UNITED NATIONS ENVIRONMENT PROGRAMME
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Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署
UNEP

PROJECT DOCUMENT

Section 1: Project Identification

1.1 Project title: Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods

1.2 Project number: GFL/
PMS: 5694

1.3 Project type: FSP

1.4 Trust Fund: LDCF

1.5 Strategic objectives: Climate Change Adaptation

1.6 UNEP priority: Climate Change Adaptation

1.7 Geographical scope: National

1.8 Mode of execution: External

1.9 Project executing organization: Ministry of Production, Environment, Energy, lndustry and Handicrafts (MAPEEIA) – General Directorate of Environment and Forests (DGEF)

1.10 Duration of project: 48 months
Commencing:
Completion:

1.11 Cost of project	**US$**	**%**
Cost to the GEF Trust Fund	**5,140,000**	24
Co-financing		
Cash		
DNSAE (FAO)	10,000,000	46
DGEF (Japan)	200,000	1
FADC	6,000,000	28
Sub-total	**16,200,000**	
In-kind		
DGEF	280,000	1
Sub-total	**280,000**	
Total Co-financing	**16,480,000**	
Grand Total	**21,620,000**	**100**

1.12 Project summary

Classified among the Least Developed Countries (LDCs), the Comoros is one of the poorest countries in the world, with a gross national income per capita of US$ 840 and an annual GDP growth of 3.5% in 2014. Additionally, the population density is among the highest in Africa, with approximately 394.90 people per km^2 in 2013 and population growth rate of 2.4% in 2014.[1] Furthermore, the Comoros has high levels of poverty (45.5%) and a chronic economic deficit, and is considered a highly indebted poor country.[2]

The Comoros archipelago is made up of four islands: Grande Comore, Anjouan, Mohéli and Mayotte. At present, the sovereignty of the Union of the Comoros (hereafter referred to as 'the Comoros') is maintained in practice by all but Mayotte. Climate change is likely to adversely affect the Comoros with impacts such as i) changes in rainfall levels and patterns and the subsequent shortening of rainy seasons; ii) increased temperatures; iii) sea level rise (and subsequent salinization of critical coastal aquifers as a result of salt water intrusion); and iv) an increased frequency of climatic hazards (such as tropical cyclones, droughts, episodes of heavy rainfall and flooding). Exacerbating these climate change impacts are the inherent environmental vulnerabilities of Small Island Developing States (SIDS), including small land area, susceptibility to natural disasters, geographical isolation, limited natural resources and sensitive ecosystems. This, superimposed on existing anthropogenic practices such as the quickening pace of deforestation rates for agricultural production, threatens water security, food security, economic growth and the livelihoods of communities within the Union of the Comoros.

Comorian communities, autonomous islands' governments, and the national government presently lack the technical capacity, management capacity, physical resources and financial resources to cope with water resources management in the context of worsening climatic conditions. At the same time, the degradation of watersheds has long-term impacts on all productive sectors, leading to an exponential increase in vulnerability throughout the rural and urban landscapes in Comoros. This project will seek to address the vulnerability of communities in the Comoros to the impacts of climate change, in particular due to the rapid degradation of watersheds and river basins in all three islands, which threatens livelihoods of communities that depend on healthy watersheds. The goal of the project is to build resilience to climate change in the Comoros by rehabilitating watersheds and forests and diversifying adaptive livelihoods, using integrated watershed management[3] as an adaptive strategy.

The proposed project will build the resilience of Comorian communities to climate change through the rehabilitation of degraded watersheds through reforestation using resilient species that can adapt to climate and environmental change, the implementation of anti-erosive measures, and the establishment of community conservation zones. The project will also

[1] http://www.tradingeconomics.com/

[2] National Progress Report on MGGs (2012)

[3] Integrated watershed management is defined as "…the process of organizing and guiding land, water, and other natural resource use on a watershed to provide desired goods and services to people without affecting adversely soil and water resources. Embedded in the concept of integrated watershed management is the recognition of the interrelationships among land use, soil, and water, and the linkages between uplands and downstream areas." Excerpt from: Kenneth N. Brooks. "Hydrology and the Management of Watersheds".

develop technical and institutional capacity for sustainable forest and watershed management as an adaptive strategy at the national and local levels. To ensure long-term sustainability of the watershed rehabilitation, the project will promote the development of alternative and sustainable livelihoods in rural areas that will contribute to ensuring diversified and resilient livelihoods with minimal impact on ecosystem services.

Through these interventions, the project will lead to the following outcomes:

- Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels
- Rehabilitated and sustainably managed watersheds and sub-catchments in the project areas
- A diversified array of resilient livelihood strategies deployed by communities in the project areas

The project interventions will take place both at the national level as well as on one site per island, each representing one watershed, composed of several villages of which five in each watershed will participate in the project:

- Grande Comore (Ngazidja) island: Mdjoiezi, Mkazi, Nvouni (Mvouni), Pvanadjou (Vanadjou) and Bahani villages are located in the central area of the island within the Séréhini watershed uniting three regions involved in agriculture, fishing, tourism, handicrafts and trade namely:
  - Bambao region, where the capital of the Union of Comoros, Moroni is located,
  - Hambou region, and
  - Itsandra region.
- Anjouan (Nzwani) island: Daji (Dagi), Kiyo, Komoni, Mremani and Adda villages are located within the Nyumakele watershed in the Mremani region (southern area of the island).
- Moheli (Mwali) island: Siri-Ziroudani, Wanani (Ouanani), Hagnamouda, Hamavouna and Itsamia villages are located within the Mibani watershed in the Djando region (southern area of the island).

This project will benefit a total of 38,306 direct beneficiaries[4] in the 15 selected villages.

This project will contribute to strengthening climate resilience through the implementation of ecosystem-based adaptation approaches and their integration in key sectoral and national development strategies and policies. It will hence directly support the climate change strategic focus of the UNEP Medium-Term Strategy for the 2014-2017 period, and the achievement of the climate change adaptation Expected Accomplishment in the UNEP Programme of Work 2016-2017.

[4] This is an estimate from national consultants, on the basis of 1991 and 2003 general population and habitat censuses. The baseline study will fill in gaps in the data at the project inception phase.

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ACRONYMS AND ABBREVIATIONS

ABS	Access and Benefit Sharing
ACCE	Adapting water resources management in the Comoros to expected climate change (GEF project)
AfDB	African Development Bank
AFD	Agence Française de Développement / French Development Agency
CBO	Community Based Organisation
CEO	Chief Executive Officer
CNCD	National Committee for Sustainable Development Coordination (Comité National de Coordination du Développement Durable)
COP	Conference of the Parties
CRCCA	Enhancing adaptive capacity for increased resilience to climate change in the agricultural sector in the Union of the Comoros
CRDE	Rural Economic Development Centres (Centre Rural de Développement Economique)
CNDRS	National Centre for Scientific Documentation and Research (Centre de Documentation et de Recherche Scientifique)
CSO	Civil Society Organisation
CTA	Chief Technical Advisor
DCA	Development Control Authority
DGA	General Directorate of Handicrafts (Direction Nationale de l'Artisanat)
DGEME	General Directorate of Energy, Mines and Water resources (Direction Général de l'Energie, des Mines et de l'Eau)
DGI	General Directorate of Industry (Direction Générale de l'Industrie)
DGEF	General Directorate of Environment and Forests (Direction Générale de l'Environnement et des Forêts)
DNRH	Directorate of Fisheries Resources (Direction Nationale des Ressources Halieutiques)
DNSAE	National Strategic Directorate of Agriculture and Livestock (Direction Nationale des Stratégies Agricoles et de l'Elevage
EA	Executing Agency
EBA	Ecosystem-Based approaches to Adaptation
ECDD	Community Engagement for a Sustainable Development (Engagement Communautaire pour le Développement Durable)
EIS	Environmental Impact Statement
EOU	Evaluation and Oversight Unit
FADC	Funds for Supporting and Developing Communities
FAO	Food and Agriculture Organization of the United Nations
FRA	Forest Resource Assessment
FSP	Full-Sized Project
GDP	Gross Domestic Product
GEBs	Global Environmental Benefits
GEF	Global Environment Facility
GEFSec	Global Environment Facility Secretariat
GHG	Greenhouse Gas

GIS	Geographic Information Systems
GNI	Gross National Income
ha	Hectares
HDI	Human Development Index
IA	Implementing Agency
IC	International Consultant
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
INRAPE	National Institute of Agronomic, Fisheries and Environmental Research (Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement)
IUCN	International Union for the Conservation of Nature
IWM	Integrated Watershed Management
LDCs	Least Developed Countries
LDCF	Least Developed Countries Fund
LOI	Letter of Intent
MamWe	Autonomous Agency for Water and Energy Distribution
MAPEEIA	Ministry for Agriculture, Fishing, and the Environment, in charge of Energy, Industry and Handicrafts (Ministère de l'Agriculture de la Pêche, de l'Environnement, de l'Energie de l'Industrie et de l'Artisanat)
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MEA	Multi-lateral Environmental Agreement
MOU	Memorandum of Understanding
MTE	Mid-Term Evaluation
MTR	Mid-Term Review
NAP	National Action Plan to Combat Desertification
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NC	National Consultant
NFAP	National Forestry Action Plan
NFI	National Forest Inventory
NGO	Non-Governmental Organisation
NEP	National Environmental Policy (Politique Nationale sur l'Environnement - PNE)
NP	National Park
EAP	Environmental Action Plan (Plan d'Action sur l'Environnement - PAE)
PAPDF	Priority Action Plan for the Forestry Development (Plan d'Action Prioritaire de Développement Forestier)
PIR	Project Implementation Review
PM	Project Manager
PN-AEPA or NPDWSS	National Programme for Drinking Water Supply and Sanitation (PN-AEPA: Programme National d'Approvisionnement en Eau Potable et d'Assainissement)
PNDHD	National Programme for Sustainable Human Development (Programme national de

	développement humain durable)
PPG	Project Preparation Grant
PRGS	Poverty Reduction and Growth Strategy
PSC	Project Steering Committee
RFP	Request for Proposal
SCA2D	Accelerated Growth and Sustainable Development Strategy
SCCF	Special Climate Change Fund
SFM	Sustainable Forest Management
SGP	Small Grants Programme
SIDS	Small Island Developing State
TE	Terminal Evaluation
TM	Task Manager
TOR	Terms of Reference
UCCIA	Chamber of Commerce (Union des Chambres de Commerce, d'Industrie et d'Agriculture)
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US$	United States Dollars
VDA	Village Development Associations
WMP	Watershed Management Plan

Section 2: Background and Situation Analysis (Baseline course of action)

2.1. Background and context

1. This proposal seeks funding from the Least Developed Countries Fund (LDCF) for the Full-Sized Project (FSP) "Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods", whose main goal is to build climate resilience in the Comoros by rehabilitating watersheds and forests and diversifying (adaptive) livelihoods through Ecosystem-Based Adaptation (EBA) approaches, including integrated watershed management (IWM).

2. The project will include the following interventions: i) Strengthening the technical and institutional capacity of the Comoros for resilient integrated watershed management as an adaptive strategy; ii) Demonstrating the rehabilitation and sustainable management of watersheds; and iii) Promoting the diversification of resilient livelihood strategies deployed by communities in the project areas.

3. The project activities for the rehabilitation of watersheds and diversification of livelihood strategies will be implemented in three sites: Séréhini watershed in Grande Comore (Ngazidja), Nyumakele watershed in Anjouan (Nzwani) and Mibani watershed in Moheli (Mwali).

Geographic context

4. The Comoros is an archipelago composed of four islands and several islets located in the Indian Ocean, at the northern entry of the Mozambique Channel between Madagascar and the Eastern coast of Africa (see Figure 2.1)[5,6]. The islands, which are separated by deep submarine channels, are (from East to West): Mayotte (370 km^2), Anjouan (424 km^2), Moheli (290 km^2) and Grande Comore (1148 km^2). The total area of the three islands that form the Union of the Comoros is 1862 km^2 – Mayotte not being considered as part of the Union as it is under French administration (see "Political context" section below).

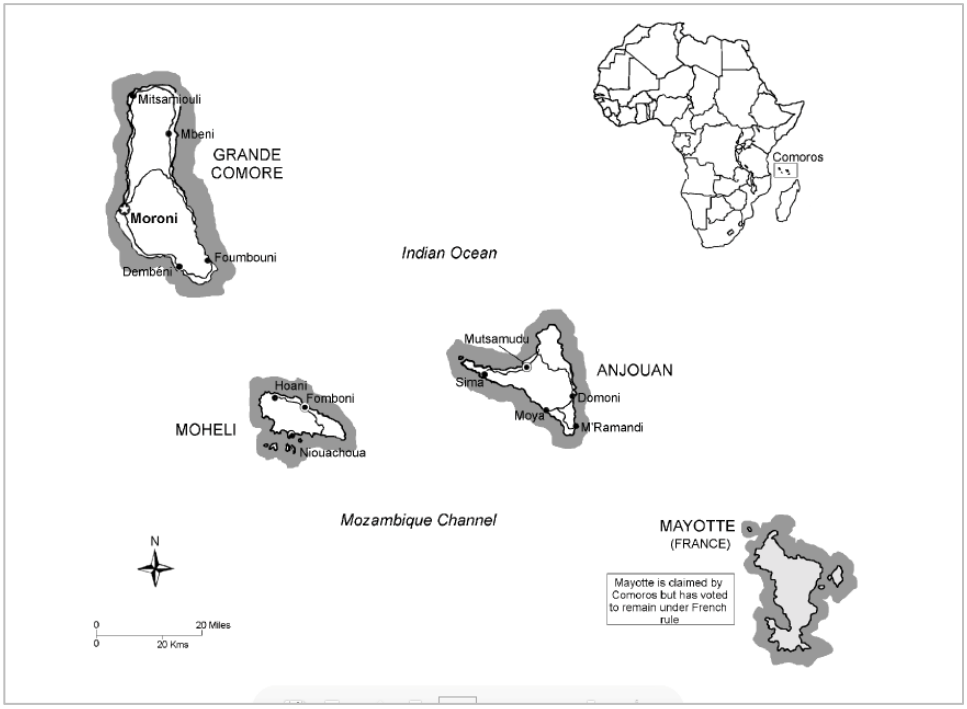
5. The islands of the Comoros (including Mayotte) are relatively young in geological terms, having been formed by volcanic activity of the last 5 million to 10,000 years approximately[7,8] and being part of a magmatic hotspot. This particularity and the various geological ages of the islands of the archipelago of the Comoros have significant implications in terms of their rock, soil, hydrological and climatic conditions. Yet, a common configuration shared by the islands due to their volcanic origin is that all coasts present steep banks, contrasted relief and fragile soils.

6. Specifically, Moheli is the oldest of the three islands that form the Union and also the lowest, rising to a maximum altitude of 790 m. The island is also accentuated with

[5] https://www.cia.gov/library/publications/the-world-factbook/geos/cn.html
[6] www.comoros-islands.com
[7] www.vliz.be/projects/marineworldheritage/Features/feature1.php?item=The%20Indian%20Ocean
[8] www.uoguelph.ca/~geology/rocks_for_crops/18comoros.PDF

deep valleys dug by numerous small rivers and is lined with a coral plateau of 10 – 60 m deep, as well as 8 small mountainous islands.[9] Anjouan is geologically younger and is characterised by steep sided mountains reaching 1595m at the summit of Mt. Ntringui. Some rivers flow down its steep flanks and deep, narrow ravines.[10,11] Finally, Grande Comore is the youngest of all islands as it only formed 10,000 years ago. As a result, it is still being reshaped by the 2361m high active volcano, Mount Karthala, which last erupted in 2007. Due to its youth and volcanic origin, Grande Comore has a very shallow and porous soil layer, resulting in the lack of any permanent rivers despite significant rainfall.[12,13] This has significant implications on the overall hydrology of the island (see "Water resources and hydrology" below) as well as on the functioning of the local ecosystems on which Comorians depend.

Figure 2.1 – Map of the Comoros Islands[14]



[9] Inventaire forestier national de l'Union des Comores 2010 (version préliminaire)
[10] www.ecddcomoros.org/comoros/geography/
[11] Inventaire forestier national de l'Union des Comores 2010 (version préliminaire)
[12] www.ecddcomoros.org/comoros/geography/
[13] Inventaire forestier national de l'Union des Comores 2010 (version préliminaire)
[14] Source: www.uoguelph.ca/~geology/rocks_for_crops/18comoros.PDF

Socio-economic context

7. The population of the Comoros was formed with the arrival of African, Indonesian, Persian, Arab and Malagasy immigrants in different proportions depending on the region. These ethnic groups have strongly mixed up, which has resulted in a great ethnic homogeneity as well as cultural richness.

8. Today the Comoros has a population of approximately 767,000 (2014 estimates)[15] with an annual population growth rate of 2,4%.[16] About 70% of the population resides in rural areas and relies on small-scale agriculture for livelihoods (e.g. rice, corn, potato, peanut, cassava, vegetables and potatoes), therefore, income generation is not very diversified. Currently, the Comoros ranks 159 on the Human Development Index, with US$ 840 GNI per capita, and 46% of the population living in absolute poverty with less than US$ 1.25 per day. In fact, a large proportion of the population relies on remittances from the Comorian diaspora (mainly in France and Mayotte), which was estimated to have sent in US$ 35.4 million in 2004.

9. Despite average growth of around 3.5% since 2014, the economy has not managed to achieve structural transformation, which would be necessary to reduce poverty and deal with unemployment among the young (more than 50% in 2014 for 15-24 year-olds)[17]. The unemployment rate has increased from 10.4% in 1995, to 13.5% in 2004, and affected 14.3% of the population in 2013.[18] Estimates for 2014 and 2015 are expected to increase, given the continued moderate growth in the last several years due to the serious energy crisis.

10. For this project, interventions will be focused on five villages, which have been selected in each of the three watersheds. The watersheds were selected on the basis of a set of comprehensive criteria that were discussed during the project preparation phase (see Appendix 16). The population distribution in the selected sites is shown in Table 2.1 below.

Table 2.1: Population distribution in the 15 selected sites (Data source: RGPH 2003)

Island	Region	Watershed	Male population	Female population	Total population
MOHELI (Mwali)	Djando	Wanani watershed	2,534	2,367	4,901
ANJOUAN[19] (Nzwani)	Mremani	Nyumakele watershed	8,688	8,868	17,556
GRANDE COMORE (Ngazidja)	Hambou-Bambao-Itsandra	Séréhini watershed	Missing data	Missing data	15,849
Total					**38,306**

[15] https://www.cia.gov/library/publications/the-world-factbook/geos/cn.html
[16] http://hdr.undp.org/en/data
[17] www.africaneconomicoutlook.org/en/country-notes/east-africa/comoros/
[18] Programme Pays pour le Travail Décent 2015-2019
[19] Missing data for Kiyo village

11. Geostrategically, the Comoros Islands are located on the main shipping route from the Indian Ocean where big oil tankers carry crude oil from the Persian Gulf to Europe and America. Economically though, the Comoros Islands are relatively isolated owing to their remoteness from major markets in Asia, Europe and America. Thus, the Comorian economy is mainly based on the primary sector (agriculture, fisheries, and livestock), which accounts for 41% of the GDP[20] as well as on three cash crops (vanilla, ylang-ylang and clove) for 90% of the country's total export. The Comorian rural populations practise two different types of agriculture: annual cultures with little or no trees associated, for example rain fed rice, cassava, peanut, potatoes and vegetables; and traditional agroforestry, that combines trees, bushes and crops into three tiers, for example: ferns and graminaceous plants (lower level soil cover); maize, taro, cassava, banana (second level crop); and fruit and citrus trees, cacao, vanilla, palm trees and some forest species (top level). There is no recent estimate of areas under each type of cultivation (see "Agriculture" section below).

Gender equity and equality in Comoros

12. Comoros has ratified the Convention on the Elimination of All Forms of Discrimination against Women and has made notable progress on gender equality and equity. The adoption of the National Gender Equity and Equality Policy (PNEEG, 2007) as well as the establishment of Gender Focal Points within each sectoral ministry have allowed the integration of gender in policies and programmes, and improved gender equality in the Comoros. Although women only hold 3% of the seats in parliament, efforts have been made to promote education for girls, and between 2000 and 2014, the ratio of girls to boys reached 0.90, 0.99, and 0.84 enrolled in primary, secondary and graduate schools, respectively[21]. The agricultural sector employs 66.9% of women (2010), involved in poultry farming, food and market garden production, as well as cash cropping and selling fish in markets. While access to land is traditionally inherited and privileged to girls according to matrilineal rule, inheritance is in reality usually shared between boys and girls, with boys sometimes obtaining two-thirds of the family inheritance according to Islamic law.[22] In terms of access to water resources, women and girls traditionally fetch water for their family and devote two hours and half each day to the detriment of education and other productive activities, such as food production.[23] Climate change will likely further impact women's and girls' livelihoods, making resources more scarce and agricultural work more difficult, leading to more food insecurity and to girls dropping out of school.[24]

Political context

13. The Comoros is known to have a long history of political and institutional instability. The country has had 20 coups or coup attempts since declaring independence from France in July 1975. Referendums were held in Mayotte at that time and the

[20] First National Communication of Comoros to the UNFCCC, 2002
[21] African Development Bank: African Economic Outlook 2015: Comoros
[22] African Development Bank: 2010 Comoros Country Gender Profile
[23] African Development Bank: 2010 Comoros Country Gender Profile
[24] SCA2D Comores 2015-2019.

population voted to remain a French territory, which, to this day, continues to be administered from France, becoming a Département d'Outre Mer in 2011. Thus, the government of Comoros has effective control of only Grande Comore, Moheli and Anjouan[25].

14. In 1997, a political crisis erupted in Anjouan and Moheli, during which both islands claimed their independence and the return of French rule. It resulted in a secessionist crisis between the two islands and Grande Comore until a confederal reconciliation arrangement called the 2000 Fomboni Accord was signed in Fomboni (the capital of Moheli). Following this, a new Constitution was adopted in December 2001, establishing the Union of the Comoros and granting considerable autonomy to each of the three islands; with each island having a president, a parliament and its own constitution, with a national government which governs all three islands[26]. If these advances have enabled the establishment of a more representative institutional structure and a more stable political environment, the administrative organization that has resulted has proved cumbersome and expensive[27]. At present, the political situation can be described as a 'federal presidential republic', whereby the President of the Comoros (currently Ikililou Dhoinine since 2011) acts as: i) the head of the government; ii) the head of state; and iii) the head of the multi-party system.

15. Although the adoption of this 2001 Constitution put an end to the 1997 political crisis, it did not introduce sustainable solutions to settle disputes between islands, and in particular conflicts between islands and the central power. Thus, much remains to be done in agreeing division of responsibilities and mandates between the Union government and the island governments on laws and policies. Furthermore, governance capacity is low as a result of repeated cycles of political crisis and instability. Institutional memory within government is also low because of the many changes in staff following changes in government.

Agriculture

16. In the Comoros, small-scale farmers dominate agricultural production. In general, each farmer supports a family of more than seven people on one to two hectares of land. Less than 1% of arable land in the Comoros is currently irrigated, rendering subsistence and small-scale farmers particularly vulnerable to environmental variability and climate change. Most arable land is already being used for agricultural purposes, and often under unsustainable exploitation systems (e.g. poor agricultural practices, including absence of crop rotation or slash-and burn[28], have reduced fertility and consequently reduced agricultural productivity). Any extension of agricultural lands as a result of population growth will increase pressure on natural resources, particularly forests (which are cut down to extend areas under agriculture) and water resources. Furthermore, poverty is endemic among small-scale farmers, with an

[25] www.ecddcomoros.org/comoros/history/
[26] Situated on Grande Comore.
[27] Analyse de la situation de la réduction des risques de catastrophes aux Comores
[28] Initial National Communication, 2002.

incidence of poverty ranging from 35% in Grande Comore to 60% in Mohéli and 64% in Anjouan[29].

17. Between 70-80% of the Comorian population are small-scale farmers. Agricultural production generates 98% of export revenue, mainly through the production of vanilla, *ylang ylang* and cloves. Seventy-five percent of these exports pay for the food imported into the country. National agricultural production meets only 40% of food needs in the country. Other crops grown in the Comoros for subsistence and for selling on a small scale include: tubers, such as cassava, sweet potatoes, tarot, and yam; vegetable cultivation, including tomatoes and eggplants; fruit production, such as mango and papaya trees, as well as pineapple, passion fruit, and breadfruit; coconut; bananas; maize and rice.[30]

18. Constraints to agriculture in the Comoros include unsolved land tenure issues following the disappearance of colonial domains and poor management of the public domain; the high cost of communication between and within islands; insularity and positioning away from the main sea routes, all of which have a negative impact on the competitiveness of agricultural exports[31].

19. According to the Comoros' Institute of Statistics, exploitable land for agricultural purposes is estimated to be 110,000 ha, corresponding to one third of the land territory of the Union of Comoros. Cultivable land that is not yet exploited is estimated to be 32,000 ha and is localized on Grande Comore and Mohéli (with none in Anjouan). Between 40,000 to 50,000 agricultural fields are currently estimated to be operational in Grande Comore (60%), Anjouan (35%) and Mohéli (5%)[32]. In Grande Comore, available land exists, but needs to be fertilized, ploughed and protected against erosion. At present, cultivated land in Anjouan is extending into forest areas, which negatively impacts healthy forest function, and damages the erosion-prone forest boundary. Deforestation is an increasingly destructive problem in Anjouan.

20. In Grande Comore, the following villages located in the Séréhini watershed have been selected, upon consultation with local government and rapid ecological and socio-economic vulnerability assessment: Mdjoiezi, Mkazi, Nvouni (Mvouni), Pvanadjou (Vanadjou) and Bahani. In these villages, the five main crops include bananas, tomatoes, cassava, peppers and sweet potatoes. The following factors have been identified during the field missions of the project preparation phase as constraints to agricultural production (in addition to foreseen climate change):
    a. The presence of invading species, such as Desmodium
    b. Lack of access to phytosanitary products and veterinary services

[29] Rapport National sur le Développement Humain-Insécurité alimentaire et vulnérabilité, 2003-2004 (Union des Comores/ SICIAV/FAO/UNDP, page 29).
[30] Actualisation de la politique agricole et formulation d'une stratégie sur le court à long terme pour le secteur comme vecteur pour lutter durablement contre l'insécurité alimentaire aux Comores (Avril 2014)
[31] www.fao.org/nr/water/aquastat/countries_regions/COM/COM-CP_fra.pdf
[32] Rapport National sur le Développement Humain-Insécurité Alimentaire et Vulnérabilité, Union des Comores, SICIAV, FAO, UNDP, 2003-2004, p.29.

c. Rudimentary means of production and techniques (hoe, machete, axe and spade)
d. No access to water for irrigation
e. Difficult access to quality seed supplies
f. No postharvest conservation or transformation techniques
g. Low technical capacity to manage soil fertility
h. Animal divagation
i. Rain season disruption

21. Table 2.2: Population composition of the five townships in Serehini Watershed[33]:

GRANDE COMORE	MALE	FEMALE	TOTAL
Pvanadjou (Vanadjou)	Missing data	Missing data	2,013
Bahani	Missing data	Missing data	1,399
Nvouni (Mvouni)	Missing data	Missing data	5,270
Mkazi	Missing data	Missing data	6,114
Mdjoiezi	Missing data	Missing data	1,053
Total population in selected sites in Moroni region (Serehini watershed)	Missing data	Missing data	**15,849**

22. In Anjouan, the selected villages within the Nyumakele watershed are Daji (Dagi), Kiyo, Komoni, Mremani and Adda. In these villages, the five main crops include banana, cassava, taro, sweet potatoes and pigeon pea (ambrevades). The following factors have been identified during the field missions of the project preparation phase as constraints to agricultural production:
a. Difficult access to quality seed supplies
b. Land degradation
c. Lack of access to water
d. Drought
e. Land tenure issues

Table 2.3: Population composition of the five selected villages in Nyumakele Watershed[34]

ANJOUAN ISLAND	MALE	FEMALE	TOTAL
Mremani	2755	2721	5476
Komoni	1403	1522	2925
Daji (Dagi)	1114	1098	2212
Adda-Daoueni	3416	3527	6943
Kiyo	Missing data	Missing data	Missing data

[33] These are estimates from http://fr.getamap.net/cartes/comoros/grande_comore/. Missing data will be searched during the baseline study.

[34] RGPH, 2003

Total population in selected sites in Mrémani region	**8688**	**8868**	**17556**

23. Finally, the selected villages for Moheli Island within the Mibani watershed are Siri-Ziroudani, Wanani, Hagnamouda, Hamavouna and Itsamia. In these villages, the five main crops include banana, cloves, taro, coffee and oranges. The following factors have been identified during the field missions of the project preparation phase as constraints to agricultural production:
    a. Reduction in soil fertility
    b. Rain season disruption
    c. Harvest theft
    d. No access to quality seed supplies or other inputs
    e. No irrigation system
    f. Difficult transport of products from field to markets

Table 2.4: Population composition of the five selected villages in Mibani Watershed[35]

MOHELI ISLAND	**MALE**	**FEMALE**	**TOTAL**
Hagnamouda	293	283	576
Hamavouna	397	365	762
Itsamia	227	179	406
Siri-Ziroudani	620	620	1240
Wanani (Ouanani)	997	920	1917
Total population in selected sites in Wanani region	**2534**	**2367**	**4901**

Land tenure

24. Agriculture in the Comoros is constrained by land tenure issues in terms of two different aspects[36]:
    a. Increasing population in the three islands, especially in Anjouan, puts pressure on land tenure and contributes to the high number of farmers without land who therefore move to the other two islands and even migrate to Mayotte. Potential farmland per capita (including both cultivated and not yet exploited) is respectively 0.2; 1; and 0.32 ha/capita in Anjouan, Grande Comore and Moheli (FAO, 2011).

    b. The fact that three tenure regimes (i.e. Colonial, Sharia (Muslim) and customary laws) are applied on an equal basis creates confusion and fragmentation in enforcement. This results in lack of willingness to invest in the protection and improvement of the arable lands by the owners and a weak tenure security. Heavily utilized soils surrounding villages are commonly

[35] Source : http://comoresdroit.centerblog.net/394-Cartographie-electorale-des-primaires-du-7-novembre-2010c
[36] Actualisation de la politique agricole et formulation d'une stratégie sur le court à long terme pour le secteur comme vecteur pour lutter durablement contre l'insécurité alimentaire aux Comores (Avril 2014)

degraded, and the remaining functional arable land has become a source of territorial conflict between communities. As a result of land demand, communities have expanded their land use in an unsupervised manner, and land encroachment upon State-owned land/forest since 1975 has become of governmental concern[37].

