PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:LDCF

PART I: PROJECT INFORMATION

Project Title:	**Building Climate Resilience through Rehabilitated Watersheds, Forests and Adaptive Livelihoods**		
Country(ies):	The Union of the Comoros	**GEF Project ID:**	5694
GEF Agency(ies):	UNEP	**GEF Agency Project ID:**	01249
Other Executing Partner(s):	Ministry of Production, Environment, Energy, lndustry and Crafts (APEIIA) - Directorate of Environment and Forests	**Submission Date:** **Resubmission Date:**	30 Jan 2014 19 May 2014
GEF Focal Area (s):	Climate Change Adaptation	**Project Duration(Months)**	48
Name of parent programme (if applicable):		**Agency Fee (US$):**	488,300

A. **INDICATIVE FOCAL AREA STRATEGY FRAMEWORK:**

Focal Area Objectives	**Trust Fund**	**Indicative Grant Financing ($)**	**Indicative Co-financing ($)**
CCA 1 – output 1.1.1	LDCF	120,000	219,000
CCA 1 – output 1.2.1	LDCF	2,075,000	2,000,000
CCA 1 – output 1.3.1	LDCF	950,000	9,000,000
CCA 2 – output 2.1.1	LDCF	450,000	810,000
CCA 2 – output 2.2.1	LDCF	150,000	0
CCA 2 – output 2.3.1	LDCF	1,150,000	175,000
Project Management,	LDCF	245,000	430,000
			-
Total project costs		**5,140,000**	**12,634,000**

B. INDICATIVE PROJECT FRAMEWORK

Project Objective: To build climate resilience in the Comoros by rehabilitating watersheds, forests and diversifying livelihoods

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
1. Capacity to address climate risks through watershed management	TA	1. Strengthened government and local capacity for resilient watershed management	1.1 Assessments of climate change risks and impacts on Comorian forests and watersheds 1.2 Resilient integrated watershed management is introduced into public policy and practice as an adaptation strategy 1.3 Technical staff are fully versed in integrated watershed management as a resilience building activity 1.4 A strategy to sustain and replicate climate-resilient integrated watershed management is developed and institutionalized	LDCF	970,000	929,000
2. Resilient watersheds and ecosystem-based adaptation demonstrations	TA INV	2. Rehabilitated and resilient watersheds in project sites	2.1 Watersheds and sub-catchments in project areas are rehabilitated and sustainably managed using resilient species 2.2 Human-induced forest and watershed degradation is reversed through resilient and collaborative catchment management in project sites	LDCF	2,655,000	2,275,000
3. Resilient and diversified ecosystem-based livelihoods for local communities	TA INV	3. Communities deploy a diversified array of resilient livelihood strategies in the project areas	3.1 Increased and sustained income from climate- resilient agroforestry among project communities 3.2 Avenues for climate-resilient innovative sources of livelihoods explored in project communities	LDCF	1,270,000	9,000,000
Sub-Total					4,895,000	12,204,000
Project management cost				LDCF	245,000	430,000
Total project costs					5,140,000	12,634,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, ($)

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
National Government	MPIEA	Grant	11,535,000

National Government	MPIEA	In-kind	280,000
Multilateral Agency	UNEP	Grant	400,000
Multilateral Agency	FAO	grant	419,000
Total Co-financing			12,634,000

D. **INDICATIVE TRUST FUND RESOURCES ($) REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY**

GEF Agency	Type of Trust Fund	Focal area	Country Name/Global	Grant amount ($) (a)	Agency Fee ($) (b)	Total ($) (a + b)
Total Grant Resources						

E. **PROJECT PREPARATION GRANT (PPG)**

Please check on the appropriate box for PPG as needed for the project according to the GEF Project Grant

	Amount Requested ($)	Agency Fee for PPG ($)
• No PPG required		
• (up to) $50k for projects up to and including $1 million		
• (up to) $100k for projects up to and including $3 million		
• (up to) $150k for projects up to and including $6 million	US$100,000	US$9,500
• (up to) $200k for projects up to and including $10 million		
• (up to) $300k for projects above $10 million		

PPG AMOUNT REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF

GEF Agency	Type of Trust Fund	Focal area	Country Name/Global	(in $)		
				PPG (a)	Agency Fee (b)	Total c = a + b
UNEP	LDCF	CC	Comoros	100,000	9,500	109,500
				100,000	9,500	109,500
Total PPG Amount						

PART II: PROJECT JUSTIFICATION

A. PROJECT OVERVIEW

A.1.Project Description

A.1.1 The Project problem, root causes and barriers that need to be addressed

The project problem and the root causes

The Union of the Comoros is an archipelago composed of four islands which are, from East to West: Mayotte (370 sq km)[1], Anjouan (424 sq km), Moheli (290 sq km) and Grande Comore (1148 sq km). The

[1] In spite of the accession of the country to international sovereignty in 1975, Mayotte is still under French rule. Therefore, this

country is located at the northern entry of the Mozambique Channel between Madagascar and the Eastern coast of Africa. The islands are separated by deep sub marine channels. The total area of the three islands, which form the Union of the Comoros, is 1862 sq km.

Comoros has a population of 752 000 (2013 estimates)[2] with an annual population growth rate of 2.6%. About 70% of the population resides in rural areas, are dependent on small-scale agriculture for livelihoods (e.g. rice, corn, potato, peanut, cassava, vegetables and potatoes), and income generation is not very diversified. Presently, Comoros rank 168 on the Human Development Index, with 986$ GNI per capita, and 46% of the population living in absolute poverty with less than 1.25$ per day. [3]

The Comorian economy is very much based on the primary sector (agriculture, fisheries, and livestock) which accounts for 41% of the GDP[4] and three crops (vanilla, ylang-ylang and clove) for 90% of total country's export. Comorian rural populations practice 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 agro-forestry, that combine 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.

The climate in Comoros is humid and is characterized by two seasons: a warm and humid rainy season from November to April with average temperatures of 27^{o}C, and a cool and dry season, from June to September, with average temperatures of 24^{o}C. Annual mean rainfall is over 1 000 mm in the three islands with maximum recorded rainfall of 5888 mm in Grande Comore, and over 3 000 mm in Anjouan and Moheli. Whereas Anjouan and Moheli have permanent surface water bodies (rivers), Grande Comore, due to its porous soils, does not.

The Union of the Comoros is hit almost annually by natural disasters such as cyclones, droughts, epidemics, tornadoes, brush fires, tidal waves, floods, major accidents, landslides, volcanic eruptions and risks related to the presence of an active volcano (earthquakes), which severely affect agricultural production and livelihood. On the other hand, the combined effects of agricultural expansion, increased urbanization, lack of appropriate resources and management have had significant impacts on natural resources, especially the forest.

