainly related to institutional, technical, socio-economic and environmental levels.

At the institutional level: Chad's fisheries sector is inadequately structured, which is not favourable for introducing appropriate development and protection measures. The country's institutions do not possess the necessary human, financial and material resources to promote actions for surveillance, controlling and protecting fisheries and to ensure a minimum of technical assistance to the fisheries communities. In addition to the lack of consultation and collaboration between the different decentralized services, administrations, local authorities, NGOs and operators, another major constraint to the sector's development is related to the limited self-financing and debt capacity of the fisheries operators. Furthermore, the absence of an appropriate environment for the promotion of the fisheries sector is also a handicap as it leads to low taxation in production and marketing and insufficient organization of the national market and domestic distribution channels. ***There is also a big discrepancy between existing legal texts regulating the sector and the main requirements of sustainable natural resources management.*** Besides that, in most cases these texts do not specify the role and duties of the local authorities in the sector's planning and management.

At the technical and technological level: Due to the lack of adequate logistical means for surveillance and controlling the fishing activities in Chad, a great majority of fishermen use harmful and damaging fishing techniques and practices such as the fine-mesh fishing nets. The rudimentary techniques of fish drying and smoking are largely used, which lead to the depreciation of the products value and to important losses (on the order of 30%).

At the socio-economic level: despite the important role played by the fisheries and aquaculture sector at the socio-economic level, there is a significant lack in terms of necessary infrastructure and equipment for promoting and valuing the sector and for improving farmers and fishers' livelihoods and living conditions.

In fact, boats landing, fish transportation, products drying and smoking are generally conducted in rudimentary and poor conditions, which cause several economic and health problems to the populations. In addition, even the roads constructed by the PRODEPECHE[1] project to facilitate access to main production zones are destructed due to the lack of maintenance. All these problems hinder the development of the fisheries sector in the country and lead to the increase of the production and marketing costs.

At the environmental level: A major constraint to the development and the sustainability of fisheries sector in Chad is the inappropriate management of fish resources. This is due to the use of illegal fishing practices and devices, recurrent drought periods leading to the shrinking of hydro- biological areas and to the increased degradation of watersheds and river banks, which in its turn, lead to erosion, desertification, and lakes and rivers silting. Untimely land clearing and inappropriate agricultural practices increase water flow into watersheds and sedimentation resulting in a gradual alteration of the physic-chemical qualities of waters. All these environmental constraints lead to the degradation of the spawning grounds and hamper the preservation of biodiversity.

The use of non-certified chemical products as the *DDT,Gamalin*, *Rambo*,*fiafiaetc,* for fish conservation continues despite all the awareness campaigns organized by the PRODEPECHE project advocating the use of Good Hygiene Practices (GHP) and Good Fabrication Practices (GFP).

[1] Fisheries Development Project (PRODEPECHE, 2007-2012)

Climate Change in Chad:

Observed Climate Change and Variability in Chad(Source: UNFCCC National report, 2012):

The Soudano-Sahelian region is one world regions where climate variability is most felt. According to the IPCC report in 2014, the evolution of temperatures over the last 50 years has been marked by an increase of 2°C. Recorded temperature anomalies were significantly higher during the period 1995-2010 compared to the period 1979-1994. Representing one of the climate hot-spots in this zone, Chad has experienced, in recent decades, a slight increase in maximum temperatures and a significant evolution of minimum temperatures on the order of 2°C. These amplitudes, calculated over the study period, indicate increase values ranging between 0.5 to 1.7°C for minimum temperatures and between 0 à 1.34°C for maximum temperatures. It could be noticed that minimum temperatures increase faster than maximum temperatures.

Moreover, rainfall distribution in Chad is characterized by significant inter-annual and intra-annual variability. This is translated in a remarkable decrease of rainfalls about 200 mm between 1960 and 1990, and isohyets migration from the north into the south, in addition to the irregularity of precipitations both in time and in space.

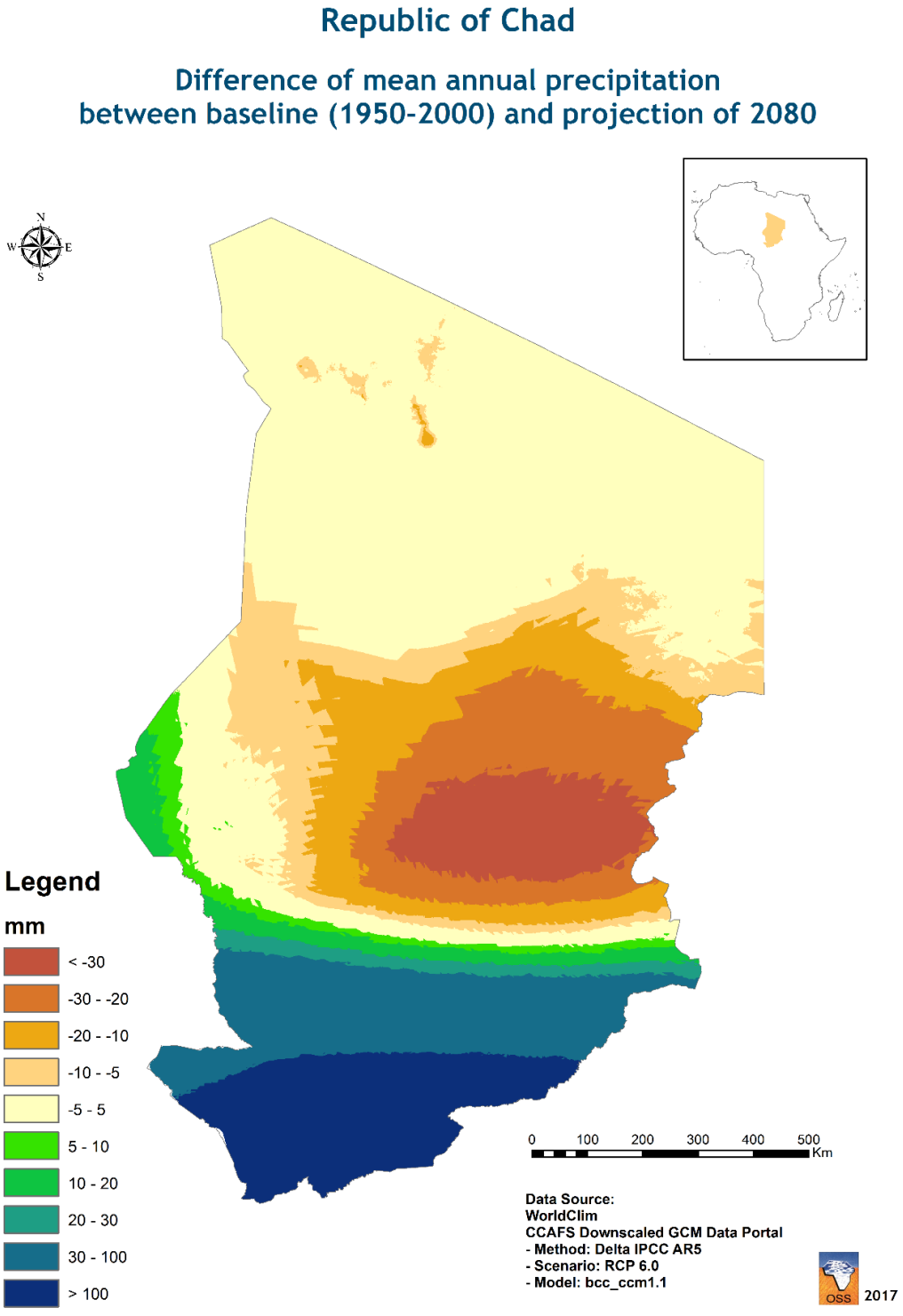
The drought period, which hit Chad between the years 1960 and 1967, resulted in a remarkable shift in rainfall patterns and led to more frequent dry years. However, starting from 1990 a gradual return to previous rainfall patterns prior to1960 was recorded compared to the severe drought periods of the years 1972-1973 and 1984.

Projected Climate Change and Variability in Chad

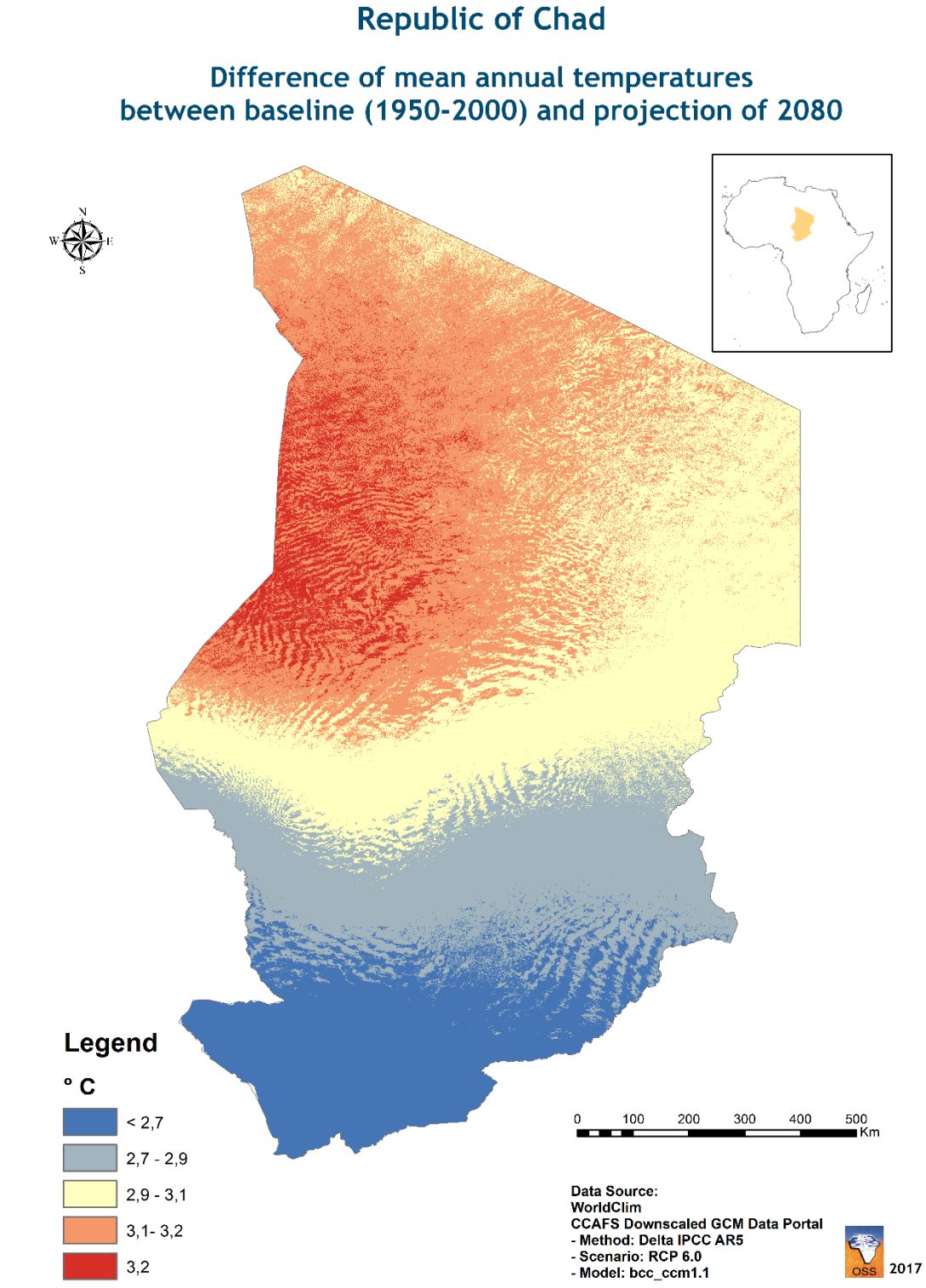
The analysis of future vulnerability to climate change is based essentially on different climatic scenarios derived from the General Circulation Models (GCMs). According to the different scenarios used for the Chad's second national report for the UNFCCC in 2012, temperature will remarkably increase by 0,6 to 0,8 °C in the south of the country and by1 to 1.3 °C in the north by 2023.

Regarding rainfall, it is expected, according to the same report, that the Sahelian zone and the southern part of the Saharan zone will be seriously affected by a decrease in precipitation. In 2100, this decrease will be much greater (-70%) than in 2030 (-20%) and 2050 (-30%).

Maps 2: *Difference in average annual precipitation between scenario 2080 and reference period 1950-2000 in Chad*



Maps 3: *Difference in average annual temperature between scenario 2080 and reference period 1950-2000 in Chad*



Climate Change Observed and Potential Adverse impacts

According to the study conducted within the framework of the Chad's National Adaptation Programme of Action (NAPA) for the identification and evaluation of extreme weather events, the latter include mainly droughts due to rainfall deficit, floods caused by intense and heavy rains, sand and/or dust storms and other less important phenomena such as locust attacks, bushfires, etc. These extreme weather events have had / and still have prevalent harmful effects as much in the past as in the present. For future potential effects, the evaluation was based on the simulation results of the different climate models, which should be considered and taken into account even in case of incertitude. The study's results were all included in the third Assessment Report of the Intergovernmental Panel on Climate Change (TAR-IPCC)[2] (2001), Chad's Initial National Communication (INC)[3] (2001), Ardoin (2004) and HDR)[4](2006).

Observed Adverse Impacts

In its fifth Assessment Report, The IPCC indicates that climate change will have harmful effects on the developing countries' economies and investments (including Chad). These impacts will be manifested mainly in the reduction of water resources, the loss of biodiversity, the recurrence of floods and exacerbated desertification.

These effects are translated in various climatic risks and hazards, which are continuously observed in the country. They can be summarized in rainfall deficit (droughts) which leads to food insecurity, water shortage for different purposes, decreased agricultural production, loss of human life and biodiversity, degradation of vegetation cover, population and livestock migration, early drying-up of seasonal watercourses or decrease of lakes and permanent watercourses levels and hence degradation of fish resources, locust attacks, bushfires, rural exodus, etc. On the other hand, excessive rainfalls (heavy and intense rains) often lead to water erosion, crop and harvest losses, human losses, habitat losses, watercourses and lakes silting, and water quality deterioration, etc.;

Excessive and sometimes extreme temperatures lead to water stress, respiratory diseases, increased water consumption, and increased evaporation and evapotranspiration.

Also, strong winds result in the silting up of lakes, wells, watercourses and crops, the formation of sand dunes, dust storms, dry mist, respiratory and cardiovascular diseases, trees uprooting, and habitats destruction (Chad's National Adaptation Program of Action (NAPA) xi February 2010).

It is also important to mention that climate change has had a considerable impact on the fisheries and aquaculture sector in Chad as the case for the entire African continent. These impacts pushed several fishermen and farmers to adopt subsistence fishing as well as population migration towards Lake Chad Basin and to zones containing more water resources.

[2] https://gridarendal-website.s3.amazonaws.com/production/documents/:s_document/286/original/q1to9.pdf?1488203631

[3] http://unfccc.int/resource/docs/natc/chanc1.pdf

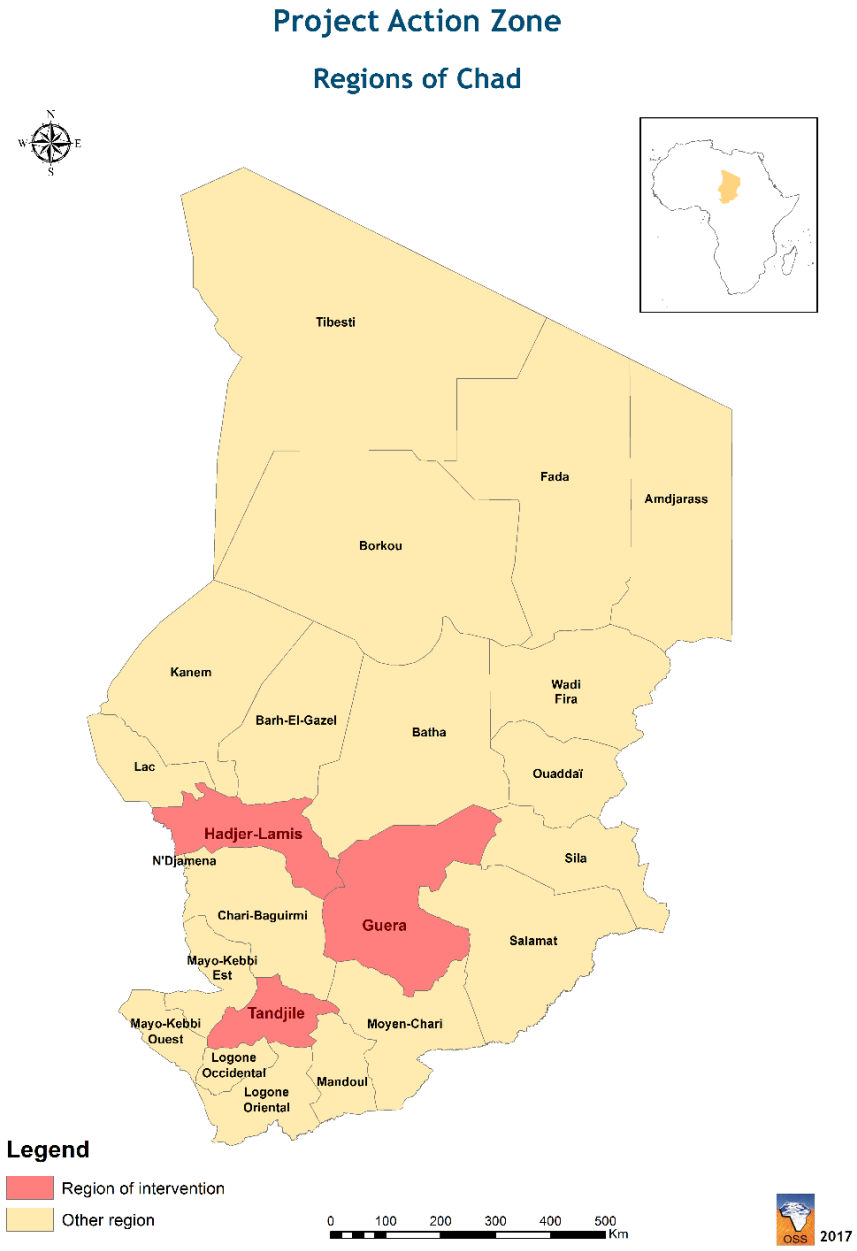
[4] http://hdr.undp.org/sites/default/files/reports/267/hdr06-complete.pdf

Project areas of intervention

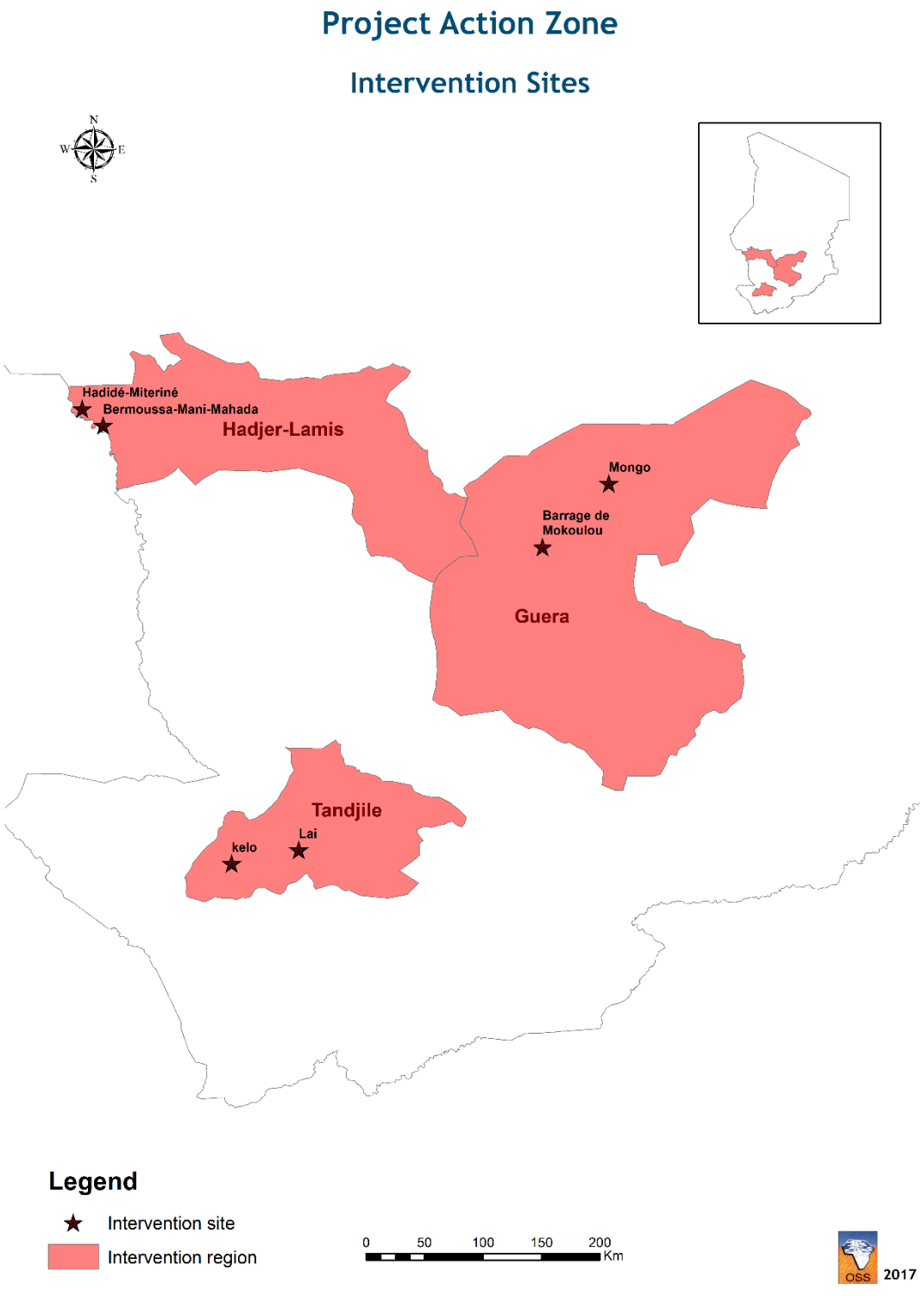
The project will cover three Chadian regions, namely: Guéra, Tandjilé and Hadjer Lamis. Specific sites were selected inside each of these regions in consultation with the project partners and concerned stakeholders at all levels.

The targeted sites were selected in function of the importance of the fisheries sector for the local population's livelihoods and also of the potential of this sector to provide alternative source of income in order ease the pressure on other natural resources and improve the resilience of the population through diversification of economic activities.

***Map 4**: Project's regions of intervention (Guéra, Tandjilé and Hadjer Lamis)*



Map 5: *Sites of intervention at selected Project regions*



Guéra region

General Data

The Guéra region is located at the Centre of Chad between the 10th and 13th northern parallels. It is bordered to the north by the Batha region, to the south by Salamat and Moyen Chari, to the east by Ouaddaï and to the west by Chari-Baguirmi and Hadjer-Lamis.

The Guéra region is divided into 4 departments, namely: Guéra (Mongo), Abtouyour (Biktine), Barh Signaka (Mélfi) and Mangalmé (Mangalmé) and 23 administrative districts. It covers a surface area of 58 950 km^2.