25. The National Agricultural Policy as well as the National Action Plan to Combat Desertification in the Comoros, which are currently being implemented, contain common objectives and activities to clarify the tenure regime status of agricultural land in order to secure land tenure for farmers and guarantee farming activity through the promotion of sustainable land management.[38]

Water resources and hydrology

26. Annual mean rainfall is over 1,000 mm in the three islands with maximum recorded rainfall of 5,888 mm in Grande Comore, and over 3,000 mm in Anjouan and Moheli. However, the rainfall varies considerably from one island to another and from one region to another within each island. The principal sources of water in the Comoros are rainwater collected in cisterns, river water and coastal aquifers, and despite relatively abundant rainfall, the supply of water is currently insufficient to meet the needs of the Comorian population. Thus, water supply has become an issue in some parts of the country, with declining water quality, and low levels of water recharge in rivers due to rapid run-off.[39]

27. The drainage system of the Comoros varies from one island to another due to their geological age and soil composition. Whereas Anjouan and Moheli have permanent surface water bodies (rivers), Grande Comore does not, as 95% of rainfalls infiltrate the soil due to its high permeability. Rivers on Anjouan and Moheli are numerous and permanent, but most are dry or in the process of drying up because of the massive and uncontrolled deforestation of watersheds and headwaters (see Figures 2.2, 2.3 and 2.4 for each island's watershed map). There are also underground aquifers found on the three islands, but they have not been extensively studied with the exception of Grande Comore where part of the aquifer is exploited.[40]

Figure 2.2: Map of the selected sites on Grande Comore island, showing watersheds and high flooding risk zones (Pvanadjou and Bahani, two of the five villages, are located outside the map, please refer to Appendix 20 for more specific location of the selected sites)[41]

[37] UNEP, 2002, "Atlas des ressources côtières"
[38] Plan d'action national pour la lutte contre la désertification aux Comores PAN/LCD 2013. www.unccd.int/ActionProgrammes/Comores-fre-2013.pdf
[39] Plan d'Aménagement de la Zone Bandasamlini-Sangani-Diboini, 2013. Plan d'aménagement de la région de Nioumakélé-bas, 2013. Both studies were undertaken in the context of the ACCE project and provide details of land and water degradation in those areas.
[40] UNEP, 2002, "Atlas des ressources côtières"
[41] Mansourou, A., PNUD, (2012) Evaluation de vulnérabilité aux risques d'inondation en Union des Comores

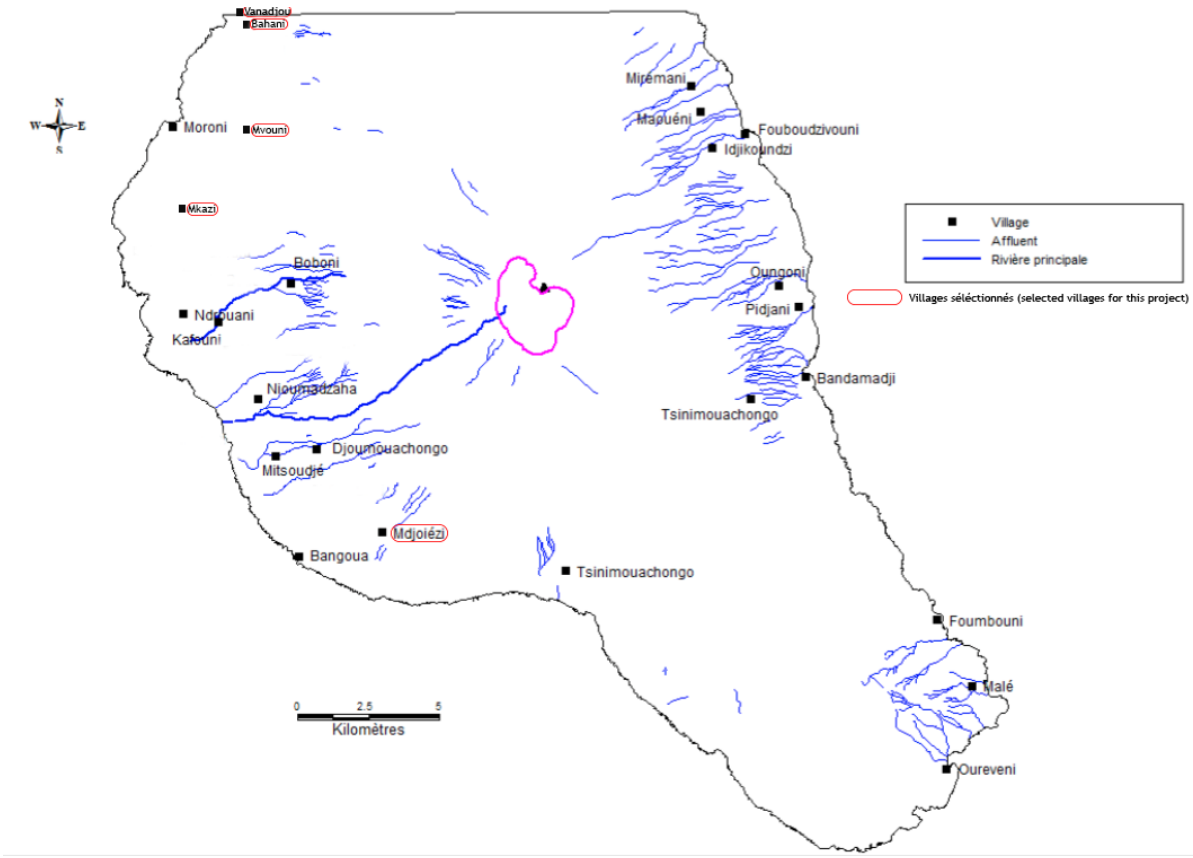


Figure 2.3: Map of selected sites on Anjouan island, showing watersheds and high flooding risk zones (please refer to Appendix 20 for more specific location of the selected sites)

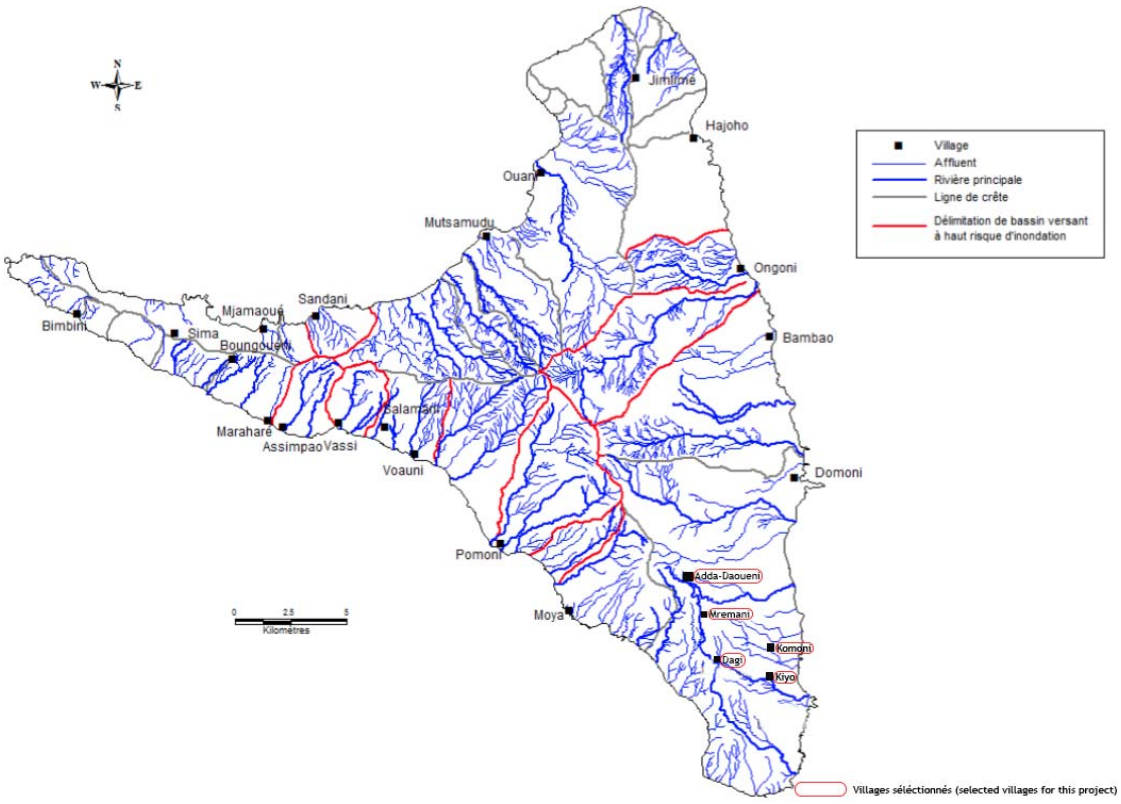
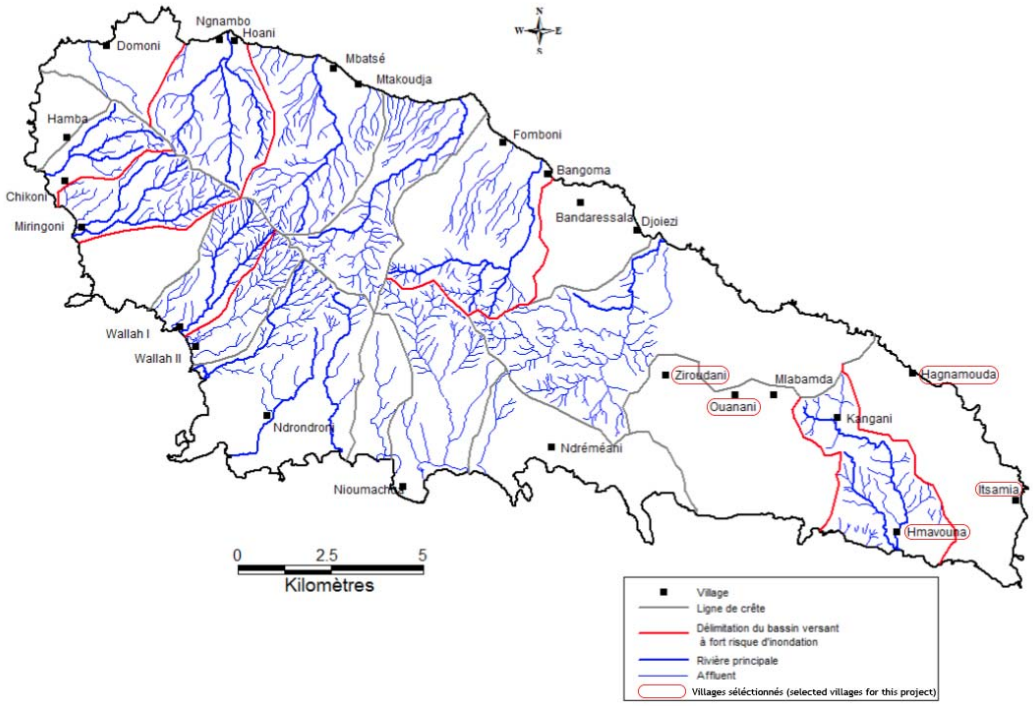


Figure 2.4: Map of selected sites on Mohéli island, showing watersheds and high flooding risk zones (please refer to Appendix 20 for more specific location of the selected sites)



Ecosystems, land use and protected areas

28. Generally speaking, the Comoros is characterised by dense vegetation, usually green and very diverse, which varies depending on the type of soil and microclimate that are numerous on the islands. The vegetation is favoured by abundant rainfall, as seen above, but is generally declining due to a number of factors as will be outlined further below.

29. The islands harbour rich flora and fauna, as well as a high rate of endemism, with key species of global significance such as the coelacanth (*Latimeria chalumnae*) and the Livingstone bat (*Pteropus livingstonii*). For instance the Livingstone Bat is considered to be essential in the regeneration of forests.[42] The Comoros Islands are also part of the Madagascar biodiversity hotspot, among with other islands in the Western Indian Ocean, an area that is considered one of the five 'hottest hotspots' globally because of the extremely high number of species found there and nowhere else on the planet[43,44].

30. The marine and coastal environments are also very rich, characterized by mangroves, coral reefs and marine seagrass containing exceptional and diverse marine life. Yet, the natural potential of the Comoros is still poorly understood, and many species are threatened with extinction because of the widespread and continuous deterioration of the environment.

31. The combined effects of agricultural expansion, increased urbanization, and the lack of appropriate resources and management have had significant negative impacts on natural resources in the Comoros, especially on natural forests.

32. The Comoros was once covered with important forest areas. Natural forests covered an area of 31,000 ha in the three islands in 1951, corresponding to approximately 14% of the total land area. Records indicate that in 1983, natural forests were reduced to 12,375 ha and that in 2010, they remained only in higher altitude areas, with an estimated forest cover of 3,000 ha in the three islands, as noted in the Priority Action Plan for Forestry Development (PAPDF) adopted in 2011[45]. However, this data relied on the Global Forest Resources Assessment (FRA) from 2010[46], which was established through linear and extrapolation techniques using forest data and aerial photos from 1949, 1974 and 1984, characterized by a weak accuracy due to the assumption that deforestation happened at a constant rate.

33. The National Forest Inventory (NFI) of 2010 revealed a much larger forest cover (28% including forests and other wooded lands), leading the FRA 2015 to adjust the data according to the National Forest Inventory.[47] The data still slightly vary among these sources, as well as when compared with a study published in 2014 by the Community Commitment to Sustainable Development project (*Engagement Communautaire pour*

[42] 5ème rapport national sur la diversité biologique des Comores, Juin 2014
[43] www.cepf.net/where_we_work/regions/africa/madagascar
[44] www.ecddcomoros.org/comoros/biodiversity/
[45] Plan d'action Forestier, 2011, Gouvernement des Comores
[46] FRA 2010: http://www.fao.org/docrep/013/i1757f/i1757f.pdf
[47] FRA 2015 for Comoros: http://www.fao.org/3/a-az188f.pdf

le Développement Durable – ECDD), ranging from 19.9% to 25% of forest cover from 2010 to 2015 (NFI 2010, ECDD 2014 and FRA 2015). These different estimates are mainly due to the various definitions used for different types of forests (e.g. "natural", "degraded", "other wooded lands"). For this project, data from ECDD and FRA are used.

Table 2.5: Extent of forest from 1990 to 2015 in hectares in the Comoros, according to the Global Forest Resources Assessment[48]

Years	**1990**	**2000**	**2005**	**2010**	**2015**
Forest area (ha)	49,000	45,000	42,000	39,000	37,000
% of total land area	26.3	24.2	22.6	21	19.9

Table 2.6: Forest cover according to the Global Forest Resources Assessment (2015)

	Area (ha)	**% of total land area**
Primary forest	8,000	4.3
Other naturally regenerated forest	26,000	14.0
Planted forest	3,000	1.6
Total Forest	**37,000**	**19.9**
Total Country Area	186,000	

34. The FAO 2011 estimates of land use in the Comoros indicate that 20.7% of the land area is covered with forests, which was further corroborated by the ECDD study published in 2014 on the land cover mapping of the Comoros, estimating forest cover of 22.2% (natural and degraded).[49] The ECDD project was aimed at developing a model for community landscape management, integrating improved livelihoods and the sustainable management of soil, water, forest resources and biodiversity. Using aerial photos and ground-truthing data from 2010 for each of the three islands, the ECDD shows that Moheli has the most intact remaining area of natural forest (over 12% of its land area), with field surveys revealing tracts of good quality old growth forest. For Grande Comore, given the size of the island, there is relatively little continuous natural forest left (8% natural forests and 18% degraded forests). The remaining forest is in large part restricted to high altitudes far from human settlements. Anjouan has the least remaining area of forest with 7% of natural forests and 14% of degraded forests, all located in the highlands in areas too steep to be accessible to humans.

35. The 2014 study released by ECDD reveals the following land class areas on all three islands based on GIS-data acquired through aerial photos and ground-truthing data in 2010.

[48] FRA 2015 for Comoros: http://www.fao.org/3/a-az188f.pdf

[49] ECDD, BCSF & Durrell (February 2014). Land Cover Mapping of the Comoros Islands: Methods and Results. Lead author: Katie Green.

Table 2.7: Land class areas on all three Comoros Islands[50]

Grande Comore (south)	Area (km^2)
Natural Forest	86.29
Degraded Forest	182.72
Agroforestry	148.60
Non-Forest	480.64
Mangrove	0.07
Montane Dry Vegetation	9.61
Inland Water	0.19
Volcanic Rock/Sand	69.96
Urban	40.76
All classes	**1018.85**

Anjouan	Area (km^2)
Natural Forest	29.56
Degraded Forest	59.13
Agroforestry	138.25
Non-Forest	173.56
Urban	20.36
All classes	**420.86**

Mohéli	Area (km^2)
Natural Forest	25.10
Degraded Forest	29.27
Agroforestry	86.34
Non-Forest	55.89
Mangrove	1.28
Inland Forest	0.18
Urban	5.62
All classes	**203.68**

36. This reduction in natural forest cover is believed to be largely attributable to the expansion of agriculture at the expense of forested areas, and more recently, to the expanding urbanization, which also encroaches on remaining forests, as will be discussed further in Section 2.3.

37. Land degradation, which is accelerated by climatic variability, severely affects food security and livelihoods[51] in the Comoros. Poor agricultural practice (including absence of crop rotation and ploughing[52]) have reduced fertility and consequently reduced agricultural productivity. Approximately 65,335 ha of agricultural lands (57,5%) are considered degraded. There are estimated to be 33,000 ha of degraded soils (50%) in Grande Comore, 24,200 ha (65%) in Anjouan and 8,125 ha (52%) in Mohéli[53]. Other key sectors of development are also impacted by land degradation, such as cattle breeding, reef fisheries (destruction of fish habitats via the flow of sediments into the ocean), drinking water and tourism (deterioration of ecosystems and reduced numbers of indigenous species of fauna and flora).

38. With regards to conservation and biodiversity protection efforts on the islands, the government of the Union of the Comoros has implemented many initiatives, which include the following: the development of sustainable land management capacity; registration of land and the creation of digitized cadastres; the ongoing establishment of seven terrestrial and marine protected areas covering an area of 80,000 ha (since 2014) – three marine areas (42,000 ha) and four terrestrial areas (38,000 ha); the development of seven forest reserves for the protection of the Livingstone bat; the development of the management plan of the Moheli marine park (the first protected area in the Comoros established in 2001); the creation of three community reserves; the development of 33 sustainable development plans and conservation action plans (PAC) of other endangered species; and the development and adoption of integrated management plans for coastal areas.[54]

[50] ECDD, BCSF & Durrell (February 2014). Land Cover Mapping of the Comoros Islands: Methods and Results. Lead author: Katie Green.
[51] The reduction in yield results in less food and revenue for the rural farming community.
[52] INC, 2002.
[53] Dernier Rapport d'évaluation, Gestion Durrable des Terres, 23 mars 2014 ; 2ème communication nationale
[54] 5ème rapport national sur la diversité biologique. 2014

39. Furthermore, as part of the Priority Action Plan for Forestry Development (PAPDF) adopted in 2011, a specific project was proposed to contribute to the sustainable development of the Union of the Comoros by ensuring the conservation of its natural resources and its biodiversity (see Section 2.4 for more details). Some of the actions planned under this project are addressing the need to strengthen the national protected area management capabilities.[55]

Energy

40. The insularity and small size of the Comoros Islands make the country particularly disadvantaged in terms of development and very vulnerable because of its fragile environment, limited resources and relatively small economy. Independent energy infrastructures in each of the islands of the archipelago also add an additional constraint for an effective management of the electrical system.[56]

41. The power sector is going through an energy crisis in the Comoros, due to the structural problem of exorbitant generation costs and inefficient organization of the sector. It has the highest rate of energy loss and the lowest cost recovery rate of all African countries. It has been estimated that in 2015, 48% of the electricity generated in the Comoros is lost and only 33% of energy sold is actually paid for. The urgency of the situation is reflected in the African Development Bank's decision to focus solely on the energy sector in its 2011-2015 Comoros country strategy.[57]

42. Overall, most of the energy needs in the Comoros are met through the use of fuel wood and oil products, and two-thirds of those needs are met with the use of biomass. As such, deforestation for firewood (and construction materials) is increasing, and it was reported in 2013 that nearly 78% of households in Comoros used fuel wood as their main source of energy.[58] Apart from domestic use, fuel wood is also used by the industry for the extraction of the essential oil of ylang-ylang. Thus, it is estimated that 500 ha of forest is cleared every year for energy and agricultural production, and according to current trends, all forested land will have disappeared within 15 years.[59] In 2003, 10.5% of the electricity came from hydropower, while 89.5% came from fossil fuel sources.[60]

General climatic conditions

43. The climate in the Comoros is typically that of a tropical oceanic country, characterized by two seasons: a warm and humid rainy season from November to April with average temperatures of 27ºC, and a cool and dry season, from June to September, with average temperatures of 24ºC. Within this general framework, the Comoros is known to have tropical humid and tropical arid mesoclimates.

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[55] Plan d'action Forestier, 2011, Gouvernement des Comores
[56] Élaboration d'une stratégie sectorielle nationale – Énergie aux Comores. AETS Consortium. 2013
[57] www.afdb.org/en/news-and-events/article/tackling-the-challenges-of-the-current-energy-crisis-in-the-comoros-14078/
[58] Elaboration d'une stratégie sectorielle nationale Energie aux Comores (Document 2.2 Stratégie sectorielle à 20 ans, Rapport final, 2013) ; FAO, Appui au programme forestier national, 2009
[59] Plan d'Action Forestier, 2012
[60] http://www.ifdd.francophonie.org/reseaux/hydro_quebec/pays_et_entreprises/afrique/comores/comores.html

44. Given its overall geographical location and climate conditions, the Comoros is hit almost annually by natural disasters such as cyclones, droughts, epidemics, tornadoes, brush fires, tidal waves, floods, landslides, volcanic eruptions and risks related to the presence of an active volcano (earthquakes), and finally, major accidents, such as oil spills or shipwrecks, all of which severely affect the livelihood of its inhabitants.

Observed and predicted climate change

45. As noted in the Comoros' National Adaptation Programme of Action (NAPA) and UNFCCC National Communications, an increase in annual temperatures of around 1°C has been noted over the last thirty years, as well as a shortening of the rainy season from six months to two to three months and an increase in frequency of severe rainfall events and flooding. A decrease in river flows has also been noted as well as an earlier drying of rivers at the end of the rainy season, attributed to the degradation of watersheds.[61] Historical observation has shown a trend towards the increase of extreme meteorological phenomena during the last thirty years.[62]

46. Future climate change is likely to increase the frequency of storms and their severity, exacerbate climate variability and increase the rapidity of sea-level rise. Values shown in Figures 2.5 and 2.6 are anomalies relative to the 1970-1999 mean climate for monthly precipitation and mean temperature under three different emissions scenarios (SRES B1; SRES A2; SRES A1B). Climate change projections for the Comoros include a decline in rainfall of between 2 and 14% during the dry season by 2090.[63] While projections of mean annual rainfall vary from one model to the next, ranging from -15% to +39%, seasonal projections show more accurate projections with decreases in rainfall from June to November and increases from December to April (see reference for seasonal projections graph). As for temperature, projections include an increase in the mean annual temperature of between 0.8 and 2.1°C by 2060, and of 1.2 to 3.6°C by 2090, and an expected 20 cm rise in sea level by 2050.[64]

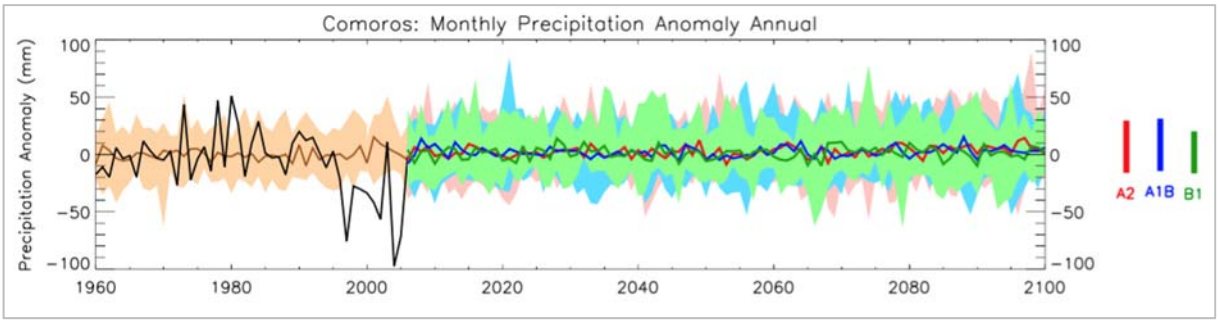


Figure 2.5: Monthly precipitation anomaly annual in the Comoros from 1960 to 2100

[61] See for example Watershed management field manual, T.C. Sheng, FAO, 1990.
[62] http://unfccc.int/resource/docs/napa/com01e.pdf
[63] McSweeney, C., New, M. & Lizcano, G. UNDP Climate Change Profiles: Comoros. http://country- profiles.geog.ox.ac.uk
[64] McSweeney, C., New, M. & Lizcano, G. UNDP Climate Change Profiles: Comoros. http://country- profiles.geog.ox.ac.uk

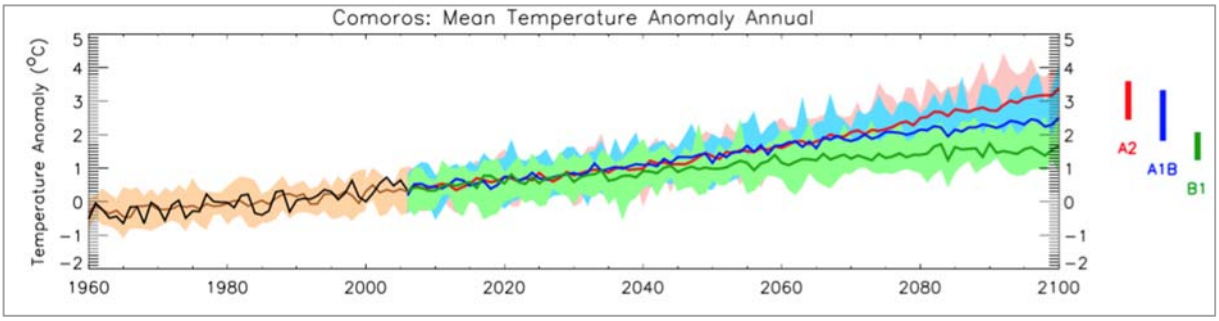


Figure 2.6: Mean temperature anomaly annual in the Comoros from 1960 to 2100

Black curves show the mean of observed data from 1960 to 2006, Brown curves show the median (solid line) and range (shading) of model simulations of recent climate across an ensemble of 15 models. Colored lines from 2006 onwards show the median (solid line) and range (shading) of the ensemble projections of climate under three emissions scenarios. Colored bars on the right-hand side of the projections summarize the range of mean 2090-2100 climates simulated by the 15 models for each emissions scenario.[65]

Observed effects of climate change

47. Studies conducted in Anjouan and Moheli during the first National Communication (2002)[66] have concluded that out of the 40 permanent river basins that used to exist in the 1950s, merely 10 remain today, and most of those dry up in the dry season, leading to a reduction in water availability for drinking, irrigation and hydro-electricity production. This increasing aridity is also marked by an agricultural water deficit that can last up to 6 months; these phenomena are also confirmed in the case of Grande Comore.

48. In addition to prolonged droughts, the three islands of the Comoros also suffer from intense flooding episodes during the rainy season. The recent floods of April 2012 were characterized by heavy rainfall, six times what was normally observed at this period of the year, hence impacting agriculture and further degrading forests.[67]

49. Other observed effects of climate change include cyclones and tropical storms. Between 1910 and 1990, the Comoros went through 40 cyclones, with heavy consequences on the population and infrastructure.[68]

Predicted effects of climate change

50. Climate change will have negative effects on the Comoros' main socio-economic sectors. This section describes the impacts that are likely to be faced by each sector under predicted climate change conditions.

51. Climate change is expected to affect the **agricultural sector** in the following ways: it is expected that the increase in air temperature combined with high intensity rainfall

[65] McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Comoros. Available: http://country-profiles.geog.ox.ac.uk/ [Accessed 14 December 2015]
[66] Abdou, Soimadou, Étude de vulnérablité dans le secteur forestier, 2005.
[67] Mansourou, A., 2013, Contribution à la gestion des risques de catastrophes naturelles: cas des inondations aux Comores, Université Senghor.
[68] Mansourou, A., 2013, Contribution à la gestion des risques de catastrophes naturelles: cas des inondations aux Comores, Université Senghor.

events will contribute to accelerating the process of soil erosion in the Comoros, given the fragility of the soil, and will lead to a decrease in agricultural production. Crops cultivated in the open field system would be the most vulnerable to climate change, given the lack of vegetation and forest cover of such systems of production. The systems that feature mixed cropping (traditional agroforestry and cultivation under natural forest cover) would resist climate change better. Small coastal plains where monocultures are found will be threatened by underground and surface salt-water intrusion. Those coastal monocultures, such as cash-cropping estates cultivating coconut palm and ylang-ylang, as well as clove and vanilla cultures (grown in the lowlands), are central to Comoros' economy. Given their economic importance, any loss of earnings resulting from a decrease in production and export would severely impact the livelihoods of Comorians and the Comorian economy.

52. These current and anticipated climate change effects have impacts on **watersheds and other ecosystems,** and on livelihoods. For example, baseline vulnerabilities created by accelerated declines in soil fertility have been noted in various parts of the country, which has had an impact on agricultural yields in highlands and low-lying areas[69]. As a result of this declining fertility and suitability for cropping, many farmers have reverted back to bush fire for land clearing, leading to further degradation of upper watersheds. With a high level of precipitation, the intensity of which may be magnified by climate change, rapid run-off has created further erosion, exacerbating the need for land clearing.

53. The supply of **water** is currently insufficient to meet the needs of the Comorian population. The principal sources of water in the Comoros are: rainwater collected in cisterns, river water and coastal aquifers. Negative climate change impacts such as rainfall variation and decline, mean annual temperature increases and climate-induced hazards will exacerbate the shortage of water supply and water quality, both of which are already affected by inadequate management of watershed resources and deforestation.

54. Rainfall variations will also continue to impact the **energy sector** in terms of hydroelectricity generation due to both prolonged drought and frequent flood events, which will in turn increase more dependence on wood fuel in rural communities, further degrading forests.

55. Climate change impacts will also affect the **health sector**. Extreme climate events such as floods will not only promote the spread and incidence of malaria, but also increase the occurrence of waterborne diseases, such as cholera, diarrhea and typhoid. Drinking water will also be affected as a result contamination due to the flooding of supply networks. Furthermore, prolonged droughts will also continue to increase food insecurity, thus further escalating malnutrition. Finally, in times of extreme floods,

[69] Plan d'Aménagement de la Zone Bandasamlini-Sangani-Diboini, 2013. Plan d'aménagement de la région de Nioumakélé-bas, 2013. Both studies were undertaken in the context of the ACCE project and provide details of land and water degradation in those areas.

access to villages and to their hospitals may be more difficult due to roads blocked by landslides, damages to the roads in turn impacting the **transport sector**.

The problem to be addressed in the project

56. This project will seek to address the vulnerability of rural communities in the Comoros to the impacts of climate change, due partly to the rapid degradation of watersheds and river basins in all three islands, which is expected to be exacerbated by increasing variability of rainfall intensity, drier periods and droughts as well as temperature increases. These dynamic changes threaten the livelihoods of communities that depend on healthy watersheds. The degradation of watersheds has long-term impacts on all productive sectors, leading to an exponential increase in vulnerability throughout the rural and urban landscapes in Comoros.

57. National institutions and local communities have low technical capacity in terms of climate change adaptation and know-how to address these threats. Other barriers include lack of technical staff at the central and island levels and particularly in rural areas, lack of finance, weak coordination between government ministries and island authorities and weak legal enforcement. Given the projected climate change risks for the country and the impacts on development sectors noted above, development investments made by the government and donors in the project regions are likely to be undermined if climate change risks are not integrated into the design of development investments.

2.2. Global significance

58. The proposed project will build the resilience of Comorian communities to climate change through the rehabilitation and reforestation of watersheds through the use of resilient species that can adapt to climate and environmental change. It will develop technical and institutional capacity for sustainable forest and watershed management at the national and local levels. To ensure long-term sustainability of the rehabilitation, the project will also promote the development of alternative and sustainable livelihoods in rural areas that will contribute to ensuring diversified and resilient livelihoods with minimal impact on ecosystem services.

59. In addition to building adaptive capacity for addressing negative climate change impacts, this project will also contribute to global environmental benefits such as conserving biodiversity, preventing land degradation and mitigating climate change. Environmental benefits will be sustained through the island-based intersectoral platform to replicate climate-based integrated watershed management (Component 2) in other regions, therefore building a body of evidence that can be used for long-term monitoring of the environment.

60. The Comoros enjoys a large diversity of plants and an important rate of endemism, which make it a high priority area for conservation of global biodiversity (WWF and IUCN, 1995). The uniqueness of the Comoros' biodiversity is highlighted by the high rates of endemism for some taxa. The global endemism rate for flora in the Comoros is estimated at 33 per cent, and 50 per cent for the orchid family. Some of the wildlife

impacted by climate change includes the Comoro Flying Fox, the Comoro Rousette, the Scops-Owl and the Moheli Brush Warbler, among others. The specific endemism rate for birds has been estimated at 25 per cent, while mammal endemism rate ranges around 14 per cent. The project (Component 2) will protect and rehabilitate forest ecosystems and the very unique wildlife that inhabits the islands of the Comoros. Similarly, the rehabilitation of watersheds will reduce the pollution of lands and water supply, which have been impacting riverine and marine animals. The project interventions protecting watersheds and rehabilitating land and forests will lead to the conservation of globally significant biodiversity.

61. Watersheds rehabilitation and reforestation in the three islands of the Comoros will contribute towards global and regional climate change mitigation with 273,000 trees planted over 3,500 ha of the three islands, increasing carbon sequestration.

62. Finally, sharing experiences and lessons learned from the project will not only inform similar actions in other countries, especially small island developing states, but also contribute to the knowledge base and the global understanding on how watershed rehabilitation and livelihoods diversification can succeed as strategies to adapt to climate change.

2.3. Root causes and barrier analysis

2.3.1 Root causes

Geographic location

63. Its geographic location, coupled with the topography and geomorphology of the islands, make the Comoros highly sensitive and vulnerable to climate change impacts. Indeed, all coasts present steep banks, contrasted relief and fragile soils due to the volcanic origin of the three islands, which emphasize the pressure on land for agriculture.

Political and institutional instability

64. Years of political instability and conflicts within the country have nurtured a lack of confidence in government structures. The lack of political stability exacerbates the negative impacts of climate change. The lack of coordinated and consistent policies and the insufficient clarity on the division of responsibilities and mandates between the Union and island governments, mean that opportunities are lost to integrate climate change considerations in development and sectoral policies and to legislate effective adaptation interventions. With competing - and at times conflicting – mandates, government institutions are unable to coordinate the actions needed to mitigate the negative impacts of climate change.

Poverty and agricultural livelihoods

65. Classified among the Least Developed Countries (LDCs), the Comoros is one of the poorest countries in the world, with a gross national income per capita of US$ 840 and an annual GDP growth of 3.5% in 2014. Additionally, the population density is among

the highest in Africa, with approximately 394.90 people per km^2 in 2013 and population growth rate of 2.4% in 2014.[70] Extreme poverty in the rural areas has led communities to intensify their encroachment on forests for expansion of agriculture, which itself leads to a vicious cycle of degrading watersheds and declining productivity.

66. Unsustainable agricultural practices are triggered by several underlying factors, including population pressure on land tenure and lack of equipment. These factors result in inappropriate use of land, including the conversion of steep land to cropland, the absence of crop rotation, and ploughing, and subsequently reduce fertility and agricultural productivity. In addition, the current and anticipated climate change effects have impacts on watersheds and on livelihoods. For example, accelerated declines in soil fertility have been noted in various parts of the country, which has had an impact on agricultural yields in highlands and low-lying areas.[71] As a result of this declining fertility and suitability for cropping, many farmers have reverted back to bush fire for land clearing, leading to further degradation of upper watersheds. With a high level of precipitation, rapid run-off has created further erosion, further exacerbating the need for land clearing. Water supply has become an issue in some parts of the country, with declining water quality, and low levels of water recharge in rivers due to rapid run-off.[72]

67. Small farm size creates disincentives for local investments into ecological restoration and the maintenance of ecological services. One individual unit averages 0.25 to 2.00 hectares and there is a severe lack of farm equipment. Farmers use mostly hoes, bush knives or machetes for their work, which makes it labor-intensive and difficult to adapt to changes. The use of agricultural inputs is very small and most farming is done without the use of any fertilizers or phyto-sanitary products. Negative impacts of climate change on production would be severe given the small scale of farms and the inability to insulate their economic activities with technological fixes.

68. Livelihoods remain based on traditional crops, and little efforts have yet been made to diversify livelihoods in rural areas. This highlights their vulnerability particularly in light of potential climate constraints on production in the mid- to long-term.