The Comoros was once covered with important forest areas. As noted in the Forestry Action Plan (2012)[5], natural forests remain only in higher altitude areas, and the total forest cover is estimated at 3 000 ha in the three islands. This is attributed in large part to the expansion of agriculture at the expense of forested areas, and more recently, to the expanding urbanization, which also encroaches on remaining forests. Deforestation for firewood and construction materials is also increasing; it was reported in 2010 that nearly 74% of households in Comoros used fuel-wood as their main source of energy. [6] These root causes are also exacerbated by a history of low political interest and investment in the forestry sector, which has also led to a lack of knowledge of forestry resources and their management. The estimated annual deforestation rate is currently 3.1%. Around 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 (Plan d'Action Forestier, 2012).

The degradation of forests has in turn led to broader scale soil erosion, declines in soil fertility and biodiversity, as well as to an overall decrease in water availability through the degradation of soil

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document refers to the three islands only.
[2] CIA World Fact Book, https://www.cia.gov/library/publications/the-world-factbook/geos/cn.html
[3] http://hdr.undp.org/en/statistics/
[4] First National Communication of Comoros to the UNFCCC, 2002
[5] Plan d'action Forestier, 2011, Gouvernement des Comores
[6] FAO, Appui au programme forestier national, 2009

moisture retention properties. This degradation is combined with a number of other baseline constraints to land use and agriculture in Comoros. First, soils in Comoros are inherently fragile and subject to erosion, with low levels of fertility, due to their volcanic nature and to the hilly terrain. Second, land use is heavily impacted by local communities' low level of technical skills and the ongoing usage of forest clearing for agricultural expansion, including through the use of outdated and unsafe slash-and-burn methods. Inappropriate land clearing leads to stripping of topsoil and degeneration of vegetative cover, which accelerates erosion. In addition, the ongoing practice of monoculture including for vanilla, ylang-ylang and main crops such as maize, taro, or banana, is leading to depletion of rare soil nutrients. There is little knowledge of what constitutes geologically appropriate, climate resilient, sustainable agriculture among rural communities. Soil erosion leading to high levels of suspended sediments, pollution by animal and human waste, and the lack of watershed management and protection negatively impact the quality of water. The risk of pollution to groundwater sources is very high due to the porosity of the ground, saltwater intrusion, and an almost total lack of waste management and water resource protection.

Combined with the Comoros' constraints on agriculture (volcanic soils, low levels of technical skills and knowledge of sustainable agriculture), these pressures have led to the degradation of forests as a pillar of healthy watersheds and river basins is leading to a decline in agricultural productivity, declining livelihoods and increased vulnerability.

Current and anticipated climate change impacts

As noted in Comoros' National Adaptation Programme of Action (NAPA) and National Communications, an increase in annual temperature 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. [7] Historical observation has shown a trend towards the increase of extreme meteorological phenomena during the last thirty years.

Studies conducted in Anjouan and Moheli during the first National Communications[8] 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.

Future climate change is likely to increase storms and their severity, exacerbate climate variability and increase the rapidity of sea level rise. Climate change projections for the Comoros include a decline in rainfall of between 2 and 14% during the dry season by 2090. [9] Projections also include an increase in mean annual temperature of between 0.8 and 2.1°C by 2060, and of 1.2 to 3.6°C by 2090, and expected 20 cm rise in sea level by 2050.

It is expected that the increase in air temperature combined with high intensity rainfall events will contribute to accelerating the process of soil erosion in Comoros, given the fragility the soil, and lead to a decrease in agricultural production. Crops cultivated in the open field system would be the most vulnerable to climate changes given the lack of vegetation and forest cover of such system of production. The systems that feature mixed cropping (traditional agroforestry and cultivation under natural forest cover) would resist climate changes better. Small coastal plains where monocultures are found will be threatened by underground and surface salt-water intrusion. These monocultures, cash-cropping estates cultivating coconut palm and ylang-ylang (found in the coastal plains), and clove and vanilla (grown in the lowlands) are central to Comoros'

[7] see for example Watershed management field manual, T.C. Sheng, FAO, 1990.
[8] Abdou, Soimadou, étude de vulnérablité dans le secteur forestier, 2005.
[9] McSweeney, C., New, M. & Lizcano, G. UNDP Climate Change Profiles: Comoros. http://country- profiles.geog.ox.ac.uk .

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.

The supply of water is currently insufficient to meet the needs of the Comorian population. The principal sources of water in Comoros are: rainwater collected in cisterns, river water and coastal aquifers. Negative climate change impacts such as rainfall variation and decline, mean annual temperature and climate-induced hazards will negatively exacerbate the shortage of water supply and water quality, both of which are already affected by inadequate management of watershed resources and deforestation. Comorian communities, autonomous islands' governments, and the national government presently lack the technical capacity, management capacity, physical resources and financial resources to overcome and cope with the anticipated changes in climatic conditions.

These 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. [10] 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. [11]

The **problem** which this project seeks to address is that the rapid degradation of watersheds and river basins in all three islands, that is exacerbated by climate change, has threatened and will continue to threaten livelihoods of communities which depend on healthy watersheds. National and local communities do not have the capacity and institutions to address these threats. Furthermore, the ongoing development investments made by government and donors in the project region will be undermined if climate change risks are not integrated into the planning and implementation of development programs.

This problem is also compounded by a number of human-induced root causes, as follows:

- 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 adapt their land use practices to the emerging climate conditions.

- 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.

- Lack of information about forests and their role in maintaining ecological productivity and livelihoods also exacerbate this problem, as well as a lack of information regarding land tenure, property rights and stewardship duties among rural communities.

- Government investments in the forestry sector, although they are gradually increasing, remain low, and based on traditional approaches of reforestation and conservation areas. The institutional set-up for watershed management is weak, and the application of forestry policies, laws and standards, is low.

[10] 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.
[11] Id.

- 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 labour-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.

- 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.

Proposed solution to the problem and barriers to implementation

Urgent interventions are needed to build the national and local capacity to respond to climate change risks on how to adapt their livelihoods to climate change. Implementing an ecosystem-based approach to resilient integrated watershed management would provide an ideal solution to the problem that this project seeks to address. Creating a framework for resilient development at local and national levels would help address the root causes mentioned above, which would be aggravated by climate change impacts. Such approaches provide a low-cost and effective means for securing and enhancing multiple ecosystem benefits for vulnerable communities. [12] As part of an integrated adaptation approach, EbA has been shown to require comparatively small investments relative to the long-term social, economic and environmental benefits. [13] However, the implementation of such an approach faces a number of barriers:

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. While some effort is being made to revitalize and reform the Centers for Agricultural Expertise (decentralized agricultural resource centers), this has not yet led to an effective transfer of knowledge to agricultural producers and natural resources users. Weaknesses within the forestry management sector, at the institutional level as well as at local level also create a vacuum of initiatives, except for small-scale ad-hoc reforestation initiatives. Lack of knowledge of the economic benefits of watershed management, as well as a lack of technical and financial resources, were quoted by stakeholders during consultations as reasons for this barrier.