According to the General Population and Housing Census (GPHC 2009) and based on the projections of the *Institut National de la Statistique, des Etudes Economiques et Démographiques* (INSEED), the population of the Guéra region includes 690 138 inhabitants distributed among the four following departments:

- The Guera department: 221 065 inhabitants;
- The Abtouyour department: 214 637 inhabitants;
- The Barh Signaka department: 132 772 inhabitants;
- The Mangalmé department: 121 664 inhabitants.

Physical Data

The Guéra zone is characterized by a Sahelian climate with two seasons:

- Wet season of 3 to 4 months (June to September) in general;
- Dry season of 7 to 8 months (October to May).

Rainfalls in Guéra generally range between 400 à 700 mm. Temperature is relatively hot from February to March (25°C à 35°C), extremely hot from April to May (35°C à 45°C), very fresh from November to January (10 à 20°C).

Terrain

The Guéra region is characterized by an uneven Terrain constituted of mountainous massifs, plains and sandy, clay and sandy-clay soil favourable for rain-fed and off-season agriculture. Ferralitic soil could also be found in certain parts of the Guéra zone.

The zone's terrain includes also numerous chains of inselbergs opening onto three large watersheds: the Batha Fitri, the Aouk Salamat and the Batha de Lairi basins. These are temporary watercourses. In the North, the Batha basin is fed by waters coming from the south of the Ouaddaï region.

Hydrogeology

The Guéra zone, with its spectacular massifs, marks a geographical transition from a pastoral sahelian north and to a rather agricultural sudanian south. The region is

composed of the Bahr Siniaka department in the south, the Abtouyour department in the north, and the Guéra central and Mangalmé departments in the East.

At the hydrogeological level, the region's aquifers are localized (rifts) and of varying importance depending on their recharge rate.

- **Major Socio-economic Activities:**

The Guéra population has two major characteristics. It is first highly cosmopolitan given its history (located between three big empires: Ouaddaï, Baguirmi and Fitri) and its geography (fundamental role of the Hadjaraï people of the mountainous massifs). Second, it presents the best example of power diffusion, taking roots in relatively autonomous micro-societies.

The main socio-economic activities present in the Guéra region are agriculture, livestock farming, trade and handicrafts.

Rain-fed sorghum, millet and *berebéré* (season sorghum) and pearl millet are the main cereals cultivated generally for local consumption, whereas cash crops include peanuts, sesame and okra. Livestock farming include bovine animals, sheep, donkeys, and poultry.

- **Project sites of Intervention in the Guéra region:**

Site 1: Mongo Centre

- **General Data**

This site is located in the Mongo city (about 3km far from the city center) and occupies a surface area of about 4 ha distributed among groups of fish farmers. Average rainfall in this site is 550 mm/yr.

The Mongo Centre site currently hosts several Producers Organizations (PO), which contribute to the organization of fishermen and fish farmers.

The Mongo city encompasses 1 University, 1 *Ecole Normale Supérieure*, 3 high schools 4 vocational and general colleges and 5 primary schools.

It also includes 1 hospital and 3 health centres.

- **Socio-economic Characteristics**

Like the other regions of Chad, the Mongo city's economy is based on agriculture, livestock farming, and trade.

Cereals (by order of importance sorghum, *berebéré* (season sorghum), and millet) are the most cultivated crops in this site, in addition to (but less importantly) peanuts, cowpea and sesame. Other vegetable crops are also grown in low-lands or areas where groundwater resources exist.

Sheep, goat and bovine breeding is also common in almost every household, whereas trade concerns mainly food, animal and manufacturing products.

Artisanal activities are based on mats and palisades knitting and weaving.

The site counts about 60 fish farmers, including 16 women (of which 7 youths) and 44 men (of which 38 youths), distributed among four groups integrating both vegetable cropping and fish farming.

Site n° 2: Mokolo Dam

- **General data:**

The Mokolo Dam is located at about 15 km south-east Biktine. It covers an estimated area varying between 2 to 5 square km depending on the season (it decreases in dry season and increases in wet season). It receives average annual rainfalls of about 550 mm/year.

Several structures and institutions are found in this site: 1 general educational college, 1 primary school, and 1 health centre.

- **Socio-economic Data:**

More than 99% of the Mokolo canton population is rural whose livelihood is based on agro-sylvo-pastoral activities. However, a dozen of fishermen (100% men) carry on fishing activities in the Mokolo dam. 45% of the site's population is also involved in agricultural activities, of which 80% are women and youths.

The cultivation of cereals is predominant in this site. Bovine, sheep, goat and poultry farming is also present in almost every household of the Mokolo canton.

Tandjilé region:

- **General Data:**

The region of Tandjilé is divided into 03 departments: Tandjilé-Est (Lai), Tandjilé- Ouest (Kélo) and Tandjilé Centre (Beré).

It is bordered to the north by the Chari-Baguirmi region, to the south by the Mandoul region, to the east by the Moyen Chari region and to the west by the Moyo-Kébbi-Est and Moyo-Kébbi- Ouest regions.

The Tandjilé region covers a surface area of 18 045 Km^2. Its population was estimated at 72 5800 inhabitants in 2011, of which 80% are rural (GPHC, 2009).

- **Major Socio-economic Activities**

The economy of this region is based on agriculture, fishery, bovine farming and agricultural products marketing. The main crops cultivated are cotton and rice, in addition to but less importantly, millet, sorghum, peanuts, manioc, sesame and potato.

Fishing is the second largest economic activity in this region. It is practiced in a traditional way in the Logone and Tandjilé rivers. To this is added artisanal trade.

The lack of communication and transportation means is considered as a major constraint to the economic growth of this region.

The Tandjilé region displays considerable natural resources: a large area of exposed cultivable lands and rice plains, important ground and surface water resources; abundant livestock of various species, abundant and diverse wildlife, considerable fishery resources and classified forests.

Access to drinking water in this region is very limited and does not exceed 22%.

- **Project Sites of Interventions in the Tandjilé region:**

Site N°1: KELO

- **General Data:**

The Kélo site is located in the south of the Bactchoro prefecture, in the north of the Bologo sub-prefecture, in the east of the Moyo-Kébbi-Ouest region and in the west of the Tandjilé Centre department (Beré).

Average rainfall in this site varies between 700 to 1200 mm/year and the most recurrent natural phenomena are: droughts, epizootic (animal diseases), floods in rice farms, strong winds, predators' invasion, etc.

- **Socio-economic Data**

Rice cultivation is predominant in the floodplains of the Kelo site. Other cultivated crops include rain-fed red sorghum, white sorghum, millet, corn, peanuts and cotton, in addition to livestock farming destined mainly for domestic consumption.

Fishery is the second major activity in this zone and concerns a wide diversity of species. The number of farmers/fishermen in the Kelo site amount to 316262 over a total population of 395 328 inhabitants, of which 201617 are women and 263551 youths.

This site includes three (03) health centres and one (01) hospital, five (05) secondary schools, 11 Colleges and 23 primary schools.

SITE N°2: LAÏ

- **General Data**

Laï is the capital of the Tandjilé-Est region. It is located in the south of the Dressia prefecture, in the north of the Donomanga sub-prefecture, in the east of the Chari River and in the west of the Tandjilé Centre department (Béré). Average annual rainfall varies between 700 and 1200 mm/yr.

The most recurrent natural phenomena in this site are: droughts, floods in rice farms, strong winds at the beginning of the wet season, predators' invasion species (locust, crop pests and insects…).

The area used for fish farming in Laï site is estimated at 10 hectares.

The Laï population is estimated at 315 301 inhabitants. The site includes three (03) health centres and one (01) hospital and five (5) secondary schools, (4) colleges and 7 primary schools.

- **Socio-Economic data**

Rice cultivation predominates in the floodplains of the Laï site. Other cultivated crops include rain-fed red sorghum, white sorghum, millet, corn, peanuts and cotton, in addition to livestock farming destined mainly to domestic consumption.

Fishery is the second major activity in this zone and concerns a wide diversity of species. The site includes about 292 240 farmers/fishermen over a total population of 315 301, of which 160 803 are women and 153 650 youths.

Hadjer Lamis region

- **General Data**

The Hadjer-Lamis region includes three (3) administrative departments, nine (9) sub-prefectures and thirty-seven (37) traditional chiefdoms (cantons, fractions, groups and Lawanat). The capital of the Hadjer Lamis region is Massakory and is located at about 148 Km from N'Djamena, Chad's capital.

This region extends over a surface area of 40 099 km2 and has a cosmopolitan population estimated at 726 670 inhabitants, of which 52% are women.

Population density is estimated at 18,1 people per km^2 and the average household size is 7 persons.

- **Physical and Natural Environment**

The Hadjer Lamis region is characterized by a Sahelian climate with rainfalls reaching 700 mm per year in rainy periods.

Rainfall rates are generally comprised between 200 and 700 mm from the north to the south. Its climate is relatively hot from February to March (25°C to 35°C), extremely hot from April to May (35°C to 45°C), very fresh from November to January (10 to 20°C).

This region is flat and includes sparse vegetation as shrub species (Acacia, Balanites, etc.) and *Calotropus procera*. The herbaceous cover is dominated by annual grasses. Average rainfall is on the order of 300mm but unevenly distributed in space and time.

- **Major Socio-economic Activities**

The major socio-economic activities present in the Hadjer Lamis region are: agriculture, livestock farming, fisheries, trade and handicrafts.

Agriculture is mainly rain-fed, however three to four types of crops are cultivated per year in the area around Lake Chad depending on the latter's extension area. Irrigated agriculture is also conducted by some farmers in small irrigated perimeters around the Chari River. The cultivation of vegetable crops is very developed in the Chari River and Lake Chad riparian areas.

This zone has important fishery resources especially in the south border of Lake Chad, along the Chari River, and in some other ponds and pits. This hydrographical wealth is an important basis for the future activities.

- **The Project Sites of Interventions in the Hadjer Lamis region**

Two sites in the Hadjer Lamis region will be covered by the project. They are both located in the Mani prefecture.

Site n°1 is: Hadidé-Miteriné known for fisheries activities

site n°2 is: Bermoussa-Mani-Mahada, known for both fisheries and fish-farming activities.

The two sites are located on a radius of 60 km and share the same climatic and socio-economic data as they both belong to the Mani prefecture.

The two sites selected are part of the Mani prefecture and are bordered to the east by the Karal sub-prefecture, to the south by the Douguia region, to the north by Lake Chad and to the west by Cameroon.

April is the hottest month of the year with average temperatures attaining 45°C. These extreme temperatures have an adverse impact on the sites environment and result most often in the drying up of the vegetation cover. December is the coldest month of the year with average temperature of 10°C.

The most recurrent natural phenomena in these two sites are: locust invasion, prolonged drought, strong winds, monkeys, and squirrels …

- **Major socio-economic Activities**

Like the other regions of Chad, the economy of these two sites is based on agriculture, fisheries, livestock farming and trade.

The Cultivation of cereals is the first predominant activity, including (by order of importance): rain-fed sorghum, *berbère* (season sorghum), corn and rice. In addition to bovine and ovine breeding practiced in the two sites, the villages of the Mani sub-prefecture are also known for the breeding of small ruminants and poultry present in almost each household.

These two sites are also characterized by their weekly markets where various food products, fresh and transformed fish, animals, manufactured products are sold. Quarries exploitation (in the Dandi and Hadjer Lamis regions) is also very important for the economy of certain households. Artisanal Fisheries activities play also an important role in the zone's economy and some of the major products include various types of basketry such as mats, traditional hats, and palisades weaving. Pottery is also important for the economy of the Mani, Douguia, Mahada, Danouna, etc. villages.

The two sites include 42 fish farmers distributed among the three following villages: Mahada, Mani and Bermoussa. It should be noted that 65% of the sites population is active in the fisheries sector and a good part of this population is also involved in agroforestry.

- **General Observations**

Despite the lack of accurate data and statistics, the two sites selected are clearly affected by the adverse impacts of climate change, especially in terms of temperature increase. They are also affected by the drying up of Lake Chad and are subject to increasing human

pressure on its vulnerable and fragile resources and to eutrophication caused by agricultural and industrial chemical disposals. All these effects resulted in a decline in the sites economy due to the extinction of some fish species, navigation problem, and resources depletion.
As for the Chari River, some of the major problems are the River's silting resulting from the sand transported by rain waters. This phenomenon is all the more frequent due to the increasing frequency of torrential episodes caused by climate change. The degradation of the River banks and deforestation for orchards cultivation are also among the most important problems faced by the Chari River. This affects considerably the fishing and aquaculture activities.

II- Programme Objectives:

The project's overall objective is: **to improve the resilience of the fisheries and aquaculture communities in Chad to the adverse effects of climate change**.

The project has the following specific objectives:

- **Strengthening institutional and legal frameworks** by updating the fisheries and aquaculture sector's master plan, improving the legal framework and the capacities of the involved stakeholders by mainstreaming climate change dimension.
- **Improving the resilience of the fisheries and aquaculture ecosystems and local population** by conducting concrete adaptation measures and implementing adaptation activities for the local population, including income-generating activities.
- **Capacity building and sensitization of the different concerned actors and stakeholders** through the implementation of awareness-raising, communication and training sessions for the different beneficiaries and users.

III- Project / Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Component 1: Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change	▪ The fisheries and aquaculture master plan is updated and validated ▪ The regulatory and legal texts are reviewed, updated and submitted to concerned entities	The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension	1,415,000
	▪ The national surveillance capacities are strengthened ▪ A monitoring-evaluation system is designed and operational	The fisheries and aquaculture monitoring and surveillance system is	

		strengthened and operational	
2. Component 2: Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change	▪ Development, rehabilitation and protection works for priority ecosystems are implemented in the three concerned zones (Guera, Tandjilé & Hadjer Lamis) ▪ Fish hatcheries and farming structures are built in the three project areas ▪ Fisheries and aquaculture products transformation /conservation platforms/units are constructed and operational in the three project areas ▪ Support actions to fishermen are provided	The resilience of ecosystems is strengthened through the rehabilitation of the priority sites and the fisheries and aquaculture infrastructure improvement are achieved	6,055,000
	▪ Revolving funds are created to diversify the communities income resources, notably beneficiary fishermen and farmers ▪ Income-generating activities are supported in favour of communities, women & youths in particular	The fishermen and communities' incomes are increased and their resilience to climate change is improved	
3. Component 3: Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad	▪ Decision-makers (parliamentarians, ministers, directors…), practitioners, concerned structures and entities are trained and sensitized to the fisheries and aquaculture challenges and adaptation to climate change ▪ The populations awareness about sustainable and adaptive fisheries and aquaculture is raised	The targeted institutions and actors are sensitized and their capacities strengthened through adapted communication	650,000
4. Project Execution cost			730,000
5. Total Project Cost			8,850,000
6. Project Management Fee charged by the Implementing Entity (if applicable)			750,000
Amount of Financing Requested			**9,600,000**

Logical Framework: Strengthening the Resilience of the Fisheries and Aquaculture Communities to Climate change in Chad

Component/outcome/output/activity	Notes on the budget	Unit cost	Number of units	Total budget ($)
Component 1 : Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change				
Outcome 1.1: The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension				
Output 1.1.1: The fisheries and aquaculture master plan is updated and validated				
• Activity 1.1.1.1. Elaboration of preparatory thematic studies related to the fisheries and aquaculture sector in Chad and its vulnerability to Climate Change	Study	200 000	1	200 000
Activity 1.1.1.2 : Organization of workshops for validation of the studies (mentioned in Activity 1.1.1.2)	Workshop	20 000	3	60 000
Activity 1.1.1.3 : Updating chad's fisheries and aquaculture master plan taking into account the climate change dimension	Study	50 000	1	50 000
Activity 1.1.1.4 : Organization of a national workshop for the updated master plan validation	National workshop	30 000	1	30 000
Activity 1.1.1.5 : Design and edit the fisheries and aquaculture master plan	Document	20 000	1	20 000
Output 1.1.2: The regulatory and legal texts are reviewed, updated and submitted to concerned entities				

Activity 1.1.2.1. Analysis of the regulatory and legal framework of fisheries and aquaculture sector in Chad and proposals for the update/elaboration of legal texts taking into account the climate change dimension	Study	70 000	1	70 000
Activity 1.1.2.2 : Elaboration of specific and complementary standards and regulations : allocation conditions of fishing license, fishing methods, incentive measures…in relation with climate change	Study	50 000	1	50 000
Activity 1.1.2.3. Organization of information, outreach, and awareness-raising sessions on the new regulatory texts aimed at different targeted groups (parliamentarians, decision-makers, managers, fishermen…)	Workshop	20 000	4	80 000
Outcome.1.2. The fisheries and aquaculture monitoring and surveillance system is strengthened and operational				
Output 1.2.1. The national surveillance capacities are strengthened				
Activity 1.2.1.1 : Diagnostic study of existing surveillance and monitoring-evaluation systems in relation with the fisheries and aquaculture sector	Study	25 000	1	25 000
Activity 1.2.1.2 : strengthening the surveillance and control mechanisms of the fish sites and resources and fishing activities	Study	50 000	1	50 000
Activity 1.2.1.3 : Organization of a workshop for the validation of the surveillance mechanisms	Workshop	15 000	4	60 000
Activity 1.2.1.4: Acquisition of surveillance materials in favour of the fisheries and aquaculture staff, managers and organizations/structures (rolling stock, IT materials, data collection materials …)	Lot	500 000	1	500 000

Activity 1.2.1.5 : Design of training modules, identification and training of the teams in charge of utilization of the surveillance mechanisms	Workshop	20 000	3	60 000
Output 1.2.2. A monitoring-evaluation system is designed and operational				
Activity1.2.2.1: Design and development of a fisheries and aquaculture monitoring-evaluation system	Study	50 000	1	50 000
Activity1.2.2.2 : Organization of a training session on the use of the monitoring-evaluation system	Workshop	20 000	3	60 000
Activity 1.2.2.3 : Operationalization of the monitoring-evaluation system (including the acquisition of necessary equipment)	Flat amount	50 000	1	50 000
Sub- total component 1				**1 415 000**
Component 2 : Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change				
Outcome 2.1: The resilience of ecosystems is strengthened through the rehabilitation of the priority sites and the improvement of the fisheries and aquaculture infrastructure				
Output 2.1.1 : Development, rehabilitation and protection works for priority ecosystems are implemented in the three concerned zones (Guera, Tandjilé and Hadjer Lamis)				
Activity 2.1.1.1 : Identification, characterization and delineation of priority and most vulnerable sites/ecosystems	Study	50 000	1	50 000
Activity 2.1.1.2. Identification of development activities and elaboration of feasibility studies	Study	40 000	3	120 000

Activity 2.1.1.3. Organization of results restitution workshops with the local populations and different concerned parties	Workshop	20 000	3	60 000
Activity 2.1.1.3 : Identification and training of the local workforce involved in the rehabilitation and development activities	Workshop	10 000	3	30 000
Activity 2.1.1.4: Establishment and stabilisation of lakes banks, ponds, watercourses, and river banks, etc.	Flat amount	300 000	3	900 000
Activity 2.1.1.5 : Establishment of basins and river banks for rice-fish farming	Flat amount	200 000	1	200 000
Activity 2.1.1.6: Water and soil conservation works and plantations (dikes, gabions, sylvo-pastoral and agroforestry plantations…)	Flat amount	200 000	3	600 000
Output 2.1.2: Fish hatcheries and farming structures are built in the three project areas				
Activity 2.1.2.1: Identification of hatchery sites in each of the project areas	Study	20 000	3	60 000
Activity 2.1.2.2: Technical and economic feasibility study for the reinforcement / establishment of fish hatcheries and farming structures in the three project areas	Study	20 000	3	60 000
Activity 2.1.2.3: Hatcheries establishment, development and equipment (renewable energy, basins, etc.)	Flat amount	150 000	3	450 000
Activity 2.1.2.4. Establishment of farming structures (works, materials, granulation and extrusion equipment, equipment for surveillance of water physico-chemical parameters of water, fish seed rearing units,equipment for alevins, seines, aerators, etc. calibration)	Flat amount	100 000	3	300 000
Activity 2.1.2.5: Training of the hatcheries managers and technicians and training of Fish farmers in the rearing and harvesting of poly culture fish culture practices	Workshop	20 000	3	60 000
Activity 2.1.2.6 : Support of the hatcheries managers and technicians	Flat amount	40 000	1	40 000

Output 2.1.3: Fisheries and aquaculture products transformation /conservation platforms/units are constructed and operational in the three project areas				
Activity 2.1.3.1 : Socio-economic feasibility study for the construction/reinforcement of the fish and aquaculture products transformation/conservation platforms/units	Study	20 000	3	60 000
Activity 2.1.3.2 : Organization of a workshop for the presentation, exchange and validation of the feasibility studies results	Workshop	20 000	1	20 000
Activity 2.1.3.3 : Identification and training of the workforce involved in the platforms/units construction works	Workshop	10 000	3	30 000
Activity 2.1.3.4 : Construction and rehabilitation of the fisheries products transformation/conservation units/platforms	Works	100 000	3	300 000
Activity 2.1.3.5 : Construction of fish markets	Works	180 000	3	540 000
Activity 2.1.3.6: Acquisition of necessary equipments/materials for the transformation and conservation units (renewable energy, adapted technology, modern ovens…)	Lots	100 000	3	300 000
Activity 2.1.3.7 : Support of the transformation and conservation units managers	Flat amount	40 000	1	40 000
Output 2.1.4 : Support actions to fishermen are provided				
Activity 2.1.4.1 : Identification of priority landing sites in the three project areas	Study	10 000	1	10 000
Activity 2.1.4.2 : Construction of canoes docking structures	Works	20 000	6	120 000
Activity 2.1.4.3 : Acquisition and allocation of fishing equipment (fresh products conservation and sale equipment)	Lots	100 000	3	300 000
Activity 2.1.4.4 : Development of boreholes equipped with pumps	Works	30 000	3	90 000

Activity 2.1.4.5 : Fish stocking in artificial ponds and dams	Flat amount	100 000	1	100 000
Outcome 2.2. The fishermen and communities' incomes are increased and their resilience to climate change is improved				
Output 2.2.1. Revolving funds are created to diversify the communities income resources, notably beneficiary fishermen and farmers				
Activity 2.2.1.1 : Organization of information and awareness-raising workshops on revolving funds for the local communities, fishermen and farmers	Workshop	10 000	3	30 000
Activity 2.2.1.2 : Creation and establishment of revolving funds				
Activity 2.2.1.3 : Training of beneficiaries on revolving funds use and management in each of the three zones	Workshop	10 000	3	30 000
Output 2.2.2 : Income-generating activities are supported in favour of the local communities, women and youths in particular				
Activity 2.2.2.1: Identification of an experienced and specialized structure (NGOs, associations, credit unions, etc.) to manage the revolving funds and support the beneficiaries				
Activity 2.2.2.2. Identification and characterization of income –generating activities in the 3 concerned zones Potential income-generating activities: - Fishing and aquaculture products transformation - Small-scale agriculture - Smart agriculture - Fisheries products artisanal conservation and transformation (fish drying and smoking) - vegetable cropping	Study	30 000	3	90 000

Activity 2.2.2.3 : Selection of the beneficiaries of the income-generating activities', including women and youths	Study	15 000	3	45 000
Activity 2.2.2.4 : Training of beneficiaries on the project themes and the income-generating activities selected	Training	20 000	6	120 000
Activity2.2.2.5: Acquisition and distribution of equipment to the beneficiaries	Lots	1,5	600	900 000
Activity 2.2.2.6. Implementation of income-generating activities for the beneficiaries				
Sub-total component 2				**6 055 000**
Component 3 : Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad				
Outcome 3.1: The targeted institutions and actors are sensitized and their capacities strengthened through adapted communication				
Output 3.1.1 : Decision-makers (parliamentarians, ministers, directors,…), practitioners, concerned structures and entities are trained and sensitized to the fisheries and aquaculture challenges and adaptation to climate change				
Activity 3.1.1.1 : Elaboration of an awareness-raising, training and communication action plan on fisheries and aquaculture for the different beneficiaries	Study	40 000	1	40 000
Activity 3.1.1.2 : Organization of a workshop for the action plan validation	Workshop	15 000	1	15 000
Activity 3.1.1.3: Elaboration of specific training modules (aquaculture technology, information collection method, climate change impacts on fish resources, etc.)	Study	50 000	1	50 000
Activity 3.1.1.4: Design and editing of adapted awareness-raising/communication materials (flyers, brochures, leaflets…)	Flat amount	60 000	1	60 000

Activity 3.1.1.5 : Organization of thematic training sessions for professional structures, entities, producers, decision-makers, practitioners, and technicians	Workshop	20 000	4	80 000
Output 3.1.2: The populations awareness about sustainable and adaptive fisheries and aquaculture is raised				
Activity 3.1.2.1 : Design and development of awareness-raising and communication materials for the large public on fish resources and climate change impacts ((leaflets, posters, flyers, summaries, documentaries, radio spots, phone applications, fisheries and aquaculture day)	Flat amount	100 000	1	100 000
Activity 3.1.2.2 : Design (format and content) of environmental education sessions in the local languages on fishery resources and ecosystems conservation aimed at pupils and women	Flat amount	60 000	1	60 000
Activity 3.1.2.3 : Organization of environmental education session for pupils and women	Workshop	30 000	6	180 000
Activity 3.1.2.4 : Establishment of a web radio (studio, server, portal and mobile application) in each of the three zones	(1 studio, 1 server, 1 portlet 1 mobile)	15 000	3	45 000
Activity 3.1.2.5. Implementation of an exchange platform/database on fisheries and aquaculture	Flat amount	20 000	1	20 000
Sub-total of component 3				**650 000**
Total components				**8 120000**
Component 4: Project execution and monitoring				
Execution Costs (management unit)				**730 000**
Implementation costs (implementation unit)				**750 000**
Monitoring and evaluation (M&E)				
TOTAL PROJECT				**9 600 000**

IV-Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	June 2018
Mid-term Review (if planned)	December 2020
Project/Programme Closing	June 2022
Terminal Evaluation	January 2022

PART II: PROJECT JUSTIFICATION

A. *The project components*

This project is in compliance with Chad National Development Strategies and Policies and meets the requirements of Chad's Environmental Policy. It will be implemented within the framework of Chad's Rural Development Intervention Programme (RDIP) and will be conducted in line with the two National Poverty Reduction Strategies (NPRS 1 and 2) as well as with the National Development Plan (NDP 2013) whose axes include the restoration and safeguard of fragile ecosystems and the fight against food insecurity. In addition, the development of the fisheries sector, aquaculture in particular, is considered as one of the major priorities of Chad's National Adaptation Plan as described in the country's INDC.