Energy needs

69. Most of the energy needs in the Comoros are met through the use of fuel wood and oil products – two-thirds of those needs are based on biomass. As such, deforestation for firewood (and construction materials) is increasing, and it was reported in 2010 that nearly 74% of households in the Comoros used fuel-wood as their main source of energy[73]. The energy sector in the Comoros is currently in crisis and represents the major constraint to the country's socioeconomic development due to its high power

[70] http://www.tradingeconomics.com/

[71] Plan d'Aménagement de la Zone Bandasamlini-Sangani-Diboini, 2013. Plan d'aménagement de la région de Nioumakélé-bas, 2013. Both studies were undertaken in the context of the ACCE project and provide details of land and water degradation in those areas.

[72] Id.

[73] FAO, Appui au programme forestier national, 2009

deficit. Indeed, the country has the highest rate of energy loss among all African countries: in 2015, the Energy Ministry published statistics indicating almost inexistent production level, with 48% of the generated electricity lost, only 33% of energy sold actually paid for and 80% of the country in darkness.[74] The reliance on only one source of energy contributes to the energy crisis and cannot possibly meet the energy needs of the whole country. An energy master plan on diversifying energy sources with renewable energies, such as solar and geothermal is under process to meet the country's needs in a sustainable manner.

Land tenure

70. The State owns most of the agricultural land in the Comoros, which has been known to lead to misuse. For example, in some project sites, the Army practices intensive logging in order to sell wood and coal as an additional income. Although village communities tend to question the State ownership of the occupied lands, because the army represents the State, there is little control of the army's actions, and different ministries have to date failed to come to an agreement on the enforcement of logging laws.

71. The fact that three tenure regimes (i.e. Colonial, Sharia, and customary laws) are applied on an equal importance also creates confusion and fragmentation in enforcement[75]. This lack of clarity on property rights often leads to land abandonment as soon as land becomes less productive, with further clearing for agricultural expansion involving total deforestation and burning. This also results in a lack of willingness on the part of producers to invest in the protection and improvement of the arable lands, which promotes unsustainable agricultural techniques and deforestation. There is no disincentive to abandoning land, and no clear economic incentive to clarifying land ownership. The Government itself has not yet come to a clear policy in this regard.

2.3.2 Barriers

Limited human capital at the institutional level

72. Low levels of technical skills, a weak agricultural extension system, lack of infrastructure and access to markets all constitute key barriers to resilience and adaptation in the Comoros. National governments and institutions as well as the islands' administrations do not have the resources nor the capacity to implement effective and efficient environmental laws and regulations. For instance, the DGEF functions in a limited way due to a low level of human, financial, technical and logistical capacity. As a result, there is no forest land-use planning, no sectoral development planning, and no forest protection measures; there is also no comprehensive policy framework for watershed management, and climate change considerations are also not integrated into the DGEF's work on forests. The Framework Law on the Environment and the various regulations are unfortunately poorly enforced due to many constraints – material, human and financial.

[74] http://www.afdb.org/en/news-and-events/article/discussions-to-reform-ailing-energy-industry-in-the-comoros-14102/
[75] UNEP, 2002, "Atlas des ressources côtières".

73. There are no clear guidelines on how to effectively maintain or use ecosystem services in an agricultural context, particularly one that is adapted to the soil and climate constraints of Comoros, let alone a set of guidelines that would enable communities to improve the sustainability of their land use practices and adapt them to the emerging climate conditions.

74. Lack of information about forests and their role in maintaining ecological productivity and livelihoods also exacerbate this problem, further enhanced by the lack of information regarding land tenure, property rights and stewardship duties among rural communities. The institutional set-up and capacity for watershed management is weak, the resources available are insufficient, and the application of forestry policies, laws and standards, is low.

75. There is no technical capacity on parasites control and diseases degrading crop cultivation at the community and national levels. Furthermore, there is no veterinary control beyond initial vaccination, which is increasingly leading to the loss of livestock, notably goats.

76. Comorian communities, autonomous islands' governments, and the national government presently lack the technical capacity, management capacity, institutional mechanisms, physical resources and financial resources to overcome and cope with the anticipated changes in climatic conditions.Some efforts have been made to revitalize and reform the local extension service, for example by transforming the Agricultural Advisory Centres (CCA) into Rural Economic Development Centres (CRDE – Centre rural de développement économique). However, this has not yet led to an effective transfer of knowledge to agricultural producers and natural resources users, owing to the low capacity of staff, limited budgets and weaknesses in the institutional set-up.

Limited technical capacity at the community level

77. Weaknesses within the forestry management sector, at the institutional level, as well as at the local level also create a vacuum of initiatives, except for small-scale ad-hoc reforestation initiatives undertaken, for example, during annual government-led reforestation campaign (for example: "Un Comorien, Un Arbre"). During consultations, stakeholders quoted the lack of knowledge of the economic benefits of watershed management, as well as a lack of technical and financial resources as reasons for this barrier.

Lack of access to information

78. All sectors face similar challenges of accessing and transferring information to local communities, due to a combination of remoteness, low levels of education, and a general cultural resistance to "government-imposed" solutions. Access to data and information is also low, particularly in the area of hydro-meteorological monitoring, which hampers the government's capacity to make forecasts and predictions. Data on forests and hydrological basins is mostly unavailable, except for ad hoc studies, and there is to date no comprehensive forest monitoring programme, due to lack of financial and technical resources.

79. There are some NGOs and CBOs in Comoros, however the associative movement is not as well developed as would be needed to provide support and outreach to local communities. A general lack of technical and financial means is often quoted as a reason for this, although there also appear to be no systemic incentives for the associative movement. Access to the media and public sources of information is also low, which hinders the rapid dissemination of new information, including that related to adaptation.

2.4. Institutional, sectoral and policy context

Institutional context

80. The seat of Government of the Union of Comoros is in Moroni, the capital of Grande Comore. The Comoros' political and institutional framework was extremely unstable and volatile until 2001, the year during which a new constitution was adopted creating the Union of the Comoros. Based on a reconciliation agreement between the three islands, the new constitution was signed in Fomboni, the capital of Moheli Island. Under the new constitution, the Union's government unites all three semi-autonomous islands and is responsible for matters relating to external relations and debt repayment as well as for overall coordination of national policies and development actions across the three islands. Under the Union of the three semi-autonomous islands, each island has its own president, parliament and constitution.

81. The President of the Union of Comoros acts as: the head of the government, the head of state and the head of the multi-party system. The Union presidency rotates between the three islands (Mohéli 2011-2016; Grande Comore 2016-2021; Anjouan 2021-2026). The Union President is elected by direct popular vote for a 5-year term. The current leader comes from the island of Moheli. The next scheduled institutional election is in 2016 when presidency will pass to Grande Comore.

82. The creation of the "Union of Comoros" in 2001 and the establishment of a government of the Union and three governments for the autonomous islands led to re-structuring of the roles of state organizations between the level of the Union and the islands. Structural adjustment policies carried out in the 1990's also led the State to transfer responsibilities related to production to non-governmental organizations and professional organizations.

83. The Union of Comoros has a number of Ministries, with sub-component departments or 'directorates'. The institutional framework is complex[76]: the three islands have considerable autonomy as well as their own governing bodies. Governance of the islands is under the leadership of decentralized commissions and technical services responsible for development planning, programming, monitoring and evaluation. In

[76]Management of public finances is also strongly influenced by the complexity of the political and institutional system. The Union combines a centralized system and a strong autonomy of individual islands (Moheli, Anjouan and Grande Comore). Union law takes precedence over that of islands and is binding on all of the Union (Article 8 of the Constitution). In this institutional configuration, management of public finances involves several entities, including National Assemblies (AN), the executive, and finance ministries and treasuries of the islands and Central government. The budget and treasury management is based on the sharing of responsibilities for tax and budget between the central government and those of the islands.

practice there appears to sometimes be a lack of clarity in the division of responsibilities between island and Union level governance. Limited capacity, resources, and information access, and a lack of regulatory enforcement authorities and coordination can serve to aggravate this already complex situation.

84. Responsibility for inter-sectoral coordination is nested under in the Government's Economic Advisory Commission[77]. There are plans to also establish a National Commission on Sustainable Development. The overarching national sustainable development framework in the Union of Comoros is the **Poverty Reduction and Growth Strategy (PRGS)**, which brought together all sectoral policies of the country and was implemented from **2010 to 2014**. Taking over the PRGS, the **Accelerated Growth and Sustainable Development Strategy (SCA2D)** started its five-year implementation period in 2015 with the aim of making the Comoros an emerging country by 2040.[78]

85. Each sector has relevant strategies and policies, and these are adopted and operationalized by each island. For instance, the agricultural policy was developed in 1994 and updated in 2011 and 2014 and is used alongside the relevant sections of the SCA2D as the strategic reference document for the agriculture sector. Agricultural development targets and climate change adaptation targets are included within its framework. The main climate change adaptation framework currently in force is the National Adaptation Programme of Action (NAPA), which is actually seen as an 'operational extension of the PRGS.' There are however currently very few operational structures or tools to integrate climate change considerations into national, island or local levels of natural resource management or agricultural development. The Government of Comoros in collaboration with MAPEEIA began its National Adaptation Plan (NAP) process in 2014 and is set to identify institutional mechanisms and existing coordination in order to include climate change related risks and opportunities within national, insular and sectoral policies and strengthen institutional and technical capacity, which will help crystallize long-term objectives as regards climate change.

86. The government agencies with primary responsibilities related to forestry, other natural resources and the environment are encompassed under the umbrella of the **Ministry for Agriculture, Fishing, and the Environment, in charge of Energy, Industry and Handicrafts (MAPEEIA for *Ministère de l'Agriculture, de la Pêche, de l'Environnement, de l'Energie, de l'Industrie et de l'Artisanat*)**. The MAPEEIA is responsible for the implementation of the national environmental framework and environmental policy, as well as being responsible for planning, programming and the monitoring and evaluation of development actions in the fields of agriculture, livestock, fisheries and the environment.

[77] Commisariat General au Plan
[78] Stratégie de croissance accélérée et de développement durable 2015-2019 (SCA2D) (May 2014)

87. At the central level, the MAPEEIA is composed of various directorates, with regional bodies in each island, which are responsible for the policy, programming, legislation, and regulations, M&E and execution:

88. The **General Directorate of Environment and Forests (DGEF - Direction Générale de l'Environnement et des Forêts)**, is responsible for overseeing environmental sustainability. The primary role of the DGEF is environmental protection, including: 'regulation and control, education and public awareness, conservation and sustainable management of Comoros' natural resource base, and the management of protected areas and other important environmental zones'.[79] DGEF is responsible for the management and implementation of the national environment policy. In line with the constitution of the Comoros, each island has a considerable degree of autonomy in development and implementation of environmental management and support activities under the environment policy. More specifically, the DGEF is the main administrative body responsible for environmental management and for implementing the National Forest Policy, adopted in 2010. The DGEF also leads international cooperation projects in the area of the environment. Among its main responsibilities, it has an obligation to respect and enforce the Forest Law, adopted in 2012[80], as well as ensuring the management of forests and watersheds, as well as supporting rural communities in the development, management and conservation of their forest resources.

89. The DGEF has four different divisions who play a role in forest and watershed management: regulation and control; education, environment and communication; land use planning; and applied research and natural resources. To date, these divisions are only represented at central level, with no parallels at island level. Due to a low level of human, financial, technical and logistical capacity, the DGEF functions in a limited way. As a result, there is no forest land-use planning, no sectoral development planning, and no forest protection measures; there is also no comprehensive policy framework for watershed management, and climate change considerations are also not integrated into the DGEF's work on forests.[81]

90. The **National Strategic Directorate of Agriculture and Livestock (DNSAE - Direction Nationale des Stratégies Agricoles et de l'Elevage)** is responsible for the coordination of the agricultural and livestock sector in the Comoros and lies under the supervision of MAPEEIA. DNSAE coordinates the implementation of the agriculture strategy and agriculture targets under the PRGS. DNSAE is composed of Food Production, Cash Crop and Rural Economy Departments, and a Division of Livestock Management, which has two Departments: Animal Health and Epidemiological Monitoring. Each island has an agricultural office which comprises six departments: Food Production; Cash Crops; Awareness Raising and Communication; Plant Health; Livestock; and Management and Logistics. Each island office currently has about 40 staff, of which 20 are agricultural technicians (including livestock). The national

[79] Appui au Programme forestier national, FAO (2008-2009)
[80] SCA2D (p. 53), 2015-2019
[81] Appui au Programme forestier national, FAO (2008-2009)

DNSAE office has around 30 programmatic staff of which 15 are under permanent employment and 15 are contracted, with additional specialized staff, including engineers, nutritional expert, veterinary expert and livestock breeding specialists. Rehabilitation of agricultural support and extension centres on each island is currently a top priority within DNSAE and within island offices, and establishing the long-term technical and financial sustainability of these centres is a pressing concern. Within sub-regions on each island, agricultural support is provided by Rural Economic Development Centres (CRDE). There is, however, a very low level of nationally-led agricultural extension support, with almost all agricultural support initiatives relying on donor-funded projects.

91. In order to support climate change adaptation in the agriculture sector, it is important that the National Strategic Directorate of Agriculture and Livestock (DNSAE) and the National Directorate of Environment and Forests (DGEF), are supported to work closely together to achieve long term common objectives, both nationally, and on each island, within the framework of the national Poverty Reduction and Growth Strategy (PRGS) and the National Adaptation Programme of Action (NAPA).

92. The **National Institute of Agronomic, Fisheries and Environmental Research (INRAPE –** ***Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement)*** is responsible for agricultural and environmental research. Established in 1994[82], INRAPE is a public scientific and technical institute under the authority of MAPEEIA. INRAPE is the main partner of the DGEF and is responsible for addressing research questions related to the environment. INRAPE has planned to invest most of its research efforts into the conservation of marine ecosystems and to monitor climate parameters. However, funding scarcity constitutes a real obstacle in achieving these goals. The institute has administrative and management autonomy and has the following mandate:
   - Prepare and implement research programs (agriculture, water resources & environment)
   - Consolidate, analyze, and publish findings and experiences, promote exchanges between national and international researchers, develop training programs on rural development, fisheries, and the environment for technical and managerial staff; and
   - Promote methods and techniques that increase agriculture and fisheries productivity, preserve the environment, and increase conservation.

93. Currently INRAPE's research projects are heavily reliant on donor-funded projects and there are few long-term research programs and no long-term climate change adaptation research programs. MAPEEIA plans to strengthen the institutional capacity of INRAPE, including through proposals to develop a research plan with joint funding from the government and development partners.

94. The **General Directorate of Energy, Mines and Water resources** (DGEME) is responsible for water policy at the national level, under the supervision of MAPEEIA.

[82] law n°95-09/AF, decree n°95-106

The decisions taken by this directorate are implemented by the corresponding Ministry of Equipment of each island in urban areas, and by communities in rural areas.

95. The **Rural Economic Development Centres (CRDE – Centre Rural de Développement Economique) -** are key agencies providing agricultural extension and development support to vulnerable farming communities. Rural Economic Development Centres (CRDE) were established in 2013 through an important national decree developed in the Union of Comoros during the design of the CRCCA project (*Enhancing adaptive capacity for increased resilience to climate change in the agriculture sector in the Union of the Comoros – 2014-2018*)[83]. These CRDE replace Agricultural Advisory Centres (CCA) as the main rural development and agricultural support institution in the Union of Comoros.

96. The Union of Comoros plans to establish 14 CRDE: 6 in Grande Comore, 5 in Anjouan and 3 in Moheli. CRDE are responsible for providing extension and technical support to farming communities in order to support sustainable rural development. CRDE offer an important platform for supporting climate change resilience at the farm and community level. They work in partnership with NGOs and farmers associations to support sustainable agricultural development, including for climate change adaptation in the agriculture sector. They are endowed with a specific legal personality and administrative and financial autonomy. At the national level, the CRDE are placed under the technical supervision of the Vice President in charge of MAPEEIA and will be financially supported by the Vice President in charge of Finance and Budget. The role of CRDE includes:

- Training of farmers and fishermen;
- Provision of relevant information to support sustainable rural development;
- Technical extension and advice and support to producers;
- Supervising professional organizations and community development structures;
- Monitoring and evaluation and data management;
- The provision of basic services to support improved working conditions for rural communities; and
- Support for the development of improved rural economic infrastructure.

Under the new decree, each local region will have a CRDE, which will be managed by a Director assisted by an accounts manager, administrative assistant and a team of technical extension staff with at least one higher education diploma or equivalent.

97. The centres are financed by the state but are also authorised to use direct contributions from the public and the private sector. CRDE are administered by a Steering Committee, with strong civil society representation. The composition of the CRDE Steering Committee includes: a representative of the prefecture, two representatives of professional organizations (such as fishermen and farmers), two representatives of NGOs working in the agriculture, fisheries and environment, two representatives of service providers (nurseries, seed production, vets etc.), a representative of the local consul, and four representatives of associations and producer groups of all disciplines.

[83] Programme National de Développement Humain Durable (PNDHD) (2013)

98. Other directorates under the MAPEEIA include:
- Directorate of Fisheries Resources (DNRH - Direction Nationale des Ressources Halieutiques)
- General Directorate of Handicrafts (DGA – Direction Nationale de l'Artisanat),
- General Directorate of Industry (DGI – Direction Générale de l'Industrie), and
- National Committee for Sustainable Development Coordination (CNCD – Comité National de Coordination du Développement Durable) and its advisory committees in the Islands.

99. Furthermore, each island has its own **governorate** in which a commissioner is in charge of the implementation of the Union national strategies and policies and those of the island. However, given the jurisdictional disputes that persist, commissioners often end up designing their own environmental strategies. The links between the MAPEEIA and the commissioners are not always efficient, which compromises the efforts in implementing environmental policies.

100. **Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs)** are important to the local development context on each island. Most communities have associations, including farmers and women's associations who play an active role in local management and development. Village Development Associations (VDA) are present in most villages in the Comoros. They are often well organized and implement local development initiatives. These village associations can consist of several 'branches', including for women's support, youth, community development, etc. VDAs are often important channels through which projects and organisations engage with communities.

Policy context

101. As stated above, the Union of Comoros has signed and ratified most international environmental conventions:

- Convention on Biological Diversity (CBD)
- United Nations Framework Convention on Climatic Changes (UNFCCC)
- United Nations Convention to Combat Desertification (UNCCD)
- Vienna Convention for the Protection of the Ozone Layer
- Stockholm Convention on Persistent Organic Pollutants
- Ramsar Convention on Wetlands
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention

102. In 1993, the country adopted a **National Environmental Policy and a Framework Law on the Environment**, and in 1994 it established its **Environmental Action Plan (Plan d'Action Environnemental - PAE)**. While the National Environmental Policy's objective was to promote the conservation and restoration of forests through an appropriate and rational management of forest resources, the Environmental Action

Plan identified a set of actions to fulfil the policy.[84] The Framework Law and the various regulations are unfortunately poorly enforced due to many constraints – material, human and financial. National governments and institutions as well as the islands' administrations do not have the resources or the capacity to implement effective and efficient environmental laws and regulations.

103. In 2003, the country developed its **initial UNFCCC National Communication** on climate change, followed by the second edition in 2013. In 2006, the Comoros developed a **National Adaptation Programme of Action (NAPA)**, which was an extension of the **preliminary operational strategic document for growth and poverty reduction (PRGS)**. The NAPA priorities were aimed at adaptation in agriculture, fisheries, water, housing, health, and, indirectly, tourism, through the replenishment of watersheds and the fight against soil erosion.

104. Upon the Union of Comoros' request, FAO started developing a support programme for the development of a national forestry programme in early 2009, which included three projects: the establishment of a forest policy, a national forest inventory and a forestry development strategy (named Plan d'Action Prioritaire de Développment Forestier – PAPDF). [85,86]

105. Adopted in 2010, the **National Forest Policy**'s overall goal is the conservation and sustainable development of the forest cover in order to guarantee a sustainable production of goods and services for the population by contributing to the fight against poverty, environmental protection, and by respecting the Union's commitments to international conventions. Its main objectives are to: i) improve knowledge on forest cover; ii) foster sustainable and participative management and conservation of forestry resources; iii) strengthen institutional framework through the implementation of a forestry administration to develop a national programme of forestry development; and iv) raise awareness through training on participative management of forests to maintain forest cover and develop sustainable practices for revenue-generating activities to fight against poverty (non-timber forest products (NTFPs) such as honey, medicinal plants, mushrooms, etc)[87]. Moreover, one of Forest Policy priority actions is to look for alternative energy sources to reduce the use of wood as a source of domestic and industrial energy.[88]

106. The **National Forest Inventory**, which started in 2009, was completed as part of the Forest Policy in 2011 through the support from FAO. From the National Forest Policy objectives, the general framework and the implementation strategy of the policy were then set out as part of **the Priority Action Plan for Forestry Development (PAPDF; 2011-2015)** to facilitate its implementation. The PAPDF is aimed at developing a

[84] Appui au programme forestier national (FAO, 2008-2009)
[85] Appui au programme forestier national (FAO, 2008-2009)
[86] Rapport sur l'Inventaire Forestier National (IFN) de l'Union des Comores (2010) (version préliminaire)
[87] Plan d'Action Prioritaire de Développement Forestier (PAPDP), mai 2012
[88] Enoncé de la politique forestière de l'Union des Comores (MAPEEIA, Mai 2010, Moroni)

reference framework in order to guide the funding and the work programme around the four following fields of action[89]:

a. Strengthening of forestry institutions and mechanisms
b. Enhancing natural forest participatory development and management
c. Promoting plantations for production of timber (for energy needs and other services)
d. Supporting local initiatives of forest resources management.

107. The **Agricultural Policy,** developed in 1994 and updated in 2011 and 2014, seeks to achieve food security, create employment, and promote sustainable use of natural resources, through four main axes: i) guaranteeing the sustainability of production conditions; ii) strengthening value chains; iii) enhancing institutional development; and iv) mobilizing non-governmental actors.[90] The Mission statement of MAPEEIA sets out objectives through the Agricultural Policy in the areas of agriculture, livestock, fishing and the environment as follows[91]:

- Agriculture: 6% increase in food production over the 2015-2019 period and double the value or volume of exports of cash crops.
- Livestock: reduce external dependence on meat from 80% in 2013 to at least 30% by 2019 through the development of poultry production, dairy production and the promotion of zero-grazing small stock production.
- Fishing: increase by 150% value added in the sub-sector by 2015, with an export target of 20,000 tons.
- Environment: restore forest cover to at least 4.3% of the national territory by 2019, establish protected areas (marine and terrestrial) in 3% of the national territory and promote the necessary measures to adapt to climate change and mitigate current and future impacts.

108. The fifth national report on biodiversity (2014) shows how a number of objectives outlined in the **National Strategy and Action Plan for the Conservation of Biodiversity** (**2011-2020)** are currently being achieved, contributing to the Aichi objectives aiming, directly or indirectly, at ensuring the sustainable management of forest resources. Progress in reaching the Aichi objectives includes introducing participative and community management of currently 10,000 ha of forests, to be increased to 12,500 ha by 2018, and improving the protection of forests to stabilize the population of *Pteroptus livingstonii*.[92]

109. The **Water Act** (Code de l'eau) from 1994 (94-037) indicates that water resources management is lead by MamWe (Autonomous Agency for Water and Energy Distribution) in urban areas and by the Ministry of Production in peri-urban and rural areas. In addition, the 2011 decree on the decentralization process (11-005) stipulates that water and sanitation management is attributed to the 54 towns on the three islands (20 in Anjouan; 28 in Grande Comore and 6 in Moheli).

[89] Plan d'Action Prioritaire de Développement Forestier (PAPDP), mai 2012
[90] Actualisation de la politique agricole et formulation d'une stratégie sur le court à long terme pour le secteur comme vecteur pour lutter durablement contre l'insécurité alimentaire aux Comores /Landell Mills/Rapport Final Provisoire/Avril 2014.
[91] Stratégie de croissance accélérée et de développement durable 2015-2019 (SCA2D) (Mai 2014)
[92] 5ème Rapport National sur la Diversité Biologique (Juin 2014)

110. In addition, in 2010, the Comoros received funds from the African Development Bank to develop the **National Programme for Drinking Water Supply and Sanitation,** to be implemented through the PRGS until 2014, with the specific objectives of i) improving access to drinking water and sanitation, and ii) contributing to reducing the prevalence of water-borne diseases while preserving the environment in the three islands.[93]

111. The Agricultural Policy as well as the **National Action Plan to Combat Desertification** in the Comoros, which are currently being implemented (since 2014), contain common objectives and activities to clarify the tenure regime status of agricultural land in order to secure land tenure for farmers and guarantee a farming activity through the promotion of sustainable land management.[94]

112. The **Urban Planning Laws**, Chapters 52-56 are concerned with the protection of lands, forests, agricultural landscapes and mitigating against land degradation. The Law contends the need for sustainable development, the limiting of urban sprawl and the protection of lands that benefit the Comorian environment, agriculture and ecology.

113. In the **Territorial Planning and Land Use Laws**, the Comorian government stresses the importance of sustainable land management and development. It urges the protection of land, natural resources while ensuring security and sanitation for populations.

2.5. Stakeholder mapping and analysis

114. Given the scope of this project, there will be a need for the involvement of a variety of stakeholders. Stakeholder participation and validation of key processes is expected for all activities, commencing with their engagement in the project preparation phase. The communities, institutions and partners in this project have been involved from the start in the project's design, during the project preparation phase, in order to ascertain buy-in and ownership of project activities. The project preparation phase included workshops and local level consultative forums, including participatory vulnerability assessments and the assessment of potential impacts to the environment, and discussions with all stakeholders involved. Among these, the Project Preparation Inception Workshop (held on March 25th, 2015) brought together all stakeholders and potential partners, and other prospective stakeholders that were identified during the course of project preparation.

115. A second consultation mission took the project preparation team to all suggested project sites, during which there were village-based focus groups and discussions on the main challenges and vulnerabilities. During the focus groups, vulnerable groups

[93] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Procurement/Project-related-Procurement/GPNComoresAEPA%20%204-10.pdf
[94] Plan d'Action National pour la luttre contre la desertification aux Comores (PAN/LCD – 2013)

such as women, youth and the elderly were particularly active in expressing their concerns. They will be specifically targeted in this project, in particular through component 3 which will provide activities designed around their specific needs, capacities, knowledge and social roles.

116. Finally, the validation workshop, which took place on December 22nd 2015, brought together project stakeholders from each island, including representatives from NGOs and specific sectors (water, agriculture, livestock, forestry), to discuss the final list of project activities and expected results. Detailed report of the inception mission, consultations and validation workshops can be found in Appendices 18 and 19.

117. Stakeholders have been consulted since the onset of project development to help:
- Identify and select criteria for site selection,
- Gather local climate change observations for each selected site,
- Validate the project's components, outcomes and outputs,
- Identify local needs and socioeconomic factors,
- Identify ongoing projects and other initiatives relevant to the project activities, and
- Define potential project stakeholders and partners as well as opportunities for coordination and synergies.

A list of key stakeholders is provided below:

118. **Government Stakeholders** - These stakeholders will coordinate almost all activities in project execution and will report back on successes and challenges. The Ministry for Agriculture, Fishing, and the Environment in charge of Energy, Industry and Handicrafts (MAPIEEA) will be the national executing partner, through the National Directorate of Environment and Forests (DGEF). The National Directorate of Energy and Water Resources (DGEME) will also be an active partner in the project, and along with the National Strategic Directorate of Agriculture and Livestock (DNSAE), will benefit from the project's interventions. These two directorates will be partners in the delivery of local activities designed to implement livelihoods diversification and watershed rehabilitation interventions.

119. The governments of each of the islands will naturally be essential partners in the project, along with the decentralized technical services, including Rural Economic Development Centres (CRDE - former Centres of Agricultural Expertise) and other extension services. The National Research Institute on Agriculture, Fisheries and Environment (INRAPE) will also participate in the project, along with other academic and research institutions, to develop options for the creation of new expertise in watershed management in Comoros.

120. The project will also provide dedicated coordination staff in each island (in the same model as previous LDCF projects in the Comoros[95]), with potential cost-sharing arrangements.

[95] "Adapting water resource management in the Comoros to expected climate change" (ACCE project)

121. The water utilities in each island (MamWE in Grande Comore, UCEA and UCEM in Anjouan and Moheli) will also be invited to participate in the project development and implementation of the provision of water-related and flood-control activities in the project. Their contribution on the monitoring of water services in the project's targeted areas will also be essential.

122. **Local Community Organizations** - These actors will be at the forefront of implementing the project's activities and will be the primary recipients of capacity building. This includes Village Development Associations, which are community-based organizations in each village in the Comoros; and Ulanga (Nature) associations whose activities focus on environmental awareness-raising through events, including days dedicated to cleaning, tree-planting, and domestic waste cleaning. Very often these associations are created and run by youth. Natural Resources Management Groups as well as water user groups will also be included. Because of the role women play in managing natural resources, mainly through fuelwood collection and agriculture, the project will place special emphasis on ensuring that women are consulted and involved in project activities, through existing women's groups. Targeted capacity building efforts will be made and project activities will be designed in a way so as to ensure that women can benefit from resilient technologies and practices, including labor-saving technologies, while also ensuring that women benefit from any increased income from resilient watershed use practices and alternative livelihoods sources.

123. A key cornerstone of this project is the development of community-wide watershed and land use plans, in which all land users will participate. This will allow for the development of informal or formal agreements on land use sharing and benefit sharing, and provide a basis for enforcement. The use of the FAO's informal guidelines on land tenure will also contribute to this process.

124. The participation of local stakeholders in the selection and implementation of adaptation interventions will promote local ownership and support for project activities in the implementation phase, as well as strengthening their sustainability after project completion.

125. **NGOs and Educational Organisations** - NGOs will provide linkages, research as well as logistical support when needed. They will also be part of consultative processes to ensure that the project has a bottom-up approach and responds to the needs of communities. This includes the tentative list of NGOs and educational and research organizations below (additional stakeholders will be identified and their capacity assessed during project inception):

- NGO'SHAWO: Mouvement de la jeunesse consciente des Comores
- Action Comores Aide (Association for Intervention for Development and the Environment),
- Action for Sustainable Development and Environment (ADDE)
- Association Comoflora

- University of the Comoros
- INRAPE
- CNDRS

126. **Private Sector** - The private sector will play a significant role in this project, particularly as Component 3 seeks to encourage alternative livelihoods. Options for artisanal and pharma-cosmetic products will be explored with key private sector partners, as will avenues for marketing and supply to ensure the sustainability and commercial viability of alternate, new or niche products identified by the project. Key stakeholders here include:
- Chamber of Commerce (Union des Chambres de Commerce, d'Industrie et d'Agriculture, UCCIA)
- Industry associations (forestry, agriculture, fisheries, artisanal groups)

127. **International Partners** - International partners have been working in various capacities in Comoros. Their experience, successes, lessons learned and logistical arrangements will all be drawn upon to ensure the success of this project. Coordination will be sought with some activities to ensure complementarity and harmonisation of development interventions, as outlined in Section 2.7. Key partners include: FAO, UNDP, WB, AfDB, and IFAD.

128. At the beginning of the project, workshops will be held to establish the basis for partnerships. Details on each type of stakeholder's participation in the project are provided in Section 5.

2.6. Baseline analysis and gaps

129. Watershed degradation is contributing to the dyring up of rivers and streams which is a key vulnerability given expected climate change impacts on rainfall. The inadequate management of watersheds is directly linked to deforestation. The reduction in natural forest cover from 26.3% in 1990 to 19.9% in 2015 is largely attributed to the expansion of agriculture at the expense of forested areas, and more recently, to the expanding urbanization, which also encroaches on remaining forests. The underlying factors of these inadequate practices include the lack of capacity to produce and enforce policies and management plans to sustainably use watershed resources.

130. Comorian watersheds are under increasing pressures both from communities seeking to increase agricultural production and to fulfill their energy needs, as well as from climate change through impacts such as decrease in river water flows and drying of rivers. This is leading to decreases in soil fertility, water availability, and is placing livelihoods in danger from decreased productivity and extreme events such as unabated flooding during severe rainfall events.

131. Agricultural production techniques are unsustainable and provide low yields. Most farmers rely on manual work and struggle with little technical knowledge, low levels of input, and a general lack of diversification options. Traditional knowledge and practices, including traditional uses of plants and agro-forestry, are gradually being

abandoned to the benefit of less sustainable natural resource use practices, such as monoculture, slash-and-burn agriculture, and itinerant agriculture because of the decline in soil fertility. This leads to an acceleration of the degradation of the ecosystem services that provide a basis for livelihoods (for example soil fertility, nutrient cycling, moisture retention, micro and macro biodiversity), further exacerbating the prevalent poverty among rural populations in Comoros. This also leads to more pressure put on steep land that is unsuitable for agriculture, resulting in more soil erosion and further deforestation and watershed degradation.

132. Poverty in rural areas is mainly due to the low diversity of livelihood strategies within but also beyond agriculture. For instance, the livestock sector is not contributing to livelihoods as it could, due to low productive the animal breeds and sanitation issues. The fishing industry, although accounting for the highest source of protein, does not contribute enough due to a lack of infrastructure in terms of energy needs and supply chain management to conserve and bring produce to markets.[96]

133. The existing levels of degradation create a disincentive for communities to embark on large-scale ecological rehabilitation initiatives. Transhumant agriculture is often practiced as a coping mechanism, leading to land abandonment when ecological services have been exhausted. Due to high poverty levels, communities are to some extent risk averse, which means that few communities have explored alternative watershed management practices or alternative sources of livelihoods. According to the last report on sustainable land management (2014), intense flooding, and dry season coupled with high temperature are the main causes of degradation with 57.5% of agricultural land (65,335 hectares) degraded.[97] Land degradation per island is estimated to affect 33,000 ha (50%) in Grande Comore, 24,200 ha (65%) in Anjouan and 8,125 ha (52%) in Mohéli[98]. In addition to the agricultural sector, other key sectors of development are impacted by land degradation, including cattle breeding, reef fisheries (through the destruction of fish habitats via the flow of sediments into the ocean), drinking water and tourism (deterioration of ecosystems and reduced numbers of indigenous species of fauna and flora).