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.

There are a few NGOs and CBOs in Comoros but 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. Access to the media and public sources of information are also low, which hinder the rapid dissemination of new information, including that related to adaptation.

Finally, at local level, 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. Communities are fairly risk averse, which means that few communities have explored alternative watershed management practices or alternative sources of livelihoods.

[12] Jones, H.P., Hole, D.G. & Zavaleta, E.S. 2012. Harnessing nature to help people adapt to climate change. Nature Climate Change 2, 504-509.

[13] UNEP/STREP 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.

A1.2 The baseline scenario and associated baseline projects

The **baseline scenario** regarding watershed management in Comoros is marked by a series of challenges. These include pressures to increase agricultural production of a few key crops, unsustainable watershed management and natural resource use practices, low levels of technical knowledge regarding agriculture in fragile ecosystems, and weak national institutions for regulating watershed use. 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.

Forest and watershed management in the country is ensured by the National Directorate of Environment and Forests (NDEF) of MPEIA, its decentralized Environmental Services and the National Sustainable Development Coordination Committee, with Island Consultative Committees. The NDEF has four different divisions who play a role in forest and watershed management:

- Division of regulation and control
- Division of education, environment and communication
- Division of land use planning
- Division of 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 NDEF functions in a limited way. As a result, there is no forest land use planning, no sector 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 NDEF's work on forests. Among recent actions to correct these gaps, the Comorian Presidency launched an annual reforestation and awareness-raising campaign, "Un Comorien, un Arbre", whereby communities are encouraged to plant trees every year. To date, the campaign has planted a total of 6 000 trees since its start in 2009.

There is no rigorous study of the impacts of climate change on watersheds and of the role of healthy ecosystems in protecting livelihoods, including through the provision of food and shelter, in the Comoros. Current management practices, when they are adequate, do not take climate change considerations into account, and are not adapted to emerging climate conditions. Climate risk management in the context of watershed management is not being applied. There is also a lack of integration between various sectors that come to play within a given watershed, often exacerbating the competition for use of various natural resources (land, water, biodiversity).

Among rural communities on each of the three islands that make up the Union of the Comoros, small producers 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. 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.

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

baseline programmes: the **National Programme on Forestry (NPF)** and the **National Programme for Sustainable Human Development (PNDHD)**[14].

The **National Programme on Forestry (NPF)** is coordinated by the MPEIA. The NPF, which addresses the baseline problems related to deforestation, forest fire, and watershed degradation, consists mainly of three initiatives:

- The Forestry Act and Forestry policy
- The 2012 Forestry Development Priority Action Plan
- The National Forest Inventory

The development and implementation of the NPF was supported by the FAO through a project called "Support to National Forestry Programme" (US$ 419 000) to proceed to a national assessment of forest resources, leading to the National Forest Inventory, and to contribute to the formulation of the forest policy. The project ended in 2013, and included support for the development of an agreed shared methodology for forest assessment, capacity building for data collection through the creation of a data collection unit within NDEF, support for forest classification, as well as conducting the actual inventory of resources. The project also supported the development of elements of the Forestry Policy, recommendations on how to update and implement the Forestry Law, and support for the development of the Forestry Action Plan.

The delivery of the *Forestry Development Priority Action Plan* is foreseen through national and island institutions and organizations, as well as a number of ad-hoc projects and initiatives. The *2012 Forestry Development Priority Action Plan* aims at restoring forests and ensuring that they play an appropriate role in Comorian economy. It also foresees strengthening the integrated management of ecosystems and the capacity of institutions and stakeholders in the sector. It is built around four principal pillars:

- Strengthening forestry institutions and mechanisms: including restructuring of the national services in change, strengthening communication and information management, strengthening local delivery capacity through training.
- Land use planning and participatory management of natural forests including: conservation of remaining natural forests, sustainable use of forest resources, watershed land use planning and management, mangrove management, and protected areas and biodiversity management.
- Establishing plantations for hardwood, fuelwood products including through a national reforestation programme and the development of community-based woodlot management.
- Support to local forest management initiatives, including: sustainable use of non-ligneous forestry products to support food security and conservation.

The total cost of implementing this priority action plan is US$ 4 680 400 over the next 4 years, though its financing (national and international) is not fully secured yet. Of this amount, US$ 2.535 million has been identified as co-financing for this initiative.

The second baseline programme on which this project proposes to build is the **National Programme for Sustainable Human Development (PNDHD)**, an effort to address the root causes including poverty, lack of access to basic socioeconomic services, small farm size, and low levels of technical knowledge for sustainable livelihoods, which the government (through the MPEIA) is implementing with support from IFAD. The programme's goal is to reduce poverty by promoting better natural resource management, in order to raise agricultural production. The initiative is funded to a total of US$ 9.7 million since 2007 (a supplementary grant was approved in 2011 for US$ 2.6 million and the project was extended to December 2014). [15] Of this total amount, $ 9 million has been identified as co-financing. It is expected that fur-

14 There are few defined and funded "projects" under the Forestry Programme, therefore the LDCF funding will be used to supplement ongoing or planned initiatives that fall within the framework of national programming. Further initiatives will be confirmed at the PPG phase.

15 The programme received some GEF funding in 2007 through the SIP-Integrated Ecological Planning and Sustainable Land Management in Coastal Ecosystems in the Comoros in the Three Island of (Grand Comore, Anjouan, and Moheli), of a total of 1,000,000 US$ in 2007-2008.

ther programming will be developed after 2014.

The PNDHD is being implemented in 55 villages in Anjouan, 17 in Grande Comore and 7 in Moheli, and promotes the transfer of basic agricultural technologies related to hedging, crop-raising associations and milk production, as well as community-based rural finance associations. In its first component, the program provides support to the mobilization and capacity development of community-based organizations, producers' associations and local cooperatives. The program also contributes to the creation and emergence of local land use committees. In its second component, the program component supports the dissemination of crop and animal production technologies towards intensification of production and productivity, including through soil protection and reclamation. The PNDHD also contributes to the terracing and watershed protection in coastal areas, and the strengthening of land and water management, including management of coastal protected areas. Under its third component, the PNDHD focuses on local production initiatives through micro-credit, in particular for women's groups. The revitalization of the Centers of Agricultural Expertise was supposed to be part of the project's 1st phase, but has not happened to date due to lack of funds (it is scheduled as part of the project's extension).