The project will be structured around 3 major components:

i) **Component 1: Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change**

This component will focus on the legal and institutional aspects related to the fisheries and aquaculture sector at the national level. Thematic studies that will serve as a basis for updating Chad's fisheries and aquaculture master plan will be conducted in the framework of the project and will deal with identification of vulnerable ecosystems, fisheries and aquaculture development, socio-economic studies, fishermen organization, etc.

In addition, the legal and regulatory governing framework for fisheries and aquaculture sector, will be improved by adapting legal texts and standards while taking into account the climate change dimension.

This component will include the design and implementation of national action plans and programmes to build the capacities of the different concerned institutions, entities and actors through the organization of thematic trainings and the acquisition of the necessary equipment.

The existing fishery and aquaculture resource surveillance system (s) will be reinforced by the acquisition of the necessary equipment and the capacity building of its various stakeholders and users.

In addition, a monitoring and evaluation system will be designed and implemented to allow regular and rigorous surveillance of the fishery resources status and trends, particularly in relation to climate change.

ii) Component 2: Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change

This component that aims to improve the resilience of populations, ecosystems and natural resources will be implemented in the three targeted areas of the project.

The main activities planned within this component will include various concrete adaptation actions such as the construction of fish hatcheries and breeding structures and the establishment of fisheries products transformation and conservation units for the benefit of beneficiary fishermen and fish farmers. The conservation and transformation units will be equipped with the necessary materials and equipment in order to ensure the most favourable conditions for fish conservation and marketing.

Canoes and boats docking structures will also be constructed to provide better working conditions for fishermen in the three concerned zones.

In addition, revolving funds will be created and dedicated to finance micro-projects and income-generating activities in favour of the most vulnerable groups, women and youths in particular. These funds and activities will be financed by the project budget. A financing mechanism will be created and managed by partner NGO(s) to be identified through an objective and transparent process.

The income-generating activities will be defined based on environment-related themes and will contribute to improving communities and natural resources resilience to climate change. These activities will have a beneficial socio-economic impact on the targeted population. The major themes to be considered for these activities are: artisanal activities, fisheries and aquaculture products transformation, small-scale agriculture, sustainable and smart farming, vegetable cropping, etc.

With the aim of improving the natural resources and ecosystems resilience, a study will be conducted to identify the lakes, ponds, and banks that need to be developed. Development and rehabilitation works will be implemented in order to re-establish and maintain the ecological balance and ecosystem services at the level of the identified sites.

It is important to note that all field activities planned for the three zones will be ensured, as far as possible, by the local communities.

iii) Component 3: Awareness-raising, communication and training activities for a concerted and integrated management of fisheries and aquaculture in Chad.

This component aims to design and implement a training, communication and awareness-raising action plan for the different beneficiaries, users, and targeted groups, including

practitioners, managers, professional structures and entities, decision-makers, and parliamentarians, etc. The training sessions will focus, among others, on fisheries and aquaculture-related themes, fish stock raising techniques, data collection methods, climate change impacts on fishery resources, etc. …

To this end, communication and awareness-raising materials and supports will be developed (leaflets, posters, flyers, radio spots, mobile application, etc.).

Environmental education sessions addressing natural resources, fishery resources and aquatic ecosystems preservation will also be conducted and dedicated to school children and women.

Adaptation Measures and contribution to climate resilience

Chad, through this project, proposes a number of concrete adaptation measures to be implemented in the project areas and intervention sites. The project will also introduce other measures to improve the institutional and legal aspects and to strengthen the capacities of all the concerned actors and to equip them with the necessary tools and means for a sustainable and reliable development of the targeted zones.

The project will build on previous and on-going initiatives conducted at the national level and in the three targeted zones. It will focus essentially on implementing climate change adaptation measures as well as other cross-cutting activities such as capacity building and communication and sensitisation. It will strengthen the capacities of local national institutions involved in the fisheries and aquaculture sector.

The project will support concrete adaptation actions to climate change:

On the social level

By building adapted infrastructures (fishing unit and platform ...) in the selected areas, the project will contribute to improve fish production along the Chari-Logone-Lake Chad system. This will improve the livelihoods of the fishing communities and farmers in these zones and help them to adapt to the important shrinkage and drying up experienced by the Chari-Logone-Lake Chad system in recent decades due to climate change.

In addition, trainings and capacity building sessions on hatcheries management and fishery products transformation and conservation techniques will be provided and equipment will be supplied to the fishing communities and farmers for a better resilience to climate change.

Ultimately, the creation of income-generating activities and the establishment of revolving funds will guarantee the sustainable development of the fisheries sector in these areas and contribute to the reduction of prevailing insecurity in the Lake Chad region.

On the environmental level

The rehabilitation of vulnerable ecosystems (development and stabilisation of lakes banks, ponds, watercourses, riverbanks, water and soil conservation…) and fisheries resources preservation will help to reduce the adverse impact of climate change especially those related to extreme weather events such as floods and droughts.

The project will also contribute to the efficient management of water resources through the development of riverbanks and retention basins. In addition, reforestation activities will be carried out and will contribute to the conservation of plant resources.

The synergy of the proposed activities will permit to establish an appropriate approach to the fight against the effects of climate change. The effects of the regulatory texts will improve the legal environment for fisheries and aquaculture activities.

In response to this complex challenge, a multitude of initiatives are proposed, at various scales and in different sectors. It is based on the efforts that coherent national and regional strategies for effective adaptation to climate change must be developed. The types of concrete actions proposed to mitigate the risks associated with climate change include:
(1) Policies and approaches that take into account scientific knowledge and the experiences of rural populations themselves, and best practices in terms of response and (2) Strengthening the individual and collective capacity of rural populations and governance institutions at the local level to improve the resilience of local production systems.

They will be targeted at transformation goals of more sustainable systems. That is why it is important in the basket of solutions to choose those that contribute to the lasting strengthening of resilience by working on:

- the increase in income derived from exports;
- job creation;
- increased protein intake;
- improved food security;
- poverty alleviation; and
- stop the rural exodus.

This project proposal is structured around three components that combine national, regional and local actions. The components and activities to be undertaken are follows:

- **Component 1**: Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change**;**
- **Component 2**: Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change;
- **Component 3**: Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad.

The allocated fund will be used under Component 1 for the implementation of measures and actions that aim to improve the institutional and legal governing basis of fisheries and aquaculture sector and to diversify populations' livelihoods. The activities of Component 2 consist of concrete field adaptation measures to reduce the vulnerability of fishermen,

fish-farmers and communities to climate change This component will include also, natural resources preservation and mobilization structures. The Component 3 will aim to raise the awareness of local populations, managers, and technicians in terms of best fishery resources management practices and adaptation to climate change.

A better protection and a concerted management of natural resources will be possible through the implementation of adapted development activities and rehabilitation and restoration actions of ecosystems, lakes, ponds and riverbanks while integrating the climate change aspects and reducing the risks of potential conflicts among users.

The project will also make possible the promotion and valorisation of local expertise related to the promotion of fishery and aquaculture products (drying up and smoking techniques, traditional techniques …). This will contribute to preserving the natural resources and ecosystems in the three project areas and hence will improve populations' livelihoods in a context of climate change. The surveillance measures envisaged under this component will lead to a better exploitation of the fishery resources and to a more optimal conservation and protection of ecosystems and priority sites, especially the most vulnerable ones.

A participatory and integrated approach will be used for the project implementation, will allow tackling all the targeted themes, and axes taking into consideration the concerns and expectations of all concerned actors.

The **project preparation** process will include four major steps involving different levels of interventions (regional, national and local):

- *Identification and definition of all actors and beneficiaries,*
- *Exchanges between the Executing entity, the involved national institutions and the local communities,*
- *Consultation for preliminary surveys with local actors (fishermen, fish farmers, vulnerable groups including women and youths, etc.) and*
- *Organization of a national workshop bringing together the different concerned stakeholders to validate the project document.*

The project sustainability will be ensured by the central and regional structures, fishermen, fish-farmers as well as the capacity building targeted groups including the staff and technical services of the concerned departments (Chad's Ministry of Environment and Fisheries).

Having mastered the project developed tools and products, the local and regional managers will be able to use and manage these tools and products during the project implementation as well as after its termination, ensuring by the way the sustainability of the project. In addition to the establishment of an adequate infrastructure, the project will implement innovative solutions, which will have financial advantages for the beneficiary fishermen and fish farmers through the creation of a revolving funds.

This project fits into **category B** in accordance with the Social and Environmental Policy of the Adaptation Fund. A social and environmental assessment of the project impacts will be carried out at a later stage.

Components and expected outcomes of the project

The project components aim to improve the resilience of the fisheries and aquaculture resources and communities to the adverse impacts of climate change. This could be achieved at two levels:

- ***National level,*** *through the improvement of the institutional and legal framework, of the Monitoring & Evaluation systems and awareness about climate change adaptation and natural resources management challenges.*

- ***Local and regional level,*** *essentially by the implementation of activities in favour of the vulnerable local populations, fishermen and natural ecosystems in order to improve their resilience to climate change.*

The activities of each component are detailed as follows:

Component 1: Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change

Outcome 1.1: The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension

Output 1.1.1 the fisheries and aquaculture master plan is updated and validated

Chad has currently its fisheries and aquaculture master plan, the latter needs to be updated and adjusted by integrating other aspects and considerations, the climate change dimension in particular. This will require the implementation of thematic studies (socio-economic study, natural and fishery resources assessment, institutional aspects, etc.).

The activities to be conducted under this output are:

Activity 1.1.1.1. Elaboration of thematic studies:

- Study for the identification of the most vulnerable and sensitive fisheries and aquaculture sites to climate change and proposal of a management strategy
- Analytical study on the impacts of climate change on fisheries and aquaculture in Chad and development prospects
- Socio-economic studies on the fisheries and aquaculture sector focusing on the directly active population, employment and revenues
- Study for the assessment of the fishery resources exploitation in Chad and proposals for stocks recovery
- Study on the development of the fisheries and aquaculture sector (marketing, fisheries and aquaculture labelling, value chain approach, …)
- Evaluation of structures and entities in charge of the fisheries and aquaculture sector in Chad and proposals for the creation/enhancement of (a) management structure (s)

- Assessment study of the aquaculture development potentialities

Activity 1.1.1.2: Organization of workshops for the validation of the studies (mentioned in Activity 1.1.1.1)

Activity 1.1.1.3: Update of chad's fisheries and aquaculture master plan taking into account the climate change dimension

Activity 1.1.1.4: Organization of a national workshop for the updated master plan validation

Activity 1.1.1.5: Design and editing of the fisheries and aquaculture master plan

Output 1.1.2: The regulatory and legal texts are reviewed, updated and submitted to concerned entities

The consolidation and reinforcement of the fisheries and aquaculture legal and institutional framework is a prerequisite for the efficient implementation and sustainability of any initiative and strategy related to natural resources promotion and conservation. Hence, a set of activities will be conducted to analyse and update the legal and regulatory texts governing the fisheries and aquaculture sector in Chad. This could be followed by information and awareness-raising sessions targeting different groups for an optimal assimilation and ownership.

To this end, the following activities will be conducted:

Activity 1.1.2.1. Critical analysis of the regulatory and legal framework of the fisheries and aquaculture sector in Chad and proposals for the update/elaboration of legal texts taking into account the climate change dimension

Activity 1.1.2.2: Elaboration of specific and complementary standards and regulations: fishing license allocation conditions, fishing methods, incentive measures, etc. in relation with climate change

Activity 1.1.2.3. Organization of information, outreach, and awareness-raising sessions on the new regulatory texts aimed at different targeted groups (parliamentarians, decision-makers, managers, fishermen…)

Outcome.1.2. the fisheries and aquaculture surveillance system is strengthened and operational

Output 1.2.1. The national surveillance capacities are strengthened

The development of sustainable and reliable mechanisms and tools is one of the main necessary conditions and factors for the protection of Chad's fishery resources and natural ecosystems. Hence, a detailed diagnosis of the current state and the design and implementation of solid and sustainable surveillance systems and mechanisms is needed. To this end, the following activities are envisaged:

Activity 1.2.1.1: Assessment study of existing surveillance and monitoring-evaluation systems and mechanisms related to fisheries and aquaculture sector

Activity 1.2.1.2: Strengthening the surveillance and control mechanisms of the fishing sites and resources and fishing activities

Activity 1.2.1.3: Organization of a consultation workshop for the surveillance mechanisms validation

Activity1.2.1.4: Acquisition of surveillance equipment for the benefit of the fisheries and aquaculture staff, managers and professional organizations (rolling stock, IT equipment, data collection equipment, etc.)

Activity 1.2.1.5: Design and development of training modules, identification and training of the teams in charge of the surveillance mechanisms utilization

Output 1.2.2. A monitoring-evaluation system is designed and operational

The development of a reliable and viable monitoring and evaluation system for a regular surveillance of the aquatic and fishery resources is highly essential.

Activity 1.2.2.1 Design and development of a fisheries and aquaculture monitoring-evaluation system

Activity 1.2.2.2: Organization of a training sessions on the monitoring-evaluation system use

Activity 1.2.2.3: Operationalization of the monitoring-evaluation system (including the acquisition of necessary equipment)

Component 2: Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change

Outcome 2.1: The resilience of ecosystems is strengthened through the rehabilitation of the priority sites and the improvement of the fisheries and aquaculture infrastructure

Output 2.1.1: Development, rehabilitation and protection works for priority ecosystems are implemented in the three concerned zones (Guera, Tandjilé and Hadjer Lamis)

Ecosystems and habitats are key elements for the protection and preservation of the fishery resources. It is thus necessary to identify and characterize the most vulnerable sites and ecosystems to protect them against the adverse impacts of climate change and degradation. The project will conduct several development and rehabilitation activities of the degraded sites.

Activity 2.1.1.1: Identification, characterization and demarcation of the most vulnerable sites/ecosystems

Activity 2.1.1.2: Identification of development activities and elaboration of feasibility studies

Activity 2.1.1.3. Organization of restitution workshops with the local populations and different concerned parties

Activity 2.1.1.4: Identification and training of the local workforce involved in the rehabilitation and development activities

Activity 2.1.1.5: Development and stabilisation of lakes banks, ponds, watercourses, riverbanks, etc.

Activity 2.1.1.6: Development of basins and riverbanks for rice-fish farming

Activity 2.1.1.7: Water and soil conservation works and plantations (dikes, gabions, sylvo-pastoral and agroforestry plantations…)

Output 2.1.2: Fish hatcheries and farming structures are built in the three project areas

The project sites of interventions do not include hatcheries for eggs and larvas production. This affects the fisheries sector profitability and the sites ecological stability as accentuated pressure is put on existing stocks without respect to legal standards and procedures. Hence, the project activities will include the installation and equipment of fish hatcheries and breeding structures in the six sites of interventions.

These activities are:

Activity 2.1.2.1: Identification of hatchery sites in each of the project areas

Activity 2.1.2.2: Technical and economic feasibility study for the reinforcement / establishment of fish hatcheries and farming structures in the three project areas

Activity 2.1.2.3: Hatcheries establishment, development and equipment (renewable energy, basins, etc.)

Activity 2.1.2.4: Establishment of farming structures (works, materials, granulation and extrusion equipment, fish seed rearing units, equipment for surveillance of water physico-chemical parameters, equipment for alevins, seines, aerators, etc. calibration)

Activity 2.1.2.5: Training of the hatcheries managers and technicians and training of Fish farmers in the rearing and harvesting of poly culture fish culture practices

Activity 2.1.2.6: Support of the hatcheries managers and technicians

Output 2.1.3: Fisheries and aquaculture products transformation and conservation platforms/units are constructed and operational in the three project areas:

Strengthening the processing capacities of fishery products is one of the key areas to be strengthened in order to optimize their use. The construction of fish markets will also contribute to increasing products marketing both at the national and local levels.

This could be achieved through the following activities:

Activity 2.1.3.1: Socio-economic feasibility study for the construction and reinforcement of the fisheries and aquaculture products transformation units

Activity 2.1.3.2: Organization of a presentation, exchange and validation workshop of the feasibility study

Activity 2.1.3.3: Identification and training of the workforce involved in the transformation unit building works

Activity 2.1.3.4: Construction and rehabilitation of the fisheries and aquaculture products transformation units

Activity 2.1.3.5: Construction of fish markets

Activity 2.1.3.6: Acquisition of necessary equipment and materials for the transformation and conservation units (renewable energy, adapted technology, modern ovens…)

Activity 2.1.3.7: Support of the transformation and conservation unit's managers

Output 2.1.4: Support actions to fishermen are provided

In order to provide fishermen's in rivers and ponds with the minimum conditions for optimum fishing practices, it is necessary to set up docking places for the canoes and also to proceed with stocking actions (barges, ponds,…) by larvae and alevins for a better preservation of existing stocks and increased profitability To this end, the following activities will be conducted:

Activity 2.1.4.1: Identification of priority landing sites in the three project areas

Activity 2.1.4.2: Construction of canoes docking structures

Activity 2.1.4.3: Acquisition and allocation of fishing equipment (fresh products conservation and sale equipment)

Activity 2.1.4.5: Development of boreholes equipped with pumps

Activity 2.1.4.6: Fish stocking in artificial ponds and dams

Outcome 2.2. The fishermen and communities' incomes are increased and their resilience to climate change is improved

Output 2.2.1. Revolving funds are created to diversify the communities' income resources, notably beneficiary fishermen and farmers

The revolving funds have proven to be the most successful financial mechanisms as they guarantee return on investment. Hence, revolving funds will be created for the benefit of the beneficiary actors and users.

Activity 2.2.1.1: Organization of information and awareness-raising workshops on revolving funds for the local communities, fishermen and farmers

Activity 2.2.1.2: Creation and establishment of the revolving funds

Activity 2.2.1.3: Training of beneficiaries on revolving funds use and management in each of the three zones

Output 2.2.2: Income-generating activities are supported for the benefit of the local communities, women and youths in particular

In order to create and sustain a symbiotic relationship between the population and the fishermen on the one hand and the natural resources and ecosystems on the other, livelihoods will be diversified through the identification and implementation of income-generating activities. This will be ensured by one or more NGO(s) to be recruited in a transparent and objective manner. In addition, the beneficiaries will be selected with all transparency and objectivity according to well-defined criteria and with the involvement of both women and youths.

The following activities will be conducted under this output:

Activity 2.2.2.1: Identification of an experienced and specialized structure (NGOs, associations, credit unions, etc.) to manage the revolving funds and support the beneficiaries

Activity 2.2.2.2: Identification and characterization of income–generating activities in the three project areas.

Potential income-generating activities may include:

- Fisheries and aquaculture products transformation
- Small-scale agriculture
- Sustainable and smart farming
- Fisheries products artisanal conservation and transformation (fish drying and smoking)
- Vegetable cropping

Activity 2.2.2.3: Selection of the beneficiaries of the income-generating activities, including women and youths

Activity 2.2.2.4: Training of beneficiaries on the project themes and the income-generating activities selected

Activity 2.2.2.5: Acquisition and distribution of equipment to the beneficiaries

Activity 2.2.2.6: Implementation of income-generating activities for the beneficiaries

Component 3: Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad

Outcome 3.1: The targeted institutions and actors are sensitized and their capacities strengthened through adapted communication

Output 3.1.1: Decision-makers (parliamentarians, ministers, directors…), practitioners, concerned structures and entities are trained and sensitized to the fisheries and aquaculture challenges and adaptation to climate change

The project awareness-raising and communication actions should be well-structured and organized. Therefore, an awareness-raising, training, and communication action plan will be elaborated. In addition, adapted communication and awareness-raising materials will be developed for the benefit of the targeted groups.

This output will include the following activities:

Activity 3.1.1.1: Elaboration of an awareness-raising, training and communication action plan on fisheries and aquaculture for the different beneficiaries

Activity 3.1.1.2: Organization of a workshop for the action plan validation

Activity 3.1.1.3: Elaboration of specific training modules (aquaculture technology, information collection method, climate change impacts on fishery resources, etc.)