134. Comorian communities, autonomous islands' governments, and the national government presently lack the technical capacity, management capacity, institutional mechanisms, physical resources and financial resources to overcome and cope with the anticipated changes in climatic conditions. Moreover, the lack of integration between various sectors within a given watershed often exacerbates the competition for use of various natural resources, such as land, water, and biodiversity.

135. Local communities too have low technical capacity and limited knowledge and awareness on how to adapt their livelihoods to become resilient to climate change. For instance, small-scale water management for production barely exists and is

[96] Stratégie de croissance accélérée et de développement durable (SCA2D) pour les Comores 2015-2019
[97] Plan d'Action National contre la Désertification aux Comores PAN/LCD - 2013
[98] Dernier Rapport d'évaluation, Gestion Durrable des Terres, 23 mars 2014 ; 2ème communication nationale

inefficient.[99] The low availability and lack of access to information on ecosystems management emphasize the low community awareness and capacity to adapt to climate change.

136. This limited knowledge and awareness at government and community level is compounded by the limited access to information on ecosystems services. In the Comoros, there is limited information about forests and their role in maintaining ecological productivity and on the extent to which watersheds and their resources are degraded. Livelihood strategies also exacerbate this problem due to unsustainable agricultural practices. This is coupled with a lack of information regarding land tenure, property rights and stewardship duties among rural communities. All sectors face similar challenges of accessing and transferring information to local communities, due to a combination of remoteness, low levels of education, and a general cultural resistance to "government-imposed" solutions. Access to data and information is low, particularly in the area of hydro-meteorological monitoring, which hampers the government's capacity to make forecasts and predictions.

Baseline Projects

137. There are a number of projects and programs in the Comoros addressing sustainable development, biodiversity, natural resources, and human development, but none of these address climate change and its negative impacts on watersheds as a central component. This creates an institutional, infrastructure and policy gap, which this project proposes to address. This project builds on four baseline projects:

138. The first baseline project on which this project will build upon is the **FAO Country Programming Framework (CPF)** (2014-2019, US$ 10,000,000). The CPF is jointly developed with the government of Comoros and other stakeholders and focuses on three priority areas that are in line with key national development policies, such as the new Rapid Growth and Sustainable Development Strategy (2015-2019) and the Growth and Poverty Reduction Strategy (2010-2014). The three priority areas of the CPF are: i) intensification, diversification and commercialization of agricultural and livestock production for improved food security, including efforts to foster a more competitive and diversified agriculture sector; ii) strengthening governance and sustainable management of forest and other natural resources, with an emphasis on agroforestry development; are iii) improving the collection and quality of agricultural statistics, including support to the national agriculture census and the establishment of a permanent agricultural information system. The CPF also takes into account sectoral policies such as the National Agricultural Strategy, the National Fisheries Strategy, the National Forestry Policy, and the Food and Nutrition Strategy. However, the CPF does not take into account climate change impacts on agriculture and natural resources. This project aims to fill this gap by assessing climate change risks and impacts on forests and watersheds, introducing integrated watershed management in the light of expected climate change impacts as an adaptation strategy to develop climate resilience of vulnerable rural communities, recognizing the interrelationships among

[99] SCA2D Comores 2015-2019

land use, soil, and water, and the linkages between uplands and downstream areas. This will be complemented by the promotion of ecosystem-based and climate-resilient livelihoods strategies, which will include agroforestry practices, zero grazing small-stock production, value chain development of vegetable production, as well as the collection of knowledge on traditional plants to develop pharmaco-cosmetic plant-based products.

139. The second baseline project which this project will build upon is the **Comoros Social Safety Net Project** (2015-2019, US$ 6,000,000), which is supported by the World Bank through the Community Development Support Fund (FADC), with the objective of increasing poor communities' access to safety net and nutrition services. The project is made up of three components: (1) establish a productive and disaster responsive safety net, (2) improve the nutrition of young children and mothers from poor communities, and (3) strengthen safety net management, coordination, and monitoring evaluation. The project targets areas on each of the three islands and covers villages in each of the three watersheds covered by the LDCF project: Séréhini on Grande Comore, Nyumakele on Anjouan, and Mibani on Moheli. There is also partial overlap in the specific villages targeted, specificially Kiyo and Komoni on Anjouan and Hamavouna on Moheli. This project will add value to the social safety net programme through livelihood strategies that invest in ecosystems in order to achieve better food security for the local communities even with expected climate change effects.

140. The National Directorate of Environment and Forests (DGEF) of MAPEEIA implements several projects within the **National Forestry Action Plan (NFAP)** with support from various donors, including Japan who will contribute US$ 200,000 focusing on forest management and rehabilitation and on water mobilization from 2015-2019. The NFAP includes the following components, which this LDCF project will build upon: (1) reorganization of the National Directorate of Environment and Forests and its decentralized services, as well as strengthened enforcement means, (2) strengthened communication capacity through data collection and dissemination, and (3) strengthened human capacity. This project will complement the capacity-building and training aspects of NFAP by providing training specifically on climate change and forest interlinkages, and integrated watershed management as an adaptation strategy. Furthermore, the assessments and the georeferenced information system to be developed under the LDCF project Component 1 will directly contribute climate change information to the data collection and dissemination activities to be implemented under NFAP. The NFAP also foresees to further the conservation of remaining forests through forest delimitation and planning activities. The LDCF project assessment and mapping exercises will contribute information to complete the datasets on remaining forests under NFAP, including information on climate change impacts.

2.7. Linkages with other GEF and non-GEF interventions

141. The proposed project will coordinate with existing projects in order to promote synergies when appropriate, support other interventions, share knowledge, share resources when possible, avoid duplication and ensure value-added to the development sector in Comoros. The key initiatives that the project will coordinate with are listed below:

142. The second phase of the National Programme for Sustainable Human Development (PNDHD), the **Agricultural Value Chain Development Program (AVCDP)** (US$ 4,300,000, 2017-2021), is scheduled to begin in January 2017. This is an effort to contribute to rural development objectives, to the Poverty Reduction and Growth Strategy (PRGS) and the Accelerated Growth and Sustainable Development Strategy (SCA2D), for which the government (through the MAPEEIA) has received support from the International Fund for Agricultural Development (IFAD). The programme's main objective is to contribute to enhancing food security and create income opportunities for poor rural people through the promotion of cassava, banana and tomato value chains. In each of the three targeted value chain, the AVCDP's specific objectives will include: i) increasing production and productivity; ii) building technical and organizational capacities among producers; and iii) improving conservation, processing and commercialization. The proposed project will complement the AVCDP's objectives thanks to activities aimed at strengthening government and local communities' capacity to implement resilient integrated watershed management through training, awareness raising and participatory watershed management. Other activities, including the promotion of a diversified array of resilient livelihood strategies conserving natural resources, such as agroforestry practices, zero-grazing small stock production, diversified vegetable production and transformation through a value chain approach, will also complement the AVCDP's own efforts to promote resilient value chains.

143. **Green Climate Fund (GCF) Readiness Programme** (US$ 300,000, 2016-2018), funded by the GCF and implemented in partnership with UNEP, will contribute to strengthening the country's technical and coordination capacity, with a view to enhancing its access to adequate climate financing to address climate threats and implement identified priorities for action. The initial phase of the Readiness and Preparatory Support Programme will focus on (i) the strengthening of the National Designated Authority (NDA) / Focal Point and (ii) the development of strategic frameworks for engagement with the GCF, including the preparation of a country programme. As a result of the readiness programme activities, it is expected that an appropriate NDA is identified, and its institutional capacities are built to effectively fulfill its roles and responsibilities in relation to the Fund. This project will engage in the Readiness Programme activities to share information, experiences and lessons learnt, and contribute in particular to the development, through a stakeholder engagement process, of a Comoros GCF country programme, which will include programming priorities and programme/project concepts.

Coordination with other GEF-funded initiatives will also be pursued, as follows:

144. **Implementing Integrated Water Resources and Wastewater Management in Atlantic and Indian Ocean SIDS** (US$ 9,700,000, 2011-2017) is a joint UNDP-UNEP project implemented in Cape Verde, Comoros, Maldives, Mauritius, Sao Tome and Principe, and Seychelles. The project objective is to accelerate progress on the World Summit on Sustainable Development targets, Integrated Water Resources Management and Water Use Efficiency plans, as well as water supply and sanitation MDGs for the protection and utilization of groundwater and surface water in the participating countries. The selected sites in the Comoros are located in north Anjouan island, in Mutsamudu. Although the proposed LDCF project interventions on Anjouan will be located in the south of the island, it will seek to build on existing structures and teams, and to learn from lessons from the SIDS project in improving water resource protection through IWRM, including the reforestation and anti-erosion work done at Mutsamudu. The proposed project will also in its awareness raising and training activities build on the communication work done by the SIDS project.

145. The project **Enhancing adaptive capacity for increased resilience to climate change in the agriculture sector in the Union of the Comoros** (*"Renforcement des capacités d'adaptation et de résilience du secteur agricole aux changements climatiques aux Comores"* – CRCCA, 2014-2018), which was recently CEO endorsed by the GEFSec, funded through the LDCF (US$ 8,990,909 from GEF and US$ 38,309,621 in co-financing) and implemented by UNDP, has been designed to support the Union of Comoros (Moheli, Grande Comore and Anjouan) to build capacity in order to reduce the vulnerability of agricultural systems to climate change and climate vulnerability. The project includes support to agricultural extension and planning, the development of agro-climate services, including through building climate data collection infrastructure, and demonstrations of resilient agricultural practices in 6 pilot sites. Cooperation with this project will occur through the development of coordination mechanisms such as a joint Steering Committee and Project Management Unit coordination meetings. Linkages between the two national directorates involved (Agriculture and Environment and Forests) will be developed to ensure synergy and cooperation, sharing of methods and lessons learned. These synergies will enable the proposed LDCF project to build on this project's outcomes, mainly the development of agro-climate services and the strengthening of extension services, in order to deliver appropriate watershed management practices.

146. **Strengthening of the Comoros' resilience to disaster risk linked to climate change and variability** ("Renforcement de la résilience des Comores aux risques de catastrophes liées au changement et à la variabilité climatiques"), is a new LDCF project (currently at PIF stage) to be executed by the Direction Générale de Sécurité Civile, of a total value of US$ 9,000,000 through UNDP and UN-ISDR. This project has three objectives: i) strengthen the systemic and institutional capacities at the local, regional and national levels for a coordinated management of disaster risk caused by climate change; ii) strengthen the national capacities for identification and monitoring of disaster risks linked to climate change, and for production and spreading of early warnings; and iii) strengthen the resilience of means of livelihood and of assets of

vulnerable communities against disaster risks brought by climate change. The main point of coordination between this project and the LDCF/UNEP project will be the NAP process, which is starting up. The evidence developed by both projects will be useful to the NAP process. For example, the proposed LDCF/UNEP project will generate evidence on climate change risks on the functioning of watersheds given also baseline vulnerabilities and will develop experience on developing management strategies and adaptation solutions, which is also the aim of the LDCF/UNDP and UN-ISDR project. Furthermore, some of the resilience-building activities of the LDCF/UNDP/UN-ISDR project are planned to take place in the watersheds this LDCF/UNEP project will work in. Coordination of reforestation activities, in particular, in these watersheds will therefore be ensured. Formal coordination processes between the two projects will be initiated at project inception, so that complementarity between their activities is ensured and that information, experiences and lessons learnt are shared between the two project teams.

Section 3: Intervention strategy (Alternative)

3.1. Project rationale, policy conformity and expected global environmental benefits

Project rationale

147. The proposed project will increase the resilience of rural communities in the Union of Comoros to both the observed and anticipated effects of climate change (see Section 2.1 for more information on the impact of climate change on the Comoros). More specifically, the proposed project will: i) strengthen governmental and local capacity to efficiently manage watersheds as an adaptive strategy; ii) rehabilitate degraded watersheds through an ecosystem-based approach including reforestation, conservation and anti-erosive measures, and iii) promote climate-resilient alternative livelihoods based on the restored ecosystems.

148. The project will provide fundamental adaptation benefits to the country in the form of increased adaptive capacity among key institutions, including the agriculture, forestry and water sectors, who are most affected by climate change. Capacity constraints and barriers will be lifted through this project, through the creation of enabling tools and frameworks, guidelines, and the development of emerging capacity and expertise with local NGOs and academic institutions. Knowledge, data and policy-relevant information will also be provided by this project as a key adaptation benefit.

149. The restoration and improved management of watersheds will be implemented through an ecosystem-based approach that should provide low-cost and effective means for securing and enhancing multiple ecosystem benefits for vulnerable communities in all three islands of the Comoros. Such benefits will most likely include: i) increased water availability and supply; ii) reduced land and soil degradation; iii) improved soil fertility, leading to improved agroforestry production;

iv) mitigation of the effect of floods and landslides; v) improvement and potential increase in biodiversity, and vi) improved livelihoods. The key socio-economic and environmental indicators will be tracked to enable this causality to be evidentially established for Comoros.

150. The project will produce direct adaptation benefits to local communities in the form of sustained, resilient and diversified livelihoods. This will make a direct contribution to the objectives of poverty eradication and will reduce vulnerability to climate variability in project sites. Vulnerability to extreme events such as floods and droughts will also be reduced through the promotion of more resilient ecosystems that can provide protective and productive services, including against floods during severe rainfall events, and against droughts. Overall, benefits generated through the proposed project should have a positive ripple effect in terms of mitigation of climate-induced events, as well as poverty reduction through diversified and sustainable livelihoods.

151. By strengthening and developing forest and watershed management practices, as well as rehabilitating the selected sites, the project will contribute to: 1) improve the health of the overall ecosystems; 2) promote proactive adaptation and resilience to the impacts of climate change; 3) improve environmental policies and programmes in order to operationalize existing guidelines and policy orientations; 4) disseminate new technologies to rural communities so that they can adopt improved agroforestry production techniques, which in turn will lead to; 5) enhance conservation of natural resources and the ecosystem services they provide, which will contribute to generate diversified and resilient livelihoods, increasing revenue and reducing poverty.

152. The adaptation benefits of this project are expect to include: 1) gains in agro-ecological productivity; 2) reduced loss of forests and water (3,500 ha of watersheds will be rehabilitated and sustainably managed); 3) reduced losses of infrastructure and livelihoods; 4) increased water availability thanks to the development of small rural hydraulics for water harvesting and conservation; 5) increased biodiversity; 6) increased livelihoods and income (at least a 20% increase in average annual income in each project community and at least 1,000 people will adopt new livelihood strategies, of which 500 will be women).

153. The project will intervene in areas where no other LDCF-supported interventions are underway and focus on pilot sites corresponding to one watershed in each of the three islands, namely the Séréhini watershed in Grande Comore, the Nyumakele watershed in Anjouan and the Mibani watershed in Moheli. The sites were selected based on climate impacts, state of resources, unsustainable practices, socio-economic vulnerability, links to ongoing or planned government initiatives and general criteria such as downstream population vulnerability, the urgency for intervention and accessibility (see Appendix 16 for further details on site selection criteria).

154. Finally, once implemented, the project will offer the potential of being scaled up to other watersheds, therefore reinforcing the climate change adaptive capacity of various communities on all three islands of the Comoros.

Policy conformity

155. The proposed project is aligned with GEF Focal Area/LDCF/SCCF strategies.[100] In particular, the following "Focal Area Objectives" are addressed in the proposed project:

156. **CCA-2, Outcome 2.3:** "Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures" – Under Component 1, the project will: i) provide strengthened knowledge, information and tools for resilient watershed management, such as the development of watershed maps, a geo-referenced information system on climate change impacts for major watersheds or sub-catchments; ii) introduce participatory watershed planning and management as a climate resilient strategy through training and consultative processes; iii) establish an island-based intersectoral platform to develop an upscaling strategy for the resilient integrated watershed management practices; iv) develop policy briefs in order to make sure that technical staff are fully versed in integrated watershed management as a resilience building activity; v) collaborate with INRAPE and universities and training institutes to deliver courses on climate change, climate risk management and watershed management; and vi) develop mechanisms for securing access to land in order to ensure farmers with sustained revenues (see Section 3.3 Component 1: Output 1.1 and Output 1.2: activities 1.2.1 and 1.2.2). Indicator 9 will be used to measure the results of Outcome 1.[101]

157. **CCA-1, Outcome 1.1:** "Vulnerability of physical assets and natural systems reduced" – EBA interventions within Component 2 will: i) implement watershed rehabilitation and management plans through an integrated approach; ii) contribute to increasing water availability through anti-erosion and anti-flooding measures, and; iii) establish community conservation zones (see Section 3.3 Component 2: Output 2.2, activity 2.2.2). Indicator 2 will be used to measure the results of Outcome 2.[102]

158. **CCA-1, Outcome 1.2:** "Livelihoods and sources of income of vulnerable populations diversified and strengthened" – Within Component 3, the project will: i) promote resilient and alternative EBA livelihoods for rural communities, including agroforestry, including zero-grazing small stock production and value addition; ii) collect and review traditional knowledge to develop pharmaco-cosmetic plant-based products (see Section 3.3 Component 3: Output 3.1, activities 3.1.2; Output 3.2,

[100] GEF Programming Strategy on Adaptation to Climate Change for LDCF and SCCF (GEF/LDCF.SCCF.16/03/Rev.01, May 2014)
[101] Indicator 9: (a) Number of people (percentage of whom are female) trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures; and (b) the degree to which the capacities of those people have been strengthened (measured e.g. through a capacity perception index).
[102] Indicator 2: Type and extent (and value, where applicable) of assets strengthened and/or better managed to withstand the effects of climate change (measured e.g. in ha of cropland/ rangeland/ catchments; km of coastline)

activities 3.2.1 and 3.2.2). Indicator 3 will be used to measure the results of Outcome 3.[103]

159. The Government of Comoros is aware of the environmental risks the country faces in light of climate change and has various laws, strategies, policy documents and action plans to address these. This project is well aligned and harmonized with many of these frameworks, in particular **the National Adaptation Programme of Action, the Forest Policy, the Agricultural Policy, the National Environmental Policy, the National Strategy and Action Plan for the Conservation of Biodiversity, the Water Act,** as well as a number of **International Conventions.** These frameworks have been described in Section 2.4. The consistency and alignment of the proposed project with these frameworks and the priorities they contain is outlined in Section 3.6.

Global environmental benefits (GEBs)

160. The activities planned under each component of the proposed project will contribute to various global environmental benefits (GEBs). As mentioned previously, GEBs will include the conservation of biodiversity, the prevention of land degradation, and the mitigation of climate change. In the case of conserving biodiversity, the project will protect and rehabilitate forest ecosystems, which will contribute to protect the unique wildlife that inhabits the islands of Comoros. In addition, the restoration of watersheds will reduce the pollution of lands and water supply, which have been impacting riverine and marine animals. The project interventions focusing on protecting watersheds and rehabilitating land and forests should thus lead to the conservation of globally significant biodiversity.

161. More specifically, the project should contribute to the:

- Increase of water availability and supply;
- Reduction of land and soil degradation;
- Improvement of soil fertility, leading to improved agroforestry production;
- Mitigation of the effect of floods and landslides;
- Improvement and potentially the increase of biodiversity;
- Increase of carbon sequestration; and
- Mitigation of climate-induced events.

162. Environmental benefits will be monitored through an island-based intersectoral platform to sustain and replicate integrated watershed management (Component 1, see Section 3.3), building a body of evidence that can be used for long term monitoring.

3.2. Project goal and objective

163. The overarching ***goal*** of the project is to build resilience to climate change in the Comoros. The project *objective* is to reduce the climate change vulnerability of

[103] Indicator 3: Number of people benefiting from the adoption of diversified, climate-resilient livelihood options (percentage of whom are female)

communities in the Comoros by rehabilitating watersheds and forests and diversifying adaptive livelihoods. This will be achieved through the use of Ecosystem-Based approaches to Adaptation (EBA) and notably by using integrated watershed management (IWM) as an adaptation strategy, in the light of expected impacts of climate change on the watersheds. In particular, the project will strengthen the capacity for watershed management at the national and local levels, demonstrate the rehabilitation and sustainable management of watersheds, and support the adoption of diversified and resilient livelihood strategies in the project areas.

164. The proposed project will intervene in one watershed per island (i.e. 3 main project sites) in the following locations, selected during the project preparation phase (i.e. inception workshop and subsequent meetings), in consultation with the Executing Agency and project stakeholders:

1. Grande Comore (Ngazidja) island: 5 villages will participate in the project in the central area of the island located within the Séréhini watershed, uniting three regions: Bambao region, where the capital of the Union of Comoros, Moroni is located; Hambou region; and Itsandra region.
2. Anjouan island (Nzwani): 5 villages will participate in the project, located within the Nyumakele watershed in the Mremani region (southern area of the island).
3. Moheli island (Mwali): 5 villages will participate in the project, located within the Mibani watershed in the Djando region (southern area of the island).

165. The selection of the watersheds in which the project will intervene was made on the basis of the following criteria: the state of natural resources, climate impacts, unsustainable practices (including slash-and-burn and shifting cultivation practices, the use of wood for distillation, river pollution from sanitation, and solid waste pollution), socioeconomic vulnerability, and commitment from local, national and international governments and partners (see Appendix 16).

3.3. Project components and expected results

166. The project will achieve its objective through the following three components:

- **Component 1** – Enhanced capacity to address climate risks through watershed management
- **Component 2** – Resilient watersheds and ecosystem-based adaptation demonstrations
- **Component 3** – Resilient and diversified ecosystem-based livelihoods for local communities

Component 1 – Enhanced capacity to address climate risks through watershed management

167. Under this component, the project will address the technical and institutional barriers to reducing vulnerability to climate change. This includes the development of a more comprehensive knowledge base on the state of the watersheds and the way in which climate change may affect ecosystem function in the watersheds, as well as

understanding the impacts of climate change and vulnerability of the communities and the role the watersheds can play in adaptation. Sound technical and institutional capacity will be developed for the application of integrated watershed management as a key strategy for resilience-building.

168. Building on the strengthened knowledge base and tools developed, awareness will be raised about IWM as an adaptation strategy, and guidelines and training developed to support its introduction into public policy and climate risk management practice. The sustainability of the project interventions and their replication and upscaling will be further strengthened by the establishment of an intersectoral platform to develop an upscaling strategy. The platform will collect and disseminate project lessons, identify entry points for upscaling the project results and approaches, and assess long-term financing options, opportunities and barriers for the sustainability of the project.

169. Anticipated benefits of this component will be an increased knowledge base on watersheds and forests, an improved understanding of their and the communities' climate vulnerabilities and adaptation options, strengthened institutional and technical capacity within MAPEEIA (in particular within the DGEF) and local institutions, and the creation of tools and mechanisms for managing watersheds, for addressing or preventing land use conflicts, and for upscaling project results through better integration of IWM practices into national development processes.

170. This Component 1 addresses the GEF Adaptation Programming Strategy's **second objective**[104] ("Strengthen institutional and technical capacities for effective climate change adaptation"), in particular **Outcome 2.3**: *Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures* and the corresponding **Indicator 9**: "Number of people trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures"; and **Indicator 10**: "Capacities of regional, national and sub-national institutions to identify, prioritize, implement, monitor and evaluation adaptation strategies and measures".

171. Total co-financing amount for Component 1: US$ 5,000,000
LDCF Project Grant Requested: US$ 781,473

172. This component will be fulfilled through the outcomes and outputs presented in Table 3.1, below.

Table 3.1: Outcomes and Outputs under Component 1

Outcomes	Outputs
Outcome 1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and	Output 1.1 Assessments of climate change risks and impacts on Comorian forests and watersheds, contributing to a geo-

[104] GEF Programming Strategy on Adaptation to Climate Change for LDCF and SCCF (GEF/LDCF.SCCF.16/03/Rev.01, May 2014)

local levels	referenced information system
	Output 1.2 Training and information is provided to introduce integrated watershed management into public policy and practice as an adaptation strategy
	Output 1.3 A strategy and an intersectoral platform to sustain and replicate integrated watershed management are developed and institutionalized

Outcome 1: Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels

Output 1.1 Assessments of climate change risks and impacts on Comorian forests and watersheds, contributing to a geo-referenced information system

173. Activities under Output 1.1 will build on the National Forestry Inventory (NFI), which was completed in 2011 with support from FAO, and which provided a knowledge base on forest distribution, species and diversity on the three islands. In order to complement the NFI, the project will support the completion of an assessment of possible climate impacts on forests and watersheds. Information generated from this project will also help finalize and adopt a map of watersheds for each of the three islands, which do not currently exist in any final form[105], and which prevents the effective management of watersheds.

174. The development of climate impact scenarios on forests and watersheds will support the design of "future forests" maps, which will allow the government to understand the potential long-term trends and evolution of forests and the impact on watersheds, and to plan land use accordingly. Climate change scenarios will be provided by the Meteorological Agency and the maps will be developed by the DGEF.

175. Climate change Vulnerability and Impact Assessments (VIAs) will be undertaken in the selected communities to improve understanding of the ways in which they may be impacted by climate change, the underlying causes of vulnerability, and adaptation options. The VIAs will integrate ecosystem considerations in order to inform the selection and implementation of ecosystem-based adaptation measures under project Component 2. The VIAs will be conducted through workshops and meetings in selected communities and will be based on a participatory approach to engage communities at the very start of the project implementation.

[105] In fact, there are conflicting versions of watershed maps, and no final, government-endorsed map has been published. As a result, the identification of watershed boundaries and limits, as well as the stakeholders within them, is difficult. This is also compounded by the fact that administrative boundaries cut across watersheds, and that the decentralized structures such as the former CADER, have either been transformed into CRDE, or closed, leading to a lack of decentralized capacity for watershed management.

176. Furthermore, the project will develop key watershed and forest management tools that are lacking at the moment. This will take the form of a geo-referenced information system on watersheds, which will include socio-economic as well as environmental data, and will also allow the integration of downscaled climate information. Socio-economic and environmental data will be collected in each watershed using GPS and other GIS tools in order to create a baseline of information, which can be updated annually through participatory monitoring of the project's activities. The key socio-economic and environmental indicators to be tracked through the information system will be identified at the project inception stage, and the approach and institutional set-up for data collection and analysis will be explored with relevant project partners.

177. Watershed maps, the VIA process and its outcomes, and the geo-referenced information system will be used by local government officials to raise awareness in each community about integrated watershed management and its potential contribution to climate change adaptation, and to transfer knowledge about forest conservation. They will also serve as a basis for participatory land use planning, and ongoing watershed planning and territorial development at the municipal level, including under Components 2 and 3 of the project. In particular, highly degraded areas and areas for conservation could be marked in the mapping and information system in order to ensure measures are taken for restoration and conservation, allowing for a visual tracking of project results at local level.

178. The activities that will contribute to Output 1.1 include:

Activity 1.1.1 Develop a map of watersheds based on the National Forest Inventory (NFI) as well as climate-based forest maps for each of the islands (the state of forests with or without intervention, under a climate change scenario)

Activity 1.1.2 Undertake climate change Vulnerability and Impact Assessments (VIAs) in the selected communities, integrating ecosystem considerations, to inform the selection and implementation of ecosystem-based adaptation measures

Activity 1.1.3 Develop a geo-referenced information system on climate change impacts for major watersheds or sub-catchments, including socio-economic and environmental data, based on NFI and downscaled climate data available

Output 1.2 Training and information is provided to introduce integrated watershed management into public policy and practice as an adaptation strategy

179. Closely linked to the work under Output 1.1, activities under Output 1.2 are focused on raising awareness about IWM as an adaptation strategy, and on its introduction into public policy. This will strengthen the sustainability of the project interventions after the project lifetime, and facilitate their upscaling in other watersheds in the Comoros.

180. The project will work with the DGEF to analyze current watershed management practices (including informal land uses implemented by communities) in order to

determine the constraints and opportunities for using IWM as a strategy for adaptation in the country. This will include an analysis of IWM factors of success, including local community mobilization, land tenure and property rights, traditional environmental knowledge, and an overview of institutional and policy issues to be addressed in order to make full effective use of the IWM methodology.

181. Based on the results and recommendations from this study, technical guidelines will be produced, on the basis of which awareness raising and training will be undertaken within MAPEEIA and among the targeted communities on the various uses of the IWM approach. This will also entail awareness raising on the contribution of healthy ecosystems for livelihoods and adaptation, and on the links between ecosystem-based adaptation, watershed management and forest rehabilitation and management. The purpose of this training will also be to harmonize approaches and methods used by the different stakeholders who engage in land-use related activities in the country. By strengthening the technical and institutional capacity of the Ministry as the main interlocutor for this area of environmental management, the project will help ensure that future interventions are consistent with the principles of IWM and EBA.

182. Building on lessons learned within Component 2's implementation of watershed rehabilitation and management plans (reforestation, establishment of conservation zones, anti-erosive measures, etc), policy briefs and technical guidelines will be developed in consultation with identified key stakeholders, in order to enable the integration of IWM in policies and the future replication of IWM in other areas of the Comoros.

183. The project will also work with the National and Island Directorates of Environment and Forests to upgrade, sustain and upscale the skill set and institutional setup needed to ensure watersheds are managed in a sustainable and resilient manner. This will include working with the INRAPE, University of Comoros and other training institutions to develop courses, modules and technical certificates on climate change, climate risk management and IWM as strategies for resilience. This will help create a cadre of experts and knowledgeable personnel on which to rely for staffing in the future, within and outside the Ministry.

184. In addition, because issues of land tenure and access to land have been identified as a key institutional obstacle to IWM and sustainable forest use, the project will seek to strengthen the DGEF's capacity to develop viable and equitable mechanisms for access to land. The project will support consultations with land users (communities, private sector, government, army) in order to develop systems for collaborative land allocations that take environmental issues into account, while respecting the need for communities to access land for agriculture. The project will seek to implement past lessons learned in this regard, such as the use of the FAO's voluntary guidelines on the governance of land tenure systems, which provide avenues for preventing/solving conflicts related to access to land. The project will also work with relevant stakeholders active in the land certification and registration process in the Comoros.

185. The activities that will contribute to Output 1.2 include:

Activity 1.2.1 Analysis of current (explicit and implicit) watershed management practices, including of their potential for adaptation, and analysis of IWM factors of success (including local community mobilization, land tenure and property rights, traditional environmental knowledge, institutional and policy issues)

Activity 1.2.2 Introduction to participatory watershed management as a climate-resilient strategy through training and awareness raising among MAPEEIA staff and decentralized stakeholders in the environment, forest, water and agriculture sector

Activity 1.2.3 Develop policy briefs and technical guidelines for MAPEEIA and communities on the contribution of healthy ecosystems for livelihoods and adaptation, and the integration of ecosystem-based adaptation into watershed and forest rehabilitation and management (based, *inter alia*, on lessons learned from Component 2)

Activity 1.2.4 Work with INRAPE, the University of Comoros, and other technical and vocational training institutes in Comoros to develop and deliver courses on climate change, climate risk management and watershed management

Activity 1.2.5 Develop mechanisms for securing access to land, including through the application of the FAO's voluntary guidelines on the governance of land tenure systems.

Output 1.3 A strategy and an intersectoral platform to sustain and replicate integrated watershed management are developed and institutionalized

186. Output 1.3 will focus on enhancing the sustainability of the project interventions, and on enabling their replication and upscaling in the Comoros, the region, and internationally. As a mechanism for upscaling and replicating project results and lessons, the project will support the creation of an island-based intersectoral platform which will gather and analyse project lessons, disseminate them nationally and internationally, review relevant policies and strategies to identify entry points for upscaling the project results and approaches, and to identify areas of policy and legal harmonization needed, and assess long-term financing options, opportunities and barriers for the sustainability of the project. The intersectoral platform will be tasked with the integration these findings in the development of a strategy for upscaling the IWM approaches and practices introduced by the project.

187. Consistent with lessons learned from other projects, this platform will be established at a relatively early stage in the project (second half of the second year), rather than at the tail end of the project, to allow for the gradual building of trust and cooperation, and to provide sufficient time for policy processes to take place. A platform will be convened on each of the three islands, chaired by the Environment Commissioner of the island, bringing together all relevant sectoral stakeholders - agriculture, forestry,

water -as well as the private sector and NGOs. An inter-island platform will act at the Union level to address national-level policy issues that may provide opportunities for upscaling the resilient IWM practices introduced by the project and for integrating IWM into relevant development planning frameworks.

188. The activities that will contribute to Output 1.3 include:

1.3.1 Collect lessons from demonstration activities (Component 2) and disseminate them nationally and internationally

1.3.2 Establish an island-based intersectoral platform to develop an upscaling strategy, including: financing options, opportunities and barriers and review of relevant policies and strategies to identify entry points for upscaling the integrated watershed management practices introduced by the project

Component 2 – Resilient watersheds and ecosystem-based adaptation demonstrations

189. Under this component, the tools and capacity developed and knowledge acquired on integrated watershed management and climate change through the first component will be put into action to demonstrate the rehabilitation and sustainable management of watersheds on each island.

190. The project will support the development of collaborative sub-catchment and/or watershed rehabilitation and management plans through consultative processes. Following the training of local communities on climate risk management, watershed management and EBA, resilient integrated watershed management techniques and approaches will be implemented in one watershed per island, thus directly addressing the current inadequate management of watershed resources outlined in Section 2.3.

191. This will be done using an ecosystem-based management approach, whereby activities to rehabilitate and manage degraded ecosystems (including reforestation using resilient species, anti-flooding and anti-erosive measures, and the establishment of conservation zones) will be accompanied by measures to monitor environmental parameters and the ability for ecosystem-based approaches to mitigate the effects of climate change and extreme events, resulting in reduced impacts on local communities' livelihoods. This component will include activities implemented in close partnership with local communities at the selected pilot sites to rehabilitate degraded ecosystems that form the basis for their livelihoods.