Baseline programming and policies for poverty reduction or environmental protection do not give adequate attention to the role of healthy ecosystems in promoting proactive adaptation and resilience to the impacts of climate change. Environmental policies and programmes are still weak, with government and NGOs lacking the means to operationalize existing guidelines and policy orientations. New technologies are not actively disseminated to rural communities, meaning missed opportunities to adopt resilient production techniques that would prove productive and resilient in the long-term.

Key stakeholders from the above mentioned baseline projects will be engaged in the project preparation phase and implementation of the proposed LDCF project including through their participation in PSC of the LDCF project.

A1.3 The proposed alternative scenario

This project seeks to enhance the resilience of rural communities whose livelihoods depend on healthy watersheds to climate change impacts in Comoros. The proposed project intervenes in at least one watershed per island (i.e. 3 main project sites), the exact location of which is to be determined during the project preparation phase. Criteria for selecting the watershed will be based on the state of degradation, potential for ecosystem-based livelihoods, and the links to ongoing or planned initiatives under the Forestry Action Plan. The project will intervene in areas where no other LDCF-supported interventions are underway. As a preliminary selection based on the preliminary consultations with and input from Executing Agency and project stakeholders, the project would intervene in the North-East area of Ngazidja (towards Mbeni), the western point or the Forest of Moya in Anjouan (towards Sima), the western watershed or Forest of Mlédjelé in Moheli, the Forest of la Grille (Grande Comore).

In order to achieve this objective, the project will address the key barriers and root causes highlighted above: low levels of technical and financial means, institutional weaknesses in the extension system, lack of data and information on the status of hydrological basins, low levels of investments by governments, NGOs and communities, and a lack of understanding of the economic and ecological benefits of watershed management. The LDCF grant will be used to build on the two baseline programmes and their associated initiatives as mentioned in Section A.1.2.

The LDCF project would supplement and strengthen the national forestry programming by providing an assessment and high-quality knowledge of climate change impacts on forests and watersheds, and by examining the current forest and watershed management and conservation practices to determine entry points for adaptation and resilience. The project would also contribute to the implementation of the Forestry Action Plan by piloting resilient forest and watershed rehabilitation technologies in selected

areas. This includes the development and demonstration of ecosystem-based adaptation approaches that will integrate a community-based ecosystem monitoring element, to promote local ownership of ecosystem services. Major project components will be as follows:

Component 1. Capacity to address climate risks through watershed management
Under this component, the project will address the technical and institutional barriers to promoting resilient integrated watershed management. This includes working to develop a more thorough knowledge base on the state of watersheds and their climate change vulnerability and the introduction of techniques and tools for the implementation of resilient watershed management at national and local level. Under this component, the project will 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 component addresses GEF Adaptation Outputs 1.1.1, 1.2.1, 2.1.1, 2.2.1 and 2.3.1.

Component 2. Resilient watersheds and ecosystem-based adaptation demonstrations
Under this component, the project will support the implementation of resilient integrated watershed management techniques and approaches in pilot demonstration areas (at least one watershed per island). This will be done using an ecosystem-based management approach, whereby activities to rehabilitate and manage degraded ecosystems will be accompanied by measures to monitor environmental parameters and ecosystem services to ensure the sustainable provision of such ecosystem services that are vital for local communities' livelihoods and survival. 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.

This component addresses GEF Adaptation Outputs 1.2.1 and 2.3.1.

Component 3. Resilient and diversified ecosystem-based livelihoods
Under this component, the project will build on the PNDHD to implement alternative livelihoods strategies for targeted communities, including the development of potential innovative means of subsistence, in order to support sustainable land and water use. 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.

This component addresses GEF Adaptation Outputs 1.3.1, 2.3.1, and 1.2.1.

A1.4 The incremental cost reasoning and expected contributions from the baseline, the LDCF and co-financing

The LDCF project will build the climate resilience of ecosystems and local communities by improving their access to ecosystem services, such as food, water, and harnessing these ecosystem services in a sustainable way to explore further economic development opportunities. Moreover, climate-resilient ecosystems can increase the adaptive capacity of local communities by providing an important buffer against extreme weather events.

This project has secured a set of baseline co-financing commitments of US$12,634,000, including 280,000 USD in-kind from the government of the Comoros. The proposed project will ensure that these investments are resilient under future climate change conditions. Please see the additional cost reasoning for each component below as well as a summarized description of the climate change vulnerabilities and their impacts to the baseline projects versus the proposed adaptation alternative in Table 1 (see Annex II).

Component 1. Capacity to address climate risks through watershed management
Baseline financing: $929,000
LDCF financing: $970,000

Business as usual scenario

The National Forestry Programme, in its current state of implementation, constitutes the baseline on which this component will build, of a total value of $410,000. Together with This includes the FAO-supported activities mentioned above (national forest inventory, assessment methods, development of forest policy) as well as the various activities included in the National Forestry Action Plan (such as National Forest Inventory) of a total value of $419,000, much of which are not currently being systematically implemented, specifically in the targeted project areas. UNEP is contributing $100,000 in co-financin. Despite a few ad hoc initiatives towards reforestation, water conservation and agricultural development, the framework for integrated watershed management will remain inexistent without LDCF intervention. This means that opportunities for building resilience in rural areas of the Comoros will be missed, and that communities will be placed in increasingly vulnerable conditions. The National Directorate of Environment and Forests will continue to lack the knowledge and tools to promote sustainable watershed rehabilitation and management, and erosion problems will continue unabated until complete loss of forest cover in Comoros. Priority actions as foreseen in the Priority Action Plan for Forestry will continue to be un-implemented, and those actions that are implemented through ad hoc resources, could risk putting in place maladaptations, such as the use of non-resilient species, or because of the use of approaches that continue to ignore the effects of climate change such as changes in precipitation and increases temperature.

Adaptation Scenario

Under this component, the project builds on the ongoing activities under the National Forestry Programme to strengthen institutional and technical capacities to address and understand climate change impacts on forests and watersheds. This includes the National Forest Inventory, which has been developed with FAO support and the Watershed Reforestation Programme which is included in the Forestry Development Priority Action Plan.

The LDCF resources will be used to strengthen government and local capacity for resilient watershed management. This will be achieved through the development of targeted knowledge products on the impacts of climate change on forests, based on the National Forest Inventory which will be published in 2013. As a further contribution to the National Forestry Priority Action Plan, the LDCF project will also develop a geo-referenced information system on climate change impacts for major watersheds or sub-catchments in each island, including socioeconomic and environmental data, so as to strengthen decision-making.