Activity 3.1.1.4: Design and editing of adapted awareness-raising and communication materials (flyers, brochures, leaflets…)

Activity 3.1.1.5: Organization of thematic training sessions for professional structures, entities, producers, decision-makers, practitioners, and technicians

Output 3.1.2: The populations' awareness about sustainable and adaptive fisheries and aquaculture is raised

Communication and awareness-raising tools and materials intended to the targeted local populations will be designed and developed under this output. These materials and tools will focus mainly on themes related to fishery resources conservation and vulnerability to climate change. Youths and pupils will benefit of trainings, communication and awareness-raising sessions revolving around the same themes.

The project will also establish data and information sharing platforms to be used by the different actors and users.

The following activities are planned under this output:

Activity 3.1.2.1: Design and development of awareness-raising and communication materials for the large public on fishery resources and climate change impacts (leaflets, posters, flyers, summaries, documentaries, radio spots, phone applications, fisheries and aquaculture day)

Activity 3.1.2.2: Design (format and content) of environmental education sessions in the local languages on fishery resources and ecosystems conservation aimed at pupils and women

Activity 3.1.2.3: Organization of environmental education session for pupils and women

Activity 3.1.2.4: Establishment of a web radio (studio, server, portal and mobile application) in each of the three zones.

Activity 3.1.2.5: Implementation of an exchange platform/database on fisheries and aquaculture

B. *Socio-economic and Environmental Advantages of the Project*

The project provide specific economic, social and environmental benefits allowing a better resilience to climate variability.

At the Socio-economic Level:

The three project areas include about 1.426.000 million inhabitants spread as follows:

- Tandjilé Region : 640 000 inhabitants,
- Guéra Region : 220 000 inhabitants
- Hadjer Lamis Region : 566 000 inhabitants

Despite the previous initiatives and projects conducted in these regions, the latter's environmental and socio-economic situation has not been adequately developed and needs further action. This observation is confirmed by the different consultations made with the project's different stakeholders and the field visits conducted to these zones by the technical staff of the national institutions and services. Due to the increased adverse effects of climate change on natural resources, the adaptive capacity and resilience of the ecosystems of these zones to climate change need to be enhanced in order to maintain their ecological balance and ensure their usual services.

This project will contribute to directly improving the livelihoods of an important part of the population via the establishment of sustainable infrastructures, mechanisms, and

innovative approaches and through the creation of income-generating activities for the targeted populations, fishermen, and farmers. Benefits include:

The proposed activities create opportunities for the diversification of livelihoods and producer groups in the area of action. Fish farming in Chad, particularly referred to as non-commercial or small-scale subsistence farming, is one of the enterprises with the livestock system undertaken to diversify production and income, improving resource utilization and reducing the risk of possible failures of the crop or market. There is the fundamental motivation of future "non-commercial" farmers, often similar to that of commercial farmers: to provide income from the sale of fish rather than to produce fish for own consumption. Examples of aquaculture systems that offer diversification are market gardening, which complements artisanal fisheries and even farmed and integrated crop and livestock fisheries.

In general, aquaculture encompasses cropping and husbandry systems in which human intervention is concentrated, in addition to catching, on the reproduction of fish. Compared to fishing, these systems make it possible to selectively increase the production of species that are more attractive to humans and provide animal protein for its well-being. By observing this angle, the project is an engine of income generators for the beneficiary population.

From the point of view of wealth creation: The development of rural communities thus creating direct employment for residents and generating greater economic activity with the development of related services (labourers, carpenters, craftsmen) who bring with them source of money to sectors. The wages of local workers become part of the local economy as they are used to pay for local purchases and services. The commercial nature of the investments will also incite the government to improve the infrastructure linking the isolated areas by roads, bridges and especially by electricity especially in the area of Hadjer Lamis. The major impact will be if the farm is a local property, albeit small, when the income from crop sales becomes a part of the local cash flow.

In fact, this project will provide :

- Job creation at the level of local communities, especially for young people and women,
- Financing of micro-projects and income-generating activities, through the revolving funds that will be created. This will improve the resilience of the most vulnerable groups, especially women and young people,
- Contributing to the improvement of the livelihoods of the most vulnerable communities through the diversification of Income Generating Activities (hatchery, aquaculture and agriculture)
- Building human and material capacity will help communities to, efficiently, take advantage from ecosystem services,
- Reducing the loss of income caused by extreme weather events

Methods, techniques and best practice that will be provided by the project will strengthen the capacity of the beneficiaries to ensure better fish and agricultural production in the project areas.

The construction and the provision of adequate infrastructure will offer better conditions for fishing practices while preserving natural resources.

The revolving fund mechanism will facilitate access to more efficient equipment and adapted inputs to improve productivity (fisheries and processing products) and improve the living conditions of the communities in the three project regions.

In rural areas, climate-induced ecological vulnerability is an enhancement of the effects of other types of economic vulnerability (low access to resources, markets, etc.), social exclusion (social exclusion, poor access to education, health). For this reason, local strategies for adapting good practices will be duplicated at local and regional level as lessons learned. It will be particularly important to pay attention to local practices that reduce the vulnerability of populations and those that aggravate it to draw the right conclusions.

At the Environmental Level:

The natural resources and terrestrial and aquatic ecosystems of these three regions are subject to continuous and increasing pressure which led to their degradation and hence to the deterioration of the fisheries and aquaculture communities' livelihoods.

From an ecological and / or environmental point of view, the potential for expansion of extensive aquaculture appears considerable, while water bodies are faced with a quantitative and qualitative deficit in fishery products, despite the efforts made by the actors, the results remain below. That is why the public policies that are foreseen by this project could continue to support the expansion of aquaculture and the diversification of production systems while discouraging fishermen from responsible fishing.

In this regard, special attention will be given to integrated farming. Integrated aquaculture / agriculture is usually seen as a value-added system for water, recycling energy and waste products to produce more farm products, intensifying the use of land with ecological practices. From a socio-economic, environmental and cultural point of view, it has many more advantages than conventional agricultural practices

The project activities will contribute to the protection of the most vulnerable ecosystems and sites in the three targeted zones, the safeguard and promotion of fauna and flora diversity, and the restoration of terrestrial and aquatic ecosystems.

The project aims to strengthen existing and previous actions and programs such as the Fisheries Development Project (PRODEPECHE), the National Programme for Food Security (NPFS) implemented in the Tandjilé region, and the Agriculture Production Support Project (PAPAT) implemented in the Guéra region. All these projects had the common objective of providing support to the rural communities and producers organizations and developing sustainable land, water and aquatic ecosystems management practices. The results of these completed projects should be further strengthened and consolidated.

This could be achieved by building synergy and complementarity between this project and the projects mentioned above with a view to providing the local managers of the targeted sites and zones with the necessary tools for a more rational management of the vulnerable ecosystems and sites and for an increased resilience of communities to climate change impacts.

The project will also contribute to the implementation of Chad's existing national strategies related to the fisheries and aquaculture sector:

- National Poverty Reduction Strategy (NPRS1) reviewed in 2006 that leads to the second-generation NPRS 2 for the period 2008 -2011,
- Water and Sanitation Master Plan (WSMP),
- National Environment Action Plan (NEAP): elaborated in 2005 and focusing on sustainable natural resources management,
- National Biodiversity Strategy and Action Plan (NBSAP) elaborated in 1999 and translating Chad's commitments to the Rio Conventions. Its main objectives are the design and implementation of appropriate information, education and communication strategy, the achievement of a better understanding of biodiversity, the promotion of new and renewable energies and the elaboration of a national biodiversity strategy and action plan.
- National Adaptation Programme of Action (NAPA): it aims to identify populations' urgent and immediate needs in terms of adaptation to the current and potential adverse effects of climate change (NAPA, 2009).

The populations' livelihoods improvement measures envisaged by this project will certainly have beneficial impact on the stability and promotion of natural resources and on the environment as a whole as proven by previous and similar experiences. Sustainable livelihoods diversification will undoubtedly ease pressure on aquatic resources, local species and restore ecological balance in the targeted sites.

The project will also contribute to consolidating and supporting management structures both at the institutional and infrastructural levels.

C. *Project Cost-Effectiveness*

The project total cost of activities is estimated at **US$ 8,12 million**. The foreseen outreaches of the project will have considerable impacts on a strategic development sector for the republic of Chad. Indeed, the fishery sector constitute a major pillar of agriculture, which is of a paramount importance for the national economy. Unfortunately, this sector is hampered by the adverse effects of climate change expected to be intensified according to different predictions, especially the *scenarii* developed by the IPCC.

The importance of artisanal fisheries can not be measured only by its contribution to GDP (4.5%) or other indicators usually used to assess the economic importance of different activities. We must also consider the fact that fishery resources and products are fundamental elements of food and employment. From this angle, their management is a priority for the actors of the sector.

In terms of food, reference should be made to a Directorate's survey on the supply of fishery products to the N'Djamena markets, which indicates a 100 tonnes per month with 60% fresh produce and 40% transformed almost exclusively from a radius of 120km

around the capital. Necessary proteins come from fishery products, which corresponds to about 15% of the population's food expenditure.

From the social point of view, it is estimated that there are more than 200,000 beneficiary actors around the project. Given that each job involved in fishing or aquaculture is at least responsible for four shore-based jobs, it can be concluded that there are nearly 400,000 workers in the various fishing sectors. So it is no exaggeration to say that about a million people depend on fishing activities (considering a family unit of three people).

Aquaculture in Chad, currently contributes about 5% to the supply of aquatic resources for human consumption and this share is likely to increase in the future, given the stagnation of catches related to fishing. Through this component, the project tries to identify the challenges that aquaculture will have to face in the context of climate change and propose ways, both adaptive and innovative, to meet these challenges.

The indirect impacts of climate change on aquaculture activities mainly concern the availability of fresh fish at all times for incorporation into feed for human consumption. Aquaculture is an important contributor to food security and livelihoods, and depends on the health of aquatic ecosystems - but their contribution is often unknown and undervalued. Aquaculture is the world's fastest growing food production system, at 7% per year.

Component 1 is entitled « Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change» and will be dedicated to improve the institutional and legal basis of the fisheries and aquaculture sector. The total cost of this component is estimated at **US$ 1 415 000**. This component concerns the national level and will allow the development of the institutional framework required for the implementation of adaptation programmes, projects and strategies with effective and sustainable impacts.

Fishing is a traditional activity that has long played an essential role in the economy of certain regions of Chad, including the intervention zones (Tandjilé, Guera and Hadjer Lamis), which operates on two different scales: artisanal fisheries subsistence or small-scale fisheries and commercial fishing by professional fishermen.

Small-scale fishing is of great strategic importance for its role in the supply of fresh fish, the economy of the necessary means (in particular from the energy point of view), the employment induced and the role it plays in establishment and stability of fishing communities. It is also of great strategic importance because of the number of catches, the jobs that depend on it and the processed industry.

In accordance with the country needs for the improvement of fisheries sector policies and regulatory framework, component 1 will focus on developing the institutional and regulatory capacities of the national services concerned. In accordance with the needs of the country for the improvement of fisheries sector policies and regulatory framework, component 1 will focus on developing the institutional and regulatory capacities of the national services concerned.

This will consist in updating existing texts and adapting them to the new conditions of the country and the main threats on the sector in a context of climate change.

In order to ensure the appropriation of these new policies, the project should include the involvement of the various stakeholders involved at the start of the project and in the design of all the products. Moreover, the involvement of parliamentarians in this process will guarantee the effectiveness of the planned activity. A series of training sessions and workshops for the presentation and validation of new texts are planned for this project. In order to ensure the appropriation of these new policies, the project should include the involvement of the various stakeholders at the beginning of the project and in the design of all the products...

The Master plan that will be developed by the project, and declined in action plans, will be demonstrated for adoption in the mainstream planning processes. Such an approach will have wide application in all fishing districts and states of the nation.

Component 2 is entitled « Implementing concrete adaptation activities in the project three zones to strengthen the communities and ecosystems resilience to climate change» and its budget amounts to **US$ 6 055 000**. This second component is the most important one as it includes the implementation of concrete adaptation measures and the establishment of infrastructure for a better ecosystems and resources management. The infrastructure to be implemented will have great economic benefits for the fishery and aquaculture activities.

Building and establishing fish seed rearing units, nurseries and hatcheries in the 3 project sites /areas will make the fingerling accessible and available to a lager group of fish farmer. Fish farmers will be trained in the rearing and harvesting of poly culture fish culture practices. Thus a wide range of fish species will be available and will make the small-scale fish farming climate resilient and enable the fish farmer to optimise their income through sale of different fish species.

The project will develop rehabilitation plans adapted to the specificities of each of the selected sites. The rehabilitation will allow fishermen to have 2 m of water available for fishing and earthen ponds for the growth of aquaculture fish. Dredging, deepening, construction of key trenches and compaction, repairs to the entrance and exit of the pond and installation of wire mesh will be undertaken by the project. All of these actions will allow fish farmers to practice productive and commercially profitable fisheries and farming throughout the year. Cost elements and cost-effectiveness evaluation for each site and each civil work will be developed later in the full proposal phase and in the execution studies of the infrastructure works. In addition a number of income-generating activities will also be created under this component for the benefit of the local population. This will ameliorate the income generation for the fishing population and enhance the contribution of the fishery sector in the national GDP.

Component 3 is entitled « Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad" and its cost is estimated at **US$ 650 000**. The activities of this component will ensure the appropriation of the results of the project by the different stakeholders and the durability of its achievements. Communication and awareness raising will also induce the up scaling of the project results at different levels.

More specifically, these investments aim to improving the conservation approaches and rational management of aquatic resources and ecosystems in the project's six (6) sites of

interventions (3 zones) and enhancing the livelihoods of adjacent populations and fishermen. The project will also improve the national and local surveillance systems, which will strengthen the continuous control of fisheries and aquaculture resources and aquatic and riparian ecosystems exploitation. The concrete adaptation measures to be implemented will then contribute to increasing the resilience of natural resources and ecosystems to the adverse impacts of climate change and to sustaining ecosystems services.

The cost-effectiveness argument for this integrated approach runs a two prone track. On one hand each individual investment will be tested to produce benefits greater than the costs, on the other hand, the overall program of activities is a pilot at selected sites from which the Government of Chad could learn on the effectiveness and sustainability of empowering local communities to manage fishing ecosystems sustainably. As the overall objective of the project is to contribute to improving the national fisheries sector, pilot and demonstration interventions are proven approaches through which governments experiment complex management options, collect information and lessons learned before starting in scaling-up the initiative. It is an effective and efficient way to explore new policy and management options without risking a significant volume of resources. The selected approach is therefore cost-effective. As noted, each single adaptation will only be selected if it is financially viable. Although at this stage of the project note concept, there are no costed cost-benefits for the proposed adaptation measures. It is important to note that later in the full proposal each individual action had to demonstrate that the Benefits are greater than the costs incurred.

D. *Consistency with national sustainable development strategies, poverty reduction strategies, and national adaptation programs of action*

This project is in complete consistency with Chad's national environmental and sustainable development strategies and action plans of Chad, namely:

- ✓ Chad's Constitution of 30 Mars 1996, reviewed in June 2005 by the decree n°08/PR/2005 of 15 July, in its articles 47; 48; 52 and 122 gives priority to the issue of the Environment
- ✓ Chad's fisheries and aquaculture master plan which will be revisited and adjusted by the project (2002)
- ✓ National Poverty Reduction Strategy (NPRS), which is the Government's reference economic and social convergence framework for achieving the Sustainable Development Goals: When it adopted its NPRS in June 2003, the Government of the Republic of Chad undertook to meet four major challenges: (i) extreme poverty, which kept the country near the bottom of the human development index; (ii) its limited capacity to respond to poverty; (iii) structural constraints thwarting the population's basic aspirations for sustainable human development; and (iv) attainment of the completion point under the Heavily Indebted Poor Countries Initiative (HIPC Initiative). The NPRS also set out Chad's commitment to achieving the eight Millennium Development Goals (MDGs) by 2015. This document was

reviewed in 2006 and evolved into NPRS2 for the period 200-2011 structured around five major pillars:

- ✓ Promoting good governance to strengthen social cohesion and to enhance the effectiveness of policies;
- ✓ Creating an enabling environment to boost and diversify economic growth and activities;
- ✓ Enhancing the growth potential of the rural sector;
- ✓ Developing infrastructure as growth driver;
- ✓ Enhancing human resources.

- National Medium-Term Investment Programme (NMTIP), developed in the framework of the New Partnership for Africa's Development (NEPAD) and is based on the five pillars of the Comprehensive Africa Agriculture Development Programme (CAADP), namely: water management, soil fertility, rural infrastructure and trade-related capacities for improved market access, intensified agro-pastoral systems in organized sectors and sustainable natural resources management applied to non-timber forest products exploitation.
- Action Plan for Rural Development (APRD) involving the ministries of Agriculture, Breeding, Environment and Fishery resources and was developed by Chad in 1999. This Action Plan examines and defines Chad's strategic orientations and provides a reference framework for development partners' interventions. It was finalized in 2001 and includes Chad's Local Development Support Project (PROADEL) and the Actors Capacity Building Programme (*le Programme de Renforcement des Capacités des Acteurs*), in addition to other cross-cutting programmes, namely the micro-finance and the monitoring support programmes.

Chad's **National environmental policies** include also the following sectorial strategies:

- Water and Sanitation Master Plan (WSMP): Chad's current water policy is based on the Water and Sanitation Master Plan. It aims at a better management and exploitation of ground and surface water resources.
- National Environment Action Plan (NEAP): elaborated in 2005 and focuses on sustainable natural resources management
- National Action Programme to Combat Desertification (2003)
- National Biodiversity Strategy and Action Plan (NBSAP- 1999)
- National Adaptation Programme of Action (NAPA): aims to identify populations' urgent and immediate needs in terms of adaptation to current and potential adverse effects of climate change (NAPA, 2009). The NAPA defines Chad's strategic guidelines and national policies for combatting climate change and achieving sustainable development.

Chad has a 2030 vision that is based on national development programs (2012-2015), (2017-2021), (2022-2026) and (2027-2030). These plans will be implemented to accelerate the structural transformation in the social, governance and rule of law, economic and environmental fields. These NDPs will make it possible to develop an emerging regional power by 2030.

The annual evaluations of the NDP 2013-2015 and the final evaluation of the Millennium Development Goals (MDGs) concluded that despite the Progress in the implementation of public policies, major challenges remain to reach the emergence of Chad and the Sustainable Development Objectives (SDGs) by 2030. One of these major challenges is ensuring sustainable management of the environment

The emergence of Chad by 2030 will therefore require Environmental challenges, through the promotion and financing of Adaptation and mitigation of climate change in accordance with principles of sustainable development. In general, these challenges arise in terms of desertification, forest degradation, degradation of the productive potential of the soil, Competition for access to resources, degradation of natural habitats, loss of biodiversity, reduction of groundwater levels, bush fire, Siltation of oasis and the development of invasive species and pollution and the space necessary for the Transhumance, degradation of protected areas and wetlands (PND, 2017-2021).

E. *Response to national technical standards*

The project will be implemented in accordance with **Chad's national standards** related to national adaptation plans and strategies, biodiversity, environment, water resources and ecosystems management, and poverty reduction, etc. Some of the project financial resources will be used to ensure compliance with relevant natural resources management standards taking into account potential impacts on natural resources, ecosystems and populations.

The project will comply with **Chad's environmental standards** and laws, namely:

- Law n° 14/PR/98 of 17 August 1998 relating to the main principles of environment protection
- Decree n°630/PR/PM/MEERH/2010 relating to Environmental Impact Assessment regulations
- Law n°039/PR/PM/MERH/SG/DGE/DEELCPN/2012 relating to Environmental Impact Assessment (EIA);
- Water Code: Law no 16/PR/99 of 18 August 1999 relating to the water code including provisions on ground and surface water management and water structures exploitation
- Law n°014/PR/2008 of 10 June 2008 relating to the forest, wildlife and fishery resources
- Inter-community charter and local conventions for the creation of Integral Protection Zones and Fishery Defense Zones;
- Code of Conduct for Responsible Fisheries.

The aquaculture sector in Chad is characterized by the following:

- Prohibition of exotic species introduction;
- Prohibition of non-certified chemical products and hormones utilization;
- Inappropriate practice of aquaculture resulting in environment degradation;

- A signed certificate delivered by the fisheries authorities.

Over the last ten years, Chad's Saharan and Sahelian zones have spread 150 km south. This has resulted in reduced farming and pasture areas, which, in turn, has lead livestock rearers and farmers to move to more suitable areas to work, leading, in general, to a reinforcement of existing inequality and discrimination amongst certain populations. Likewise, Lake Chad has reduced in size from 25,000 km² in 1960 to 2,500 km² today. This reduction has considerably affected upon crop and fish production, and forced inhabitants to move to wetter areas (INDC Chad, 2015).

In terms of adaptation, the Chad INDC has targeted the priority sectors: water, agriculture/agroforestry, livestock and fishing. Tandjilé, Guera and Hadjer Lamis were designated as priority targeted zones (the priority areas areas: Kanem, Barh El Ghazal, Batha, Guéra, Hadjer Lamis, Wadi Fira; Ouaddai, Dar Sila, Lac, Moyen-Chari, Borkou, Tibesti, Ennedi Est, Ennedi Ouest (INDC Chad, 2015).

In the INDC, it was highlited that the impacts of climate change are significant on the large hydrographic systems of the basins of Lakes Chad and Niger: natural, agro-silvo-pastoral, fishery and human systems.

These impacts include changes to the agricultural seasons, disturbances in the biological cycles of crops and a reduction in cereal crop production. Depending on the geographic zone, climate change exposes certain sectors and social groups to a medium to high level of vulnerability (1 = very high, 6 = lower), according to the NAPA and consultations carried out during the workshop launching the INDC preparation process.

For the area action of the project, the sectors and groups were described according to their vulnerability:

- Sahelian Zone

  - Sectors: 1) water resources, 2) agriculture, 3) livestock, 4) fishing, 5) gathering, 6) handicrafts, 8) forestry

  - Groups: 1) women and children, 2) isolated elderly people, 3) the sick, 4) displaced persons and refugees, 5) returning persons

- Sudanian Zone

  - Sectors: 1) water resources, 2) agriculture, 3) livestock, 4) fishing, 5) fishery resources, 6) forestry

  - Groups: 1) women and children, 2) isolated elderly people, 3) displaced persons, 4) refugees, 5) rural populations, 6) returning persons.

After this brief overview, it is noted that the project will be carried out in priority areas designated by the INDCs. The fishing sector, which is a mediumly vulnerable sector, will be taken into account and will generate activities that will enable it to be developed and to train and hire more fishers. The fishing is an important priority sector and the INDC insists on the development of enclosed fish farming areas.

This would relieve pressure on agricultural lands already threatened by desertification. In addition, agroforestry plantations will be implemented to protect the lake and rivers in the

most vulnerable areas. These actions could thus contribute to the protection of animal and plant biodiversity in the targeted areas.

Finally, it was mentioned in the INDC that to achieve the objectives, It will only be possible to achieve the conditional objectives with contributions from the international community amounting to about 18 billion US $. The part of “Secure animal and fishery production and promote associations” is 1 billion US $ and the part of “Support development of fishing resources“ is around 25 million US$.