192. This component addresses GEF Adaptation Programming Strategy's **first objective**[106] ("Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change"), in particular **Outcome 1.1**: *Vulnerability of physical assets and natural systems reduced*, and the corresponding **Indicator 2**:

[106] GEF Programming Strategy on Adaptation to Climate Change for LDCF and SCCF (GEF/LDCF.SCCF.16/03/Rev.01, May 2014)

"Type and extent of assets strengthened and/or better managed to withstand the effects of climate change".

193. Total co-financing amount for Component 2: US$ 1,700,000
LDCF Project Grant Requested: US $ 1,850,710

194. This component will be fulfilled through the outcomes and outputs presented in Table 3.2, below.

Table 3.2: Outcomes and Outputs under Component 2

Outcomes	Outputs
Outcome 2. Rehabilitated and sustainably managed watersheds and sub-catchments in project areas	Output 2.1 Watershed rehabilitation and management plans and implementation mechanisms adopted by communities
	Output 2.2 3,500 ha of the targeted watersheds are rehabilitated through reforestation, conservation and anti-erosive measures

Outcome 2: Rehabilitated and sustainably managed watersheds and sub-catchments in project areas

Output 2.1 Watershed rehabilitation and management plans and implementation mechanisms adopted by communities

195. In each of the selected watersheds on the three islands, the process will begin by the participatory development of Watershed Management Plans (WMPs). Using the information generated under Component 1 on climate change impacts and vulnerabilities, these plans will include watershed rehabilitation plans, as well as collaborative land-use mechanisms in which all land users are equitably represented. The mechanisms for land allocation among different uses (forest conservation, charcoal production, agriculture) will be expressed in agroforestry land use plans at the community scale, to be developed under Component 3.

196. In each community, facilitators will conduct consultations for the identification of current land uses as well as ecosystem rehabilitation and conservation objectives that will allow for achieving a balance between ecosystem services and sustainable production, while reducing the communities' vulnerability to the impacts of climate change.

197. The WMPs will also include mechanisms for implementation and enforcement, and will be designed so as to facilitate inter-village cooperation, as well as collaboration with other land users and local municipal law enforcement. The DGEF will act as a facilitator for the development, design and enforcement of the agreements throughout the duration of the project. Partnerships will be developed with municipal law

enforcement and with community groups to support long-term enforcement, while the monitoring process set up in Component 1 will also provide continued data to assist with the management of rehabilitated zones.

198. The activities that will contribute to Output 2.1 include:

2.1.1 Support community-based negotiations towards the development of collaborative sub-catchment and/or watershed rehabilitation and management plans and implementation mechanisms, that aim at reversing human-induced watershed degradation and integrate climate risks and impacts, using the models and information produced in Component 1

Output 2.2 3,500 ha of the targeted watersheds are rehabilitated through reforestation, conservation and anti-erosive measures

199. In order to further support the implementation of the WMPs developed under output 2.1, the project will provide extensive training to local authorities, traditional leaders, and communities on the principles of watershed management, ecosystem-based adaptation, and climate risk management. This will help in building awareness and understanding of the potential benefits of IWM as an adaptation strategy, and to empower local communities to develop home-grown strategies that respond to their own priorities, as well as to promote local enforcement. The participants will also be trained to monitor and sustain adaptation interventions in the longer term. Climate data and watershed maps from Component 1 will be used to engage communities in the training.

200. The training will create the basis on which to implement the WMPs. Trained community stakeholders will implement the WMPs, with local NGOs and contractors, through an integrated approach, including the following measures:

a. Reforestation using resilient multi-purpose species with proven soil restoration properties (as predetermined by studies conducted through other projects, such as the LDCF-funded ACCE project), and the establishment of dedicated woodfuel production lots;
b. Anti-erosive and anti-flooding measures, including stone dykes and small retaining walls, terracing on cropped land, as well as anti-fire corridors;
c. Well delimited crop and livestock areas with limits on expansion, and the establishment of cropping plots through fencing, bunding, and other soil conservation measures. This will be undertaken in concurrence with Component 3 activities supporting the development of better agricultural production techniques; and
d. Establishment of temporary and/or permanent community conservation areas, with defined no-take zones, designed to increase the watershed rehabilitation rate, in particular in and around headwaters.

201. Each community will determine the location and boundaries of the activities with the support of technical experts and the DGEF. The execution of these works will rely on community-based organizations, local NGOs as well as private sector actors for the more intense labor.

202. It is expected that by the end of the project, communities will have rehabilitated 3,500 ha of watersheds on the three islands (400 ha per year in Grande Comore, 250 ha per year in Anjouan and 225 ha per year on Moheli).

Table 3.3: Rehabilitated hectares of watersheds per island and per year of project implementation

	Year 1 (ha)	Year 2 (ha)	Year 3 (ha)	Year 4 (ha)	TOTAL (ha)
Grande Comores (Ngazidja)	400	400	400	400	1,600
Anjouan	250	250	250	250	1,000
Moheli	225	225	225	225	900
Total hectares of watershed rehabilitated by end of project					**3,500**

203. The activities that will contribute to Output 2.2 include:

2.2.1 Conduct local training on climate risk management, watershed management and ecosystem-based adaptation in project sites

2.2.2 Implement watershed rehabilitation and management plans, developed under output 2.1, through an integrated approach, including: reforestation using resilient species; anti-erosive and anti-flooding measures; establishment of temporary and/or permanent community conservation zones.

Component 3 – Resilient and diversified ecosystem-based livelihoods for local communities

204. Under this component, the project will introduce and implement a diversified array of climate-resilient alternative livelihood strategies in targeted communities. This will include the development of potential innovative livelihoods pathways, such as renewing the exploitation and commercialization of traditional plants and other niche food and cash crops, all within an integrated watershed management approach.

205. By reducing pressures on the environment, this approach will help to maintain the ecological services that form part of resilience; as well as reducing the vulnerability of communities to climate shocks by providing them with sustainable development pathways. The diversified livelihoods will support sustainable land and water use and decrease incentives towards unsustainable natural resources use. It is expected that increased productivity and income from the sustainable use of natural resources and the restored ecosystem services will provide continued incentives for the communities to practice resilient integrated watershed management in order to sustain livelihoods. These development results will be tracked.

206. This component addresses GEF Adaptation Programming Strategy's **first objective**[107] ("Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change"), in particular **Outcome 1.2**: *Livelihoods and sources of income of vulnerable populations diversified* and the corresponding **Indicator 3**: "Number of people benefiting from the adoption of diversified, climate-resilient livelihood options".

207. Total Co-financing amount for Component 3: US$ 9,500,000
LDCF Project Grant Requested: US $ 2,062,816

208. This component will be fulfilled through the outcomes and outputs presented in Table 3.4, below.

Table 3.4: Outcomes and Outputs under Component 3

Outcomes	Outputs
3. Increased and sustained income from alternative livelihood strategies among project communities	Output 3.1 Ecosystem-based livelihoods, such as agroforestry practices are adopted among project communities
	Output 3.2 Climate-proof innovative sources of livelihoods adopted in project communities

Outcome 3: Increased and sustained income from alternative livelihood strategies among project communities

Output 3.1 Ecosystem-based livelihoods, such as agroforestry practices are adopted among project communities

209. Building on the WMPs developed under Component 2, communities will develop climate-resilient and ecosystem-based land use plans through a consultative participatory process. These land use plans will help communities determine the areas dedicated to cropping and agroforestry, as well as the type of crops and interventions to be promoted in each village.

210. Beneficiaries will be encouraged to associate into producer groups, so as to strengthen cooperation, increase resource efficiency, maximize land use, and to facilitate training and capacity building. Technical support as well as inputs for small stock production will be provided by the project. The project will also provide technical support and input acquisition towards a value-chain approach that will include all aspects of production, transformation and marketing. In addition, technical support and tools will be provided to identify and analyze constraints to production in order to relieve farmers from crop and livestock loss due to pests or parasites.

[107] GEF Programming Strategy on Adaptation to Climate Change for LDCF and SCCF (GEF/LDCF.SCCF.16/03/Rev.01, May 2014)

211. The implementation of these community-driven plans will include the following interventions, which were selected during the project preparation phase, based on community consultation and preliminary technical advice. Further feasibility studies, market assessments and cost-benefit analyses will be conducted during inception in order to inform the development of the community-based plans.

a. The project will support the development of zero-grazing small stock value chains, such as dairy cows, chicken and egg production, and goats. It has been determined that a local market exists for such products, provided that producer groups can be adequately supplied with necessary inputs, and that phytosanitary and veterinary constraints can be overcome. This will include the provision of animals, materials for fencing and protection, as well as small transformation and packaging equipment, in order to facilitate commercialization. This will also be done by building on the established producer groups, with particular attention to women's producer groups.

b. The project will support the deployment of enhanced fruit and vegetable production, which, at the moment, remains at an artisanal and subsistence level, despite the availability of high-quality source materials. The project will support the production and processing of vegetables and vegetable products (for example tomato conserves and sauces, peppers and spice assortments, etc). This activity will be deployed with the support of a value chain specialist, who will be able to help communities identify and overcome constraints to production and commercialization, while providing support to the implementation of sustainable production techniques.

212. More specifically, the following table presents potential cropping alternatives that have been identified for the selected villages in each island, which will be subject to more advanced feasibility testing during the project inception phase.

Table 3.5: Potential cropping alternatives for each island of the Comoros

Island	**Cropping alternative**	**Targeted stakeholders**
Grande Comore	Pepper Ginger Coconut tree Papaya Oranges Cash cows Chicken hatcheries & egg production Goats	Small-holder farmers
Anjouan	Processing of potatoes Processing of tomatoes Processing of mangos Cash cows Chicken hatcheries & egg production Goats	Producer groups

Moheli	Processing of coffee Processing of tomatoes Cash cows Chicken hatcheries & egg production Goats	Producer groups

213. In order to further support agricultural production in the targeted areas, the project will seek to identify and address the major phytosanitary constraints experienced by various producers. Plant and animal diseases have been known to decimate entire stocks and crops in the past, without well-defined causes and solutions. Therefore, the project will seek to ensure that investments into production systems also provide adequate training and capacity to address pests and diseases, in particular those that are related to changes in climate or land use.

214. In addition, the project will also support the installation of water conservation and mobilization infrastructure in project sites. This will help address climate-related water constraints to production, including accelerated run-off, low soil water retention, and the unpredictability of rainfall. For those sites which do not have an immediate source of water, the project will support the installation of small rural hydraulic infrastructures, such as cisterns, buried reservoirs, or impluviums, depending on their feasibility. Their location and type will be determined through the consultations for the development of the WMPs, and detailed technical design will be supported by MAPEEIA before implementation.

215. The activities that will contribute to Output 3.1 include:

3.1.1 Based on integrated watershed rehabilitation and management plans (Component 2), establish community-agreed climate-resilient agroforestry land use plans

3.1.2 Implement ecosystem-based livelihoods production strategies, focusing on climate-resilient production activities and using a value-chain approach

3.1.3 Analyze and address phytosanitary constraints to production, including pests and parasites affecting crops and livestock

3.1.4 Develop small rural hydraulics for water harvesting and conservation (cisterns)

Output 3.2 Climate-proof innovative sources of livelihoods adopted in project communities

216. The project will also seek to develop new and innovative sources of livelihoods that are less at risk of climate change and that provide viable diversification avenues for communities. One such avenue that was identified during project preparation is the cultivation, preparation and commercialization of natural medicinal and cosmetic products.

217. An analysis of traditional knowledge and practices in Comoros has revealed that many indigenous herb species have in the past been used for traditional medicinal purposes. Preliminary scientific research into these applications during the project preparation phase (see Appendix 18 for the full report) has also shown significant potential for natural medicinal applications using local species and plants.

218. These species include, for example, *Tambourissa leptophylla*, which is a tree endemic to the Comoros, and whose fruits are used traditionally for the treatment of malaria, diarrhoea, and wound healing. Other species, like clove, are already among the main cash crops in the country. This plant is well-known worldwide both as a spice and in traditional medicine. The phytochemistry and biological activities of clove have been extensively studied. Reported therapeutic potentials include antioxidant, antimicrobial, antiparasitic, insecticidal, anticancer, anti-inflammatory and analgesic activities, to name a few. The table below outlines potential avenues for further development of medicinal applications.

Table 3.6: Species identified for the potential development of medicinal applications

Species	**Common Name**	**Indication**	**Active Ingredient(s)**	**Formulation**
Carica papaya	Papaya	Parasites	Benzyl isothiocyanates	Tea of seeds
Psidium guajava	Guava	Diarrhoea	Quercetin glycosides, polyphenols	Tea of leaves
Zingiber officinale	Ginger	Nausea and motion sickness	Gingerols	Rhizome powder capsules
Zingiber officinale	Ginger	Antifungal or anti-inflammatory	Gingerols	Balm or salve of root extract
Euphorbia hirta		Antiamoebic	Ellagic acid	Tea of leaves
Euphorbia hirta		Wound healing	Volatile terpenoids	Leaf oil in balm or salve
Azadirachta indica	Neem	Acne	Terpenoids	Soap with seed oil
Azadirachta indica	Neem	Insect deterrent/ antifeedant	Limonoids	Seed solvent extracts
Azadirachta indica	Neem	Wound healing	6-hydroxychavicol, polyphenols	Ointment with leaf solvent extracts
Piper capense		Insecticide	Volatile terpenoids	Essential oil
Aphloia theiformis		Antioxidant/ sun protection	Xanthones	Leaf solvent extracts in cream
Jatropha curcus		Anti-inflammatory, wound healing	Volatile terpenoids	Seed oil or solvent leaf extract in a balm
Moringa oleifera		Hypertension	Thiocarbamate, isothiocyanate glycosides	Leaf oil capsules or leaf solvent extract dried capsules
Syzygium aromaticum	Clove	Anti-inflammatory/ analgesic	Eugenol and derivatives	Bud oil in balm/salve

219. The following course of action would allow for significant multiple benefits to be realized:

a. Conservation of traditional indigenous knowledge, which is gradually disappearing with older generations,
b. Conservation of local biodiversity and potentially genetically important species and varieties, including endemic species, and
c. Creation of producer groups which can earn income while providing access to viable alternative medicine options for minor ailments to those who may not have access to medical services. At present, while the Comorian population uses natural medicines, all the supplies are imported, making them too expensive.

220. Through this project, traditional knowledge on pharmaco-cosmetic uses of plants will be collected and reviewed with the participation of local NGOs, the University of Comoros, and community stakeholders. In addition, other niche food crops will be investigated in consultation with community stakeholders to identify potential cash crops. A shortlist of products will be selected in cooperation with producer groups and national authorities, based on criteria combining ecological appropriateness, value for watershed rehabilitation, as well as climate resilience and, most importantly, feasibility of production and transformation.

221. It is expected that through this project, a few producer groups, comprised mainly of women of all ages, will be supported in acquiring the adequate knowledge on the cultivation, uses, administration of medicinal plants.

222. They will also be supported in developing a commercialization and marketing plan, using local markets, and including a certification process that may allow for expanding market access later on.

223. This activity will be realized in cooperation with international phyto-cosmetic experts, in partnership with the Herbier des Comores, which has worked over the past few years to catalogue and characterize the medicinal value of indigenous plants. This will also help make linkages to the activities undertaken under the CBD and the International Treaty on Plant Genetic Resources.

224. The activities that will contribute to Output 3.2 include:

3.2.1 Collect and review traditional knowledge on pharmaco-cosmetic plant-based products and niche food crops with a view of identifying potential cash crops for diversification (including environmental impact, socio-economic potential and policy barriers)

3.2.2 Organize producer groups, particularly women's groups, towards the production and marketing of niche pharmaco-cosmetic plants

3.4. Intervention logic and key assumptions

225. The interventions designed in the proposed project will: i) build technical and institutional capacity of local and national-level government and stakeholders to plan and implement EBA interventions, in particular resilient watershed management, and to eventually integrate these into policy and strategy frameworks; ii) apply this capacity to demonstrate the rehabilitation and sustainable management of watersheds; and iii) increase the capacity of local communities to adapt to climate change through diversified and resilient livelihood strategies.

226. In order to build resilience of the communities to the effects of climate change, the project will endeavor to introduce integrated watershed management into public policy and practices as an adaptation strategy, as well as training technical staff to implement such policies. Furthermore, the project will implement EBA interventions, including developing watershed rehabilitation and management plans through an integrated approach, contributing to increasing water availability through anti-erosion and anti-flooding measures, and establishing community conservation zones. Finally, the proposed project will generate climate-resilient livelihood alternatives for rural communities, through pharmaco-cosmetic plant-based products and niche food crops.

227. Overall, the proposed activities under each component of the project are designed to provide benefits at the national and local levels regardless of the severity of climate change impacts in the Comoros. Implementing sustainable watershed management plans and practices will ultimately contribute to improve the protection of natural resources and the ecosystem services they provide, which in turn should improve the livelihoods and reduce the vulnerability of communities.

228. The key assumptions underlying the project design are as follow:

- Local communities accept the proposed interventions during the implementation of the project;
- The Government of Comoros fully supports the project throughout its duration;
- Institutional capacity is sufficient and relationships between ministries and directorates involved in the project are adequate to provide the solutions proposed under the activities of the project;
- There is sufficient technical capacity and information to conduct the mapping and geo-referrencing of forest and watershed ecosystems;
- The priority interventions implemented are cost effective;
- Priorities for adaptation to climate change are unlikely to be undermined by national emergencies;
- The improved understanding of the social and economic value of restored ecosystems prevents future degradation from the “business-as-usual” use of land in the restoration sites;
- Local government (on each island) is willing to include IWM into public policy;
- Local communities are willing to learn about IWM approaches and integrate them in their practices;

- Land tenure is secured and guaranteed for on-farm work; and
- Communities are able to link to markets for agricultural products and innovative sources of livelihoods, and production increases meet an existing demand.

3.5. Risk analysis and risk management measures

229. A series of risks that the proposed project faces in trying to reach its objectives was considered during the PPG phase. The risks and some of the measures for mitigation considered for the project are listed below.

Table 3.7: Summary of the risks to project objectives of the proposed project and suggested risk management measures

	Description of risk	Potential consequences	Risk rating	Mitigation measures/proposed interventions	Risk category	Probability & Impact (1–5)
1	Current climate and seasonal variability and/or hazard events prevent implementation of planned activities.	Economic loss or physical damage to infrastructure is a challenge to the timely implementation of project activities.	Medium	• Consider current climatic variability during the restoration process. • Focus on climate-resilient species and techniques to: i) assist plant growth particularly in the seedling/sapling phase; and ii) reduce risk of damage from hazard events. • Take meteorological predictions and seasonal variability into account to reduce the risk of damage to plants.	Economic	P = 3 I = 5
2	Weak institutions and government capacity cause delays and logistical challenges to support project implementation	Given that the institutional capacities are generally low and coordination between different government agencies is not optimal, this could impede the implementation of the project and reduce the number of activities that could be delivered.	High	• Government officials have been engaged since the preparation stage to promote ownership of the project. • Government capacity in terms of climate change adaptation will be assessed at the inception of the project, and measures will be taken to reinforce capacities if needed in order to avoid delays in project implementation. • Government officials will coordinate the activities of all the partners and stakeholders	Institutional	P = 4 I = 4

				ensuring that the civil service has a central role in the project's success, maintaining their interest and accountability of the project. • The project will promote inter-ministerial collaboration so as to ensure cross-departmental accountability and cooperation. • Training and capacity building will also be provided, which will allow this project to provide learning incentives.		
3	The roles, responsibilities and mandates of the Union versus the island governments lack clarity	Given that there is a general lack of institutional capacity and that the coordination between different government agencies is not always well established, this could create an imbalance between island governments regarding the implementation of the project and reduce the number of activities that could be delivered.	High	• There will be three Island Coordinators who will coordinate activities with the PM. The Island Coordinators will act as a liaison between the PM and the national and international consultants conducting the work in each village. • Workshops and meetings will be held regularly to make sure each island government and the Union's government all coordinate efforts to select the right target audiences for each activity. • Government officials have been engaged since the preparation stage to ensure ownership of the project. • Training and capacity building will also be provided, which will allow this project to provide learning incentives.	Institutional	P = 4 I = 4
4	Poverty and other social factors prevent local communities from adopting resilient	If local communities do not engage fully in the project due to social factors, or do not fully see the long-term	Low	• The project will carry out information dissemination activities at the local level ensuring that communities are aware of the benefits of	Social, environmental	P = 2 I = 4

	ecosystem-based adaptation measures for the long-term, instead opting for maladaptive activities for short-term benefits	benefits they can gain from the project, they will perpetuate maladaptive practices that will result in a spiraling of the root causes underlying what the project seeks to address – i.e. unsustainable use of natural resources, which will then lead to further degradation of ecosystems. Consequently, the community will continue to be vulnerable to climate-induced natural hazards.		ecosystems and adaptation. • The emphasis on livelihoods will also place people's socioeconomic welfare at the heart of the project and offset some of the risks they may incur in choosing adaptive measures. • Inclusive interventions such as building community action plans for water management will ensure that individuals have a role and stake in the project. • During project preparation, stakeholders will be brought on board and local risk-mitigation strategies will be developed for inclusion into the project, so that communities are certain to implement "no-regrets" options.		
5	Climate change adaptation priorities undermined by national emergencies	Project activities are interrupted. Natural and financial capital is lost.	Low	• The project manager and coordination committee will keep abreast of national events and politics to plan contingency activities when/if necessary.	Social, environmental	P = 3 I = 5

3.6. Consistency with national priorities or plans

230. The proposed project will be consistent and aligned with many of the Comoros' national priorities and plans, such as:

231. The **Poverty Reduction and Growth Strategy (PRGS, 2010-2015)** aims to increase economic growth to at least 5% annually and to decrease income poverty by 50% by 2015. Sustainable development, including protection of the environment, is a central aim of the strategy, "improving soil productivity", "integrated coastal management", and "increasing water supply" being three of the seven priority programmes. Specifically, the proposed project is consistent with and supports two of the core strategy objectives: (2) "strengthening key sectors of the economy with the highest growth and poverty reduction potential" and (6) "promoting environmental sustainability and civilian security". As the project will look into ecosystem-based alternative livelihoods for local communities on all three islands, as well as restoring important forests and watersheds, it will contribute to reduce poverty and promote sustainable growth, which is consistent with the PRGS.

232. Taking over the PRGS, the **Accelerated Growth and Sustainable Development Strategy (Stratégie de Croissance Accélérée et de Développement Durable - SCA2D, 2015-2019)** started its five-year implementation period in 2015 with the aim of making the Comoros an emerging country by 2040.[108] The SCA2D has four objectives: i) strengthen the foundations of a strong, viable, fair and inclusive economic growth; ii) improve the population's living conditions and ensure equity in the access to basic social services; iii) promote the Comorian natural and cultural heritage and the optimal use of natural resources; and iv) promote good governance. Each sector has relevant strategies and policies, and these are adopted and operationalized by each island along the relevant sections of the SCA2D. For instance, the agricultural policy was developed in 1994 and updated in 2011 and 2014 and is implemented alongside the relevant sections of the SCA2D as the strategic reference document for the agriculture sector. Agricultural development targets and climate change adaptation targets are included within the framework of SCA2D. The project is well aligned with the SCA2D as it will promote livelihood diversification strategies as well as collaborative watershed rehabilitation through an integrated watershed management approach involving all key stakeholders and community members, thus fostering good governance, improving population's living conditions through an optimal and sustainable use of natural resources.

233. The **United Nations Development Assistance Framework 2015-2019 (UNDAF)** was formulated at the same time as the SCA2D, and therefore reflects lessons learned from the PRGS and from the previous UNDAF. It is aligned with three of the four pillars of the SCA2D, namely the strengthening of the foundations of strong, viable, fair and inclusive economic growth; the improvement of the population's living conditions and equity in the access to basic social services; and the promotion of good

[108] Stratégie de croissance accélérée et de développement durable 2015-2019 (SCA2D) (Mai 2014)

governance. Since the aim of UNDAF 2015-2019 is to contribute directly to the SCA2D, the proposed project is also well aligned with the framework's expected outcomes, particularly regarding UNDAF Outcome 4 on vulnerable population reaching climate change and crisis resilience by 2019. The proposed project will be mainstreamed in the UNDAF, not only because it will support community-based negotiations towards the development of collaborative watershed rehabilitation and management plans, but because it will also provide a diversified array of resilient livelihood strategies that will allow vulnerable populations to be more resilient to climate shocks.

234. The **Forest Policy's (2010)** overall goal is the conservation and sustainable development of the forest cover in order to guarantee the sustainable production of goods and services for the population by contributing to the fight against poverty, environmental protection, and by respecting the Union's commitments to international conventions. Its main objectives are to: i) improve knowledge on forest cover; ii) foster sustainable and participative management and conservation of forestry resources; iii) strengthen institutional framework through the implementation of a forestry administration to develop a national programme of forestry development; and iv) raise awareness through training on participative management of forests to maintain forest cover and develop sustainable practices for revenue-generating activities to fight against poverty (non-timber forest products (NTFPs) such as honey, medicinal plants, mushrooms…).[109, 110] The proposed project is well aligned with the Forest Policy, and will contribute to the achievement of most of its objectives.

235. From the National Forest policy objectives, the general framework and the implementation strategy of the policy were then set out as part of the **Priority Action Plan for Forestry Development (PAPDF, 2011-2015)** to facilitate its implementation. The PAPDF is aimed at developing a reference framework in order to guide the funding and the work programme around the four following fields of action[111]:

    a. Strengthening of forestry institutions and mechanisms,
    b. Enhancing natural forest participatory development and management,
    c. Promoting plantations for production of timber (energy needs and other services), and
    d. Supporting local initiatives of forest resources management.

    All of those objectives will be addressed through the proposed project.

236. The **National Adaptation Programme of Action (NAPA) (2006)** identifies loss of water bodies, drought and low river flows, and climate-related storms as major threats and hazards to Comoros. It also identifies water/groundwater availability, food security and income generation as the main issues vulnerable to climate change. The NAPA priorities were aimed at adaptation in agriculture, fisheries, water, housing, health, and, indirectly, tourism, through the replenishment of watersheds and the fight

[109] Enoncé de la politique forestière de l'Union des Comores (MAPEEIA, Mai 2010, Moroni)
[110] Rapport sur l'Inventaire Forestier National (IFN) de l'Union des Comores (2010) (version préliminaire)
[111] Plan d'Action Prioritaire de Développement Forestier (PAPDP), mai 2012

against soil erosion. Some of the priority adaptation projects identified in the NAPA are (1) promote drought resistant crop varieties (2) fight against soil erosion and promote restoration and reconstitution of basin slopes; and (4) increase water supply and increase its quality. These are among the priorities that will be addressed through this LDCF project.

237. The **National Adaptation Plan (NAP)** process started in 2014, however, it is still to be launched in practice due to delays in accessing funds. The NAP process is set to identify institutional mechanisms and existing coordination in order to include climate change related risks and opportunities within national, insular and sectoral policies and strengthen institutional and technical capacity, which will help crystallize long-term objectives as regards climate change. Close coordination between this project and the NAP process will be ensured, and facilitated by the fact that both processes are housed in MAPEEIA. In particular, the analytical products and improved evidence base, the strengthening of technical and institutional capacity for addressing climate change impacts, and the intersectoral platform undertaken under Component 1 of the proposed project will advance the problem definition, solution identification and institutional coordination needed for the NAP process in the Comoros.

238. The **Agricultural Policy,** developed in 1994 and updated in 2011 and 2014, seeks to achieve food security for all, create employment, and promote sustainable use of natural resources, through four main axes: i) guaranteeing the sustainability of production conditions; ii) strengthening value chains; iii) enhancing institutional development; and iv) mobilizing non-governmental actors.[112] The proposed project is well aligned with the Agricultural Policy, as it includes activities to develop diversified, innovative and sustainable livelihoods in order to increase food security and reduce poverty of Comorian rural populations.

239. The **National Environment Policy (NEP)** and the **Environmental Action Plan (EAP)** which supports it were adopted by the Comorian government in 1993 and 1994, respectively, to enable the country to integrate environmental concerns for sustainability into development plans, programs and projects.[113] The NEP also defines national standards for biodiversity conservation, protected areas management, environmental impact assessment and pollution control. The project is well aligned with the NEP, which seeks to add an environmental perspective to national public discourse and to socioeconomic development activities.

240. The fifth national report on biodiversity (2014) shows how a number of objectives outlined in the **National Strategy and Action Plan for the Conservation of Biodiversity 2011-2020** are currently being achieved, contributing to the Aichi objectives aiming, directly or indirectly, at ensuring the sustainable management of forest resources. Progress in reaching the Aichi objectives includes introducing

[112] Actualisation de la politique agricole et formulation d'une stratégie sur le court à long terme pour le secteur comme vecteur pour lutter durablement contre l'insécurité alimentaire aux Comores /Landell Mills/Rapport Final Provisoire/Avril 2014.
[113] Appui au Programme forestier national (FAO, 2008-2009)

participative and community management of currently 10,000 ha of forests, to be increased to 12,500 ha by 2018, hence improving the protection of forests in order to stabilize the population of *Pteroptus livingstonii*.[114] This project is well aligned with this strategy because, as part of integrated watershed management, the development of watershed management plans and watershed rehabilitation will contribute to the biodiversity strategy. The establishment of temporary and permanent community conservation zones will also contribute to the protection of biodiversity.

241. The proposed project is well aligned with the **National Action Plan to Combat Desertification (NAP)**. As part of its integrated watershed management approach, the project interventions focused on reforestation and watershed rehabilitation will contribute to combating desertification. The following ongoing or completed activities (among others) identified in the NAP are indeed directly related to this proposed project:

- Implement national programme on sustainable land management between 2008 and 2012.
- Clarify the tenure regime status of agricultural land in order to encourage investments in anti-erosive measures on agricultural land.
- Ongoing analysis to establish three protected zones (Karthala forest, N'tringui Mount, and M'lédjéle forest).[115]

242. The **Water Act** (Code de l'eau) from 1994 (94-037) indicates that water resources management is led by MamWe (Autonomous Agency for Water and Energy Distribution) in urban areas and by the Ministry of Production in peri-urban and rural areas. The 2011 decree on the decentralization process (11-005) stipulated that water and sanitation management is attributed to the 54 towns on the three islands (20 in Anjouan; 28 in Grande Comore and 6 in Moheli). In addition, in 2010, the Comoros received funds from the African Bank for Development to develop the **National Programme for Drinking Water Supply and Sanitation,** to be implemented through the PRGS until 2014, with the specific objectives of i) improving access to drinking water and sanitation and ii) contributing to reducing the prevalence of water-borne diseases while preserving the environment in the three islands.[116] Within the proposed project, an ecosystem-based approach will promote integrated watershed management, through which access to water resources will be enhanced thanks to better conservation, the development of small rural hydraulics for water harvesting and conservation, as well as the overall rehabilitation of the ecosystems.

3.7. Additional cost reasoning

Outcome	Baseline and Gaps	GEF Alternative	Additional

[114] 5ème Rapport National sur la Diversité Biologique (Juin 2014)
[115] Plan d'Action National pour la luttre contre la desertification aux Comores (PAN/LCD – 2013)
[116] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Procurement/Project-related-Procurement/GPNComoresAEPA%20%204-10.pdf

			adaptation cost
1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels	There is a lack of institutional and technical capacity to plan and implement climate change adaptation in the Comoros. This is characterized by a lack of data and information on climate change impacts and vulnerabilities, a limited inclusion of climate change adaptation in policies and frameworks, and an absence of guidelines to help communities build technical capacity to adapt to climate change impacts, further emphasized by a lack of intersectoral coordination. Although the FAO Country Programming Framework (CPF) contributes to the strengthening of governance and sustainable management of forest and other natural resources with an emphasis on agroforestry development, there is no plan for building capacity to use integrated watershed management as an ecosystem-based approach to help Comorians adapt to climate change. Even though the Comoros Social Safety Net Project aims at building a productive and disaster responsive safety net, and strengthening safety net management, coordination, and monitoring and evaluation, this project does not take climate change impacts into account. While the National Forestry Action Plan (NFAP) aims to build the capacity of DGEF and other relevant actors on forests, and strengthen data collection and dissemination, it does not directly consider climate change impacts and interlinkages.	GEF financing will support the assessment of climate change impacts on forests and watersheds through the development of a geo-referenced information system on climate change impacts. It will also support the introduction of IWM into public policy through training and awareness raising of MAPEEIA staff on integrated and participatory watershed management as a climate resilient strategy to support vulnerable rural populations in adapting to future climate change. For longer-term impact, a strategy and an intersectoral platform will be developed and institutionalized to sustain and replicate integrated watershed management, through the collection of lessons learned in Component 2 and their dissemination nationally and internationally. GEF financing will also add a resilient and sustainable aspect to the Social Safety Net Project by supporting community-based development of collaborative watershed management plans, agroforestry land use plans, and ecosystem-based livelihoods strategies, incorporating climate change risks and climate resilient and sustainable strategies. GEF financing will complement the capacity-building aspects of NFAP by providing training on climate change and forest interlinkages, and integrated watershed management as an adaptation strategy. The assessments and information system to be developed will also contribute climate change information to the NFAP data collection and dissemination activities, as well as to planned work on forest delimitation and management planning.	US$ 781,473
2. Rehabilitated and sustainably	Comorian watersheds are under increasing pressures both from communities seeking to increase	GEF financing will support the rehabilitation of 3,500 ha of watershed through integrated watershed	US$ 1,850,710

managed watersheds and sub-catchments in project areas	agricultural production and to fulfill their energy needs and the limited capacity and resources prevent the implementation of sustainable forest management and watershed rehabilitation. While there are projects promoting the rehabilitation and management of forests as well as water recovery (funded by Japan), it is not planned through a participatory process with the construction of anti-erosive measures, anti-flooding measures and conservation measures. Although the FAO Country Programming Framework (CPF) will contribute to strengthening sustainable management of forest and other natural resources, it does not assess climate change risks and impacts on forests and watersheds.	management as an ecosystem-based adaptation approach, including reforestation, conservation and anti-erosive measures. It will facilitate community-based negotiations for the development of collaborative sub-catchment watershed rehabilitation and management plans. It will also support the building of local capacity to cope with climate risk and implement watershed management.	
3. Increased and sustained income from alternative livelihood strategies among project communities	Poverty in rural communities of the Comoros is mainly due to the low diversity of livelihood strategies within, but also beyond, agriculture. For instance, the livestock sector is not contributing to livelihoods as it could, due to the low productivity of the animal breeds and sanitation issues. While some projects (FAO CPF; PNDHD) support intensification, diversification and commercialization of agricultural and livestock production for improved food security, including efforts to foster a more competitive and diversified agriculture sector and to reduce poverty by promoting better natural resource management in order to raise agricultural production, these projects do not include innovating in niche products, nor do they promote a participative and integrated approach to reach their goals.	GEF financing will support the development of sustainable livelihood strategies such as resilient agroforestry and zero-grazing small stock production among project communities (including chicken hatcheries, egg production, young goats and cash cows) and vegetable and fruit processing with value chain management; as well as the development and deployment of climate-proof innovative sources of livelihoods, including pharmaco-cosmetic plant products.	US$ 2,062,816

3.8. Sustainability

243. This project includes considerations that promote the continued achievement of its objectives and outcomes after the completion of its implementation. One of the challenges of many international development projects in developing countries is the lack of continuity once the project concludes. In order to ensure that the investments

of the project do not meet the same challenges, several key principles that support sustainability will be advocated:

244. Country ownership, which will include:
- Partnering with public institutions including national, departmental and local governments and structures, and supporting them to establish their own effective management structures during implementation,
- Working with community-based organizations,
- Supporting interventions that reinforce government plans and activities, and that can be integrated into government policies, which will make project interventions and results more relevant to government institutions,
- Working with the government, non-governmental organizations, community-based groups and the research community in Comoros to build home-grown adaptation capacity and knowledge which will outlast the project's interventions, and
- Working at the village level, leading to greater ownership and participation of local communities, resulting in the integration of resilient practices in local activities. The development of alternative and adaptive livelihoods is expected to open the gateway to more resilient income-generating activities in the long-term, and provide economic incentives for sustainable activities.