Current watershed management practices and policies, as set out in the Forestry Policy, the reforestation campaign, and as implemented through various forestry or agriculture projects, will be examined in the light of climate change and other constraints, and guidelines for resilient watershed management as part of an adaptation strategy will be produced. This will enable the Centers for Rural Development (CRDs) to further transfer this technology and approach to local users. In addition, LDCF resources will be used to empower the National Directorate of Environment and Forests including through policy briefs and technical guidelines on the integration of ecosystem-based adaptation into watershed and forest rehabilitation and management, so that any further reforestation initiatives take climate change into consideration.

The LDCF resources will be used to also remove one key barrier, the unavailability of local expertise, by developing innovative training on climate-risk management in agro-forestry context with the National

Research Institute on Agriculture, Fisheries and Environment (INRAPE), vocational training centers and other centers of expertise in the country. The project will also support further policy thinking, based on project lessons learned, in order to support the adoption of watershed management as a resilience-building strategy and to develop a replication strategy in other watersheds around the country.

The preliminary list of indicative additional activities proposed for funding from LDCF resources for a total of US$ 970,000 includes:

- Develop a map of future forest ecosystems under various management and climate scenarios for each of the islands, including fine-tuning the list of resilient species which is being developed under another project (Adaptation to Climate Change in the Water Sector);[16]
- Assess climate risks on watersheds and current management practices;
- Develop a geo-referenced information system on climate change impacts for major watersheds or sub-catchments, including socioeconomic and environmental data, based on national forest inventory and downscaled climate data available;
- Assessment of current (explicit and implicit) watershed management practices, including their potential for adaptation, and analysis of factors of success in Integrated Watershed Management (including local community mobilization, land tenure and property rights, traditional environmental knowledge, institutional and policy issues);
- Introduction to participatory watershed management as a climate resilience strategy through training and awareness raising among MAPEIIA staff and decentralized stakeholders in the environment, forest, water and agriculture sector;
- Develop policy briefs and technical guidelines for MAPEIIA on the integration of ecosystem-based adaptation into watershed and forest rehabilitation and management (based on lessons learned from Components 2 and 3);
- Work with the National Institute of Research on Agriculture, Fisheries and Environment (INRAPE), technical and vocational training institutes in Comoros to develop courses on climate change, climate risk management and watershed management;
- Collect lessons from demonstration activities and disseminate them nationally and internationally;
- 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 resilient integrated watershed management practices introduced by the project.

Component 2. Resilient watersheds and ecosystem-based adaptation demonstrations

Business as usual scenario
Baseline financing: $2,275,000
LDCF financing: $2,655,000

The National Forestry Programme, in particular its watershed management sub-action plan, constitutes the baseline on which this component is based. This initiative has contributed, and will contribute, during the project, to create basic level of capacity for national and island authorities on watershed management through a total baseline financing of $2,075,000. UNEP will provide co-financing of $200,000. However, without LDCF intervention, current trends in deforestation and in soil erosion will continue to accelerate, leading to the gradual disappearance of vegetative cover in fragile ecosystems in Comoros. This will likely lead to further impoverishment of smallholder producers who depend on ecosystem services (e.g. provisioning services) for their survival. Furthermore, this trend will likely accelerate as ecosystem

[16] Adapting Water Resource Management in Comoros to Increase Capacity to Cope with Climate Change" (ACCE), a joint UNDP-UNEP LDCF project (2010-2014) for a total of $3,74 million in LDCF funding. This project targets the institutional level to integrate climate information into water resource management and foresees some local-level initiatives to address water-related vulnerability, including the construction and rehabilitation of water mobilization and conservation infrastructure on the three islands.

services become damaged beyond repair: water quality and availability will decrease, agro-biodiversity will decline, leading to further productivity declines, which will exacerbate the declines due to human-induced soil erosion, as well as those attributed to changes in precipitation patterns. The result of letting ecosystem degradation go unabated could be dire for local populations, and could also have harsh consequences for the Comorian economy at large, since it still depends on smallholder producers for food and cash crops such as ylang-ylang and vanilla. Ad hoc initiatives to reforest and rehabilitate degraded ecosystems will either end or become insufficient to deal with the combined pressures of climate change and human-induced degradation. This includes the FAO-supported initiative "Support to National Forestry Programme", which has provided forest inventory and distribution of species, varieties, harmonized classification, maps, and strengthened the national monitoring unit, but that did not make any projections based on climate change. The national watershed reforestation initiatives and the national reforestation campaign (both included in the *National Forestry Development Priority Action Plan*) will continue, but without an assessment of their resilience, they may promote maladapted strategies or miss opportunities for increasing local resilience to climate change.

Adaptation alternative

Under this component, the project will build on the baseline forestry programming at local level. The component seeks to rehabilitate and achieve resilient watersheds in the project sites (to be confirmed at PPG phase). This will be done through activities designed to demonstrate, at the local level, the benefits of ecosystem-based adaptation, both for short-term productivity and for long-term resilience. This component proposes to build on the national forestry programming to take forestry conservation projects a step further into resilience building mechanisms. Under this component, LDCF resources will be used to support the implementation of watershed rehabilitation and management plans, along with an innovative community-based EBA monitoring and assessment programme that will be piloted as part of this management plan. This will include: state of ecological services, key environmental parameters e.g. (erosion rates, water run-off and availability, agro-biodiversity) and socioeconomic gender-disaggregated factors of resilience (e.g. agricultural productivity, income, nutrition), as well as a data collection system to integrate the community-based EBA monitoring information into the national watershed information system. The data collection system will provide designated volunteers within local communities with the technology used to monitor the state of the ecosystem around them, using photos, easy to understand codes, and smart-phone technology. The information will then be uploaded into the national watershed information system via cell phone technology. The technology could also be used to relay information to users, including meteorological information and early warning information, where available. These innovations are designed to build local ownership of ecosystems and their services, and to build a direct evidence-based understanding of the benefits of ecosystem-based adaptation for local and national decision-making.

The LDCF resources will also be used to support the rehabilitation of degraded ecosystems and watersheds, including reforestation using resilient species; anti-erosive and anti-flooding measures; establishment of temporary and/or permanent community conservation zones, as proposed in the National Forestry Priority Action Plan, but implemented with projected future climate conditions in mind (e.g. particularly, future rainfall parameters). This will also be supported by activities to assist communities in negotiating collaborative catchment management plans, including land use planning and risk mapping.

The preliminary list of indicative additional activities, for a total of US$ 2 655 000 from LDCF resources includes:

- Implement watershed rehabilitation and management plans in pilot sites through an integrated approach, including: reforestation using resilient species; anti-erosive and anti-flooding measures; establishment of temporary and/or permanent community conservation zones.
- Develop and implement, including through local training, a continuous community-based EBA monitoring and assessment programme that will include: state of ecological services, key envi-

ronmental parameters e.g. (erosion rates, water run-off and availability, agro-biodiversity) and socioeconomic gender-disaggregated factors of resilience (e.g. agricultural productivity, income, nutrition).