F. *Complementarity with other projects*

Several natural resources and ecosystems management projects and initiatives have focused before on the project areas of intervention such as the Fisheries Development Project (PRODEPECHE, 2007-2012), which was implemented in the Tandjilé region and which aimed to strengthen the fishermen capacities in terms of regulations, surveillance, materials and equipment; the National Programme for Food Security (NPFS, 2011-2016) which aims to ensure food security for Chad’s population, disadvantaged people of urban and rural areas in particular; Chad Agriculture Production Support Project (PAPAT, 2012-2016) with the objective to support rural communities and producers’ organizations to increase the production of targeted fauna and flora and to develop sustainable land, water and aquatic ecosystems management practices.

These projects aimed essentially to improve the management approaches in the targeted zones in order to ensure the sustainability of resources and enhance populations’ livelihoods.

However, an analysis of these project’s achievements indicates that the obtained results remain fragile and insufficient. Hence, the present project comes to tackle other aspects that were not addressed by previous experiences, such as:

- Integrating the climate change dimension in the country’s strategic documents and references, such as the fisheries and aquaculture master plan
- Improving the ecosystems and adjacent communities’ resilience to climate change
- Developing and restoring the most vulnerable sites to climate change in the project three zones (Tandjilé, Guera et Hadjer Lamis)
- Building capacities and increasing the awareness of all actors and targeted groups.

In terms of adaptation, many projects are implemented at the national level in partnership with international financial partners:

- The AMCC –Global Climate Change Alliance project-) funded by the EU (~5.26 billion CFA francs or 8 million Euros through for the following priority projects:
  - Development of intensive and diversified crops that are adapted to extreme climate risks
  - Soil restoration and defence against degradation caused by climate change
  - Improvement of intercommunity grassland areas, in order to reduce migratory movements due to climate change

- National Agency for the Great Green Wall

- The 11th European Development Fund for the period 2014-2020. This foresees the provision of 297 million euros for “rural development, nutrition and food safety”, and an amount of 53 million euros for sustainable management of natural resources”.

- The Project to Improve the Resilience of Agricultural Systems in Chad (PARSAT). The PARSAT with total funding of 36.2 million USD, co-funded by IFAD, GEF, ASAP and the Chadian government was put in place in 2015, for a period of 7 years.

At the regional level, several projects are conducted or planned in the area of the lake. There are listed below:

- The Lake Chad basin sustainable development programme (PRODEBALT with funding from ADB)

- The nutrition and food insecurity resilience reinforcement programme in the Sahel (P2RS, based on African Development Funds amounting to 15 million USD)

- The Project in Support of the Lake Chad Basin initiative to reduce vulnerability and the risks associated with STIs/HIV/AIDS (PAIBLT, ADB)

- The regional “Adaptation to climate change in the Lake Chad Basin” project (German Ministry for Economic Development and Cooperation/Federal Enterprise for International Cooperation cooperation) covering the period 2013-2018

- The Lake Chad preservation project: contribution to the Lake development strategy (GEF-ADF)

- Pan-African Great Green Wall agency

- The Programme for integrated management of cross-border basins in African – example: Lake Chad (EU)

- The regional programme to reinforce the resilience of countries in the Sahel (26 million US, IDB)

It is important to point out that the OSS is involved in the great green wall through several projects including the BRICKS project (Building Resilience through Innovation, Communication and Knowledge) funded by the GEF.

The Lake Chad Basin Commission (LCBC) is a member organization of the OSS and joint activities are planned to implement the LCBC's five-year plan.

Finally, the REPSAHEL project (Improving the Sahelian populations’ resilience to environmental changes), funded by the Swiss SDC, has been able to exchange views

with the national partner (Ministry of the Environment) for the selection of the selected sites. Reference reports were made and meetings with local people were organized to collect their needs and recommendations. The most recent was organized in Touboubou in May 2017 to consult the populations and more specifically the fishermen on the RECOPAT project, the subject of this project proposal.

The Douguia site in the Hadjer Lamis region is not connected to Lake Chad but rather to the Chari River, a tributary of the lake. Chad shares the Chari River on about 200 km. It serves as the border between Cameroon and Chad from the Chadian capital to its mouth in Lake Chad.

The project will aim at setting up a steering committee, which will bring together national institutions and international organizations and financial partners involved in the implementation of adaptation projects in Chad. This will enable the participants to discuss the activities carried out and to inform the partners of the achievements, in order to avoid duplication and avoid the loss of time and financial resources.

In addition, at the sub regional level, the LCBC will play a leading role in disseminating results. Countries bordering Lake Chad will be involved through training sessions and study tours so that they can duplicate successful experiences.

G. *Project Learning and Knowledge Management Strategies*

The project's successful experiences and lessons learned will be all documented and shared with all concerned stakeholders at the national level. The planned activities will be an integral part of the monitoring-evaluation system to be developed by the project. The adaptation, restoration and infrastructure measures will be implemented and will serve as demonstrative activities to be replicated in other zones and sites of the country.

The project involves strengthening the resilience and capacity of the fishing and aquaculture communities to address climate change in Chad. Thus, component 3 of the project includes several activities aimed at training, communication and awareness-raising among the various actors and stakeholders.

The project therefore provides for the establishment of an exchange platform on fisheries and aquaculture in Chad. This system will serve as a medium- and long-term "management and sharing of acquired knowledge" system for the compilation and dissemination of successful experiences and lessons learned throughout the implementation of this project.

This will be concrete through:

(I) assessment of existing knowledge,

(Ii) compilation and archiving of all modules and the capacity building activities (training, communication, awareness-raising, etc.) carried out within the framework of the project,

(Iii) compilation of all project adaptation activities that have been used to promote fisheries and aquaculture and improve the living conditions of the population

This mechanism will be popularized and made available to the various structures and institutions involved in fisheries and aquaculture not only at the 3 project sites but also at the country level.

The project will organize study tours for the benefit of fishermen and aquaculturists, in areas with specificities and above all similar problems. This will allow for interactions and exchanges of experience between fishermen and aquaculturists in these different areas.

The results, conclusions and recommendations of the periodic evaluation missions of the project will be disseminated through this exchange mechanism and on the appropriate websites that will be set up within the framework of this project.

On the other hand, it is expected that the results of the evaluation of the end of the project will also be disseminated so that they can be used and valued.

For optimal sharing and dissemination of knowledge and experience, the project envisages the following steps and actions:

1. Presentation of the practices, approaches and methodologies tested in the various technical meetings related to the project and the theme "Fishing and aquaculture"

2. Develop process learning materials on good practices,

3. Involve as much as possible civil society organizations interested in addressing issues related to fisheries adaptation and aquaculture,

Other products and materials will be developed by the project, which include:

a- Toolkit for developing adaptation strategies in fisheries management and aquaculture,

b- Small-scale fisheries implementation toolkit...

c- Training manual for fish farmers on livestock practices of species more resistant to climate change,

The project will also establish networks with stakeholders involved in adaptation to Climate Change, environment and development planning to ensure more effective sharing of knowledge

The **table below** provides information on existing baseline situation and the constraints with proposed activities and orientations in the framework of the project learning and knowledge management strategies:

Constraints/ baseline	Proposed activities

Lack or limited presence of best practices and approaches in the project areas in terms of: ▪ Integration of climate change in fisheries and aquaculture policies ▪ Integration of climate change adaptation measures in the management of the three project areas ▪ Creation of income-generating activities for local communities through a revolving fund mechanism ▪ Linkage between scientific knowledge and local know-how ▪ Coordination and partnership between stakeholders for joint action at regional and local levels.	▪ Documentation of the project implementation process and results ▪ Development of case studies based on participatory and consultation processes ▪ Identification and implementation of adaptation measures ▪ Facilitation of learning and experience/lessons learned and best practices exchange ▪ Documentation of response strategies to facilitate the future design and extension of the project actions/ and to influence policies and practices

H. *Consultation process during project preparation*

The project development process started with consultations with the main concerned stakeholders in Chad. Several exchanges meetings were conducted between the concerned departments, namely; the Ministry of Environment and Fisheries and The General Directorate of Fisheries and Aquaculture, with the involvement of various stakeholders, local communities' representatives, research institutes, NGOs, etc.

Remote meetings were held with the concerned managers and authorities to discuss the project scope, axes, zones of intervention and needed measures.

A consultation workshop on 22 -24 May 2017 was organized with the support and advice of OSS, in Douguia-Hadjer Lamis in Chad to which participated the General Director of the General Directorate of Fisheries and Aquaculture, decision-makers, managers of the three zones, local population, fishermen, and small farmers, etc.

Of the 34 participants in the workshop, there were approximately 10 female rural women representatives in these three areas. Among them, 3 women are presidents of fishing and aquaculture groups in addition to 1 president of youth group. In addition, about 14 participants in the workshop are either chairpersons or members of fisheries and aquaculture groups. Women, young people and professional groups actively participated in the work of the workshop and enriched the debate by highlighting the issues and challenges of the "fisheries and aquaculture" sector, particularly in the face of climate change and by expressing the wishes and the expectations of the vulnerable populations and the respective fishers and aquaculturists of the three zones.

The meeting aimed to:

- Integrate stakeholders' needs and expectations in the project activities;
- Inform and raise the awareness of local and national managers and local populations, especially fishermen, about the project major objectives and actions.

This participatory process will help to identify the most priority actions for a better management of the project components in the three targeted zones as well as the activities required to improve populations, fishermen, and fish-farmers' livelihoods.

The project execution will be ensured by different-level stakeholders, including the local level, by means of a central management unit and local management units and with the participation of NGOs, local population, youths and women, etc.

The project priority actions and interventions as well as recipients will be identified, selected and ranked based on a participatory process. Socially accepted (by local communities and fishermen) development actions will be retained. The most vulnerable groups, such as women, children, disabled persons, elders, etc. will be specifically targeted and considered by the project.

The minutes of this consultation workshop are annexed.

The list of stakeholders consulted during the project preparation process are presented in the table below:

No	Organization : Ministry of Environment and Fisheries
	National Level
1	Minister of Environment and Fisheries
2	Director General of the General Directorate of Fisheries and aquaculture
	Local level
1	Representatives of the populations and fishermen of the three zones
2	Rrepresentatives of local decentralized technical services

The themes tackled during the consultation process are the following:

- ✓ Relevance of the project areas of action
- ✓ Climate change and its potential impacts on ecosystems balance and fishermen and populations' livelihoods,
- ✓ Project contribution in terms of ecosystems and natural resources conservation in the three zones,
- ✓ Improvement of existing infrastructure in the three zones,
- ✓ Involvement and improvement of fishermen and populations' livelihoods,
- ✓ Main concerned actors, their role, duties and contribution to the project implementation,
- ✓ Reinforcement of the project management structures,
- ✓ Reinforcement of awareness and communication activities for the project actors,
- ✓ Place of women and youths in the project implementation,
- ✓ Complementarity and synergy with other existing projects

At the end of the workshop, it is important to note that the majority of the recommendations and suggestions that were proposed by the participants in this workshop contributed fully to the finalization of the project design. Among the main recommendations and suggestions taken into consideration in the preparation of this document are:

- The updating and strengthening of the legal and institutional basis, including the master plan for fisheries and aquaculture
- The final choice of zones and intervention sites at the level of each zone,
- Rehabilitation and management of ecosystems and ponds,
- Strengthening the capacity of Fishermen organizations,
- Strengthening the capacities of the different local actors,
- The reinforcement of the existing infrastructure in the 3 zones (hatcheries, equipment, etc.),
- The identification of themes related to the improvement of the living conditions of the population and fishermen,

I. *Justification for funding request*

Chad's fishery resources are generally of paramount importance for the country's national and local economy. Climate change has adverse impacts on the sustainability and balance of natural resources, which had negative impacts on the fishermen and fish-farmers livelihoods.

The project areas (Tandjilé, Guéra and Hadjer Lamis) were selected based on a common agreement among all the concerned stakeholders. They are representative of the country's entire territory and considered as national priorities.

According to Chad's NAPA, the major observed adverse impacts of climate change are:

- Conversion of most farmers and breeders, pastoralist into subsistence fisherman;
- Important migration of northern population to Lake Chad and to areas containing water resources;
- Considerable decrease in fish stocks.

The impacts of climate change are always more visible and severe on the most vulnerable and poor people, in particular on those whose livelihoods rely on agriculture, pastoralism as well as fishing and aquaculture. The latter are currently facing several climatic risks and challenges which result most often in production decrease, livestock loss and reduced availability of fishery resources.

In fact, the productive potential of the Chari-Logone–Lake Chad system has been subject for the last few decades to the combined effects of climate change and anthropogenic pressure due to human concentration in fisheries. This situation of overexploitation is detrimental to the resources replenishment and preservation.

In the specific case of Lake Chad, the average fishing yield decreased by 55%, going from 110 kg/ inhabitant/year in 1980 to 50 kg/ inhabitant/year in 2002 and led to a socio-economic upheaval for the riparian population. This could be explained by the reconversion of the traditional farmer population towards fishery, a new field for which they do not have the necessary means and knowledge that professional fishermen have inherited from their ancestors. Indeed, current practices reflect a severe competition among the sector's main actors where the achievement of the highest economic profitability seems to reign. This logic led the sector's professionals to adopt destructive fishing behaviours in an unrestrained pursuit of meeting basic life needs. This includes the use of any type of gears in any type of ground, including spawning grounds and reproduction zones whose main function is to ensure the continuity and renewal of resources and species.

Climate change, favourable or not, modifies the quantity and quality of fishery resources and lead to their deterioration and to ecosystems services degradation that could generate conflicts among fishermen, farmers, etc.

Chad's National Adaptation Programme of Action (NAPA) provides a means for the least developed countries to identify priority activities to meet their most urgent and immediate needs in terms of adaptation to climate change. Its main objective is to draw a list of priority adaptation measures and actions to serve as a basis for the elaboration of projects and programs proposals.

The Tandjilé, Guéra and Hadjer Lamis zones are unfortunately affected by the adverse impacts of climate change. Therefore this project aims, among others, to improve the legal and institutional basis of fishery and aquaculture sector and to identify appropriate activities for the adaptation, conservation, rehabilitation and restoration of the most vulnerable sites, to enhance the zones' infrastructure for the benefit of fishermen and fish-farmers, and to promote the local communities' livelihoods. The project will adopt a

coherent, integrative and inclusive approach which responds to the local populations' needs and complies with the strategic guidelines of the Adaptation Fund, OSS and the different regional and international Agreements and Conventions.

Based on all the consultations conducted, the fisheries and aquaculture communities' main expectations and needs includes the following: capacity building, resources restoration and rehabilitation, improved livelihoods through the development of income-generating activities.

This project comes in conjunction with the other projects and initiatives listed below to support and strengthen the resilience of the Chad sector and fisheries to climate change. Its total cost, excluding the additional management costs, is US $ 8.12 million. About 75% of this amount will be allocated directly to concrete actions to adapt resources and communities to climate change. These include actions to manage ponds, ponds and ecosystems that are vulnerable to climate change. In addition, it is necessary to provide for the reinforcement of the minimum infrastructure for fishermen to enhance the fisheries and aquaculture sector and improve economic productivity at the level of the 3 selected areas and sites of the project, Improving the livelihoods of local populations, fishers and fish farmers.

Thus, in order to anchor a sustainable symbiotic relationship between populations and sustainable resources, the project foresees the creation of income-generating activities for the benefit of vulnerable and needy segments of the population in the three zones.

In addition to direct adaptation actions, approximately 17% of the project cost will be allocated for improving the legal, institutional and national monitoring and resource monitoring and monitoring / evaluation. This component is of strategic importance because it intends to improve regulatory texts and policy documents by taking into account aspects of climate change. This will provide new opportunities and solutions for fishers and aquaculturists to diversify their activities and adapt to the new challenges of climate change.

On the other hand, about 8% of the total cost of the project will be dedicated to building the capacities of the population, institutions and communities, in order to better manage knowledge, but also to communicate and raise awareness of fisheries resources and direct and indirect potential impacts of CCs.

In addition, this project is in line with OSS Strategy in terms of natural resources and ecosystems management and the reconciliation between local populations and these resources. Combatting natural resources degradation and promoting and conserving biodiversity in the Sahel region are also some of the major priorities of the OSS's action.

Furthermore, the objectives of this project mentioned above are in complete consistency and adequacy with the Adaptation Fund's priority areas and objectives. The institutional and legal measures and mechanisms to be developed and the actions to be conducted will help increase the resilience and adaptive capacities of targeted populations and fishery resources to climate change in the three project areas.

J. *Consideration of the project outcomes sustainability during the project design*

This project aims to strengthen the resilience of the fisheries and aquaculture sector to the adverse impacts of climate change in three targeted areas. Its designing process carefully considered the issue of sustainability.

To achieve **environmental sustainability**, the project will address the inappropriate management of fish resources and this through the **component 1**. The planned activities will enable the strengthening of the fisheries and aquaculture monitoring and surveillance system. Besides, the project will consider monitoring and evaluation of environmental changes as part of the regular project M&E system.

For institutional and legal sustainability, the project propose the updating of chad's fisheries and aquaculture master plan taking into account the climate change dimension, the review and the update of related regulatory and legal texts and the capacity building of its various stakeholders.

Socio-economic sustainability will be ensured by improving populations' livelihoods and resilience to climate change by creating income-generating activities and reinforcing the infrastructure of the selected sites. The **component 2** provides to engage a participatory and consultation process, which will reinforce the project ownership by the local communities and authorities. The expected active participation of NGOs, population, fishermen, and farmers, etc. in all the project preparation steps is envisaged through their involvement in the process of identification of priority and most vulnerable sites and the development activities to undertake. Training session and awareness raising/communication materials will be provided. In addition, local communities will be motivated to participate in project activities through the conditionality of access to the revolving fund and programmes, and assuring that investments in alternative income generating activities have positive rates of return.

The Material and technical sustainability will be insured by the installation and equipment of fish hatcheries and breeding structures in the six sites of interventions and the construction of Fisheries and aquaculture products transformation and conservation platforms/units. Fishermen, hatcheries managers and technicians will receive appropriate trainings to ensure ownership and sustainability.

K. *Overview of the environmental and social impacts and risks identified as being relevant to the project:*

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	**Yes.** The project complies with domestic laws and policies.	**No.** The project complies with domestic laws and policies of Chad

Access and Equity	**Yes**. In general, the project promotes fair and equitable access to project benefits. However, the nature of the project does not allow all community members to benefit from the project in the same way	There is a risk the project will fail to provide equal access to capacity building benefits to the three concerned areas. Since some activities of the project are not intended to provide a benefit for all beneficiaries.
Marginalized and Vulnerable Groups	No initiatives are identified with outcomes or outputs that can generate a negative impact on marginalized and/or vulnerable groups.	The project activities will be closely monitored, particularly with regard to the former use of resources in the area. This aims to ensure that the activities are accompanied with proper measures for livelihood improvement and other means to ensure subsistence for the persons using these resources.
Human Rights	No activities are identified whose execution is not in line with the established international human rights. Project objectives promote basic human rights for equitable access to the various activities to be implemented and to capacity building as well as access to information	The project will guarantee human rights respect for all stakeholders and local population in accordance with its objectives and scope.
Gender Equity and Women's Empowerment	The activities of the project are oriented to promote a fair and equal development opportunities between men and women. The project promotes equal participation in decision-making processes by ensuring the representation of women at the different steps and levels.	An in-depth gender analysis of the involvement of both men and women conditions in the proposed concrete adaptation actions must be undertaken
Core Labour Rights	The project respects the labour standards	
Indigenous Peoples	The project promotes the respect of the rights and responsibilities set forth in the United Nations Declaration on the Rights of Indigenous Peoples. In the local	

	communities, different tribes exist, but no sharp distinction between indigenous and nonindigenous people can be made	
Involuntary Resettlement	The project will not be involved in resettlement actions of communities	No resettlement is planned within this project.
Protection of Natural Habitats	The protection of ecosystems and its natural habitats and biological diversity is a core objective of component 1, 2 and 3 of the project	The implementation of all activities related to the protection and management of ecosystems and natural habitats shall be closely monitored to evaluate if the expected positive impact is achieved or if any unexpected negative side effect is generated.
Conservation of Biological Diversity	The protection of ecosystems and its natural habitats and biological diversity is a core objective of component 1, 2 and 3 of the project	-
Climate Change	The project will increase the adaptive capacity of the local population and the resilience of aquatic ecosystems	Monitoring and evaluation of actions will be carried out during and after the implementation of the project.
Pollution Prevention and Resource Efficiency	The project will contribute to the prevention of water pollution and minimize the misuse of natural resources	
Public Health	The project will not have a negative impact on public health. Instead, the project will contribute to improving the sanitary conditions of communities by surveillance ecosystems and water resources. The project will also enable communities to improve their incomes for more access to health facilities, etc.	
Physical and Cultural Heritage	The project will have no activities affecting physical and cultural heritage. Their protection / conservation will rather be encouraged by the project.	

Lands and Soil Conservation	The project will promote soil conservation and reduction of land degradation through reforestation and bank stabilisation	The Monitoring of the implementation of all activities related to land resources protection and management will be carried out to assess whether the expected benefit is achieved or if unforeseen adverse side effects occur

PART III: IMPLEMENTATION ARRANGEMENTS

A. *Project management*

The project will involve national and local-level actors.

- **At the local level:** the project will involve decentralized technical services of the concerned ministries and require the mobilization of local populations, fishermen, fish farmers and other local authorities as well as associations, civil society organizations, women's cooperatives, villages, etc.
- **At the national level**: the project will be executed by the Ministry of Environment and Fisheries (MEF) via the General Directorate of Fisheries and Aquaculture of Chad and will mobilize national concerned development and research institutions.

The project will be implemented by the Sahara and Sahel Observatory (OSS) as a Regional Implementing Entity to be responsible for financial aspects, monitoring and reporting to the Adaptation Fund.

The project will be executed by the Project Management Unit (PMU) to be hosted by the General Directorate of Fisheries and Aquaculture of Chad of MEF.

The steering committee will be composed by representatives from technical departments of the concerned ministries, national research institutions, representatives from civil society as well as international and relevant partners such as the CBLT[5].