245. Promoting a learning-by-doing approach will allow beneficiaries of the project to put into practice the approaches and strategies proposed in the project and share new knowledge and lessons learned on ecosystem rehabilitation, agroforestry techniques and small livestock production. The project will be adaptive in nature for this very purpose: to identify the activities that are most sustainable and beneficial leading to improved livelihoods. The improved livelihood strategies will be piloted and adapted to optimize the achievement of results.

246. Implementation of effective capacity building, awareness raising and communication strategies will also contribute to the sustainability of the project's long-term impacts. The strategies will foster long-term commitment of local government and communities to implement IWM thanks to:
a. Continuous awareness raising on participatory watershed management and its role in climate change adaptation within the selected villages and watersheds in each island,
b. The development and delivery of training and courses on climate change, climate risk management and watershed management, provided not only to government institutions but also to targeted communities of the project, and
c. The national and international dissemination of the lessons learned through the project, which will facilitate the replication of the project in other watersheds.

247. Specific mechanisms and processes will also be put in place in the course of the project implementation to ensure the long-term sustainability of the project interventions. In particular, the establishment of an island-based intersectoral platform (Output 1.3) will provide a platform for continued dialogue on IWM as an adaptation

strategy. The development of the watershed rehabilitation and management plans and implementation mechanisms (Output 2.1) will put in place the processes and structures for ensuring, together with the training provided to local communities, the long-term follow-up and monitoring of the project interventions.

248. Interventions in the policy area, beyond contributing to already established country priorities and needs, will also serve in the long-term, by promoting new thinking and investments into forests and watersheds as mechanisms to promote resilience.

3.9. Replication

249. The project components have the potential to be scaled up in order to ensure greater aggregate impact at the national level and beyond. By increasing capacity at the institutional level (Component 1), and through inclusion and participation at the stakeholder level, the project ensures that agency and capacity remains in the country. The introduction of integrated watershed management as an adaptation strategy into public policy and practice under in Component 1 will put in place the information, awareness and capacity needed for its integration in relevant sectoral and development policies to support systematic upscaling of the project interventions.

250. Stakeholders can apply the expertise gleaned in this project and can expand and adapt it. Reforestation and watershed rehabilitation, when successful, can easily be replicated and upscaled in other sites. The project will seek to learn from previous experiences and successes in this area, as well as identifying lessons from implementation of demonstration activities and disseminating them within the Comoros and internationally (Component 2). Indeed, demonstrations conducted in Component 2 will prove that the concept of ecosystem-based adaptation approach works in the Comorian context and will provide an example for replication. The interventions on alternative livelihoods (Component 3) is a foray into upscaling community and private sector activities for income generation, and provides a pivotal first step for enhancing economic activity at a larger scale.

251. More specifically, this project will be replicated and up-scaled not only through local NGOs who will take part in the implementation of most activities, but also thanks to the establishment of an island-based intersectoral platform for the development of an upscaling strategy. The upscaling strategy will include financing options, opportunities and barriers, and a review of relevant policies and strategies to identify entry points for upscaling the integrated watershed management practices introduced by the project (activity 1.3.2).

252. Furthermore, replication will be possible because of the training and awareness raising among MAPEEIA staff and decentralized stakeholders in the environment, forest, water and agriculture sector on the benefits of participatory watershed management and ecosystem-based adaptation (activities 1.2.2 and 2.2.1). Finally, through the support of community-based negotiations, stakeholders will be fully engaged in the

development and implementation of watershed rehabilitation and management plans (activities 2.1.1 and 2.2.2), and will be able to transfer lessons learned and new knowledge to neighboring communities in order to upscale the project's results.

3.10. Public awareness, communications and mainstreaming strategy

253. The vulnerability of local communities in the Comoros is exacerbated in part by limited knowledge and awareness of climate change, its impacts, and possible adaptation strategies. To address this challenge, strategies at local and national levels will support awareness, communication and mainstreaming of the project approaches.

254. An important element of public awareness and communications will be introducing participatory watershed management as a climate resilience strategy. This will be achieved through training and awareness raising among MAPEEIA staff and decentralized stakeholders in the environment, forest, water and agriculture sectors during workshops and meetings in each island (Component 1 – activity 1.2.2). Awareness about participatory watershed management will also be raised among the public and in local communities through courses on climate change, climate risk management and watershed management developed by INRAPE, the University of Comoros and other technical training institutes (activity 1.2.4).

255. Local training will also be provided to support the implementation of the ecosystem-based adaptation interventions in Component 2 (activity 2.2.1). Lessons learned from demonstrations of resilient watersheds and ecosystem-based adaptation implemented within Component 2 will be disseminated nationally and internationally to facilitate the upscaled implementation of integrated watershed management as an adaptation approach. Finally, communication and mainstreaming of alternative livelihood strategies will occur through national and international consultants working closely with communities of the three islands on developing value chain management for small livestock (zero-grazing livestock), agroforestry products and pharmaco-cosmetics products (Component 3).

3.11. Environmental and social safeguards

256. The UNEP checklist for Environmental and Social Safeguards (Appendix 17) reflects the positive environmental and social impacts of the project. The Project Manager, Chief Technical Advisor and UNEP Task Manager will be responsible for overseeing adherence to these guidelines throughout the implementation of the project.

257. In the proposed project, gender equity will be promoted in each activity. Gender equity is defined here as the equal participation of men and women in project activities. During the focus groups of the second consultation mission, vulnerable groups such as women, youth and the elderly were particularly active in expressing their concerns on their vulnerability. In order to ensure gender equity, women's voices

will be included from the design of the project to its completion. The proportion of women involved in the project activities will be monitored during project implementation.

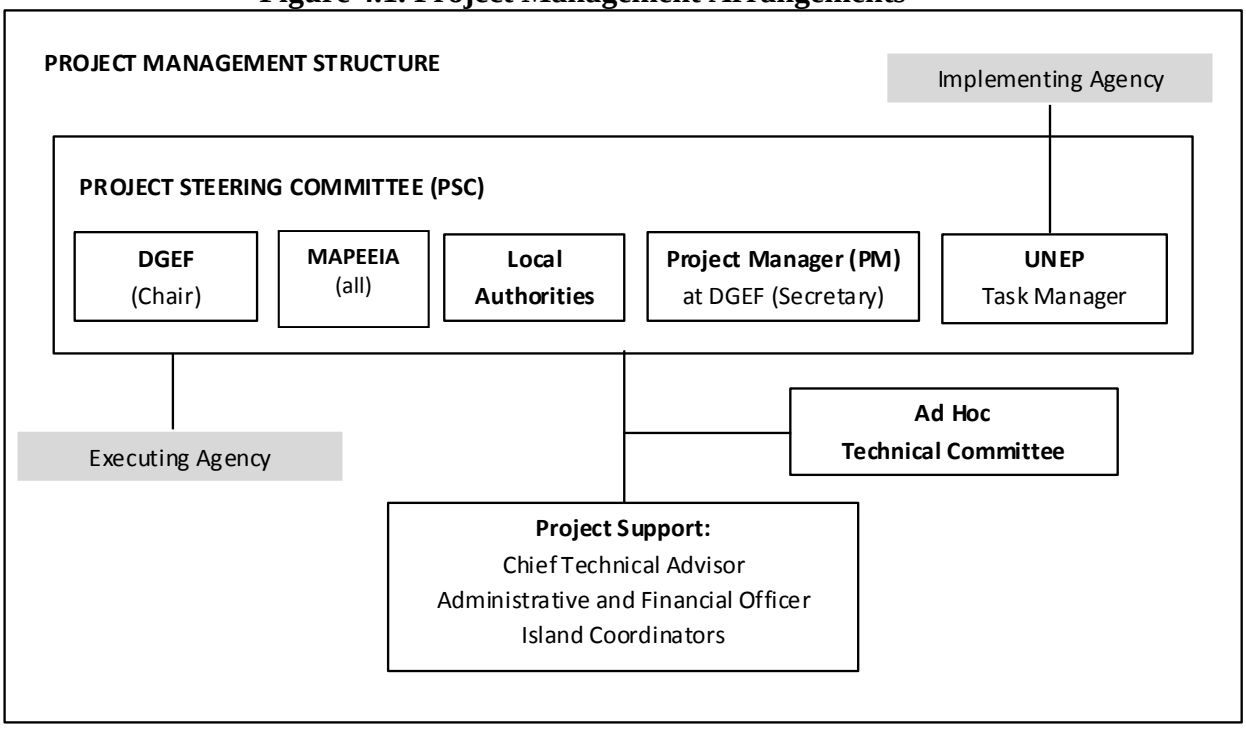
258. On Component 2, the perspectives of women and men on the use of their watershed and their priorities given expected climate change will be ascertained in a safe environment in separate meetings as well through equal representation in joint planning meetings. On Component 3, women and men will be helped to engage in climate-resilience and ecosystem-based activities designed around their specific needs, capacities, knowledge and social roles. For women these include, for example, the cultivation, preparation and commercialization of natural medicinal and cosmetic products, and the raising of poultry and small stock. Particular attention will also be given to the establishment and strengthening of women's producer groups.

259. The project has established gender-related targets, and the proportion of women involved in the project activities will be monitored during project implementation. Stakeholder decisions relating to project activities will only be made with a sufficient representation of women in attendance. Finally, indicators and results will also be gender-disaggregated to measure how women are being empowered through the project.

260. In terms of environmental impacts, the proposed project will restore and build the resilience of degraded ecosystems using an EBA approach during the implementation phase. The degradation of the watersheds and forest ecosystems where the project activities will be implemented is mainly human induced. Moreover, the proposed adaptation interventions will undergo UNEP's Environmental, Social and Economic risk screening process. This will identify potential environmental, social and economic risks of the proposed interventions in order to address them adequately by avoiding, mitigating or minimizing them in a structured, consultative and planned manner, and to ensure that the selected adaptation measures provide positive environmental and social benefits.

Section 4: Institutional Framework and Implementation Arrangements

Figure 4.1. Project Management Arrangements



261. The proposed project will be implemented by UNEP, and executed by the General Directorate of Environment and Forests (DGEF) of the MAPEEIA. As the Implementing Agency (IA) for the proposed project, UNEP will oversee the project, and provide the technical support required to meet the project goal. As such, UNEP will be responsible for project supervision to ensure consistency with GEF and UNEP policies and procedures. This supervision will be the responsibility of the Task Manager (TM) which will be appointed by UNEP. The TM will formally participate in the following: i) Project Steering Committee (PSC) meetings (at least once a year); ii) the mid-term and final evaluations; iii) the clearance of half-yearly and annual progress and financial reports; and iv) the technical review of project outputs.

262. The Executing Agency for the project will be the General Directorate of Environment and Forests (DGEF) of the MAPEEIA. DGEF will work in close collaboration with the National Strategic Directorate of Agriculture and Livestock (DNSAE – Direction Nationale des Stratégies Agricoles et de l'Elevage) and the General Directorate of Energy, Mines and Water Resources (DGEME – Direction Général de l'Energie, des Mines et de l'Eau), and island-level institutions responsible for the local level interventions of the project. The Executing Agency will be accountable to UNEP, who will oversee and monitor the implementation of the project.

263. A **Project Steering Committee (PSC)** will be established at the outset of the project. The PSC will be composed of MAPEEIA, DGEF, DNSAE, DGEME, and UNEP, as well as local authorities. It will be responsible for overseeing project implementation and making management decisions for the project, in particular when guidance is required by the Project Manager (PM). The PSC will be chaired by a representative of DGEF, and the PM will serve as secretary to the PSC. At the discretion of the PSC, members of relevant implementing NGOs or community organizations will be invited to participate in the PSC meetings to ensure local ownership and guidance for the project.

264. The PSC will play a critical role in project monitoring and evaluation by assuring the quality of these processes and products, and using evaluations for performance improvement, accountability and learning. The PSC will ensure that required resources are committed and will arbitrate on any conflicts within the project or negotiate solutions to any problems encountered with external bodies. The PSC will consider and approve the Annual Work Plans and approve any deviations from the original plans, if deemed necessary. Additionally, the PSC will contribute to reviewing project progress reports and technical reports from consultants. Overall, the PSC will serve as decision-making support, as appropriate throughout project implementation. It will meet at least twice a year.

265. In order to facilitate UNEP's ultimate accountability for the project results, the PSC's decisions will be made in accordance with standards that ensure management for development results, best value for money, fairness and equity, integrity, and transparency. If consensus cannot be reached within the PSC, the final decision shall rest with the UNEP Task Manager.

266. The project will be guided in its technical work by a multi-stakeholder **Ad Hoc Technical Committee,** if needed, chaired by DGEF (or a designate). The composition of the Ad Hoc Technical Committee will be inclusive of public and private sector representatives, representatives of research institutions, universities, NGOs, CBOs and civil society, community stakeholders, as well as interested and collaborating donors. As the management of the project is overseen by the PSC, the functions of the Technical Committee will be mainly technical and advisory. However, the Technical Committee may recommend management decisions to the PSC.

The Project Team

267. A full-time **Project Manager** (PM) will be recruited for the duration of the project by the Executing Agency, DGEF, to execute the management of the project on a day-to-day basis within the parameters laid down by the PSC. The PM's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The PM will therefore be responsible for the overall planning, implementation, management and reporting for the project. The PM will manage the project budget and

resource allocation, and will provide regular updates to the UNEP Task Manager (TM) and the Chief Technical Advisor (CTA) on the progress and challenges encountered during the execution of project activities.

268. The PM will guide and supervise the work to be conducted by the three Island Coordinators, the Financial and Administrative Officer, as well as the national and international consultants, who will be hired in support of project implementation. Stringent communication channels and lines need to be established to guarantee that the decentralized design of this project will be successful. It will be particularly important that the implementation experiences from the regions feed into the national level activities of the project.

269. The PM will meet the baseline project managers twice a year or more frequently if necessary. These meetings will include the project coordinators of all baseline projects. The focus will be on sharing lessons learned. Such meetings will also help avoid duplication of activities.

270. A **Chief Technical Advisor** (CTA) will be hired to provide technical guidance on the implementation of the project to the PM. The CTA will also assist the PM in leading the project. The CTA will fulfill the following functions: i) quality assurance and technical review of project outputs (e.g. studies and assessments); ii) assistance in drafting TORs for technical consultancies and supervision of consultants work; iii) assistance in monitoring the technical quality of project M&E systems, including annual work plans, indicators and targets; iv) providing advice on best suitable approaches and methodologies for achieving project targets and objectives; v) providing a technical supervisory function to the work carried out by the other technical assistance consultants hired by the project; and vi) assisting in knowledge management, communications and awareness raising.

271. Administrative and logistics support personnel will also be appointed for the duration of the project, including one Financial and Administrative Officer and three Island Coordinators. The Financial and Administrative Officer and the Island Coordinators will report to the PM, who will report to the Project Steering Committee Executive and the PSC.

272. The **Financial and Administrative Officer** (FAO) will work under the direct supervision of the PM and will be based at the national coordination office. She/he will assist the PM in the effective execution of the project and will be required to undertake intensive coordination with the Ad Hoc Technical Committee, the PM, and with other relevant partners.

273. The three **Island Coordinators** will work under the direct supervision of the PM and will each be based in their island's capital coordination office for the duration of the project. The Island Coordinators will act as a liaison between the PM and the national and international consultants conducting the work in each village.

274. The project will develop sub-contracting agreements with national institutions whose excellence is recognized in the field of climatology, agriculture, and climate change adaptation policies (such as INRAPE). These agreements will be developed to conduct an in-depth analysis of current watershed practices and the state of forest resources and to support the implementation of demonstration projects, as well as to prepare a strategy to rehabilitate and reforest watersheds within an integrated watershed management approach.

275. Consultants will be hired for specific tasks that cannot be carried out by government staff. International technical assistance will be sourced for specialized tasks only when national capacity is insufficient. National consultants will benefit from the support of an international expert when deemed necessary. International consultants will be selected with the assistance of UNEP and in conjunction with the PM.

Section 5: Stakeholder participation

276. The implementation strategy for the proposed project includes extensive stakeholder participation. A wide range of government institutions, non-governmental organizations, as well as the University of the Comoros will be involved in the implementation of project activities where necessary and possible, particularly for their scientific and technical expertise. The various outputs that will be delivered under the project outcomes will fully integrate the expertise available in the country and improve upon what is presently available, whilst also providing a platform for knowledge exchange and mutual learning.

277. Community ownership will be promoted through the full engagement of local stakeholders in the planning, implementation and monitoring of many of the project activities.

278. During project implementation, stakeholder consultations will be divided into three phases. Firstly, the 'mobilisation phase' will take place during the first year of the project. This phase includes the following: i) developing time specific details of the activities and local management structures for implementation; ii) forging partnerships for action; and iii) developing and agreeing to the extent of stakeholder engagement in each activity. Secondly, the 'consultative implementation' phase will run during the main implementation phase of the proposed project. This phase involves applying the stakeholder involvement plan to each of the activities defined during the first phase. Thirdly, the 'completion and upscaling' phase will start during the last year of project implementation. This phase will support the sustainability of the project by transferring responsibility for management of the proposed project's investments to the stakeholders.

279. Specific stakeholders to be engaged in the various aspects of project implementation are presented in the table below.

Stakeholders	Contributions to the project
1. Government Stakeholders	
Ministry of Agriculture, Fishing, Industrial Development, Handicrafts, and Environment (MAPEEIA) through the General Directorate of Environment and Forests (DGEF)	- DGEF will act as the Executing Agency, and will lead the implementation of the project - Provision of data from National Forest Inventory for the creation of watershed maps, forest maps and climate change scenarios (Outcome 1: Output 1.1) - Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2) - Contributor to the introduction of IWM into public policy and practice as an adaptation strategy (Outcome 1: Output 1.2) - Contributor to the establishment of island-based intersectoral platforms to develop upscaling strategy (Outcome 1: Output 1.3)

Stakeholders	Contributions to the project
	- Supervision of reforestation activities within IWM implementation (Outcome 2: Output 2.2) at the island level - Supervision of alternative livelihoods strategies within EBA (Outcome 3: Outputs 3.1 and 3.2) at the island level
General Directorate of Energy, Mines and Water Resources (Direction Générale de l'Energie, des Mines et de l'Eau - DGEME)	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2) - Support to local training on climate change, climate risk management, watershed management and EBA (Outcome 2: Output 2.2) - Support to the development of small rural hydraulics for water harvesting and conservation in Grande Comore (Outcome 3: Output 3.1)
National Strategic Directorate of Agriculture and Livestock (Direction Nationale des Stratégies Agricoles et de l'Elevage - DNSAE)	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2). - Support to local training on climate change, climate risk management, watershed management and EBA (Outcome 2: Output 2.2) - Support to the implementation of ecosystem-based resilient livelihoods production strategies focusing on agroforestry and zero-grazing small livestock production (Outcome 3: Output 3.1)
Rural Economic Development Centres (former Centres of Agricultural Expertise)	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2). - Support to local training on climate change, climate risk management, watershed management and EBA (Outcome 2: Output 2.2) - Support to the implementation of ecosystem-based resilient livelihoods production strategies focusing on agroforestry and zero-grazing small livestock production (Outcome 3: Output 3.1). - Support to the establishment of community-agreed climate resilient agroforestry land use plans (Outcome 3: Output 3.1)
MamWE (water utilities) – Grande Comore	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2). - Contributor to the development and implementation of the provision of water-related and flood-control activities (Outcome 2: Output 2.2). - Contributor to the monitoring of water services in Grande Comore's targeted watershed and its 5 selected villages (Outcome 2: Outputs 2.1 & 2.2). - Support to the development of small rural hydraulics for water harvesting and conservation in Grande Comore (Outcome 3: Output 3.1)
UCEA (water utilities) – Anjouan	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2). - Contributor to the development and implementation of the

Stakeholders	Contributions to the project
	provision of water-related and flood-control activities (Outcome 2: Output 2.2). - Contributor to the monitoring of water services in Anjouan's targeted watershed and its 5 selected villages (Outcome 2: Outputs 2.1 & 2.2). - Support to the development of small rural hydraulics for water harvesting and conservation in Anjouan (Outcome 3: Output 3.1)
UCEM (water utilities) – Moheli	- Recipient of training on government capacity for resilient watershed management as an adaptation strategy (Outcome 1: Output 1.2). - Contributor to the development and implementation of the provision of water-related and flood-control activities (Outcome 2: Output 2.2). - Contributor to the monitoring of water services in Moheli's targeted watershed and its 5 selected villages (Outcome 2: Outputs 2.1 & 2.2). - Support to the development of small rural hydraulics for water harvesting and conservation in Moheli (Outcome 3: Output 3.1)
2. Local Community Organizations	
Development Associations (community based organizations) Ulanga (Nature) associations Water user groups Natural resources management groups Women's groups	- Contributor to some of the following outputs: • Support to community-based negotiations towards the development of collaborative watershed rehabilitation and management plans (Outcome 2: Output 2.1) • Support to the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2). • Establishment of community-agreed climate resilient agroforestry land use plans (Outcome 3: Output 3.1)
3. NGOs and Educational Organizations	
Action Comores Aide Action for sustainable development and environment (ADDE) NGO'SHAWO: Mouvement de la jeunesse consciente des Comores	- Contributors to some of the following outputs: • Supervision of the introduction to participatory watershed management among MAPEEIA staff and decentralized stakeholders through workshops and meetings in collaboration with national and international consultants and educational organizations (Outcome 1: Output 1.2) • Contributor to the establishment of island-based platforms to develop an upscaling strategy (Outcome 1: Output 1.3). • Support to community-based negotiations towards the development of collaborative sub-catchment and/or watershed rehabilitation and management plans (Outcome 2: Output 2.1) • Supervision of the implementation of watershed rehabilitation and management in the three islands, and collaboration with national and international consultants (Outcome 2: Output 2.2). • Supervision of training on zero-grazing livestock practices

Stakeholders	Contributions to the project
	until after project implementation (NGOs specialized in animal health to assist farmers in livestock production) (Outcome 3: Output 3.1)
Comoflora Associations	- Support to producer groups in promoting the production of niche pharmaco-cosmetics plants (Outcome 3: Output 3.2).
University of the Comoros	- Contributor to the development of courses on climate change, climate risk management and IWM together with INRAPE and CNDRS (Outcome 1: Outputs 1.2) - Support to the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2) - Collaboration with NGOs on the introduction to participatory watershed management among MAPEEIA staff and decentralized stakeholders through workshops and meetings (Outcome 1: Output 1.2) - Conduct local training on climate risk management, watershed management and EBA (Outcome 2: Output 2.2)
National Research Institute on Agriculture, Fisheries and Environment (INRAPE)	- Provision of weather and climate data (Outcome 1: Output 1.1) - Support the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2) - Collaboration with NGOs on the introduction to participatory watershed management among MAPEEIA staff and decentralized stakeholders through workshops and meetings (Outcome 1: Output 1.2) - Contributor to the development of courses on climate change, climate risk management and IWM together with CNDRS and University of Comoros (Outcome 1: Output 1.2). - Conduct local training on climate risk management, watershed management and EBA (Outcome 2: Output 2.2)
National Centre for Scientific Documentation and Research (Centre de Documentation et de Recherche Scientifique - CNDRS)	- Collaboration with NGOs on the introduction to participatory watershed management among MAPEEIA staff and decentralized stakeholders through workshops and meetings (Outcome 1: Output 1.2) - Contributor to the development of courses on climate change, climate risk management and IWM together with INRAPE and University of Comoros (Outcome 1: Output 1.2). - Support to the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2) - Conduct local training on climate risk management, watershed management and EBA (Outcome 2: Output 2.2)
4. Private Sector	
- Chamber of Commerce (Union des Chambres de Commerce, d'Industrie et d'Agriculture - UCCIA) - Industry associations (forestry, agriculture, fisheries, artisanal	- Support to/Contributor of the construction of anti-erosive and anti-flooding measures (Outcome 2: Output 2.2), as well as small rural hydraulics for water harvesting (Outcome 3: Output 3.1) - Encouragement of alternative livelihoods, such as options for artisanal and pharma-cosmetic products, avenues for marketing and supply to ensure the sustainability and commercial viability of

Stakeholders	Contributions to the project
groups)	alternate, new or niche products (Outcome 3: Outputs 3.1 and 3.2)
5. International Organizations	
Food and Agriculture Organization of the United Nations (FAO)	- Support to the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2) - Contributor to the development of mechanisms for securing access to land through the application of FAO's voluntary guidelines on the governance of land tenure systems (Outcome 1: Output 1.2)
United Nations Development Programme (UNDP)	- Support to local training on climate change, climate risk management, EBA and the implementation of IWM (Outcome 2: Output 2.2)
African Development Bank (AfDB)	- Support to the development of policy briefs and technical guidelines for MAPEEIA and communities on the integration of EBA into watershed management (Outcome 1: Output 1.2)
World Bank (WB)	- Support to the implementation of IWM (Outcome 2: Output 2.2).
International Fund for Agricultural Development (IFAD)	- Support to the implementation of ecosystem-based resilient livelihoods production strategies focusing on agroforestry and zero-grazing small livestock production (Outcome 3: Output 3.1)

Section 6: Monitoring and Evaluation Plan

280. The project will follow UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarized in Appendices 7 and 8. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the Executing Agency and UNEP.

281. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Appendix 4 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators along with the key deliverables and benchmarks included in Appendix 6 will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarized in Appendix 4. Other M&E related costs are also presented in the costed M&E Plan and are fully integrated in the overall project budget. Furthermore, the geo-referenced information system to be established under project Component 1 will involve the collection and continuous updating of socio-economic and environmental data. This will further strengthen the information base for assessing the achievement of anticipated project results and benefits.

282. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the project management team but other project partners will also have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation, so that appropriate support or corrective measures can be adopted in a timely fashion.

283. The Project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project is in compliance with UNEP and GEF policies and procedures is the responsibility of the UNEP Task Manager. The Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

284. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project, which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Progress vis-à-vis

delivering the agreed project global environmental benefits will be assessed with the Project Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by project partners and UNEP. Risk assessment and rating is an integral part of the annual Project Implementation Review (PIR) process. The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

285. In-line with UNEP Evaluation Policy and the GEF's Monitoring and Evaluation Policy the project will be subject to a Terminal Evaluation and, additionally, a Mid-Term Review will be commissioned and launched by the Project Manager before the project reaches its mid-point. If project is rated as being at risk, a Mid-Term Evaluation will be conducted by the Evaluation Office. The purpose of the Mid-Term Review (MTR) or Mid-Term Evaluation (MTE) is to provide an assessment of project performance at mid-term, to analyze whether the project is on track, what problems and challenges the project is encountering, and which corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. In addition, it will verify information gathered through the GEF tracking tools.

286. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties have been identified during the stakeholder analysis (see Section 5 of the project document). The Project Steering Committee will participate in the MTR or MTE and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented. An MTR is managed by the UNEP Task Manager at DEPI. An MTE is managed by the Evaluation Office of UNEP. The Evaluation Office will determine whether an MTE is required or whether an MTR is sufficient.

287. An independent Terminal Evaluation (TE) will take place at the end of project implementation. The Terminal Evaluation will be initiated no earlier than six months prior to the operational completion of project activities and, if a follow-on phase of the project is envisaged, should be completed prior to completion of the project and the submission of the follow-on proposal. Terminal Evaluations must be initiated no later than six months after operational completion. The Evaluation Office of UNEP will be responsible for the TE and liaise with the UNEP Task Manager at DEPI and the Executing Agency throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP and executing partners. The direct costs of the evaluation will be charged against the project evaluation budget.

288. The TE report will be sent to project stakeholders for comments. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalized and further reviewed by the GEF Independent Evaluation Office upon submission. The evaluation report will be publically disclosed and will be followed by a recommendation compliance process. The standard UNEP Terms of Reference of the Mid Term Evaluation/Review and Terminal Evaluations will be adjusted to the specific needs of the project.

289. The GEF tracking tools are attached as Appendix 14. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above, the mid-term and terminal evaluation will verify the information of the tracking tool.

Section 7: Project Financing and Budget

7.1. Overall project budget

Table 7.1: Summary GEF budget for the four years of project implementation

	GEF/LDCF Funds (US$)	Co-financing	Total cost (US$)
Total project cost	5,140,000	16,480,000	21,620,000

Table 7.2: Project Management Costs for GEF Funds

Project Management Costs for GEF Funds	Amount in US$
Project Manager (48 months @ US$ 2525 / month)*	24,000
Financial and Administrative Officer	80,000
Vehicles (1 per island) **	75,000
Materials and premises	10,000
Inception meeting and SC meetings	40,000
Travel for PM	16,000
Total cost for Project Management	**245,000**

* The budget for project manager is distributed among the components and the Project management costs as follows: 20% in PMC, 27% in Component 1, 27% in Component 2 and 27% in Component 3.

** At present the DGEF does not have a vehicle to enable it to monitor project activities on Grande Comore. For the project preparation mission, the consultation team had to use private cars that were not adapted to off-roads conditions. After the project ends, the vehicles will be used by DGEF to continue monitoring project impacts on each island.

7.2. Project co-financing

Table 7.3: Co-financing by source and type

Name of Co-financier	Type	Amount in US$
DGEF	In-kind	280,000
DNSAE (FAO)	Cash	10,000,000
DGEF (Japan)	Cash	200,000
FADC	Cash	6,000,000
Total		**16,480,000**

7.3. Project cost-effectiveness

290. The project has been designed to achieve the greatest results with the most cost-effective use of invested resources. This project is strategically designed to target those areas which the baseline programs do not, and to target areas where there is the

greatest value added, and which can utilize GEF expertise. It is for that reason, that this project targets the specifics of climate change adaptation, land degradation and integrated watershed management, biodiversity protection and livelihoods generation.

291. The project's emphasis on an EBA approach contributes to its overall cost-effectiveness. A growing body of scientific research demonstrates that past initiatives which included EBA measures have resulted in a greater ratio of benefit/cost compared to the use of hard infrastructural measures. For example, an economic analysis of the restoration and rehabilitation of grasslands and woodlands estimated internal rates of return of 20–60% and benefit/cost ratios of up to 35:1[117] for grasslands. A frequently cited example of the cost-effectiveness of EBA is an economic analysis undertaken in Lami, Fiji[118]. This study included assessments of the costs and benefits of three approaches to watershed management: i) solely EBA measures; ii) "hard" engineering options and a hybrid approach; and iii) combining both hard engineering and EBA interventions. The analysis demonstrated that EBA watershed management options can be at least twice as cost-effective as hard engineering options – e.g. a benefit/cost ratio of US$19.50 for EBA compared with US$9 for hard engineering[119]. This analysis also showed hybrid approaches to climate change adaptation, which included complementary EBA and engineering measures was likely the most cost-effective approach for adaptation to climate change.

292. The project will combine investment and policy actions at the Union and island level to meet the project in a least cost way. Reforestation activities as well as the introduction of alternative livelihood strategies components of the project each represent over a third of the LDCF grant requested, so that the project is able to generate sufficient sustainable practices.

293. The project will also be cost-effective in that the project design and implementation include a variety of stakeholders, each with their value added in supporting implementation. There will be stakeholders from the environment, agriculture, water resources and energy sectors engaged in the project, both as the beneficiaries and implementers of the project. NGOs and existing cooperatives will also be able to bring their expertise to support project implementation.

294. The proposed project includes technical and administrative training for community members on EBA interventions through a learning-by-doing approach. This will enhance community ownership of the project interventions. This reduces the cost of monitoring and maintenance of the activities as well as promoting the sustainability of the project interventions beyond the lifespan of the project.