- Working with local NGOs, pilot the development of a data collection system to integrate the community-based EBA monitoring information into the national watershed information system (Component 1).
- Conduct trainings on climate risk management, watershed management and ecosystem-based adaptation in project sites.
- Support community-based negotiations towards the development of collaborative sub-catchment and/or watershed rehabilitation and management plans that integrate climate risks and impacts, using the models produced in Component 1.

Component 3. Resilient and diversified ecosystem-based livelihoods
Baseline financing: $9,000,000
LDCF financing: $1,270,000

Business as usual

The baseline on which this component is based is comprised of development activities implemented through the PNDHD, as detailed in Section A.1.2. These initiatives have created local development opportunities on which it will be possible to build to address resilience issues. However, despite this progress, natural resource users in rural areas in Comoros are currently faced with numerous constraints on their livelihoods which lead them to unsustainable practices for land and water management. Under a business as usual scenario, these practices (like itinerant agriculture, slash and burn, agricultural expansion through deforestation) will continue and, regardless of efforts by the NDEF, the ecosystem services that are at the basis of livelihoods will continue to degrade. Only by combining ecosystem rehabilitation with sustainable livelihoods could the ecosystem services be restored and maintained. Furthermore, without LDCF intervention, local communities will continue to pursue livelihoods patterns that could prove maladapted to future climate conditions: changes in crops, land use patterns, water use efficiency could all be necessary to ensure that communities can continue to derive livelihoods from natural resources even in the face of changed climate conditions. Without LDCF support, communities will not be able to develop new livelihoods patterns, and could remain mired in the vicious circle of environmental degradation and poverty.

Adaptation Alternative

This component builds on the national forestry programme (forest inventory and priority action plan) as well as the programming in agriculture under the National Programme for Sustainable Human Development (co-financing contribution of US$ 9 000 000) to promote local diversification and resilient livelihoods among vulnerable communities. The LDCF resources will be used towards the desired outcome of this component which is that communities deploy a diversified array of resilient livelihoods strategies in the project areas. This component will add on to the baseline programmes in agriculture and food security (including the PNDHD) to promote and extend promising production technologies for agricultural diversification. This will include the development of resilient agro-forestry plans and land use mechanisms based on risks assessments delivered in Component 1, as well as the implementation of ecosystem-based resilient livelihoods production strategies: agro-forestry, zero-grazing small stock production, small food transformation and processing, vegetable production and piloting of innovative niche products. With regards to niche products, the project will support the collection and adaptation of traditional knowledge on pharmaco-cosmetic uses of plants and other niche crops that could emerge as climate change conditions permit.

The preliminary list of additional activities, for a total of US$ 1,270,000 LDCF funding includes:

- Based on integrated watershed rehabilitation and management plans (Component 2), establish community-agreed climate resilient agro-forestry land use plans.
- Collect and review traditional knowledge on pharmaco-cosmetic plant-based products and niche food crops with a view of identifying potential resilient cash crops for diversification of livelihoods (including environmental impact, socioeconomic potential and policy barriers).
- Implement ecosystem-based resilient livelihoods production strategies focusing on agro-forestry and including: zero-grazing small stock production, small food transformation and processing, vegetable production and piloting of innovative niche products.

Further details on the links between baseline programming and this project is provided in the table contained in Annex 1.

A1.5. Adaptation benefits

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.

The project will produce direct adaptation benefits to local communities in the form of sustained, resilient, diversified and sustainable 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.

This project will also improve the provision of agro-ecosystems and forest ecosystem goods and services, benefiting the local communities that rely on these ecosystems. This will take place through Component 2 and 3 and sustained through the knowledge sharing aspect of Component 1. The rehabilitation of watersheds and forests and the valuation of ecosystem goods and services will also reduce the vulnerability of agro-ecosystems and forest ecosystems to climate change. The planting of resilient trees and cultivation techniques of resilient crops will lead to this benefit.

The adaptation benefits of this project include: (1) gains in agro-ecological productivity; (2) reduced loss of forests and water; (3) reduced losses of infrastructure and livelihoods; (4) increased water availability; (5) increased biodiversity; (6) increased livelihoods and income.

In addition to building adaptive capacity against negative climate change impacts, this project will also contribute global environmental benefits such as conserving biodiversity and preventing land degradation. Environmental benefits will be monitored through the community-based ecological monitoring programme in Component 2, building a body of evidence that can be used for long-term monitoring of the environment.

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 percent, and 50 percent for the orchid family. Some of the wildlife impacted by conserving biodiversity include 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 percent, while mammal endemism rate ranges around 14 percent. In the case of conserving biodiversity, the project (Component 2) will protect and rehabilitate forest ecosystems and the

very unique wildlife that inhabits the islands of 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.

A.1.6 Innovativeness, sustainability and potential for scaling up

Innovativeness: The project will introduce integrated watershed management as a no-regrets option for resilience and adaptation that can achieve development results such as protection of water supply, environmental rehabilitation as well as poverty reduction. The project will also introduce innovative measures such as a community-based ecological monitoring programme that will seek to demonstrate the links between a healthy environment and livelihoods, integrating new technologies such as GIS and crowd-sourcing platforms to empower local natural resources management. The project will also work with local NGOs and academic institutions to develop emerging capacities in the country. Finally the project will also seek to pilot economic innovations through the use of niche plant-based products (pharmaco-cosmetics and food crops) towards sustained diversification of livelihoods in the face of emerging climate conditions. The project also seeks to implement an innovative approach to adaptation in the Comoros, by focusing on the rehabilitation of watersheds and ecosystems as a means to reduce community vulnerability.

Sustainability: Working at the village level will lead to greater ownership and participation of local populations leading to an integration of resilient practices in village activities. The development of alternative and adaptive livelihoods will open the gateway to more resilient income-generating activities in the long-term, and provide economic incentives for sustainable activities. It is expected that the community-based monitoring programme, which will demonstrate the link between healthy watersheds and increased livelihoods, will serve as a fundamental tool in promoting sustainability and scaling up of project interventions. The project will also work with 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. 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.

Scaling up: The project components have the potential to be scaled up in order to ensure greater aggregate impact at the national level. Reforestation and watershed rehabilitation, when successful, can easily be replicated and upscaled in other sites, and the project will seek to learn from previous experiences and successes. By increasing capacity at the systemic level (Component 1), and through inclusion and participation at the stakeholder level the project ensures that agency and capacity remains in the country. Stakeholders can apply the expertise gleaned in this project and can expand and adapt it. 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 an expanded level.