The following diagram presents all the entities and parties involved at the local, regional and national levels:

[5] http://www.cblt.org/en

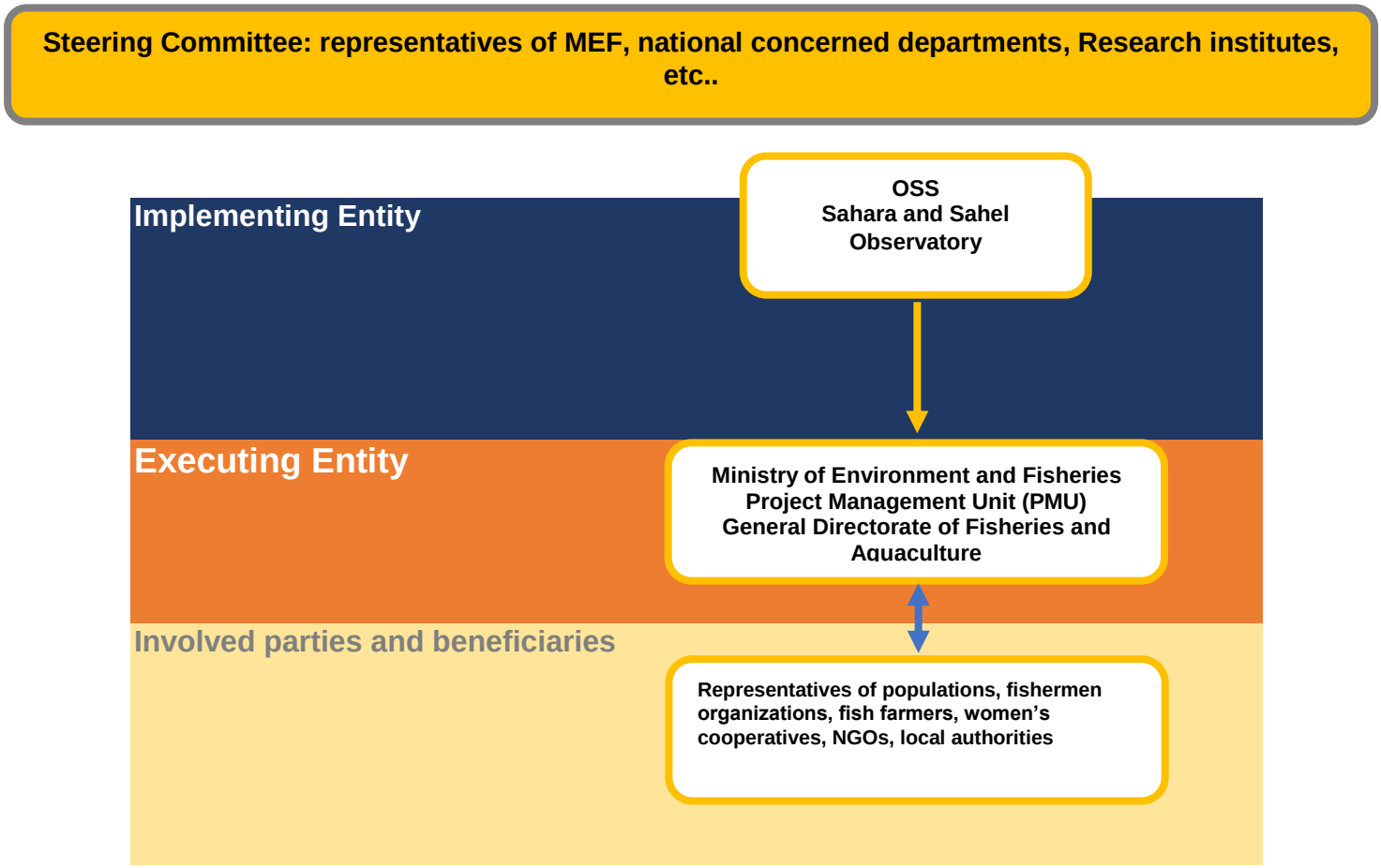


Fig 1: Project Structure

B. *Project Risk Management*

The project will conduct several concrete adaptation activities. Some of them aims the development and rehabilitation of the vulnerable and degraded sites. These activities have a direct impact on the environment and the local population. Below, are the main risk activities:

- Identification, characterization and demarcation of the most vulnerable sites/ecosystems
- Creation and establishment of the revolving funds
- Construction and infrastructure
    - ✓ Development and stabilisation of lakes banks, ponds, watercourses, riverbanks, etc.
    - ✓ Development of basins and riverbanks for rice-fish farming
    - ✓ Water and soil conservation works and plantations (dikes, gabions, sylvo-pastoral and agroforestry plantations…)

- ✓ Hatcheries establishment, development and equipment (renewable energy, basins, etc.)
- ✓ Establishment of farming structures (works, materials, granulation and extrusion equipment, equipment for surveillance of water physico-chemical parameters, equipment for alevins, seines, aerators, etc. calibration)
- ✓ Construction and rehabilitation of the fisheries and aquaculture products transformation units
- ✓ Construction of fish markets
- ✓ Development of boreholes equipped with pumps
- ✓ Fish stocking in artificial ponds and dams

N°	***Identified risks***	***Level (H, M, L)***	***Risk management measures***
1	Conflict of interest between different stakeholders regarding access to and use of water and other natural resources	L	Creation of an online exchange platform
2	High expectations of communities and local governments in terms of rapid investments in the field	H	Awareness-raising actions to explain the immediate contribution and the long-term outcomes of the project
3	Incompatibility between the project intervention areas and the administrative units boundaries	L	Promotion of a project management and development model adapted to the three (3) project areas. The involvement of local authorities would support and ensure this approach.
4	Strong sectorial bias between the different stakeholders	L	Full participation of all stakeholders in the project development and implementation
5	Inadequate baseline / resource potential	M	Establishment of a baseline before and during project implementation. The project will ensure the acquisition of the relevant data
6	Low rate of ownership of new technologies by the communities	L	Promotion, demonstration and training on new technologies and practices
7	Limited participation and willingness of local communities to promote project initiatives	L	Increase awareness at local community level, work with available local structures, ensure the active involvement of community organizations during the project implementation
8	Limited collaboration between the relevant technical institutions	M	The concerned institutions should be involved from the beginning of the project and should continue to be involved in planning,

			implementing, and reviewing the project and in the elaboration of reports.
9	Mis-use of project resources	L	Follow a transparent and participatory process in the selection of beneficiaries, using certain agreed criteria. Definition of criteria and processes concerning the selection of beneficiaries who will be eligible for the revolving fund
10	Mis-use of project benefits by the elite	L	The robustness of the project management structure encourages transparency and stakeholder participation in preparing the project implementation, reporting / communication, monitoring and evaluation. This will create ownership and monitoring of project interventions.
11	Project financial mismanagement	L	The project will have a clear separation of roles and will strengthen accountability and audit
12	Delay in project implementation due to government bureaucracy, long and inefficient procurement processes	L	Proper planning (including the development of a procurement plan) Negotiation with the government for support that may facilitate the overall project implementation.

C. *Environmental and Social Risk Management Measures*

N°	*Identified Risks*	*Level (H, M, L)*	*Risk management measures*
1	Interventions and activities on the selected project sites may lead to a temporary exploitation restrictions of some sites for fishermen and beneficiaries, which may result in increased pressures on other sites. As a consequence, the adaptation measures to be undertaken at the project sites must be chosen in a balanced manner.	M	The project sites, in particular the most vulnerable ones, must be chosen in agreement with all partners. Rehabilitation actions and income-generating activities for livelihoods diversification must be defined and set up in consultation and discussion with various stakeholders.
2	The introduction of aquaculture species that are better adapted to the zones' climatic and physical conditions may generate pressure on local species	L	Promotion of the conservation of local species when introducing other aquaculture species
3	Activities may have a negative environmental impact and cause social conflicts among users	M	Strengthening of mechanisms concerning coordination and conflict resolution in the three project areas
4	Conflicts related to the use of natural resources	M	Cconsultations with all local stakeholders, strengthening of existing conflict resolution mechanisms, integration of the conflict resolution mechanisms into the structure of communities' natural resources management
5	Aquaculture and fish stocking in artificial ponds and dams is considered a source of organic, chemical, bacteriological, and genetic pollution; In addition, these infrastructures have a potential negatives impacts on natural resources and ecosystems and the human health.	M	Monitoring ecosystem services and environmental surveillance will be provided by the project. Specific training modules (aquaculture technology, information collection method, climate change impacts on fishery resources, etc.) will be developed. Also, environmental impact studies will be realized before the starting of the activities
6	Risk of misuse of transformation and storage units and failure to respect the hygienic conditions	M	M&E of the application of existing standards, trainings and awareness raising

D. *Project Monitoring and Evaluation arrangements, including a budgeted M&E plan*

The project management unit (PMU) with the support of Sahara and Sahel Observatory (OSS), monitors the project activities. The Adaptation Fund Board requires that projects and programmes under implementation submit annual status reports and that the Implementing Entities ensure that capacity exists to measure and monitor results of the Executing Entities at the country-level.

The OSS will ensure that the Executive Entity will undertake the various evaluations and prepare the yearly reports. To this end, the Executing Entity will be entirely devoted to the effective implementation of the project.

Quarterly Progress Reports will be prepared by the Executing Entity and verified by OSS. Annual Project Reports will be prepared to monitor progress. These Annual Reports include, but are not limited to, reporting on the following:

- Progress made towards project objective and outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project Outputs delivered per project Outcome (annual);
- Lessons learned/good practices;
- Annual expenditure reports;
- Reporting on project risk management.

A joint review mission to the project sites will be conducted twice a year. The joint review will include representatives from the country, Executing Entity and OSS, participating implementing stakeholders, local government and communities. The first mission will focus on reviewing the project plan while the second will focus on the results. The different missions will provide on-site technical support to the project staff.

In terms of financial monitoring, the project team will provide OSS with certified periodic financial statements. Audits on the project will be aligned with OSS finance regulations and rules and applicable audit policies.

During project implementation, Annual Work Plans (AWPs) and Quarterly Work Plans (QWPs) will be used to refine project delivery targets and realign project activities upon consultation and endorsement by OSS.

The program will undergo an independent mid-term review at the mid-point of the project implementation, which will determine progress being made toward the achievement of outcomes and identify adjustments if needed. It will focus on the effectiveness, efficiency and timeliness of the project implementation, highlight issues requiring decisions and actions, and present initial lessons learned about project design, implementation and management.

The findings of this review will be incorporated as recommendations for the final half of the project’s term. A terminal evaluation will also be conducted.

The project M&E budget is shown in the table below:

M&E activities	Responsible parties	Budget (USD)	Time frame																Notes
			2018				2019				2020				2021				
			Quarter				Quarter				Quarter				Quarter				
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Design of a Monitoring & Evaluation System		15.000																	
Initial studies to improve baseline, gender, and land tenure analysis and environmental and social impact assessment		35.000																	
Field visits to measure the project results for each target , reporting and gender and land tenure analysis	Monitoring & evaluation expert / communication specialist / project manager and Ministry of Environment	30.000																	Quarterly
Monitoring project outputs by the project reporting team	Project manager and team and Ministry of Environment	35.000																	Half-yearly
Field visits for a joint assessment of project progress status and reports	Project team at OSS and Ministry of Environment	10.000																	Yearly
Mid-term evaluation and reporting	Project manager / M&E expert / communication specialist	15.000																	At the end of the two first years
Final evaluation and reporting	Ministry of Environment and OSS	20.000																	At least two months before the

																		project closure
Compilation of the project terminal report	Project manager and Ministry of Environment.	15.000																At the end of the project
Project final audit	OSS	20.000																At least two months before the project closure
M&E total cost		**195.000**																

E. *Project Results Framework (including indicators, targets and milestones)*

The Project Results Framework defines the indicators for the project implementation as well as the respective means of verification. A Monitoring and Evaluation (M&E) system will be established, based on these indicators and means of verification.

Any changes to the Results Framework require prior approval by the steering committee and the OSS non-objection. The launching workshop is crucial to strengthen the ownership of the project results, to agree on the project execution modalities, and to document the mutual agreement on the project implementation arrangements amongst the stakeholders.

Project Results Framework

Objective	Indicator	Baseline	Target	Data source/Method
Component 1: Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change				
Outcome 1.1: The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension				
Output 1.1.1: The fisheries and aquaculture master plan is updated and validated	• Elaboration of thematic studies • Finalization of the master plan • Organization of validation workshops	• The existing master plan is obsolete and outdated • Lack of knowledge about the real impacts of climate change on natural resources • Absence of thematic studies for a rational and sustainable natural resources management	• *At least 4 thematic studies are elaborated by the end of year 1* • *The remaining studies are elaborated by the end of year 2* • *The master plan is updated by the end of year 1*	• Study reports • Master plan document
Output 1.1.2: The regulatory and legal texts are reviewed, updated and submitted to the concerned institutions	• Elaboration of legal and regulatory texts • Submission of texts to the concerned institutions	• Legal and regulatory texts related to climate change adaptation and mitigation are not taken into consideration in the planning approaches of the three project areas	• *At least 1 consultation workshop per zone is organized to identify adaptation measures*	• Workshops minutes • Action plan report

			• *1 regional consultation and results-reporting workshop is organized* • *1 adaptation and mitigation action plan is finalized*	• Action plan validation report
Outcome.1.2. The fisheries and aquaculture surveillance system is strengthened and operational				
Output 1.2.2. A monitoring-evaluation system is designed and operational	• Progress and establishment of a monitoring-evaluation system	• Lack of monitoring and evaluation tools/mechanisms • Lack of knowledge about fishery resources	• *All preparatory and feasibility studies are elaborated by the end of year 1* • *The monitoring-evaluation system is set up by the end of year 2*	• Study reports and documents • Discussion and validation workshops • M&E system
2. Component 2 : **Implementing concrete adaptation activities in the three project areas to strengthen the communities and ecosystems resilience to climate change**				
Outcome 2.1. The resilience of ecosystems is strengthened through the rehabilitation of the priority sites and the improvement of the fisheries and aquaculture infrastructure				

Output 2.1.1 Development, rehabilitation and protection works for priority ecosystems are implemented in the three concerned project areas (Guera, Tandjilé and Hadjer Lamis)	Progress status • Preparatory studies • Execution of adaptation activities	• *Lack of climate change adaptation activities for the fishery resources* • *Lack of characterization of the most vulnerable sites to climate change*	• *All preparatory studies are elaborated during year 1* • *The most part of development and rehabilitation works are realized during year 2 and 3*	• Study reports • Study validation reports • Work receipt reports
Output 2.1.2: Fish hatcheries and farming structures are built in the three project areas	• Progress status of the construction of hatcheries and breeding structures and set up of works • Percentage of trained beneficiaries	• Lack of necessary infrastructure for fisheries and aquaculture products, conservation and transformation	• *Sites for hatcheries and breeding structures are identified during year 1 of the project* • *At least 2 hatcheries are constructed by the end of year 2* • *1 hatchery is set up by the end of year 3* • *All breeding structures are finalized by the project end* • *At least 50 % of beneficiaries are trained by the end of year 3* • *At least 50 % of beneficiaries are trained by the end of year 4*	• Monitoring reports and documents about structure receipts • Minutes and reports about training sessions

Output 2.1.3. Fisheries and aquaculture products transformation /conservation platforms/units are constructed and operational in the three project areas	• Progress status about the contruction of units/platforms • Percentage of trained beneficiaries	• Absence of fisheries and aquaculture transformation/conservation units/platforms • Inadequate development and promotion of fisheries and aquaculture products	• *All preparatory studies are finalized during year 1* • *At least 50 % of planned platforms are implemented by the end of year 2* • *The remaining infrastructures and platforms are finalized during year 3 and 4*	• Training reports/minutes • Project monitoring reports
Output 2.1.4. Support actions to fishermen are provided	• Progress status of construction works • Rate of acquisition of equipment • Execution rate of fish stocking activities	• Lack of necessary landing/docking infrastructure • Lack of fish stocking in existing artificial dams and lakes	• *3 landing sites are identified during year 1 of the project* • *Landing/docking infrastructures are set up during year 2 and 3* • *3 boreholes are constructed and equipped with pumps*	• Work and construction reports and receipts • Receipts of equipments and reports
Ouput 2.2.1: Revolving funds are created to diversify the communities income resources, notably beneficiary fishermen and farmers	• Creation of revolving funds • Number of awareness and information sessions	• Absence of financial support mechanisms for fishermen and fish farmers in the project targeted zones and sites	• *3 revolving funds are created and set up during year 1* • *3 awareness/training/ information sessions are organized during year 2, 3 and 4*	• Reports of awareness and information sessions
Output 2.2.2: Income-generating activities are supported in favour of the local communities,	• Contractualization with NGO(s)	• Local population and fishermen do not possess knowledge about other	• *3 NGOs are identified and contracted during year 1*	• Conventions / Contracts with NGOs

women and youths in particular	• Refinement of the income generating activities • Definition of the beneficiaries • Allocation and distribution of equipments and materials to beneficiary fishermen and fish farmers • Concrete execution of the income-generating activities	income-generating activities, other than fisheries and aquaculture • Socio-economic situation of local populations/fishermen/fish farmers in the three zones is not favorable	• *End beneficiaries are identified during year 1* • *3 training sessions are organized during year 2* • *40 % of the income-generating activities are set up by the end of year 3* • *60 % of the income-generating activities are set up by the end of year 4*	• List of beneficiaries validated by concerned institutions • Training reports and minutes • Reports on the creation of income-generating activities
Component 3: **Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad**				
Outcome 3.1 The targeted institutions and actors are sensitized and their capacities strengthened through adapted communication				
Output 3.1.1 : Decision-makers (parliamentarians, ministers, directors,…), practitioners, concerned structures and entities are	• Elaboration of an awareness-raising, training, and	• Inadequate awareness of decision-makers, managers and actors	• *Awareness-raising / communication / training plan is elaborated by the end of year 1*	• Action plan report

trained and sensitized to the fisheries and aquaculture challenges and adaptation to climate change	communication action plan • Design of awareness-raising and communication materials • Organization of training and communication sessions	• Lack of awareness-raising and communication tools and materials on fisheries and aquaculture	• *20 % of awareness-raising materials are distributed by the end of year 2* • *40 % of awareness-raising and communication materials are elaborated by the end of year 3* • *40 % of materials are finalized during year 4* • *3 training/information/communication sessions are organized during year 2* • *3 training/information/communication sessions are organized during year 3*	• Communication and awareness-raising materials • Training / communication / awareness-raising reports and minutes
Output 3.1.2. The populations' awareness about sustainable and adaptive fisheries and aquaculture is raised	• Elaboration of an awareness-raising/ training/ communication action plan	• Awareness of populations, fishermen, and fish farmers is limited • Lack of awareness-raising and communication materials in relation with	• *20 % of awareness-raising materials are designed and distributed by the end of year 2* • *40 % of awareness-raising and communication*	• Action plan report • Communication and awareness-raising materials • Training/ communication and

	• Design of awareness /communication materials • Organization of training, awareness and communication sessions • Establishment of a WEB radio, studio and server • Establishment of an exchange platform / database	fisheries and aquaculture resources • Lack of communication and awareness-raising tools/channels	*materials are elaborated by the end of year 3* • *40 % of materials are finalized during year 4* • *3 training sessions are organized during year 2* • *3 training sessions are organized during year 4* • *The web radio, studio, and server are set up by the end of year 2 at the latest*	awareness-raising session reports / minutes • Equipment and material receipts / installation reports

F. *Alignment with the Adaptation Fund's results framework*

The project will align with the Strategic Results Framework of AF, whose general purpose is to "assist developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change in meeting the costs of projects and concrete adaptation programs to implement resilient to climate change. This part will be developed in the full proposal document.

Project Objective(s)[6]	**Project Objective Indicator(s)**	**Fund Outcome**	**Fund Outcome Indicator**	**Grant Amount (USD)**
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**

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

G. *Project detailed budget*

LOGICAL FRAMEWORK: Strengthening the Resilience of the Fisheries and Aquaculture Communities to Climate change in Chad »

Component/outcome/output/activity	Notes on the budget	Unit cost	Number of units	Total budget ($)
Component 1 : Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change				
Outcome 1.1: The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension				
Output 1.1.1: The fisheries and aquaculture master plan is updated and validated				
Activity 1.1.1.1. Elaboration of preparatory thematic studies related to the fisheries and aquaculture sector in Chad and its vulnerability to Climate Change	Study	200 000	1	200 000
Activity 1.1.1.2: Organization of validation workshops of the studies mentioned in Activity 1.1.1.1	Workshop	20 000	3	60 000
Activity 1.1.1.3: Update of Chad's fisheries and aquaculture master plan, taking into account the climate change dimension	Study	50 000	1	50 000
Activity 1.1.1.4 : Organization of a national workshop for the validation of the updated master plan	National workshop	30 000	1	30 000

Activity 1.1.1.5: Design and editing of the fisheries and aquaculture master plan	Document	20 000	1	20 000
Output 1.1.2: The regulatory and legal texts are reviewed, updated and submitted to concerned entities				
Activity 1.1.2.1: Critical analysis of the regulatory and legal framework of the fisheries and aquaculture sector in Chad and proposals for the update/elaboration of legal texts taking into account the climate change dimension	Study	70 000	1	70 000
Activity 1.1.2.2: Elaboration of specific/complementary standards/regulations : fishing licensing conditions, fishing practices/methods, incentive measures…in relation with climate change	Study	50 000	1	50 000
Activity 1.1.2.3: Organization of information, outreach, and awareness-raising sessions on the new regulatory texts, aimed at different target groups (parliamentarians, decision-makers, managers, fishermen…)	Workshop	20 000	4	80 000
Outcome.1.2: The fisheries and aquaculture monitoring and surveillance system is strengthened and operational				
Output 1.2.1: The national monitoring capacities are strengthened				
Activity 1.2.1.1: Diagnostic study of existing surveillance and monitoring-evaluation systems/mechanisms/approaches in relation with the fisheries and aquaculture sector	Study	25 000	1	25 000
Activity 1.2.1.2: Design/strengthening of the surveillance and control mechanisms of the fish resources/fishing and aquaculture sites	Study	50 000	1	50 000

Activity 1.2.1.3: Organization of a consultation workshop for the validation of the surveillance mechanisms	Workshop	15 000	4	60 000
Activity 1.2.1.4: Acquisition of surveillance materials in favour of the fisheries and aquaculture staff, managers and organizations/structures (rolling stock, IT materials, data collection materials …)	Lot	500 000	1	500 000
Activity 1.2.1.5: Design of training modules, identification and training of teams in charge of the use of surveillance mechanisms	Workshop	20 000	3	60 000
Output 1.2.2: A monitoring-evaluation system is designed and operational				
Activity 1.2.2.1: Design and development of a fisheries and aquaculture monitoring-evaluation system	Study	50 000	1	50 000
Activity 1.2.2.2: Organization of a training session about the use of a monitoring-evaluationsystem	Workshop	20 000	3	60 000
Activity 1.2.2.3: Operationalization of the monitoring-evaluation system (including the acquisition of necessary equipments)	Flat amount	50 000	1	50 000
Sub- total component 1				**1 415 000**
Component 2 : Implementing concrete adaptation activities in the three project areas to strengthen the communities and ecosystems resilience to climate change				
Outcome 2.1: The resilience of ecosystems is strengthened through the rehabilitation of priority sites and the improvement of the fisheries and aquaculture infrastructure				
Output 2.1.1: Development, rehabilitation and protection works for priority ecosystems are implemented in the three concerned zones (Guera, Tandjilé and Hadjer Lamis)				