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[117] De Groot et al. 2013. Benefits of investing in ecosystem restoration. *Conservation Biology* 27: 1286-1293.

[118] Rao et al. 2013. *An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands.* A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa.

[119] A combination of EBA and hard engineering options is the most effective option to decrease vulnerability to floods according to this study. However, EBA interventions are prioritised in the proposed project as it focuses mainly on reducing the negative effects of droughts and bushfires.

Table 7.4: Cost-analysis of activities planned as part of Outcome 3
(1 KMF = 0.00220904 US$, November 4th, 2015)

Island	Alternative	Targeted stakeholders	Production Cost/kg (US$)	Selling price/kg (US$)	Benefits/kg (US$)
Grande Comore	Pepper	Small-holder farmers	0.77	6.63	5.85
	Ginger		1.84	3.31	1.47
	Coconut tree		0.08	0.55	0.48
	Papaya		0.22	2.21	1.99
	Oranges		0.07	0.88	0.82
	Cash cows		0.8/L	2.21/L	1.41/L
Anjouan	Processing of potatoes	Organization / Association	2.98	15.46	12.48
	Processing of tomatoes	Peasants	1.10	5.36	4.26
	Processing of mangos		1.33/L	2.21/L	0.88/L
	Cash cows		0.8/L	2.21/L	1.41/L
Moheli	Processing of coffee	Organization / Association	1.89	11.05	9.15
	Processing of tomatoes	Peasants	1.10	5.36	4.26
	Cash cows		0.8/L	2.21/L	1.41/L

Table 7.5: Cost-analysis of reforestation, as part of Outcome 2 (activity 2.2.2)
(1 KMF = 0.00220904 US$, November 4th, 2015)

Reforestation	Measure	Quantity	Cost per unit (KMF)	Total cost (KMF) / ha	Total cost (US$) / ha	Cost for 3,500 ha
Field preparation (anti-erosive measures, anti-flooding)	Hectares	1	50,000	50,000	110.45	
Plants/trees using local species	Unit	78	1,000	78,000	172.31	
Total				**128,000**	**282.76**	
Averaged down					**250 US$ / ha**	**875,000 US$**

295. From 282.76 US$ / ha, the cost per hectare was averaged down to 250 US$ per hectare. Reforestation will be conducted over 3,500 ha spread across the three islands of the Comoros with 78 trees planted per hectare. 273,000 trees will be planted in total within this project.

296. These cost analyses were undertaken for the different alternative livelihood strategies planned under Component 3 for each island, and were found to be affordable. The adaptation benefits are expected to include improved agricultural productivity from better quality seed supply as well as improved means of production, increased income, livelihood diversification, improved well-being, and improved watershed management and land productivity. The cost-effectiveness of project activities will be tested, measured and evaluated during project implementation, using cost-benefit analysis.

297. Furthermore, the technical and financial support of the management committees, which is an integral component for all the pilot interventions, will ensure the strengthening of community capacity to manage and maintain integrated watershed management. This will help to ensure the sustainability of works beyond the period of the LDCF grant.

Appendix 1: Budget by project components and UNEP budget lines (attached)

Appendix 2: Co-financing by source and UNEP budget lines (attached)

Appendix 3: Additional cost analysis

Outcome	Baseline and Gaps	GEF Alternative	Additional adaptation cost
1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels	There is a lack of institutional and technical capacity to plan and implement climate change adaptation in the Comoros. This is characterized by a lack of data and information on climate change impacts and vulnerabilities, a limited inclusion of climate change adaptation in policies and frameworks, and an absence of guidelines to help communities build technical capacity to adapt to climate change impacts, further emphasized by a lack of intersectoral coordination. Although the FAO Country Programming Framework (CPF) contributes to the strengthening of governance and sustainable management of forest and other natural resources with an emphasis on agroforestry development, there is no plan for building capacity to use integrated watershed management as an ecosystem-based approach to help Comorians adapt to climate change. Even though the Comoros Social Safety Net Project aims at building a productive and disaster responsive safety net, and strengthening safety net management, coordination, and monitoring and evaluation, this project does not take climate change impacts into account.	GEF financing will support the assessment of climate change impacts on forests and watersheds through the development of a geo-referenced information system on climate change impacts. It will also support the introduction of IWM into public policy through training and awareness raising of MAPEEIA staff on integrated and participatory watershed management as a climate resilient strategy to support vulnerable rural populations in adapting to future climate change. For longer-term impact, a strategy and an intersectoral platform will be developed and institutionalized to sustain and replicate climate-resilient integrated watershed management, through the collection of lessons learned in Component 2 and their dissemination nationally and internationally. GEF financing will also add a resilient and sustainable aspect to the Social Safety Net Project by supporting community-based development of collaborative watershed management plans, agroforestry land use plans, and ecosystem-based livelihoods strategies, incorporating climate change risks and climate resilient and sustainable strategies.	US$ 781,473
2. Rehabilitated and sustainably managed watersheds and sub-catchments in project areas	Comorian watersheds are under increasing pressures both from communities seeking to increase agricultural production and to fulfill their energy needs and the limited capacity and resources prevent the implementation of sustainable forest management and watershed rehabilitation. While there are projects promoting the rehabilitation and management of forests as well as water recovery (funded by Japan), it is not planned through a participatory process with the construction of anti-erosive measures, anti-flooding	GEF financing will support the rehabilitation of 3,500 ha of watershed through integrated watershed management as an ecosystem-based adaptation approach, including reforestation, conservation and anti-erosive measures. It will facilitate community-based negotiations for the development of collaborative sub-catchment watershed rehabilitation and management plans. It will also support the building of local capacity on to cope with climate risk and implement	US$ 1,850,710

	measures and conservation measures. Although the FAO Country Programming Framework (CPF) will contribute to strengthening sustainable management of forest and other natural resources, it does not assess climate change risks and impacts on forests and watersheds.	watershed management.	
3. Increased and sustained income from alternative livelihood strategies among project communities	Poverty in rural communities of the Comoros is mainly due to the low diversity of livelihood strategies within, but also beyond, agriculture. For instance, the livestock sector is not contributing to livelihoods as it could, due to the low productivity of the animal breeds and sanitation issues. While some projects (FAO CPF; PNDHD) support intensification, diversification and commercialization of agricultural and livestock production for improved food security, including efforts to foster a more competitive and diversified agriculture sector and to reduce poverty by promoting better natural resource management in order to raise agricultural production, these projects do not include innovating in niche products, nor do they promote a participative and integrated approach to reach their goals.	GEF financing will support the development of sustainable livelihood strategies such as resilient agroforestry and zero-grazing small stock production among project communities (including chicken hatcheries, egg production, young goats and cash cows) and vegetable and fruit processing with value chain management; as well as the development and deployment of climate-proof innovative sources of livelihoods, including pharmaco-cosmetic plant products.	US$ 2,062,816

Appendix 4: Project Results Framework

Outcome/Outputs	Indicator	Baseline	Mid-term Target	End of term Target	Means of Verification
COMPONENT 1: Enhanced capacity to address climate risks through watershed management					
Outcome 1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels	Number of national and local government officials and local community members with capacity to plan and implement integrated watershed management interventions as an adaptive strategy	0	75 people in total have the capacity to plan and implement integrated watershed management interventions on the three islands, of which 50% are women	150 people in total have the capacity to plan and implement integrated watershed management interventions on the three islands, of which 50% are women	capacity score card; survey; project reports
Output 1.1 Assessments of climate change risks and impacts on Comorian forests and watersheds, contributing to a geo-referenced information system	*Availability of an operational geo-referenced information system on climate change impacts for major watersheds, using climate data*	*There is a draft National Forest Inventory, but no geo-referenced information system on watersheds*	*The structure of the geo-referenced information system is under construction by mid-term*	*1 geo-referenced information system is operational at national level by end of project*	*project reports*
Activity 1.1.1 Develop a map of watersheds based on the National Forest Inventory (NFI) as well as climate-based forest maps for each of the islands (the state of forests with or without intervention, under a climate change scenario)					
Activity 1.1.2 Undertake climate change Vulnerability and Impact Assessments (VIAs) in the selected communities, integrating ecosystem considerations, to inform the selection and implementation of ecosystem-based adaptation measures					
Activity 1.1.3 Develop a geo-referenced information system on climate change impacts for major watersheds or sub-catchments, including socio-economic and environmental data, based on NFI and downscaled climate data available					

Outcome/Outputs	Indicator	Baseline	Mid-term Target	End of term Target	Means of Verification
Output 1.2 Training and information is provided to introduce integrated watershed management into public policy and practice as an adaptation strategy	*Number of people trained in IWM*	*0*	*75 people in total trained in IWM on the three islands by end of project, of which at least 50% are women, by mid-project*	*150 people in total trained in IWM on the three islands by end of project, of which 50% are women, by end of project*	*Training reports and attendance lists*
Activity 1.2.1 Analysis of current (explicit and implicit) watershed management practices, including of their potential for adaptation, and analysis of IWM factors of success (including local community mobilization, land tenure and property rights, traditional environmental knowledge, institutional and policy issues)					
Activity 1.2.2 Introduction to participatory watershed management as a climate-resilient strategy through training and awareness raising among MAPEEIA staff and decentralized stakeholders in the environment, forest, water and agriculture sector					
Activity 1.2.3 Develop policy briefs and technical guidelines for MAPEEIA and communities on the contribution of healthy ecosystems for livelihoods and adaptation, and the integration of ecosystem-based adaptation into watershed and forest rehabilitation and management (based, inter alia, on lessons learned from Component 2)					
Activity 1.2.4 Work with INRAPE, the University of Comoros, and other technical and vocational training institutes in Comoros to develop and deliver courses on climate change, climate risk management and watershed management					
Activity 1.2.5 Develop mechanisms for securing access to land, including through the application of the FAO's voluntary guidelines on the governance of land tenure systems					
Output 1.3 A strategy and an intersectoral platform to sustain and replicate integrated watershed management are developed and	*Availability of island-based intersectoral platforms and of a state of the art report on the strategy and lessons learned to sustain Integrated Watershed Management*	*No island-based intersectoral platform or state of the art report are in place or available*	*Island-based intersectoral platforms are in place by mid-term and the state of the art report on the strategy and lessons learned to sustain IWM is underway by mid-term*	*Island-based intersectoral platforms are functioning and develop an upscaling strategy by end of project, and the state of the art report on IWM is published by the end of the project*	*Project report, state of the art report, list of stakeholders taking part in platforms and meetings conducted*

Outcome/Outputs	Indicator	Baseline	Mid-term Target	End of term Target	Means of Verification
institutionalized					*within intersectoral platforms*
Activity 1.3.1 Collect lessons from demonstration activities (Component 2) and disseminate them nationally and internationally					
Activity 1.3.2 Establish an island-based intersectoral platform to develop an upscaling strategy, including: financing options, opportunities and barriers and review of relevant policies and strategies to identify entry points for upscaling the integrated watershed management practices introduced by the project.					
COMPONENT 2: Resilient watersheds and ecosystem-based adaptation demonstrations					
Outcome 2. Rehabilitated and sustainably managed watersheds and sub-catchments in project areas	# of ha of sustainably managed watersheds under sustainable collaborative management	*0*	1,750 ha of watersheds are sustainably managed by mid-project, of which 200 ha/yr on Ngazidja, 125 ha/yr year on Anjouan, and 112.5 ha/yr on Moheli	3,500 ha of watersheds are sustainably managed by the end of the project, of which 400 ha/yr on Ngazidja, 250 ha/yr on Anjouan, and 225 ha/yr on Moheli (per year during 4 years)	visual observation, bio-physical surveys of project sites, project reports
Output 2.1 Watershed rehabilitation and management plans and implementation mechanisms adopted by communities	*Number of villages that adopt a collaborative watershed rehabilitation and management plan and implementation mechanism*	*0*	*At least 2 villages in each island adopt a collaborative watershed rehabilitation and management plan and implementation mechanism by project mid-term*	*5 villages in each island adopt a collaborative watershed rehabilitation and management plan and implementation mechanism by end of project*	*visual observation and door-to-door surveys, project monitoring and coordination reports*
Activity 2.1.1 Support community-based negotiations towards the development of collaborative sub-catchment and/or watershed rehabilitation and management plans and implementation mechanisms, that aim at reversing human-induced watershed degradation and integrate climate risks and impacts, using the models and information produced in Component 1					

Outcome/Outputs	Indicator	Baseline	Mid-term Target	End of term Target	Means of Verification
Output 2.2 3,500 ha of the targeted watersheds are rehabilitated through reforestation, conservation and anti-erosive measures	*# of ha of rehabilitated watersheds*	*0*	*1,750 ha of watersheds are rehabilitated by mid-term, of which 200 ha/yr on Ngazidja, 125 ha/yr year on Anjouan, and 112.5 ha/yr on Moheli*	*3,500 ha of watersheds are rehabilitated by the end of the project, of which 400 ha/yr on Ngazidja, 250 ha/yr year on Anjouan, and 225 ha/yr on Moheli*	*visual observation, bio-physical surveys of project sites, project reports*
Activity 2.2.1 Conduct local training on climate risk management, watershed management and ecosystem-based adaptation in project sites.					
Activity 2.2.2 Implement watershed rehabilitation and management plans, developed under output 2.1, through an integrated approach, including: reforestation using resilient species; anti-erosive and anti-flooding measures; establishment of temporary and/or permanent community conservation zones.					
Component 3: Resilient and diversified ecosystem-based livelihoods for local communities					
Outcome 3. Increased and sustained income from alternative livelihood strategies among project communities	Number of people reporting a sustained and increased income from alternative livelihoods introduced by the project, among which half are female-headed households	Average annual income in the project communities is 62,000 KMF (137 US$), not including foreign funds transfers	Targeted households in project sites report a 10% increase in average annual income, among which half are female-headed households, by mid-project	Targeted households in project sites report a 20% increase in average annual income spread and sustained on the 4 following years, among which half are female-headed households	household surveys; project reports
Output 3.1 Ecosystem-based livelihoods, such as agroforestry practices are	*# of men and women who adopt ecosystem-based livelihoods, such as agroforestry practices in the project areas*	*0*	*500 people, of which 250 are women, adopt ecosystem-based livelihoods, such as agroforestry practices, by*	*1000 people, of which 500 are women, adopt ecosystem-based livelihoods, such as agroforestry practices, by*	*household surveys; visual observations ; project*

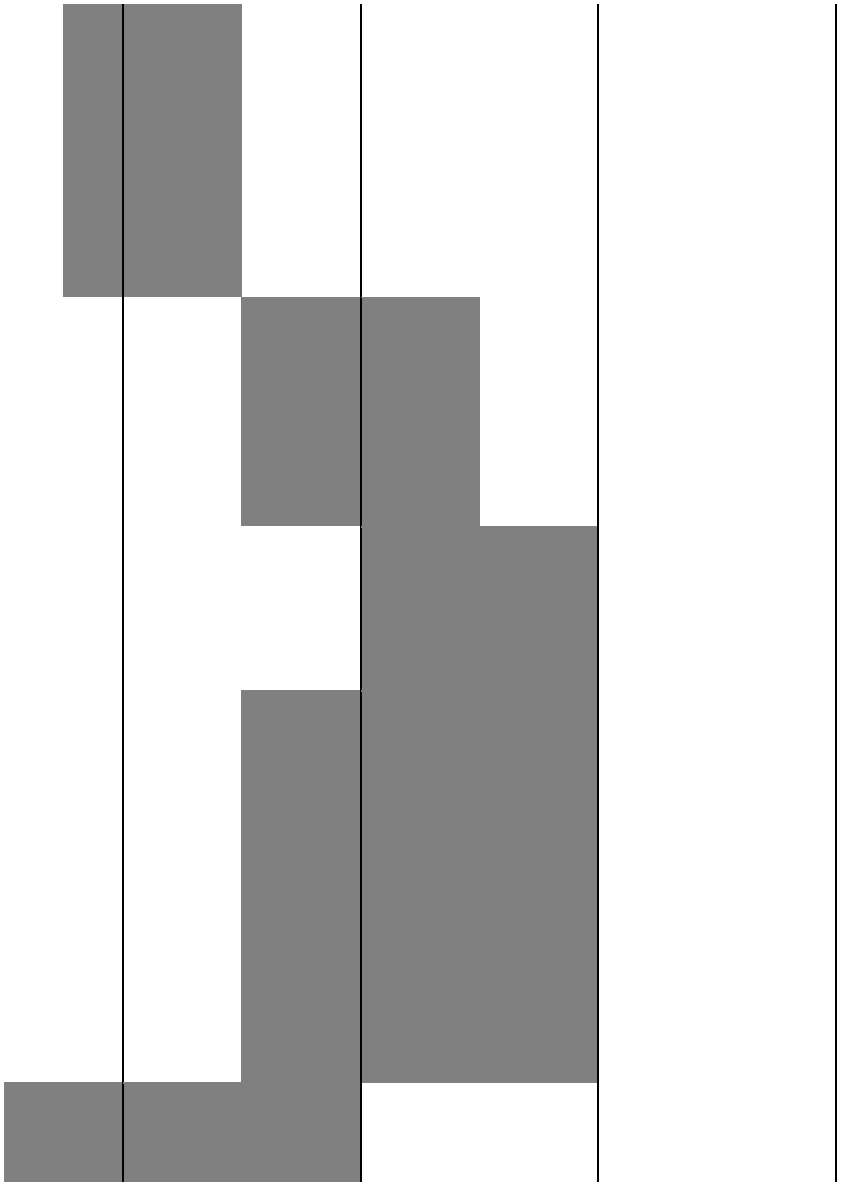
Outcome/Outputs	Indicator	Baseline	Mid-term Target	End of term Target	Means of Verification
adopted among project communities			*mid-term*	*end of project*	*reports*
Activity 3.1.1 Based on integrated watershed rehabilitation and management plans (Component 2), establish community-agreed climate-resilient agroforestry land use plans					
Activity 3.1.2 Implement ecosystem-based livelihoods production strategies, focusing on climate-resilient production activities and using a value-chain approach					
Activity 3.1.3 Analyze and address phytosanitary constraints to production, including pests and parasites affecting crops and livestock					
Activity 3.1.4 Develop small rural hydraulics for water harvesting and conservation (cisterns)					
Output 3.2 Climate-proof innovative sources of livelihoods adopted in project communities	*# of people adopting climate-proof and innovative livelihoods strategies*	*0*	*500 people, of which 250 are women, are adopting climate-proof and innovative livelihoods strategies by mid-term*	*1000 people, of which 500 are women, are adopting climate-proof and innovative livelihoods strategies by the end of the project*	*household surveys; visual observations ; project reports*
Activity 3.2.1 Collect and review traditional knowledge on pharmaco-cosmetic plant-based products and niche food crops with a view of identifying potential cash crops for diversification (including environmental impact, socio-economic potential and policy barriers)					
Activity 3.2.2 Organize producer groups, particularly women's groups, towards the production and marketing of niche pharmaco-cosmetic plants					

Appendix 5: Workplan and timetable

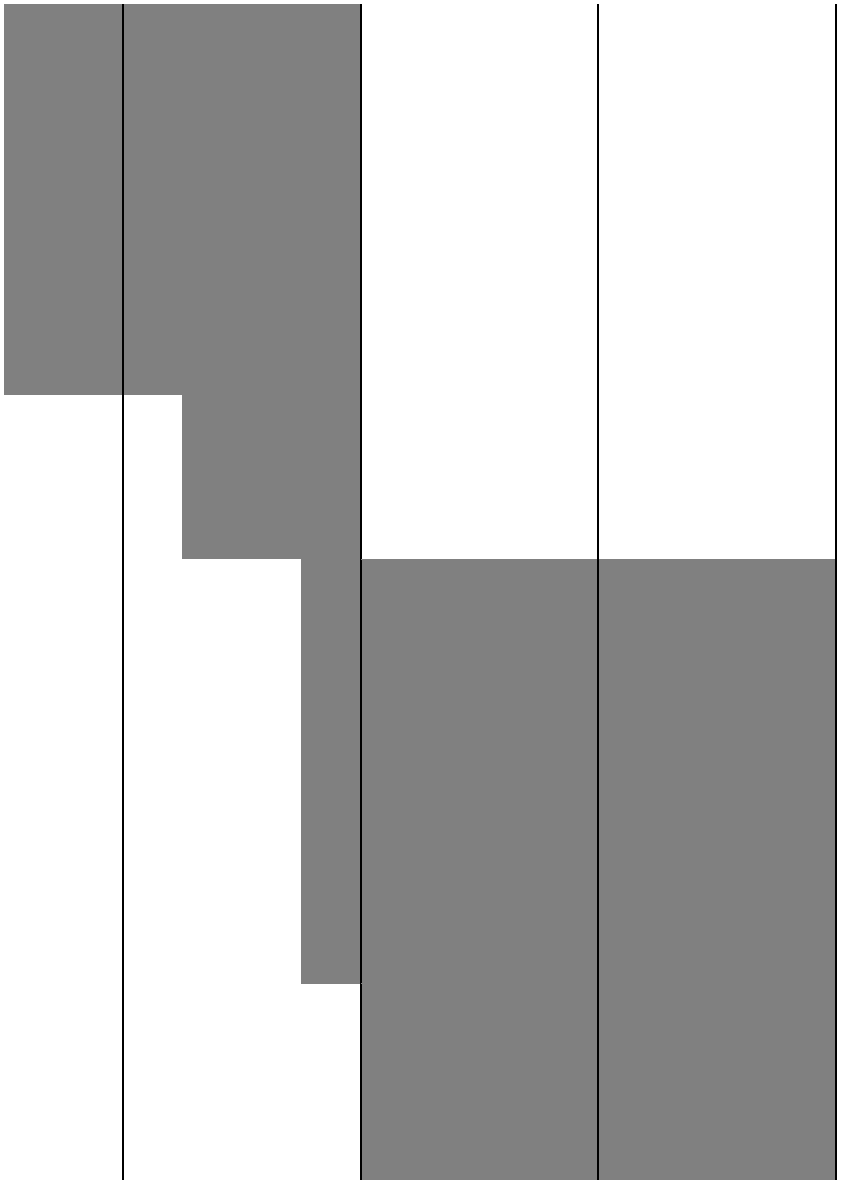
				YEAR 1				YEAR 2				YEAR 3				YEAR 4			
	OUTCOMES	OUTPUTS	ACTIVITIES	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Component 1: Enhanced capacity to address climate risks through watershed management	**1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels**	*1.1 Assessments of climate change risks and impacts on Comorian forests and watersheds, contributing to a geo-referenced information system*	1.1.1 Activity 1.1.1 Develop a map of watersheds based on the National Forest Inventory (NFI) as well as climate-based forest maps for each of the islands (the state of forests with or without intervention, under a climate change scenario)																
			1.1.2 Undertake climate change Vulnerability and Impact Assessments (VIAs) in the selected communities, integrating ecosystem considerations, to inform the selection and implementation of ecosystem-based adaptation measures																
			1.1.3 Develop a geo-referenced information system on climate change impacts for major watersheds or sub-catchments, including socio-economic and environmental data, based on NFI and downscaled climate data available																

		1.2 Training and information is provided to introduce integrated watershed management into public policy and practice as an adaptation strategy	1.2.1 Analysis of current (explicit and implicit) watershed management practices, including of their potential for adaptation, and analysis of IWM factors of success (including local community mobilization, land tenure and property rights, traditional environmental knowledge, institutional and policy issues)
			1.2.2 Introduction to participatory watershed management as a climate-resilient strategy through training and awareness raising among MAPEEIA staff and decentralized stakeholders in the environment, forest, water and agriculture sector
			1.2.3 Develop policy briefs and technical guidelines for MAPEEIA and communities on the contribution of healthy ecosystems for livelihoods and adaptation, and the integration of ecosystem-based adaptation into watershed and forest rehabilitation and management (based, inter alia, on lessons learned from Component 2)

			1.2.4 Work with INRAPE, the University of Comoros, and other technical and vocational training institutes in Comoros to develop and deliver courses on climate change, climate risk management and watershed management
			1.2.5 Develop mechanisms for securing access to land, including through the application of the FAO's voluntary guidelines on the governance of land tenure systems
		1.3 A strategy and an intersectoral platform to sustain and replicate climate-resilient integrated watershed management are developed and institutionalized	1.3.1 Collect lessons from demonstration activities (Component 2) and disseminate them nationally and internationally
			1.3.2 Establish an island-based intersectoral platform to develop an upscaling strategy, including: financing options, opportunities and barriers and review of relevant policies and strategies to identify entry points for upscaling the integrated watershed management practices introduced by the project.
ecosystem-based	**2. Reduction in environmenta**	*2.1 Watershed rehabilitation and*	2.1.1 Support community-based negotiations towards the development of



	l degradation thanks to ecosystem-based adaptation approach	*management plans and implementation mechanisms adopted by communities*	collaborative sub-catchment and/or watershed rehabilitation and management plans and implementation mechanisms, that aim at reversing human-induced watershed degradation and integrate climate risks and impacts, using the models and information produced in Component 1
		2.2 3,500 ha of the targeted watersheds are rehabilitated through reforestation, conservation and anti-erosive measures	2.2.1 Conduct local training on climate risk management, watershed management and ecosystem-based adaptation in project sites.
			2.2.2 Implement watershed rehabilitation and management plans, developed under output 2.1, through an integrated approach, including: reforestation using resilient species; anti-erosive and anti-flooding measures; establishment of temporary and/or permanent community conservation zones.
ecosystem-based livelihoods for	**3. Increased and sustained income from alternative livelihood strategies**	*3.1 Ecosystem-based livelihoods, such as agroforestry practices are*	3.1.1 Based on integrated watershed rehabilitation and management plans (Component 2), establish community-agreed climate-resilient agroforestry land



	among project communities	*adopted among project communities*	use plans					
			3.1.2 Implement ecosystem-based livelihoods production strategies focusing on agroforestry, and using a value-chain approach.					
			3.1.3 Analyze and address phytosanitary constraints to production, including pests and parasites affecting crops and livestock					
			3.1.4 Develop small rural hydraulics for water harvesting and conservation (cisterns)					
		3.2 Climate-proof innovative sources of livelihoods adopted in project communities	3.2.1 Collect and review traditional knowledge on pharmaco-cosmetic plant-based products and niche food crops with a view of identifying potential cash crops for diversification (including environmental impact, socio-economic potential and policy barriers)					
			3.2.2 Organize producer groups, particularly women's groups, towards the production and marketing of niche pharmaco-cosmetic plants					

Appendix 6: Key deliverables and benchmarks

Outcomes	Deliverables	Benchmarks (midway through the project)
1. Strengthened technical and institutional capacity for resilient integrated watershed management at the national and local levels	- Map of watersheds based on the National Forest Inventory and climate-based forest maps - Vulnerability and Impact Assessments (VIAs) in the selected communities, integrating ecosystem considerations, to inform the selection and implementation of ecosystem-based adaptation measures - Geo-referenced information system on climate change impacts for major watersheds - Analysis of current watershed practices and their potential for adaptation - Training and awareness raising on participatory watershed management of DGEF - Policy briefs and technical guidelines on the integration of EBA into watershed and forest rehabilitation - Courses on climate change, climate risk management and watershed management - Mechanisms for securing access to land - Island-based intersectoral platform to upscale resilient integrated watershed management practices - Upscaling strategy	- Maps delivered at the end of the first year - The VIAs have informed the selection and implementation of ecosystem-based adaptation measures - The geo-referenced information system is established and maintained every 1st and 3rd quarter of Year 2 to Year 4 - Current watershed practices analyzed - Training and awareness raising conducted - Policy briefs and technical guidelines in preparation (to be completed in the last year of the project) - Courses delivered by INRAPE and University of the Comoros - Mechanisms for securing land access in process of implementation by FAO - Island-based intersectoral platform in preparation for implementation from 3rd quarter of Year 3
2. Rehabilitated and sustainably managed watersheds and sub-	- Collaborative watershed rehabilitation and management plans - Local training on climate risk management, watershed management and EBA	- Identified communities and established collaborative watershed rehabilitation and management plans - Local trainings conducted in project sites

catchments in project areas	- Reforestation using resilient species - Anti-erosive and anti-flooding measures - Establishment of temporary / permanent community conservation zones	- Identified resilient species, purchased seedlings, planting started - Sites identified to build anti-erosive and anti-flooding measures - Sites identified to establish temporary / permanent community conservation zones
3. Increased and sustained income from alternative livelihood strategies among project communities	- Establishment of community-agreed climate resilient agroforestry land use plans - Agroforestry production techniques - Zero-grazing small stock production - Small food transformation and processing - Phytosanitary constraints affecting livestock and crops managed - Construction of small rural hydraulics for water harvesting and conservation - Identification, production and marketing of niche pharmaco-cosmetic products	- Identified communities in project sites to establish climate resilient agroforestry land use plans - Identified production techniques for some project sites - Zero-grazing small stock identified in some project sites - Processing options for certain vegetables identified - Phytosanitary constraints affecting livestock and crops identified; solutions found and implemented - Small rural hydraulics for water harvesting and conservation built and in the process of being tested - Traditional plants for pharmaco-cosmetics identified; production and marketing to follow

Appendix 7: Costed M&E plan

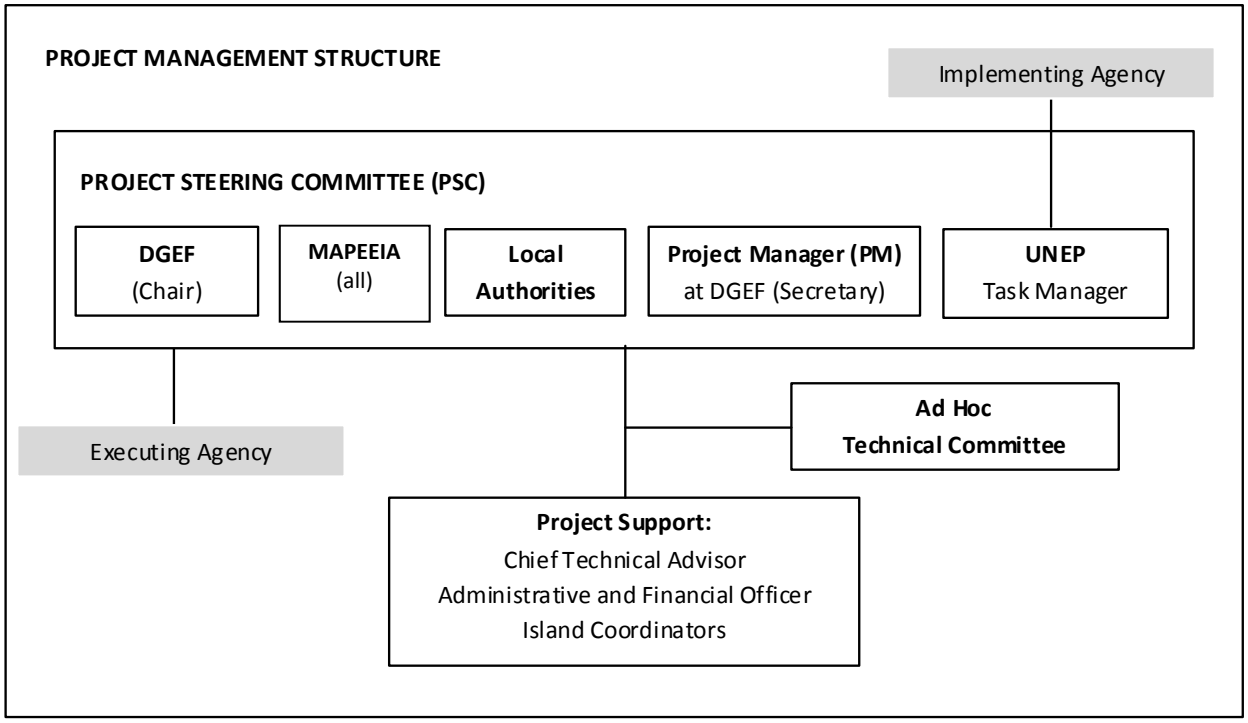
COSTED M&E PLAN			
M&E activity	**Responsibility**	**Budget (US$), Excluding project team staff time**	**Time frame**
Inception Workshop	▪ Project Manager ▪ DGEF ▪ UNEP TM	None*	Two months after project approval
Inception Report	▪ Project Manager	None	One month after Inception Workshop
Baseline Assessment	▪ Project Manager	$45,000	Two months after Inception Workshop
Monitoring of project indicators	▪ Project Manager ▪ Island Coordinators	$40,000	In Year 2 and Year 4 of the project implementation
Measurement of Means of Verification for Project Progress on output and implementation	▪ Oversight by Steering Committee (DGEF, MAPEEIA, UNEP TM) ▪ Project Manager	To be determined as part of the annual work plan preparation	Annually prior to PIR and to the definition of annual work plans
Periodic monitoring of implementation progress	▪ Project Manager ▪ DGEF ▪ UNEP TM	None	Quarterly
Periodic Progress reports	▪ Island Coordinators ▪ M&E Clerk	None	Quarterly
Project Implementation Review (PIR)	▪ Project Manager ▪ CTA ▪ UNEP TM	None	Annually
Audit	▪ Private firm	$25,000	Annually
Midterm Evaluation	▪ UNEP Evaluation Office	$45,000	Mid-point
Final Evaluation	▪ UNEP Evaluation Office	$45,000	Close to the end of project implementation
Project Final Report	▪ Project Manager ▪ UNEP TM	None	Maximum of three months after the end of the project
Visits to the project sites	▪ UNEP TM ▪ Project Manager ▪ DGEF ▪ PSC	Paid out of operational costs	Yearly
Total Indicative Cost		**$200,000**	

* The Inception Workshop is part of the project team and staff time. It is therefore budgeted under 'PMC: Inception meetings and SC meetings', which is why it does not appear in the M&E budgeted plan.