A.2. Stakeholder engagement

Stakeholder participation and validation of key processes is expected for all activities commencing with their engagement in the PPG phase. The communities, institutions and partners potentially involved in this project will be 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 will include workshops and local level consultative forums including participatory vulnerability assessments and the assessment of potential impacts to environment and discussions with all partners involved. Among these, the Project Preparation Inception Workshop will bring together all stakeholders and potential partners, and other prospective stakeholders will be identified during the course of project preparation. Vulnerable

groups, specifically women and the elderly, will be specifically targeted in this project through component 3 which will provide activities designed around their specific needs, capacities, knowledge and social roles. A preliminary list of stakeholders is provided below:

1. **Government Stakeholders** - These stakeholders will coordinate almost all activities in project implementation and will report back on successes and challenges. The Ministry of Agriculture, Fishing, Industrial Development, Artisan Artifacts, and Environment will be the national implementing partner, through the Direction Générale de l'Environnement et des Forêts. The Direction Générale de l'Eau will also be an active partner in the project, and, along with the Agriculture Directorate, will benefit from the project's interventions, specifically in the monitoring. These two directorates will be partners in the delivery of local activities designed to implement livelihoods diversification and watershed rehabilitation works.

The governments of each of the Islands will naturally be essential partners in the project, along with the decentralized technical services, including 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.

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

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 as regards 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.

2. **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 *Development Associations*, which are community-based organizations in each village in the Comoros; *Ulanga (Nature) associations* whose activities focus on environmental awareness through events, including days dedicated to cleaning, tree-planting, and domestic waste cleaning. Very often these associations are created and run by youth; Water user groups and other Natural Resources management Groups.

3. **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 below (additional stakeholders to be identified and their capacity assessed during project preparation):

- *Action Comores Aide* (Association for Intervention for Development and the Environment),
- *Action for sustainable development and environment (ADDE)*
- *Comoflora*
- *University on Grande Comore*

4. **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 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.
- *Chamber of Commerce*
- *Industry associations* (forestry, agriculture, fisheries, artisanal groups)

5. **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 other activities to ensure complementarity and harmonisation of development interventions. Key partners include: FAO, UNDP, AFD, WB, AFDB, IFAD.

6. **Women's groups** – 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. 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.

A.3. Risks

The following risks to successful implementation of the project have been identified at the preliminary level in Table 1, along with appropriate countermeasures and management responses to minimize the potential threat posed by the specific risk. A more thorough risk analysis will be developed during the project design phase.

TABLE 1: RISKS, RATINGS AND MITIGATION MEASURES

IDENTIFIED RISKS	LEVEL	MITIGATION MEASURES
Weak institutions and government capacity can cause delays and logistical challenges to support project implementation	High	The project will be organised in such a way to ensure ongoing support and consultations throughout the project for public officials. Government officials will be engaged at the preparation stage to promote ownership of the project. Government officials will also coordinate the activities of all the partners and stakeholders ensuring that the civil service has a central role in the project's success, maintaining both their interest and accountability of the project. The project will promote interministerial collaboration so as to ensure cross departmental accountability and cooperation. The project will also seek linkages with ongoing projects and initiatives so as to encourage synergies which will reinforce the significance of the LDCF project and ensure there is no overlap with other projects' activities. Training and capacity building will also be provided (Component 1), which will allow this project to provide learning incentives. The project will also promote active participation at the local level of government officials encouraging improved civic relations.
Poverty and other social factors prevents local communities from adopting resilient ecosystem-based adaptation measures for the long-term, and instead opting for mal-adaptive short-term benefits	Low	The project through Component 3 will carry out information dissemination activities at the local level ensuring that communities are aware of the benefits of adaptation. The emphasis on livelihoods (Component 3), 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. Activities such as encouraging varied cultivation, and planting of fruit trees whose products can be sold, can alleviate poverty while building resilience. Inclusive interventions such as building community action plans for water management will ensure that individuals have a role and stake in the project. Further, fostering forums for collaboration and discussion on watershed and forest rehabilitation options may create new sources of livelihoods and participation, encouraging people's involvement in the project.
Lack of funds after project may reduce sustainability of project outcomes	Medium	The project through component 1 will pay particular attention to the key factors of success in the implementation of resilient watershed management as a strategy for adaptation in the country. The project will support the development of island-based consultative platforms to discuss project outcomes, assess their potential for replicability, devel-

		op an upscaling strategy, a mainstreaming strategy, and a financing strategy that will consider all possible future sources.
Communities may not immediately see the benefits of ecosystem rehabilitation and therefore may not desist from unsustainable land and forest use practices	Low	The project's community-based monitoring programme hopes to deliver information to the communities that will clearly demonstrate the links between healthy environments and increased livelihoods. It is hoped that Components 2 and 3 will demonstrate sufficient socioeconomic benefits for the project's outputs and outcomes to be sustained in the long-term. However, 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.

A.4. Coordination with other relevant GEF financed and other initiatives (0.5+)

In addition to the projects mentioned in the section A.1.3, this project will coordinate with existing projects so as 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. A primary list of initiatives is below, which will be supplemented with other initiatives identified during the project preparation phase.

- *Strengthening water utilities in Anjouan and Moheli (Projet de renforcement des services de l'eau de l'UCEA et l'UCEM (750.000 Euros, 2009-2014*)). This project, implemented through support from French Development Cooperation (AFD), has three objectives: to clarify the institutional mechanisms for water management; to implement the institutional mechanisms and strengthen financial, technical, accounting and administrative capacities of key actors (Union of Water Committees (UCE) and Water user Groups); and to secure potable water supply for 70,000 persons in Moheli and 250,00 in Anjouan through rehabilitation of village water networks, the preparation of future investments and funding requests, and rainfall monitoring.

- Support to public management of water in a pilot zone in Grande Comore (*Projet d'appui à la gestion du service public de l'eau dans une zone pilote de l'île de Grande Comore, 5 500 000 Euros, 2012-2015)).* This project, implemented in Grande Comore through AFD support, foresees water mobilization investments and the implementation of a management system for public water utilities; the development of a smaller network of impluviums; and boreholes to increase water supply. The project also seeks to enhance the capacity of the water utilities to manage water supply.

- Investment in drinking water infrastructure on the Djandro Plateau (*Projet d'investissement pour des infrastructures d'adduction d'eau potable sur le Plateau du Djandro, 4.200.000 Euros, 2011-2014).* This project is focused on water supply in Moheli and is also implemented through AFD support. Its objectives are to rehabilitate and upgrade the drinking water network in the Djandro plateau, with strengthening of the water utility and public service on the island.

- Strengthening of water services in Domoni and Potable Water Supply on the Sima Peninsula in Anjouan (*Projet de renforcement des services de l'eau potable sur l'agglomération de Domoni, 1,500,000 Euros, 2012-2014) and Approvisionnement en Eau Potable de la péninsule de Sima sur l'île d'Anjouan, 4,200,000 Euros, 2012-2014).* These projects focus on Anjouan and their objectives are to upgrade and rehabilitate the public water infrastructure and networks on the island. They are also funded though AFD support.