Activity 2.1.1.1 : Identification, characterization, prioritization and demarcation of the most vulnerable sites/ecosystems	Study	50 000	1	50 000
Activity 2.1.1.2: Identification of development activities and elaboration of feasibility studies	Study	40 000	3	120 000
Activity 2.1.1.3: Organization of restitution workshops about results with the local populations and the different concerned parties	Workshop	20 000	3	60 000
Activity 2.1.1.4 : Identification and training of the local workforce involved in the rehabilitation and development activities	Workshop	10 000	3	30 000
Activity 2.1.1.5: Development and stabilisation of lakes banks, ponds, watercourses, and river banks, etc.	Flat amount	300 000	3	900 000
Activity 2.1.1.6 : Development of basins and river banks for rice-fish farming	Flat amount	200 000	1	200 000
Activity 2.1.1.7: Water and soil conservation works and plantations (dikes, gabions, sylvo-pastoral and agroforestry plantations…)	Flat amount	200 000	3	600 000
Output 2.1.2: Fish hatcheries and farming structures are built in the three project areas				
Activity 2.1.2.1: Identification of hatchery sites in each project area	Study	20 000	3	60 000
Activity 2.1.2.2: Technical and economic feasibility study for the reinforcement / establishment of fish hatcheries and farming structures in the three project areas	Study	20 000	3	60 000
Activity 2.1.2.3: Hatcheries establishment, development and equipment (renewable energy, basins, etc.)	Flat amount	150 000	3	450 000
Activity 2.1.2.4: Establishment of farming structures (works, materials, granulation and extrusion equipment, fish seed rearing units, equipment for the surveillance of physico-	Flat amount	100 000	3	300 000

chemical parameters of water, equipment for alevins, seines, aerators, and calibration				
Activity 2.1.2.5: Training of managers and technicians for the hatcheries and training of Fish farmers in the rearing and harvesting of poly culture fish culture practices	Workshop	20 000	3	60 000
Activity 2.1.2.6: Support of the hatcheries managers and technicians	Flat amount	40 000	1	40 000
Output 2.1.3: Fisheries and aquaculture products transformation /conservation platforms/units are constructed and operational in the three project areas				
Activity 2.1.3.1: Socio-economic feasibility study for the construction/reinforcement of the fish and aquaculture products transformation/conservation platforms/units	Study	20 000	3	60 000
Activity 2.1.3.2 : Organization of a workshop for the presentation, exchange and validation of the results of the feasibility studies	Workshop	20 000	1	20 000
Activity 2.1.3.3 : Identification and training of the workforce involved in the construction works of the platforms/units	Workshop	10 000	3	30 000
Activity 2.1.3.4 : Construction/rehabilitation of the fisheries products transformation/conservation units/platforms	Works	100 000	3	300 000
Activity 2.1.3.5 : Construction of fish markets	Works	180 000	3	540 000
Activity 2.1.3.6: Acquisition of necessary equipments/materials for the transformation/conservation units (renewable energy, adapted technology, modern ovens…)	Lots	100 000	3	300 000
Activity 2.1.3.7 : Support of the managers of the transformation/conservation units	Flat amount	40 000	1	40 000
Output 2.1.4 : Support actions to fishermen are provided				

Activity 2.1.4.1 : Identification of priority landing sites in the three project areas	Study	10 000	1	10 000
Activity 2.1.4.2 : Construction of docking facilities for canoes	Works	20 000	6	120 000
Activity 2.1.4.3 : Acquisition and allocation of fishing equipments (fresh products conservation and sale equipments)	Lots	100 000	3	300 000
Activity 2.1.4.4 : Development of boreholes, equipped with pumps	Works	30 000	3	90 000
Activity 2.1.4.5 : Fish stocking in artificial ponds and dams	Flat amount	100 000	1	100 000
Outcome 2.2: The fishermen and communities' incomes are increased and their resilience to climate change is improved				
Output 2.2.1: Revolving funds are created to diversify the communities income resources, notably beneficiary fishermen and farmers				
Activity 2.2.1.1 : Organization of information and awareness-raising workshops on revolving funds for the local communities, fishermen and farmers	Workshop	10 000	3	30 000
Activity 2.2.1.2: Creation and establishment of revolving funds				
Activity 2.2.1.3 : Training of beneficiaries about the benefit of revolving funds and their management in each of the three project areas	Workshop	10 000	3	30 000
Output 2.2.2 : Income-generating activities are supported in favour of the local communities, women and youths in particular				
Activity 2.2.2.1: Identification of an experienced/specialized structure (NGOs, associations, credit unions, etc.) to manage the revolving funds and to support the beneficiaries				

Activity 2.2.2.2. Identification and characterization of income –generating activities in the three concerned project areas Potential income-generating activities : - Transformation of fishing and aquaculture products - Small-scale agriculture - Intensive farming - Artisanal conservation and transformation of fisheries products (fish drying and smoking) - Vegetable cropping	Study	30 000	3	90 000
Activity 2.2.2.3: Selection of beneficiaries, including women and youths, for the income-generating activities	Study	15 000	3	45 000
Activity 2.2.2.4 : Training of beneficiaries on the project themes and the selected income-generating activities	Training	20 000	6	120 000
Activity 2.2.2.5: Acquisition and distribution of equipments to the beneficiaries	Lots	1,5	600	900 000
Activity 2.2.2.6: Implementation of income-generating activities for the beneficiaries				
Sub-total component 2				**6 055 000**
Component 3 : Awareness-raising and capacity building for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad				
Outcome 3.1: The targeted institutions and actors are sensitized and their capacities strengthened through adapted communication				
Output 3.1.1 : Decision-makers (parliamentarians, ministers, directors,…), practitioners, concerned structures and entities are trained and sensitized concerning the fisheries and aquaculture challenges and adaptation to climate change				
Activity 3.1.1.1 : Elaboration of an awareness-raising, training and communication master plan on fisheries and aquaculture for the different beneficiaries	Study	40 000	1	40 000

Activity 3.1.1.2 : Organization of a workshop for the validation of the master plan	Workshop	15 000	1	15 000
Activity 3.1.1.3: Elaboration of specific training modules (aquaculture technology, methods on information collection , climate change impacts on fish resources, etc.)	Study	50 000	1	50 000
Activity 3.1.1.4: Design and editing of adapted awareness-raising/communication materials (flyers, brochures, leaflets…)	Flat amount	60 000	1	60 000
Activity 3.1.1.5 : Organization of thematic training sessions for professional structures, entities, producers, decision-makers, practitioners, and technicians	Workshop	20 000	4	80 000
Output 3.1.2: The populations awareness about sustainable and adaptive fisheries and aquaculture is raised				
Activity 3.1.2.1 : Design and development of awareness-raising and communication materials for the large public on fish resources and climate change impacts ((leaflets, posters, flyers, summaries, documentaries, radio spots, phone applications, fisheries and aquaculture day)	Flat amount	100 000	1	100 000
Activity 3.1.2.2 : Design (format and content) of environmental education sessions in the local languages on fishery resources and ecosystems conservation aimed at pupils and women	Flat amount	60 000	1	60 000
Activity 3.1.2.3: Organization of environmental education sessions for pupils and women	Workshop	30 000	6	180 000
Activity 3.1.2.4 : Establishment of a web radio (studio, server, portal and mobile application) in each of the three zones	(1 studio, 1 server, 1 portal and 1 mobile application)	15 000	3	45 000

Activity 3.1.2.5. Implementation of an exchange platform / data-base on fisheries and aquaculture	Flat amount	20 000	1	20 000
Sub-total of component 3				**650 000**
Total components 1 - 3				**8 120 000**
Component 4: Project execution and monitoring				
Execution costs (Management Unit)				**730 000**
Implementation costs (Implementation Unit)				**750 000**
TOTAL PROJECT				**9 600 000**

H. *Disbursement schedule with time-bound milestones*

Component/outcome/output/activity	Total Budget ($)	Year 1	Year 2	Year 3	Year 4
Component 1 : Improving national management strategies and policies to strengthen the resilience of the fisheries and aquaculture resources and communities to climate change					
Outcome 1.1: The institutional, regulatory and legal aspects related to fisheries and aquaculture are improved and take into consideration the climate change dimension					
Output 1.1.1: The fisheries and aquaculture master plan is updated and validated					
• Activity 1.1.1.1. Elaboration of thematic studies: - Study for the identification of the most vulnerable and sensitive fisheries and aquaculture sites to climate change and proposal of a management strategy, - Analytical study on the impacts of climate change on fisheries and aquaculture in Chad and development prospects, - Socio-economic studies focusing on the directly active population, employment and revenues …., - Study for the evaluation of the fishery resources exploitation in Chad and proposals for stocks reconstitution, - Study on the development of the fisheries and aquaculture	200,000	160,000	40,000	-	-

sector (marketing, fisheries and aquaculture labelling …), - Evaluation of structures and entities in charge of the fisheries and aquaculture sector in Chad and proposals for the creation/enhancement of (a) management structure(s), - Study for the evaluation of the development potential related to the aquaculture sector					
Activity 1.1.1.2 : Organization of validation workshops for the validation of the studies mentioned in Activity 1.1.1.1)	60,000	50,000	10,000	-	-
Activity 1.1.1.3 : Update of Chad's fisheries and aquaculture master plan, taking into account the climate change dimension	50,000	40,000	10,000	-	-
Activity 1.1.1.4 : Organization of a national workshop for the validation of the updated master plan	30,000	-	30,000	-	-
Activity 1.1.1.5 : Design and editing of the fisheries and aquaculture master plan	20,000	-	20,000	-	-
Output 1.1.2: The regulatory and legal texts are reviewed, updated and submitted to concerned entities	-	-	-	-	-
Activity 1.1.2.1: Critical analysis of the regulatory and legal framework of the fisheries and aquaculture sector in Chad and proposals for the update/elaboration of legal texts taking into account the climate change dimension	70,000	50,000	20,000	-	-
Activity 1.1.2.2 : Elaboration of specific/complementary standards/regulations : fishing license allocation conditions, fishing methods, incentive measures…in relation with climate change	50,000	40,000	10,000	-	-

Activity 1.1.2.3: Organization of information, outreach, and awareness-raising sessions on the new regulatory texts, aimed at different target groups (parliamentarians, decision-makers, managers, fishermen…)	80,000	40,000	40,000	-	-
Outcome.1.2: The fisheries and aquaculture monitoring and surveillance system is strengthened and operational	**-**	**-**	**-**	**-**	**-**
Output 1.2.1: The national monitoring capacities are strengthened	**-**	**-**	**-**	**-**	**-**
Activity 1.2.1.1 : Diagnostic study of existing surveillance and monitoring-evaluation systems/mechanisms/approaches in relation with the fisheries and aquaculture sector	25,000	25,000	-	-	-
Activity 1.2.1.2 : Design/strengthening of the surveillance and control mechanisms of the fish resources/fishing and aquaculture sites	50,000	30,000	10,000	10,000	-
Activity 1.2.1.3 : Organization of a consultation workshop for the validation of the surveillance mechanisms	60,000	40,000	20,000		-
Activity 1.2.1.4: Acquisition of surveillance materials in favour of the fisheries and aquaculture staff, managers and organizations/structures (rolling stock, IT materials, data collection materials …)	500,000	150,000	150,000	100,000	100,000
Activity 1.2.1.5 : Design of training modules, identification and training of teams in charge of the use of surveillance mechanisms	60,000	-	30,000	30,000	-
Output 1.2.2: A monitoring-evaluation system is designed and operational	-	**-**	**-**	-	-

Activity 1.2.2.1: Design and development of a fisheries and aquaculture monitoring-evaluation system	50,000	30,000	20,000	-	-
Activity 1.2.2.2 : Organization of a training session on the use of the monitoring-evaluation system	60,000	10,000	30,000	20,000	-
Activity 1.2.2.3: Operationalization of the monitoring-evaluation system (including the acquisition of necessary equipments)	50,000	10,000	40,000	-	-
Sub- total component 1	**1,415,000**				
Component 2 : Implementing concrete adaptation activities in the three project areas to strengthen the communities and ecosystems resilience to climate change	**-**	**-**	**-**	**-**	**-**
Outcome 2.1: The resilience of ecosystems is strengthened through the rehabilitation of priority sites and the improvement of the fisheries and aquaculture infrastructure	**-**	**-**	**-**	**-**	**-**
Output 2.1.1 : Development, rehabilitation and protection works for priority ecosystems Priority ecosystems development, rehabilitation and protection works are implemented in the three concerned zones (Guera, Tandjilé and Hadjer Lamis)	**-**	**-**	**-**	**-**	**-**
Activity 2.1.1.1 : Identification, characterization, prioritization, and demarcation of the most vulnerable sites/ecosystems	50,000	40,000	10,000	-	-
Activity 2.1.1.2: Identification of development activities and elaboration of feasibility studies	120,000	80,000	40,000	-	-
Activity 2.1.1.3: Organization of restitution workshops about results with the local populations and different concerned parties	60,000	40,000	20,000	-	-

Activity 2.1.1.4 : Identification and training of the local workforce involved in the rehabilitation and development activities	30,000	-	30,000	-	-
Activity 2.1.1.5: Development and stabilisation of lakes banks, ponds, watercourses, and river banks, etc.	900,000	100,000	200,000	350,000	250,000
Activity 2.1.1.6 : Development of basins and river banks for rice-fish farming	200,000	-	40,000	110,000	50,000
Activity 2.1.1.7: Water and soil conservation works and plantations (dikes, gabions, sylvo-pastoral and agroforestry plantations…)	600,000	50,000	150,000	200,000	200,000
Output 2.1.2: Fish hatcheries and farming structures are built in the three project areas	**-**	**-**	**-**	**-**	**-**
Activity 2.1.2.1: Identification of hatchery sites in each project area	60,000	40,000	20,000	-	-
Activity 2.1.2.2: Technical and economic feasibility study for the reinforcement / establishment of fish hatcheries and farming structures in the three project areas	60,000	40,000	20,000	-	-
Activity 2.1.2.3: Hatcheries establishment, development and equipment (renewable energy, basins, etc.)	450,000	-	100,000	200,000	150,000
Activity 2.1.2.4: Establishment of farming structures (works, materials, granulation and extrusion equipment, equipment for the surveillance of physico-chemical parameters of water, equipment for alevins, seines, aerators, calibration)	300,000	-	50,000	150,000	100,000
Activity 2.1.2.5: Training of the managers and technicians	60,000	-	30,000	20,000	10,000

Activity 2.1.2.6: Support of managers and technicians for the hatcheries	40,000	-	20,000	10,000	10,000
Output 2.1.3: Fisheries and aquaculture products transformation /conservation platforms/units are constructed and operational in the three project areas	**-**	**-**	**-**	**-**	**-**
Activity 2.1.3.1 : Socio-economic feasibility study for the construction/reinforcement of the fish and aquaculture products transformation/conservation platforms/units	60,000	40,000	20,000	-	-
Activity 2.1.3.2 : Organization of a workshop for the presentation, exchange and validation of the results of the feasibility studies	20,000	-	20,000	-	-
Activity 2.1.3.3 : Identification and training of the workforce involved in the construction works of the platforms/units	30,000	15,000	15,000	-	-
Activity 2.1.3.4 : Construction/rehabilitation of the fisheries products transformation/conservation units/platforms	300,000	-	100,000	150,000	50,000
Activity 2.1.3.5 : Construction of fish markets	540,000	-	100,000	250,000	190,000
Activity 2.1.3.6 : Acquisition of necessary equipments/materials for the transformation/conservation units (renewable energy, adapted technology, modern ovens…)	300,000	-	50,000	150,000	100,000
Activity 2.1.3.7 : Support of the managers for the transformation/conservation units	40,000	-	20,000	10,000	10,000
Output 2.1.4 : Support actions to fishermen are provided	**-**	**-**	**-**	**-**	**-**
Activity 2.1.4.1 : Identification of priority landing sites in the three project areas	10,000	10,000	-	-	-

Activity 2.1.4.2 : Construction of docking facilities for canoes	120,000	-	40,000	80,000	-
Activity 2.1.4.3 : Acquisition and allocation of fishing equipments (fresh products conservation and sale equipments)	300,000	-	150,000	100,000	50,000
Activity 2.1.4.4 : Development of boreholes, equipped with pumps	90,000	-	40,000	40,000	10,000
Activity 2.1.4.5 : Fish stocking in artificial ponds and dams	100,000	-	-	50,000	50,000
Outcome 2.2: The fishermen and communities' incomes are increased and their resilience to climate change is improved	**-**	**-**	**-**	**-**	**-**
Output 2.2.1: Revolving funds are created to diversify the communities income resources, notably beneficiary fishermen and farmers	**-**	**-**	**-**	**-**	**-**
Activity 2.2.1.1 : Organization of information and awareness-raising workshops on revolving funds for the local communities, fishermen and farmers	30,000		10,000	10,000	10,000
Activity 2.2.1.2 : Creation and establishment of revolving funds	-	-	-	-	-
Activity 2.2.1.3 : Training of beneficiaries on the benefit of revolving funds and their management in each of the three project areas	30,000		10,000	10,000	10,000
Output 2.2.2 : Income-generating activities are supported in favour of the local communities, women and youths in particular					
Activity 2.2.2.1: Identification of an experienced/specialized structure (NGOs, associations, credit unions, etc.) to manage the revolving funds and to support the beneficiaries	-	-	-	-	-
Activity 2.2.2.2. Identification and characterization of income –	90,000	50,000	40,000	-	-

generating activities in the three concerned project areas Potential income-generating activities : - Transformation of fishing and aquaculture products - Small-scale agriculture - Smart agriculture - Artisanal conservation and transformation of fisheries products (fish drying and smoking) - Vegetable cropping					
Activity 2.2.2.3 : Selection of beneficiaries, including women and youths, for income-generating activities,	45,000	15,000	30,000	-	-
Activity 2.2.2.4 : Training of beneficiaries on the project themes and the selected income-generating activities	120,000	-	100,000	20,000	-
Activity 2.2.2.5: Acquisition and distribution of equipments to the beneficiaries	900,000	-	400,000	300,000	200,000
Activity 2.2.2.6: Implementation of income-generating activities for the beneficiaries	-	-	-	-	-
Sub- total component 2	**6,055,000**				
Component 3 : Awareness-raising and capacity building for Organizing awareness-raising, training and communication sessions for a concerted, integrated and sustainable management of the fisheries and aquaculture sector in Chad	**-**	**-**	**-**	**-**	**-**
Outcome 3.1: The targeted institutions and actors are sensitized and their capacities	**-**	**-**	**-**	**-**	**-**

strengthened through adapted communication					
Output 3.1.1 : Decision-makers (parliamentarians, ministers, directors,…), practitioners, concerned structures and entities are trained and sensitized concering the fisheries and aquaculture challenges and adaptation to climate change	**-**	**-**	**-**	**-**	**-**
Activity 3.1.1.1 : Elaboration of an awareness-raising, training and communication action plan on fisheries and aquaculture for the different beneficiaries	40,000	30,000	10,000	-	-
Activity 3.1.1.2 : Organization of a workshop for the validation of the action plan	15,000	-	15,000	-	-
Activity 3.1.1.3: Elaboration of specific training modules (aquaculture technology, methods on information collection , climate change impacts on fish resources, etc.)	50,000	30,000	20,000	-	-
Activity 3.1.1.4: Design and editing of adapted awareness-raising/communication materials (flyers, brochures, leaflets…)	60,000	20,000	30,000	10,000	-
Activity 3.1.1.5 : Organization of thematic training sessions for professional structures, entities, producers, decision-makers, practitioners, and technicians	80,000	10,000	50,000	20,000	-
Output 3.1.2: The populations awareness about sustainable and adaptive fisheries and aquaculture is raised	-	-	-	-	-
Activity 3.1.2.1 : Design and development of awareness-raising and communication materials for the large public on fish resources and climate change impacts ((leaflets, posters, flyers, summaries,	100,000	60,000	40,000	-	-

documentaries, radio spots, phone applications, fisheries and aquaculture day)					
Activity 3.1.2.2 : Design (format and content) of environmental education sessions in the local languages on fishery resources and ecosystems conservation aimed at pupils and women	60,000	20,000	40,000	-	-
Activity 3.1.2.3 : Organization of environmental education session for pupils and women	180,000	-	100,000	40,000	40,000
Activity 3.1.2.4 : Establishment of a web radio (studio, server, portal and mobile application) in each of the three zones	45,000	-	30,000	10,000	5,000
Activity 3.1.2.5. Implementation of an exchange platform/database on fisheries and aquaculture	20,000	-	-	20,000	-
Sub-total of component 3	**650,000**				
Total components 1 - 3	**8,120,000**	**1,365,000**	**2,690,000**	**2,470,000**	**1,595,000**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[1] :

Mr Nadji TELLRO WAI *Head of technical support unit at the Ministry of Environment and Fisheries (AF-NDA) - CHAD*	Date*:* **July 17, 2017**

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 (INDC, PANA, NPRS, RDIP) 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.

Implementing Entity Coordinator:

Mr. Khatim Kherraz – Executive Secretary of the Sahara and Sahel Observatory (OSS)

Signature:

Date: **August 4th, 2017**	Tel. and email: **(+216) 71 206 633** boc@oss.org.tn
Project Contact Person: **Mr Nabil Ben Khatra**	
Tel. And Email: **(+216) 71 206 633,** nabil.benkhatra@oss.org.tn	

[6.] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

ADAPTATION FUND

REPUBLIQUE DU TCHAD

PRESIDENCE DE LA REPUBLIQUE

PRIMATURE

MINISTERE DE L'ENVIRONNEMENT ET DE LA PECHE

SECRETARIAT GENERAL

POINT FOCAL FONDS POUR L'ADAPTATION

UNITE – TRAVAIL -PROGRES

N'Djamena, le 17 JUIL 2017

N° 001/PR/PM/MEP/SG/PF-FA/2017

Lettre d'Endossement par le Gouvernement

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

Subject: Endorsement for a project **"Strengthening the Resilience of Fishing Communities and Aquaculture in Chad to Climate Change"**

In my capacity, as designated authority for the Adaptation Fund in Republic of Chad, I confirm that the above project proposal is in accordance with the government's national priorities in implementing of activities to adapt natural and fisheries resources and related communities to improve their resilience to the adverse effects of climate change.

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 the Ministry of Environment and Fishery of Chad.

Sincerely,

Nadji TELLRO WAI
Point Focal du Tchad auprès du Fonds pour l'Adaptation
Ministère de l'Environnement et de la Pêche
BP 447, N'Djamena, Tchad
Tél. Mobile :+235 66 28 29 72/99 33 13 50
Email : nadji_tellro@yahoo.fr

SAHARA AND SAHEL OBSERVATORY

NATIONAL CONSULTATION WORKSHOP

"STRENGTHENING THE RESILIENCE OF THE FISHERIES AND AQUACULTURE COMMUNITIES TO CLIMATE CHANGE IN CHAD"

(FRENCH TITLE: "RENFORCEMENT DE LA RÉSILIENCE DES COMMUNAUTÉS DE PÊCHE ET DE L'AQUACULTURE AU TCHAD FACE AU CHANGEMENT CLIMATIQUE - RECOPAT»)

REPORT

DOUGUIA, 23 MAY 2017

I. CONTEXT

Chad is a sub-Saharan country and subject to the adverse impacts of climate change which affect the majority of its sectors and natural resources, including the country's fisheries and aquaculture resources, resulting in more vulnerable communities.

Despite its continental geographic situation, Chad possess about 135 ichthyologic species living in lakes and rivers of which 80% are exploited for commercial purposes. Chad's fish species include mainly catfish (Clarias, Heterobranchus, Chyisichthys, Bagrus, Clarotes), Tilapia commonly known as *Carpes* (Oreochromis, Sarotherodon), and Nile perch (Latesniloicus) and several other species such as the Alestes and the Hydrocynus.

The total number of fishermen in Chad is estimated at 220 000, of which are 200 000 Chadian sedentary fishermen practicing seasonal fishery. Only 20 000 are professionals (full-time occupation), of which are 40% Nigerian, Malian, Guinean, Beninese origins. A significant number of women, estimated at 3 500, work also in the fisheries sector. Several fishing gears and techniques are used, depending on the fishing zone. They are about 19 000 rowing boats. The motorization rate is about 6%.