Appendix 8: Summary of reporting requirements and responsibilities

Reporting Requirements	Due Date	Responsibility
Final Procurement Plans	2 weeks before project inception	PM
Inception Report	1 month after inception meeting	PM
Expenditure Report accompanied by explanatory notes	Every six months	PM, Financial and Admin Officer, DGEF
Cash advance request and details of anticipated disbursements	Every six months	PM, Financial and Admin Officer, DGEF
Audited report	Yearly	DGEF with a contracted independent firm
Inventory of non-expendable equipment	Yearly	PM, Financial and Admin Officer
Co-financing Report	Yearly	PM, DGEF
Project Implementation Review (PIR) Report	Yearly	PM, CTA, UNEP Task Manager, Financial and Admin Officer
Progress Reporting	Bi-annually	PM
Minutes of Project Steering Committee Meetings	Bi-annually	PM
Mission reports and "aide memoire" for Executing Agency	Within 2 weeks of return	UNEP Task Manager, Financial and Admin Officer
Final Report	2 months of project completion date	PM, Financial and Admin Officer, UNEP Task Manager
Final inventory of non-expendable equipment	2 months of project completion date	PM, Financial and Admin Officer
Equipment transfer letter	2 months of project completion date	PM, Financial and Admin Officer
Final Expenditure statement	3 months of project completion	PM, Financial and Admin Officer
Midterm review or midterm evaluation	Midway through project completion	UNEP Evaluation Office UNEP Task manager
Final expenditure report for expenditures of project	6 months of project completion	DGEF with a contracted independent firm
Independent terminal evaluation report	6 months of project completion	UNEP Evaluation Office

Appendix 9: Decision-making flowchart and organizational chart



Project Management Arrangements

Appendix 10: Terms of Reference – Project Personnel

TERMS OF REFERENCE FOR THE PROJECT MANAGER (PM)

The Project Manager will be recruited for the duration of the project and will be hosted by the government. The Project Manager will undertake responsibilities associated with the execution of the project activities, which include:

- Plan, organize and coordinate the implementation of project activities
- Ensure the delivery of project activities and results to the required standard of quality and within the specified constraints of time and cost
- Supervise and manage the work of the three Island Coordinators, the Finance and Administrative Officer, as well as technical consultants
- Monitor and report on project performance and delivery to the Project Steering Committee, DGEF, UNEP and the CTA, including on challenges encountered
- Develop TORs and assist in the identification, selection and recruitment of staff, consultants and other experts, as required
- Facilitate collaborative and consultative processes to ensure participation by government and other stakeholders
- Facilitate public awareness activities, and lead the organization of training workshops and meetings
- Ensure timely preparation of detailed Annual Work Plans and budgets for PSC review and approval
- Draft other documents and reports for the Project Steering Committee and act as the PSC secretary
- Manage organizational and logistical issues related to project execution as per UNEP guidelines and procedures
- Keep records of project documents, including financial documents, in accordance with audit requirements
- Facilitate timely preparation and submission of financial reports and settlement of advances, including progress reports and other substantial reports
- Identify and resolve logistical and organizational problems, under the guidance of the Project Steering Committee
- Liaise and coordinate with the UNEP Task Manager (TM) on a regular basis

The Project Manager will have a post-graduate degree in public administration, or natural resources management, environment or related field, and have a minimum of seven (7) years' experience in progressively responsible and substantive areas in environmental and natural resource governance programming and planning.

TERMS OF REFERENCE FOR THE FINANCIAL AND ADMINISTRATIVE OFFICER (FAO)

The project will be supported by a Financial and Administrative Officer who will be recruited for the duration of the project and whose main responsibilities will be as follows:

- Assist in the financial management tasks under the responsibility of the Project Manager, including information on the transfer and conversion of funds at the Bank
- Verify financial entries in the appropriate Accounting Software
- Prepare annual and semi-annual budgets, quarterly expenditure reports, cash advance requests, budget revisions, and any other financial management tools required by UNEP or the Ministry
- Prepare inventory reports, and reports on goods and services acquired
- Coordinate with the Ministry of Finance as relevant
- Make timely payments of contractual fees and procurements
- Provide support in the use of financial management software for financial monitoring and reporting on project financial flows
- Collect and archive project related data and information, set up and maintain project files, and establish document control procedures
- Compile, copy and distribute all project reports (Consultancies, workshops, training sessions, etc.)
- Undertake project financial closure formalities including submission of terminal reports, transfer and disposal of equipment, processing of semi-final revisions, and support professional staff in preparing the terminal assessment reports
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the project personnel, experts, and consultants by preparing annual recruitment plans
- Undertake any other administrative tasks delegated by the Project Manager

TERMS OF REFERENCE FOR THE ISLAND COORDINATORS

The three Island Coordinators will be recruited for the duration of the project and will be hosted by the government. They will report to the PM and will be responsible for the following tasks:

- Act as a liaison between the PM, local authorities and stakeholders during the implementation of the project
- Implement, monitor and follow up on island- and local-level project activities with local stakeholders
- Support the preparation of Annual Work Plans and budgets
- Organize operations and logistics of national and international consultants' field missions
- Support community-based negotiations
- Play a key role in establishing the island intersectoral platform
- Assist PM in any other tasks at the island level
- Participate in the PSC meetings

TERMS OF REFERENCE FOR THE CHIEF TECHNICAL ADVISOR (CTA)

The CTA will provide technical guidance on the implementation of the project to the PM and will also assist the PM in leading the project. The CTA is likely to be sourced as an international consultant as the technical expertise required is currently unavailable within the

Comoros. Importantly, the CTA should be fluent in French. The CTA will be responsible for the following tasks:

- Undertake technical review and quality assurance of project outputs (e.g. studies and assessments)
- Assist in the drafting of TORs for technical consultancies
- Supervise the work of consultants
- Provide a technical supervisory function to the work carried out by the other technical assistance consultants hired by the project
- Provide advice on best suitable approaches and methodologies for achieving project targets and objectives
- Assist in monitoring the technical quality of project M&E systems (including AWPs, indicators and targets)
- Lead the preparation of the annual Project Implementation Reviews (PIRs)
- Assist in knowledge management, communications and awareness raising

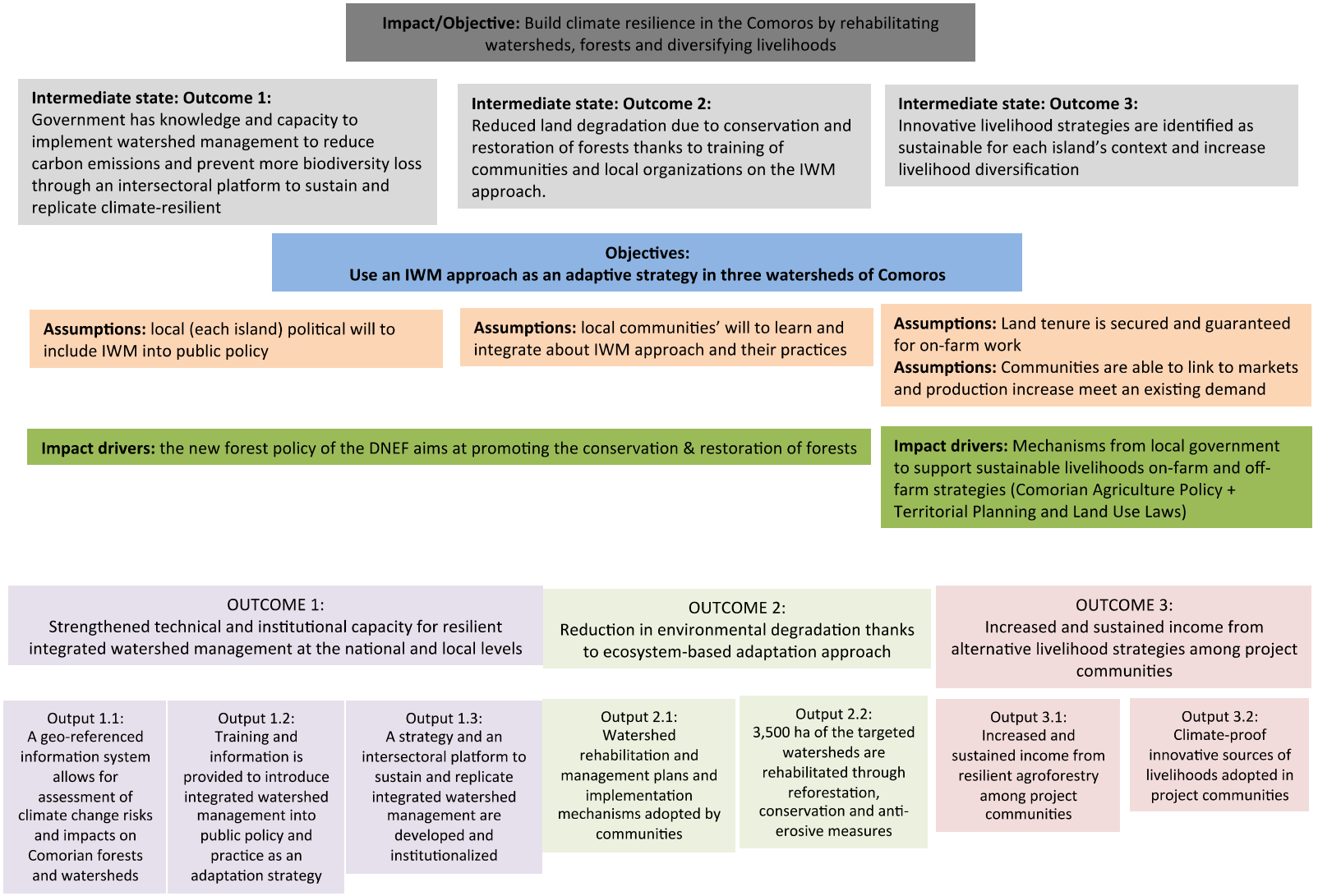
Appendix 11: Co-financing and Support letters from project partners (attached)

Appendix 12: Endorsement letter of GEF National Focal Point (attached)

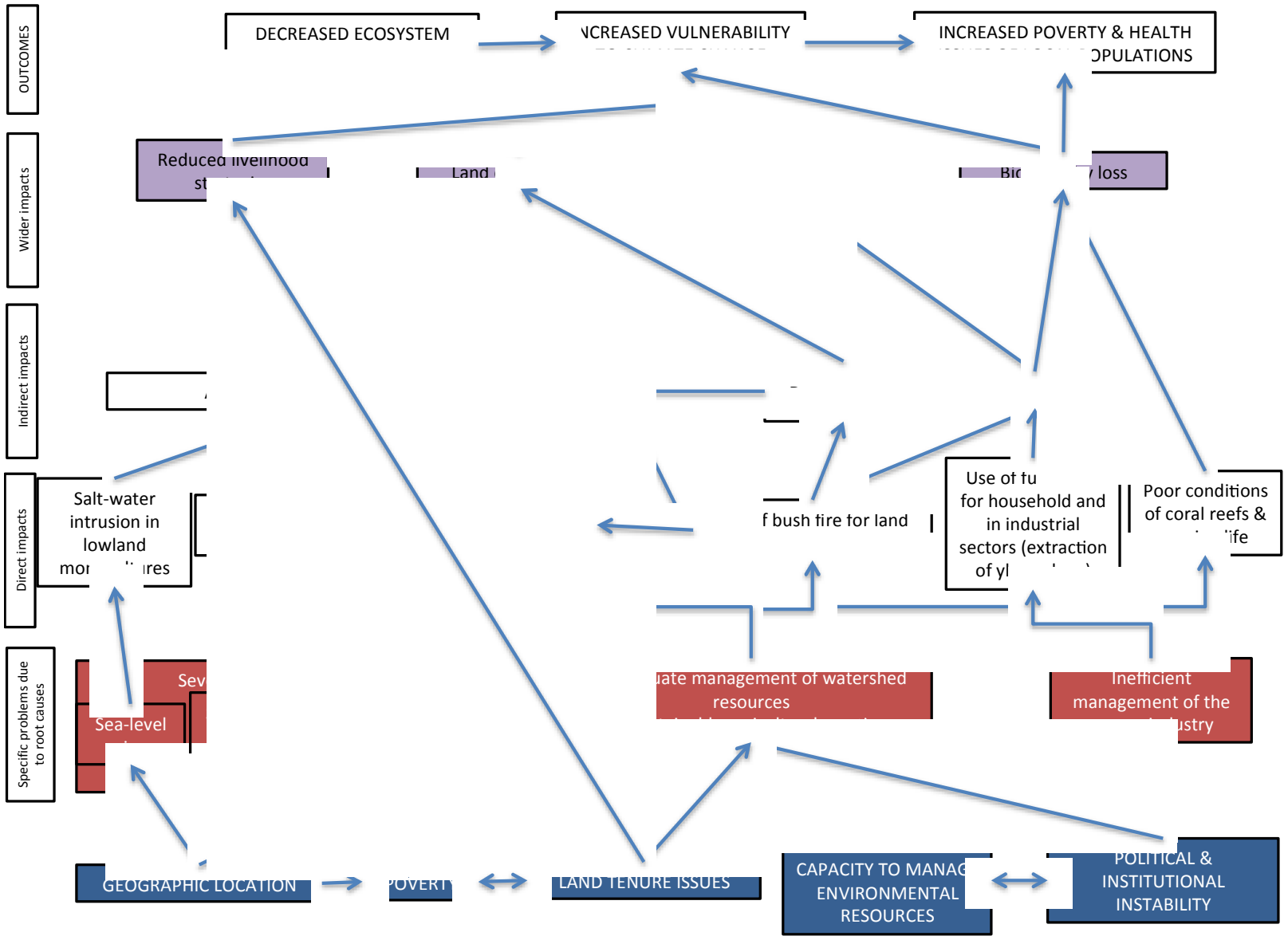
Appendix 13: Draft procurement plan (attached)

Appendix 14: Tracking Tools (attached)

Appendix 15: Theory of Change and Problem Tree



Problem tree:



Appendix 16. Site Selection Criteria

Category of criterion	Specific criteria
Climate impacts	Flooding
	Drought
	Exposure to cyclone
	Annual precipitation
	Presence of climate-related animal diseases
	Dry watershed
	Deforestation
State of resources	Soil quality
	Biodiversity hotspots
	Erosion / sedimentation
	Availability of groundwater
	Availability of surface water
Unsustainable practices	Fire / Slash-and-burn practices / shifting cultivation
	Using wood for distillation
	Rivers pollution levels (sanitation)
	Solid waste pollution
Socio-economic vulnerability	Poverty
	Malnutrition
	Diversity of livelihoods strategies
	Population density
On-going or planned government initiatives, local, national and international partners	On-going national political programmes
	Degree of investment / commitment from donors
	Community will
General criteria	Downstream population vulnerability
	Urgency for intervention
	Accessibility

Watershed Selection in GRANDE COMORE

ic criteria	Intervention areas and sites or CRDE					
	Maweni	**Simboussa**	**Sidjou**	**Dimadjou**	**Sembenoi**	**Serehini**
	-Maroni -lagrille -Bandasamlini	**-plateau simboussa -Djoha, Diwaro**	**-idjinkoundzi -mirereni -zone cotière Dimani**			**-Nvouni (Mvouni) -Bahani -Hambou**
	X high risk	**X medium risk**	**_**	**X Risque élevé**	**X risque**	**X Risk**
	X	**X**	**X**	**X**	**X**	**X**
cyclone	**X**	**X**	**X**	**X**	**X**	**X**
ipitation	**Medium**	**Weak**	**Very weak**	**Weak**	**Weak**	**High**
climate-related ses	**X**	**X**		**X**	**X**	
ed						**X**
n	**X**	**X**		**X**		**X**
	Degraded	**X Degraded**		**Degraded**	**Degraded**	
hotspots	**X**	**X**				**X**
dimentation	**X**	**X**	**X**	**X**		**X**
of r	**X**	**X**	**X**	**X**	**X**	**X**
of surface						
and-burn hifting	**X**	**X**	**X**	**X**	**X**	**X**
for distillation				**X**	**X**	**X**
tion levels						
pollution	**X**	**X**	**X**	**X**	**X**	**X**
	X	**X**	**X**	**X**	**X**	**X**
	X	**X**	**X**	**X**	**X**	**X**

On-going or planned government initiatives, local, national and international partners	On-going national political programmes	**X**		**X**	**X**		**X**
	Degree of investment / commitment from donors	**Weak**	**Null**	**Weak**	**Weak**	**Null**	**Very weak**
	Community will	**X**	**X**	**X**	**X**	**X**	**X**
General criteria	Downstream population vulnerability		**X**	**X**			**X**
	Urgency for intervention		**X**	**X**			**X**
	Accessibility	**X**	**X**		**X**	**X**	**X**
TOTAL	Twenty six (26)	**18**	**21**	**14**	**18**	**17**	**22**

Watershed Selection in ANJOUAN

Climate Impacts							
SITES	Flooding	Drought	Exposure to cyclone	Annual precipitation	Presence of climate-related animal diseases		
Anjouan	4	4	4	4	4		
Cuvette	1	1	0	4	1		
Nioumakele	0	4	3	4	4		
Pomoni	3	2	3	4	2		
Mutsamudu	0	2	3	4	2		
State of resources							
	Dry watershed	Deforestation	Soil quality	Biodiversity hotspots	Erosion / sedimentation	Availability of groundwater	Availability of surface water
Anjouan	3	3	3	3	3	3	3
Cuvette	0	3	2	3	3	3	3
Nioumakele	3	3	3	3	3	3	2
Pomoni	2	3	3	3	2	3	3
Mutsamudu	2	2	3	3	3	3	3
Unsustainable practices							
	Fire / Slash-and-burn practices / shifting cultivation	Using wood for distillation	Rivers pollution levels (sanitation)	Solid waste pollution			
Anjouan	5	5	5	5			
Cuvette	1	0	1	1			
Nioumakele	3	5	3	3			
Pomoni	1	2	4	1			

Mutsamudu	4	0					
Socio-economic vulnerability							
	Poverty	Malnutrition	Diversity of livelihoods strategies	Population density			
Anjouan	5	5	5	5			
Cuvette	2	2	2	3			
Nioumakele	4	4	3	5			
Pomoni	3	3	3	3			
Mutsamudu	2	2	4	4			
On-going or planned government initiatives, local, national and international partners							
	On-going national political programmes	Degree of investment / commitment from donors	Community will				
Anjouan	4	4	4				
Cuvette	3	3	1				
Nioumakele	4	4	3				
Pomoni	3	3	1				
Mutsamudu	4	4	1				
General criteria							
	Downstream population vulnerability	Urgency for intervention	Accessibility				
Anjouan	7	7	7				
Cuvette	3	3	5				
Nioumakele	6	6	5				

Pomoni	6	6	3				
Mutsamudu	4	4	5				
TOTAL							
Anjouan	114						
Cuvette	54						
Nioumakele	93						
Pomoni	75						
Mutsamudu	76						

Watershed Selection in MOHELI (missing data)

Appendix 17. Checklist for Environmental and Social Safeguards

Note that as part of the GEF's evolving Fiduciary Standards, Implementing Agencies are required address "Environmental and Social Safeguards".

To address this requirement, UNEP has developed a checklist and has supplied the followi guidance:

1. The checklist must be filled in initially during concept development to help guide t identification of possible risks and activities that will need to be included in the project desig
2. A completed checklist must accompany the PIF.
3. The checklist must be reviewed during the PPG phase and updated as required.
4. The final checklist must be submitted with the Project Package and must clearly show whi activities are being undertaken to address the issues identified

Project Title:	***Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods***		
GEF project ID and UNEP ID/IMIS Number:	GEF Agency Project ID: 5694 UNEP ID: 01249	***Version of checklist:***	1
Project status (preparation, implementation, MTE/MTR, TE):	Preparation	***Date of this version:***	March 2016
Checklist prepared by (Name, Title, and Institution):	Anna Kontorov, Task Manager, Climate Change Adaptation Unit, DEPI, UNEP		

Section A: Project location:
If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) th stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	**Comment/explanation**
- Is the project area in or close to -		
- densely populated area	Yes	The project aims to impact as many beneficiaries as possible, therefore it will be implemented in densely populated areas. No negative environmental or social impacts associated with working in densely populated areas are anticipated during project implementation. Monitoring and evaluation will be undertaken during the standard M&E processes.
- cultural heritage site	No	
- protected area	No	
- wetland	No	
- mangrove	No	

- estuarine	No	
- buffer zone of protected area	No	
- special area for protection of biodiversity	No	
- Will project require temporary or permanent support facilities?	No	
If the project is anticipated to impact any of the above areas, an Environmental Survey will be needed to determine if the project is in conflict with the protection of the area or if it will cause significant disturbance to the area.		

Section B: Environmental impacts

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	**Comment/explanation**
- Are ecosystems related to project fragile or degraded?	Yes	The proposed project will restore – and build the resilience of – degraded ecosystems using an EBA approach during the implementation phase. Note that the degradation of the watersheds and forest ecosystems where the project activities will be implemented is mainly human induced.
- Will project cause any loss of precious ecology, ecological, and economic functions due to construction of infrastructure?	No	No infrastructure construction is planned.
- Will project cause impairment of ecological opportunities?	No	Ecological opportunities will be increased.
- Will project cause increase in peak and flood flows? (including from temporary or permanent waste waters)	No	The resilience of local communities to floods will be increased.
- Will project cause air, soil or water pollution?	No	No pollution will be generated by the project activities.
- Will project cause soil erosion and siltation?	No	Soil stability and water infiltration will be enhanced by planting trees in the project areas, thereby reducing erosion and sedimentation.
- Will project cause increased waste production?	No	No increase in waste production will result.
- Will project cause hazardous waste production?	No	No hazardous waste will be generated.
- Will project cause threat to local ecosystems due to invasive species?	No	The project will promote planting indigenous and resilient tree species instead of exotic tree species.
- Will project cause greenhouse gas emissions?	No	Project activities are likely to result in the sequestration of carbon in soils and plant

		biomass. This will be achieved by replanting both forests and multiple other tree species (e.g. by implementing agroforestry techniques).
- Other environmental issues, e.g. noise and traffic	No	
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily, both in the short and long-term, can the project go ahead.		

Section C: Social impacts

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	**Comment/explanation**
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	All project interventions were developed in accordance with internationally proclaimed human rights and UN guidelines. In addition, all activities were developed in consultation with stakeholders. Consequently, no rights or laws will be infringed upon by the proposed activities.
- Are property rights on resources such as land tenure recognized by the existing laws in affected countries?	Yes	The project interventions will not cause conflicts related to land tenure or impact land tenure negatively in any other way. Because land tenure security is weak in the Comoros, an activity under Component 1 is aimed at developing mechanisms for securing access to land, through the application of the FAO's voluntary guidelines on the governance of land tenure systems.
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	Consultations with community members will take place throughout the project implementation phase to avoid any problems or conflicts related to land tenure and/or access to resources. A participatory approach involving local community members will be used in the development of the watershed management plans, agroforestry land use plans, and other project activities relating to resource use.
- Does the project incorporate measures to allow affected stakeholders' information and consultation?	Yes	The proposed project will reduce the vulnerability of stakeholders by providing information on climate risks and opportunities and ensuring feedback on

		the application of such information. Additionally, all the on-the-ground activities will be community-based.
- Will the project affect the state of the targeted country's institutional context?	Yes	The proposed project will strengthen institutional capacity in the Comoros to adapt to climate change using EBA approaches. National and local (i.e. each island, directorates) authorities will be trained in the implementation of EBA. Additionally, knowledge sharing will be promoted through meetings, creation of partnership and trainings.
- Will the project cause change to beneficial uses of land or resources? (incl. loss of downstream beneficial uses (water supply or fisheries))?	No	The proposed project is designed to enhance ecosystem services and access to resources. This includes reduced flooding and sedimentation at intervention sites as a result of the project activities.
- Will the project cause technology or land use modification that may change present social and economic activities?	Yes	The proposed project will increase the efficiency of current land use systems to enhance the social and economic benefits of these systems. While the establishment of community conservation zones may lead to the exclusion of certain types of land use, the project intends to replace or provide sustainable alternatives to unsustainable land uses, and to ensure that all families have resilient livelihoods.
- Will the project cause dislocation or involuntary resettlement of people?	No	The proposed project will restore degraded ecosystems in selected sites. It will not cause any population dislocation or involuntary settlements.
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	No infrastructure works are planned.
- Will the project cause increased local or regional unemployment?	No	The proposed project will not result in increased unemployment. On the contrary, the project should improve the livelihoods of the local communities as well as their resilience to the effects of climate change.
- Does the project include measures to avoid forced or child labour?	Yes	The proposed project conforms to all national and international guidelines and laws regarding forced labour. Extensive community engagement will prevent the use of forced labour. In addition, all required labour – which will consist only of short-term employment for meeting specific objectives – will be provided through community engagement and will

		be remunerated in accordance with national law.
- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	Satisfactory offices with proper workstations and equipment, fair salaries, and adequate staff to ensure management of project without overburdening staff are part of the project design.
- Will the project cause impairment of recreational opportunities?	No	The project intervention sites do not include areas currently used for recreation.
- Will the project cause impairment of indigenous people's livelihoods or belief systems?	No	The proposed project was developed through consultation with local communities. It will improve the communities' livelihoods by increasing the availability of climate-resilient livelihood options.
- Will the project cause disproportionate impact to women or other disadvantaged or vulnerable groups?	No	The proposed project will help reduce the exposure of climate-vulnerable groups including women, children and farmers. Gender equity will also be promoted in each activity.
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	No cultural heritage will be damaged by project operations.
- Does the project include measures to avoid corruption?	Yes	As per UNEP norms and standards
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily, both in the short and long-term, can the project go ahead.		

Section D: Other considerations

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	**Comment/explanation**
- Does national regulation in affected country require EIA and/or ESIA for this type of activity?	No	
- Is there national capacity to ensure a sound implementation of EIA and/or SIA requirements present in affected country?	No	
- Is the project addressing issues, which are already addressed by other alternative approaches and projects?	No	
- Will the project components generate or contribute to cumulative	Yes	The proposed project will enhance climate resilience of ecosystems and local

or long-term environmental or social impacts?		communities. No negative impacts are anticipated and positive impacts will accrue.
- Is it possible to isolate the impact from this project to monitor E&S impact?	Yes	The project SMART indicators are designed to measure the impacts of the project and will help monitor its E&S effects.
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily, both in the short and long-term, can the project go ahead.		

Appendix 18. Consultant reports (attached)

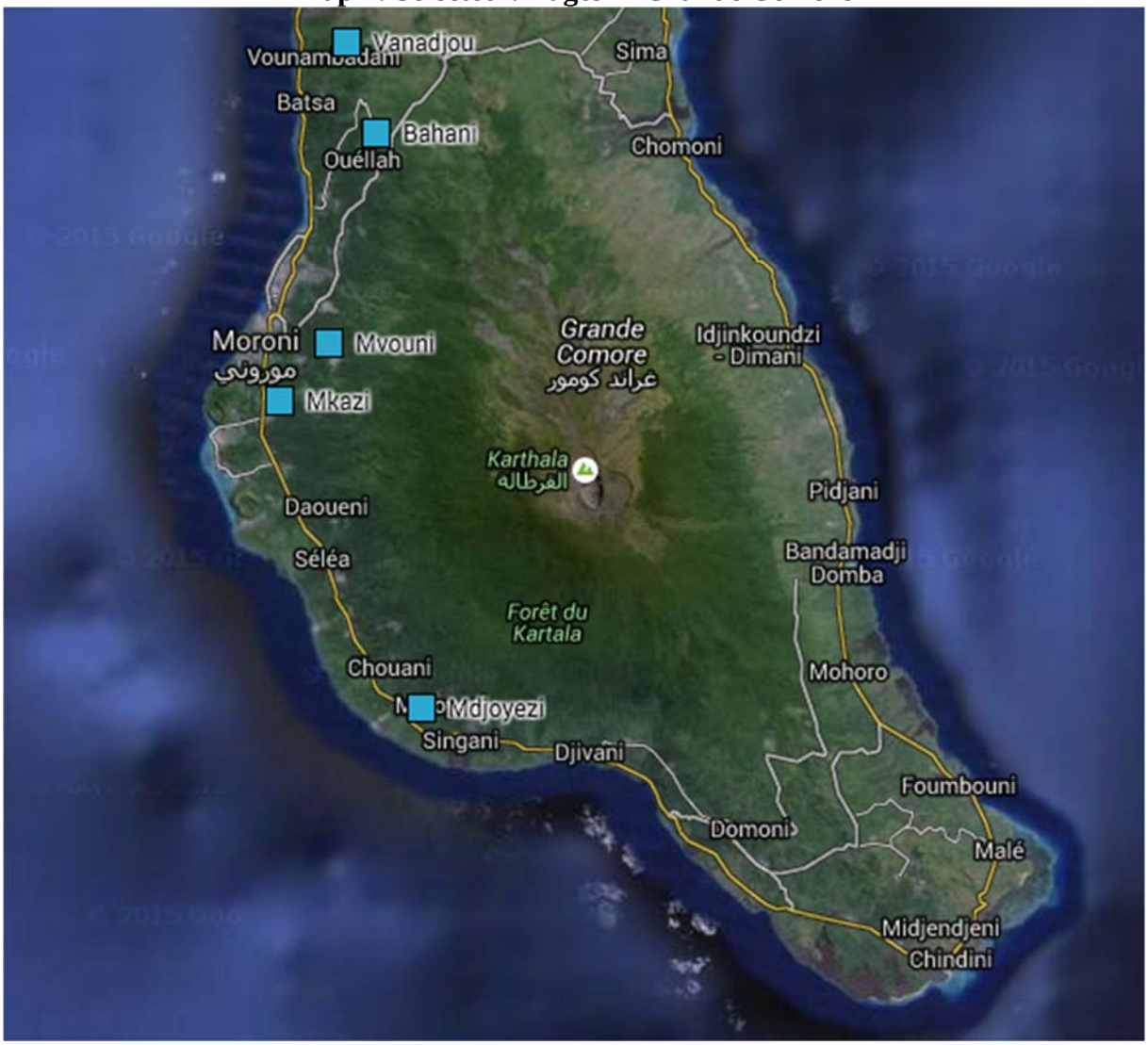
Appendix 18a: Development of phytomedicines and related products in Comoros – Complete
Appendix 18b: Rapport Daniel_DGEF_Agro-écologie Version Septembre
Appendix 18c: Rapport_alternatives1.1.1.O.1_Elhadji

Appendix 19. PPG Inception and Validation Workshop Reports (attached)

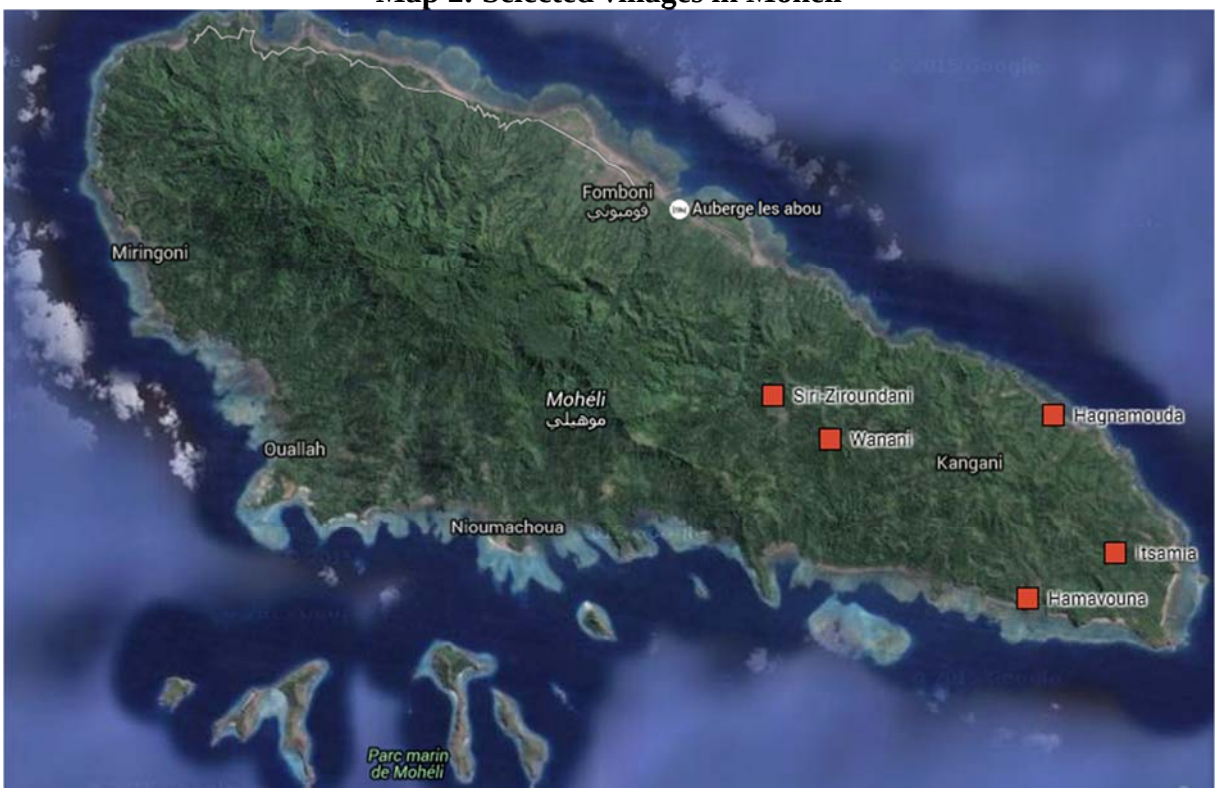
Appendix 19a: Inception Report 2
Appendix 19b: Rapport du séminaire national de validation du projet Bassins versants final

Appendix 20. Maps of the selected sites

Map 1: Selected villages in Grande Comore



Map 2: Selected villages in Mohéli



Map 3: Selected villages in Anjouan