Fish transformation and marketing is ensured especially by women. This activity provides merchants with an average annual revenue of 140 000 CFA francs.

In this context, the RECOPAT project has been designed to support Chad's adaptation strategies, and in particular, to strengthen the resilience of the fisheries and aquaculture communities. The project proposal will be submitted to the Adaptation Fund.

More specifically, the RECOPAT project aims to improve the resilience of the fisheries and aquaculture sectors to climate change by strengthening national and institutional legal frameworks and by implementing concrete adaptation measures, including income-generating activities.

II. WORKSHOP OBJECTIVES AND EXPECTED OUTCOMES

The main objective of the national consultation workshop organized by OSS is to know more about the different stakeholders' concerns and needs to be taken into consideration in elaborating the final proposal of the RECOPAT project.

Specifically, the workshop aimed to:

- **Inform and raise the awareness of local and national managers and local populations,** especially fishermen, about the major project objectives and actions;
- **Integrate stakeholders' needs and expectations into the project activities;**

The expected workshop outcomes were the following:

- Identification of difficulties that may hinder or delay the implementation of the project activities;
- Collection of ideas for activities that could be implemented and included in the project plan;
- Better understanding of the project scope and the adaptation measures that could be introduced in the project zone.

III. WORKFLOW

The mission was conducted by an OSS delegation composed of Mr. Nabil Hamada, Mr. Mourad Briki and Mr. AbdoulKarim Bello from 22 to 24 May 2017.

1. Meeting with national institutions

A meeting was conducted by the OSS delegation with Chadian authorities and stakeholders on the sidelines of the consultation workshop held in Douguia on 23 May 2017. The meeting aimed to inform these authorities about the workshop taking place and its major objectives. The participants of the meeting included:

- ✓ Concerned national institutions to finalize the preparation of the consultation workshop,
- ✓ The Secretary General of Chad's Ministry of Environment and Fisheries, Mr. Oualbadet MAGOMNA, for a courtesy and exchange visit,
- ✓ The Minister of Environment and Fisheries, Mr. Mahamat Brah for a courtesy visit.

Meeting with authorities of Chad's Ministry of Environment and Fisheries

Meeting with the Ministry of Environment and Fisheries

The major goal of this mission was to discuss the RECOPAT project, starting from the project proposal development process to its submission to the Adaptation Fund in August 2017.

2. Workflow

The national consultation workshop was held on 23 May 2017 in Douguia, which is one of the observatories of the Network of Long-Term Environmental Monitoring Observatories (ROSELT). More than 40 participants, composed of representatives of the local communities of the three targeted areas (Hajer Lamis, Guera and Tandjilé) and of national partner institutions took part in the workshop (cf. List of Participants in Annexe 1).

The workshop was conducted in accordance with a prior defined agenda (see annexe 2). It included the following items:

- ✓ Confirmation of national and local partners' commitment to the RECOPAT project,
- ✓ Consultative approach for a better definition of the project priorities, components and activities,
- ✓ Adoption of a roadmap for future activities and deadlines.

- **Opening Session**

The opening session was chaired by Mr. Oualbadet MAGOMNA, Secretary General of the Ministry of Environment and Fisheries, and was devoted to the different partners to deliver words of welcome.

Opening ceremony of the consultation workshop

Mr. Mourad Briki, regional coordinator of the REPSAHEL project at OSS, thanked the different actors and partners for their warm reception and commitment and highlighted the importance of the RECOPAT project in supporting existing projects and programmes and the efforts undertaken by Chad's government and authorities. He indicated that the innovative aspect of the RECOPAT project is related to the integration of concrete adaptation and mitigation actions in the participatory management of the targeted fisheries and aquaculture sites.

- **Presentation of the project concept note**

Following a brief overview on the Sahara and Sahel Observatory (OSS), the OSS delegation presented the concept note of the RECOPAT project to be submitted in August 2017 for examination by the next Board meeting of the Adaptation Fund. The presentation underscored the project's objectives, components and potential activities.

The RECOPAT project aims to improve the resilience of the fisheries and aquaculture sector to the adverse effects of climate change in Chad with the following specific objectives:

- ✓ Improving institutional and legal capacities by updating Chad's exsisting fisheries and aquaculture master plan, improving the regulatory and legal basis by integrating climate change aspects, strengthening the capacities of the different professional institutions and entities/structures, and improving the surveillance and monitoring and evaluation mechanisms.
- ✓ Improving the resilience of the fisheries and aquaculture ecosystems and communities through the implementation of concrete adaptation measures and activities for the population, including income-generating activities.
- ✓ Improving training, awareness-raising and communication with the different actors and stakeholders through the implementation of related activities aimed at the different users and beneficiaries.

Presentation of the RECOPAT project concept note

The project management modalities as well as future preparation steps and the submission of the proposal to adaptation Fund were also specified.

- **Group Work**

As planned, the second session was dedicated to group work. To this end, participants were divided into groups per region for a better definition and identification of needs and challenges at the national as well as local level.

Group work at the national consultation workshop

The groups were mentored by representatives of institutions, decision-makers, and associations (fishermen, fish farmers, farmers, etc.) of the fisheries and aquaculture sector. The group work focused on the three following themes:

- ✓ Improvement of strategic orientations;
- ✓ Resilience and adaptation to climate change (ecosystems and population);
- ✓ Awareness-raising and communication.

A chairman and a rapporteur were designated for each group. The different results of each group were shared with the other groups and participants in a plenary session.

As presented in a table prepared by the OSS team, the workshop helped to identify the achievements/assets and major activities of the different themes (cf. Annexe 3).

3. Closing session

The workshop ended at 5 p.m. OSS and the Ministry of Environment and Fisheries have committed to finalize the project concept note as soon as possible.

The Secretary General of the Ministry of Environment and Fisheries closed the workshop and thanked OSS for its support and commitment.

The major highlights of the workshop are:

- ✓ The presence and commitment of various actors and stakeholders at the central as well as local level, including representatives of populations, farmers, fishermen and fish farmers;
- ✓ The group work allowed to collect and compile the expectations, needs and suggestions of the different stakeholders in line with the project objectives and expected outcomes;
- ✓ The meeting confirmed the strong will and commitment of Chad's authorities and policy makers to make the RECOPAT project come true.

ANNEXES

Annexe 1 : List of participants

Liste de Presence :

N°	NOM ET PRENOMS	INSTITUTION	CONTACTS	SIGNATURE
01	Tomtebaye Ngamate	MEP	66468349	[signature]
02	Maï Malloum ISSA	Chef Section pêche	99787676	[signature]
03	IDRISS MAHAMAT HASSAN	CDHSA/DDA/MEP	95428882	[signature]
04	MERCI Doumana	Gp. Harazaï	66755044	[signature]
05	RASSEMADJI NGOMDJIBAYE	DGPA/MEP	66352722	[signature]
06	NDOREMBAYE BERTIN	SG FOTPAPE	66450597	[signature]
07	YAKASIM LIMANE	Présidente de groupement	99984832	[signature]
08	KAKA ABDOULAYE	pdte du Gpt KEYE de	95877047	[signature]
09	RAMADAN Idogo	Président de gpmt des pisculteurs Tandjile kelo	60011188 / 90001188	[signature]
10	Selgué Samuel	Animatrice	66595317	[signature]
11	Kakéssé Jonas	Gpt Peche		[signature]
12	Noël Kanarké	President gpt Pehe	66708026	[signature]
13	Mitabel Ampléas	DGPA	63483375	[signature]
		Mareyeuse	66067500	[signature]
14	Doubroumadji Catherine	Mareyeuse	68885645	[signature]
15	Ab-Yaer Aboubakar	President du gpt AL Tietawa	63752040	[signature]
16	MIRDIGUE MANIPA	gpt de jeunes	63895838	[signature]
17	Mahamat Hisseine	M d'Agriculture	66343675	[signature]
18	Melom PRUDENCE	gpt Harazaï	62695114	[signature]
19	idriss DJIMET	Mangue	66777291	

20	Gambo Djibrine	H. lamise	99639342	[signature]
21	Hissein Djibrine	H lamise	65730257	BH
22	Ahmed Dicao	H lamise	82129110	[signature]
23	Mai Ali	H lamise	99800260	[signature]
24	Abdelkhadir Homatia	vise president/G-Gouroug	66-75-50-50	[signature]
25	Abbaalhadji Mahamat	membre/G. Gouroug	66695790	[signature]
26	Dr. Mahamat Adoum Youmous	D.T.V.P	99632600	[signature]
27	ADOUM ACYL Mahadjir	Representant du M.E.A	66650108	
28	~~ABDERAHMANE~~ Abdoulaye	REPA	99742059	[signature]
29			66656571	
30	MBAINDOLEBE GABIN	SG/MEP	66235392	[signature]
31	BAPING DOUAGUE	DTVPH/MEP	66843188	[signature]
32	D ABDERAHMANE DJAHARA	PF/MEP	66273924	[signature]
33	OUALBADET MAGOMNA	SGA/MEP	66234641	[signature]
34				
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Annexe 2: Agenda of the consultation workshop - 24 May 2017

Time	Activities	Speakers
08.30 – 09.00 a.m.	**Opening session** Welcome address Presentation of participants Adoption of the workshop agenda	Ministry of the Environment and Fisheries of Chad - OSS
09.00 – 0930 a.m.	**Plenary session: Project Presentation** • Generalities, Objectives • Project scope • Detailed activities	OSS
09.30 – 10.30 a.m.	**Debate**	OSS and participants
10.30 – 11.00 a.m.	***Coffee-break***	
***11.00* a.m. – 01.00 p.m.**	**Group Work** • Introduction to group work • Assets and Difficulties • Proposals of adequate adaptation measures	OSS and participants
1.00 – 2.00 p.m.	***Lunch***	
2.00 – 4.00 p.m.	**Group work**	OSS and participants
4.00 – 4.30 p.m.	***Coffee-break***	
4.30 – 5.30 p.m.	**Presentation and discussion of group work results**	OSS

Annex 3: Outcomes of the consultative workshop's three working groups

Strengthening the resilience of the fisheries and aquaculture communities to climate change in Chad: Tandjilé, Guera and Douguia

Consultative and Interactive Workshop on the RECOPAT Project

23 May 2017-Douguia

Dougia Group Members List

ABDREMANE ABDOULAYE **(President)**	Mme KOUESSE RAMADANE KARIFENE **(Reporting)**
Dr MAHAMAT ADOUM YOUNOUS	NDOREMBAYE BERTIN
ARRACHID AHMAT	MAIL ALI
MAIL MALOUM ISSA	KAKA ABDOULAUE
YAKASIE LIMAME ABAKAR	AMADOU DIIDJO
BOULAMA SEINI DJIBRINE	GAMBO DJIBRINE

Site : ……Hadjer Lamis (Doguia)……..

	Main Theme	*Results & Advantages*	*Constraints & Weaknesses*	*Needs & Proposals*	*In charge*
1	**Strategic orientations improvement**				
A	On the institutional level	**National level** Existing: - DGPA : DP, DDA, DTVPH, Vision 2030 - Decentralized services 1. Fishing and aquaculture steering pattern 2. National Development Plan for aquaculture **Local level** Existing farmers' organizations (ILOD, farming platforms, resources management committee, groups and associations, etc)	**National level** Poor implementation of policies and strategies at outdated data **Local level** Poor implementation of Fishermen Organizations (FO)	• Updating policies and strategies (SDPP & PNDD) **Local level** Building capacities of existing FO	MEP/PTF Local communities/technical services/partners
B	On the legal level	**National level** Existing : Law n°14/PR/1998 on general principles of environment protection and implementation documents, Law n° 14/PR/2008 on forestry, animals and sea resources regimes and their implementation documents **Local level** Existing: Status, rules and regulations, conventions.	**National level** Poor texts implementation, outreach and understanding Absence of texts related to the Fishery and aquaculture section **Local level :** Weaknesses in the implementation and organisation development Poor empowerment of existing documents and texts	- Texts editing, outreach and empowerment from the MEP users and agents ; - Development of the implementation texts; - Building capacities of FO	MEP/ partners Local communities/technical services/partners

C	Monitoring and Evaluation	**National Level** Existing : Decentralized services (sectors and sub-sectors) Setting of a mixed brigade NGOs & FOs **Local level** NGOs & FOs for Environment preservation	**National level** Poor technical and material capacities, Texts misinterpretation	- Building capacities of agents in charge of texts outreach and implementation - Building capacities of local stakeholders	MEP/Partners Local communities/technical services/partners
D	Building capacities of the different stakeholders	**National level :** Legal Affairs and Litigation Office (DAJC) Planification and Monitoring Studies Office (DEPS) **Local level :** - Local committee - ''MANI ESSOR''Training Center	- Absence of training program (PF) - Absence of training program	- Development & implementation of a training program - Development & implementation of a training program	MEP/Partners Local communities/technical services /partners

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
2 – CC Resilience Adaptation and Mitigation Activities (ecosystems & population)					
a	Ecosystems Level	- Submarine Ecosystems Diversity (lakes and rivers) Decentralized services for ecosystems preservation - Temporary pond and lakes - Local Development Plans FO for the environment preservation (village monitoring committees)	Risks due to CC effects and poor aquatic ecosystems adaptation capacities, Poor technical and equipment capacities Aquatic Ecosystems degradation Bad Fishing practices	- Implementation of the National Plan to CC Adaptation (PANA) - Implementation of the Local Development Plan	MEP/Partners Local communities/technical services/partners
	Benefits for fishermen, aquaculture	Temporary ponds and permanent water streams Local Development Plans FO for the environment preservation (	- Risks due to CC effects, - Poor implementation of Local Development Plans - Poor FO operationality	• Implementing measures adequate to CC Implementing LDP	

b	farmers and other local farmers	village monitoring committees, Arable areas : - Preservation, transformation and transportation infrastructure	- Under exploitation of arable lands - Weak empowerment of existing infrastructure Degradation of Access paths to fisheries	• Provision of fishing equipements (nets, …), Fish markets,	
c	Income generating activities	- FO Saving and credit facilities - Local saving banks and credits	Low FO operationality, Lack of Micro finance Institutions (MFI) Monitoring	- Operationnalizing the FO; - Including MFI in the monitoring process Creating new Saving Banks **Examples** : - LNFP exploitation - Drying, Smoking and Sale of fresh fishs - Fresh Vegetable Collection, - Retail markets	- MEP Decentralized Services Services in charge of microcredits

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
		How the information is flowing currently?	***Difficulties and Obstacles to the information flow***	***Communication channel types, kind of message and communication tools***	
	Outreach and Communication	- Mobile Phones/Smartphones, exchange of information from the stakeholders and beneficiaries Chad Radion & television	- Network issues areas non-connected permanently - Difficult access due to the high price of the mobile phone fees Difficult access to Internet	- Strengthening the telephone networks - Subsidizing telephone access;	Communities /Operators /New Technologies Ministry

Strengthening the resilience of the fisheries and aquaculture communities to climate change in Chad : Tandjilé, Guera et Douguia

Consultative and Interactive Workshop on the RECOPAT Project 23 May 2017- Tandjilé

Tandjilé Group Members List

1-RASSEMADJI NGOMDJIBAYE : Président DGPA	7-MITABEL AMPLIASE : Member: TANDJILE
2-MBAIGOLMEM MBAIOUNDABIE : Reporting DP	8-KAKESSE JONAS : Member : TANDJILE
3-MAHAMAT TAHIR KEDELA : Member DGPA/A	9-NOEL KANARKE : Member : DGPA
4-MBAINDOLEBE GABIN : Member : SG/MEP	10-RAMADAN IDOGO Member : TANDJILE
5-MIRDIGUE MANIPA : Member : TANDJILE	11-DOUBOUMODJI CATHERINE Member : TANDJILE
6-SELGUE SAMUEL : Member : TANDJILE	

Site : ……TANDJILE…….

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
1	**Strategic Orientation Improvement**				
A	On the institutional level	- A Regional representation for Environment and Fisheries - Fisheries and Aquaculture sectors and sub-sectors - Producers Organizations - Microfinance Institutions	- Quantitative and qualitative weaknesses of managing agents - No NGOs dedicated to the Fisheries and Aquaculture sectors - Decentralized services lacking of financial means and equipments - Difficulty for	- Deploying a sufficient number of well-trained agents - Advocating towards NGOs on the importance of fisheries and aquaculture - Strengthening the decentralized services in equipment and financial resources.	DGPA /SG/MEP - MEP/Délégation Régionale

			Fisheries and Aquaculture stakelholders to access micro credits	- Advocating towards MFI to foster access to credit for the stakeholders	-MEP /SG -MEP/Plan
B	On the legal level	-Texts on environment and sea resources - Texts on decentralization - Local conventions and regulations on Sea resources management - Legal institutions in place	-Outdated Texts on Environment and sea resources - No implementation text specific to sea resources - No respect of the local conventions and regulations - Weak legal institutions	- Editing texts on environment and sea resources - Development of texts specific to sea resources - Creating awareness of the local stakeholders on respecting local conventions and regulations - Building legal institutions capacities	MEP/Ministry of Justice MEP/NGO MEP/Ministry of Justice
C	Monitoring and Evaluation	Regional representation for Fisheries and Environment - Fisheries & Aquaculture sectors and sub-sectors - Fishermen Organization (FO)	Quantitative and qualitative weaknesses of managing agents Insuffisance quantitative et qualitative des agents d'encadrement -No NGOs dedicated to the Fisheries and Aquaculture sectors - - Decentralized services lacking of financial means and equipments	- Deploying a sufficient number of well-trained agents Déploiement des agents formés en nombre suffisant - Advocating towards NGOs on the importance of Fisheries and aquaculture - Strengthening the decentralized services in equipments and financial resources.	MEP/NGO
D	Building capacities of the different stakeholders	- Sea products processing platform in Besmé - Sectors offices in Kelo and Lai, subsectors offices in Missere -Fishing local technological knowledge	- Lack and deterioration of equipments Local knowledge needs to be formalized	- Training - Equipments - Local Knowledge Outreach - Creating awareness -Literacy efforts	MEP/PTF

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
2 - CC Resilience Adaptation and Mitigation Activities (ecosystems & population)					
a	Ecosystems Level	- Water streams, overflowing areas, ponds - Abudant Aquatic Plants and Wildlife -Rupicole Vegetation - Population	- Quick and multifactorial degradation of ecosystems - Difficutly to access body of water - Demographic pressure on resources	- Ecosystems adjustment - Creation of fry production and distribution infrastruture - Creation of fishing ponds - Making adequate drilllings	MEP/PTF
b	Benefits to fishermen, aquaculture farmers and other local farmers	-Dynamic organization	- Lack of financing - weak organisational development	Financing Training Health care center literacy center fish market Vegetable crop development Cold supply chain Processing platforms Rural paths	MEP/PTF
c	Income generating activities	Cereal trade Off-season crops Small breeding …	Lack of financing	Agriculture financing Building capacities of stakeholders Cereals storage (construction, équipments,…) - Vegetable crops, - Breeding	MEP/PTF

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
		How the information is flowing currently ?	Difficulties and obstacles to the information flow	Communication channel types, kind of message and communication tools	
	Outreach and Communication	Community radio in place Theater group	- Irregular functioning of community radios - Theme related to sea resources not considered	- Strengthening financial, technical and human capacities of community radios - Diversifying communication channels	MEP/PTF

Consultative and Interactive Workshop on the RECOPAT Project 23 May 2017- Guera

Group Members List

N°	Name	First Name	Role
1.	Chiguer	Abakar	President
2.	Soumaine	Albachar	Reporting
3.	Halimé	Hisseine	Member
4.	Mélom	Prudence	Member
5.	Mahamat	Hisseine	Member
6.	Merci	Doumana	Member
7.	Idriss	Djime	Member
8.	Adoum	Acyl Mahadjir	Member
9.	Abba Alhdji	Mahamat	Member
10.	Abdelkhadir	Hamatta	Member
11.	Baping	Douague	Member
12.	Idriss	Mahamat hassan	Member

Site : Guera

	Main Theme	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
1	**Strategic Orientation Improvement**				
A	On the Institutional level	**National Level** : - ----- Fisheries and Aquaculture Ministry	- Staff instability poor staff management - Administrative slowdown	- Need to create a sector in charge of fisheries and	- MEP ; - Regional Representation

		Sector technical and financial partners Office in charge of fisheries and aquaculture **Regional Level :** - Environment representation - Pisciculture farmers group	- Lack of competent technicians locally	aquaculture at the regional level Speed up the administrative process	- Producers' Organization (CNCPRT)
B	On the legal level	- Laws on fisheries and aquaculture Texts in place	- No implementation texts based on the Laws on fisheries and aquaculture Lack of rules and regulations on fisheries and aquaculture	- Development of implementation texts on the fisheries and aquaculture laws as well as rules and regulation on the aquaculture best practices	- MEP ; - Delegation regional ; - Producers' Organization (CNCPRT)
C	Monitoring & Evaluation	- Administration in charge of fisheries and aquaculture	- No local monitoring and evaluation - lack of means	- Need to strengthen the administrative means - Create a fisheries and aquaculture sector	- MEP ; - Regional delegation; - ridge tile des Producers' Organization (CNCPRT, FOTPAPE)
D	Building capacities of the different stakeholders	- Producers organizations - Administration	- weak organisation - FO with poor professional level - Poor production technical skills - lack of production equipments	- Building capacities on technical organization; - Building capacities in technical production - Provision of production Equipment	- MEP ; - Delegation regional ; - Producers' Organization (CNCPRT))

	Main Themes	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
2 - -– CC Resilience Adaptation and Mitigation Activities (ecosystems & population)					
a	Ecosystems Level	- Existing production sites - fish farmers Agroforestry and vegetable crops	- Lack of surface water - Land degradation	- Need of drilling with adequate pumps - Dams with water caption - Artificial Ponds and dams fishing Integrated fish farming - Land preservation (DRS)	- MEP ; - Delegation regional ; - Producers' Organization (CNCPRT)
B	Benefits to fishermen, aquaculture farmers and other local farmers	- Producers organizations Knowledge in their areas of activity - Production site	- Poor communication in the structure - Lack of adequate equipment's and means - Lack of technologies adapted to climate change	- Promoting climate change adjusted production systems Diversifying income generation Providing producers organizations with production and processing equipment's and infrastructure	- MEP ; - Regional representation; - Producers' Organization (CNCPRT)
d	Income generating activities	- MFI Available markets - Products ready to be sold on the market	- Access Condition; - Lack of capital Decrease of producers incomes	- Facilitating access to credit Building MFI capacities Diversifying income generating activities	- MEP ; - Delegation regional ; - Producers' Organization (CNCPRT)

	Main Themes	Results & Advantages	Constraints & Weaknesses	Needs & Proposals	In charge
		How the information is flowing currently?	Difficulties and Obstacles to the information flow	Communication Channel types, Kind of message and communication tools	
	Outreach and Communication	- Community Radio - Training and Outreach workshop - Local chiefs and leaders - Public loudspeakers	- Small coverage area - Limited number of workshop participants	- Ads Images - Radio - Newspapers - Schools - Churches and mosques	- MEP ; - Regional delegation; - Producers' Organization (CNCPRT) - ONG