- The *Potable Water Mobilisation Project (17 million US$),* funded through the African Development Bank is a complement to the above-mentioned projects in Moroni and five other locations on the three islands. The project includes major investments in water mobilization and conservation infrastructure,

sanitation, as well as some institutional strengthening components, including revisions to the Water Code, reviews to the institutional structure, and the development of a strategy and Action Plan for 2030.

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

- "Adapting Water Resource Management in Comoros to Increase Capacity to Cope with Climate Change" (ACCE), a joint UNDP-UNEP LDCF project (2010-2014). This project targets the institutional level to integrate climate information into water resource management. For instance, Components 1, 2 & 3 have significant activities that will take place on the ground and will involve the participation of various local partners. Moreover, the UNDP-UNEP joint project also provides some of the critical climate change capacity building at the institutional level which this project will draw upon, most notably in the area of availability of climate information which will be useful in determining key sites during the PPG. As the ACCE project will be winding down in 2015, this project will seek to identify key lessons learned, opportunities, and barriers in the process. Possible cost-sharing arrangements for island coordination will also be explored, to ensure cost efficiency, coordination and continuity.

- The Project 'Enhancing adaptive capacity for increased resilience to climate change in the agriculture sector in the Union of the Comoros' (CRCCA) which was recently CEO endorsed by the GEFSec, funded through the LDCF and implemented by UNDP has been designed to support the independent 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, to deliver appropriate watershed management practices. Further details on how to maximize the linkages between these LDCF projects will be sought during the PPG phase.

- "Strenghtening 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$ 10 000 000 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. Cooperation between these two projects will be further explored during the PPG phase, which are expected to be undertaken concurrently.

Finally, the project will build on institutional capacity built during the delivery of enabling activities in Comoros, including the NAPA, the NBSAP, the National Communication (second NC under development), the NCSA and other enabling frameworks.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1.National strategies and plans or reports and assessments under relevant conventions

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, such as:

Poverty and Growth Strategy (2010-2015), namely its objectives (b) strengthening key sectors of the economy with the highest growth and poverty reduction potential; and (e) promoting environmental sustainability and civilian security, are supported by this project.

National Environment Policy (NEP) supported by a **National Action Plan** (2011) was adopted by the Comorian government to enable the country to integrate environmental concerns for sustainability into development plans, programs and projects. 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 through socioeconomic development activities.

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.

Comorian Agriculture Policy seeks to attain agro-food balance, creates employment, and promotes sustainable use of natural resources.

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 the security and sanitation for populations.

Forestry Sector Development Action Plan seeks to highlight the importance of forests, their vulnerability and take action to protect them. Actions are based around three objectives: building capacity at the organizational, knowledge and infrastructural levels; protect the forests that remain; demonstrate through on-the-ground activities that forests can be sustained; and enhance knowledge of forest resources.

The **National Adaptation Plan of Action** (NAPA) identifies loss of water bodies, drought and low flows, and climate-related storms as major threats and hazards to Comoros. It also identifies reduced water /groundwater depletion, food security and income generation as the main vulnerabilities to climate change. Some of the priority adaption projects identified in the NAPA are (2) defense and reforestation of degraded soils; (3) reconstitution of basin slopes; and (4) increase of water supply and are among the priorities that will be addressed through this LDCF project.

B.2. GEF Focal area and/or fund(s) strategies, eligibility criteria and priorities

The project meets the eligibility criteria and programming priorities of the LDCF. It fits with the strategic objective of the LDCF to "meet the urgent and immediate adaptation needs of the Least Developed Countries, as identified in their NAPAs" (Decision 7/CP.7) by focusing on: i) strengthening government and local capacity for watershed management b) demonstration measures for rehabilitating and making resilient watersheds through ecosystem based adaptation measures iii) develop avenues for more climate-resilient, building institutional capacity to deal with climate change risks.

The objective of this project is to build climate resilience in the Comoros by rehabilitating watersheds, forests and diversifying adaptive livelihoods. In doing so, the project meets the LDCF/SCCF Focal area objectives CCA-1 "Reducing Vulnerability: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level" and CCA-2 "Increasing Adaptive Capacity: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level".

B.3. The GEF Agency's comparative advantage for implementing this project

UNEP has considerable experience in implementing projects and providing scientific guidance in the field of climate change. To date, UNEP has facilitated the completion of 15 NAPAs and has assisted 38 countries in developing National Communications. It has also implemented or is in the process of implementing approximately 80 adaptation projects at global, regional and national levels. UNEP's role in these projects is predominantly to develop the capacity of stakeholders, particularly in terms of ecosystem management. UNEP's work on climate change adaptation focuses on three main areas: (i) Science and Assessments, (ii) Knowledge and Policy Support, and (iii) Building the Resilience of Ecosystems for Adaptation. UNEP has recently shifted the focus of its adaptation work to EBA. This new initiative is known as the EBA Flagship Programme of UNEP. The activities proposed under this proposed project cut across areas of UNEP's work on climate change adaptation.

The project is consistent with UNEP's comparative advantage as identified through the GEF Council paper C.31/5. This document delineates UNEP's comparative advantage in providing the GEF with a range of relevant experiences, a proof of concept, the testing of ideas, and the best available science and knowledge upon which it can base its investments. The project also concords with the GEF Council paper C.28/18 that delineates UNEP's comparative advantage areas including: strengthening meteorological and climate early warning systems; and developing and using climate information to effect changes in relevant sectoral policies based on climate science.

UNEP is uniquely positioned to undertake this innovative environmental work. UNEP's core business is providing technical advice on managing environments in a sustainable manner and it thus has a significant comparative advantage in implementing this LDCF project. The technical and scientific knowledge that UNEP brings to the project will be fundamental for its success. UNEP's experience in revising policy will be important for translating the information generated into appropriate policy, strategy and legislative documents which will be key in obtaining institutional capacity development.

The involvement of sectors such as conservation, agriculture, water, and forestry adds to the complexity of implementing the project successfully. However, UNEP is also uniquely positioned in this regard, because it routinely facilitates dialogue between sectors to ensure that environmental management is conducted taking into account the full range of societal needs. The philosophy adopted by UNEP of minimizing trade-offs and maximizing synergies between sectors will importantly increase the sustainability of the project's interventions.

UNEP will bring US$ 400 000 in co-financing to this initiative, through its ongoing programming such as PROVIA, as well as its expertise in environmental monitoring.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).annex

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Ali Mohamed SOILIHI	Secretary General	Vice Presidency in charge of Ministry of Production, Environment, Energy, Industry and Crafts	23/10/2013

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.					
Agency Coordinator, Agency name	**Signature**	**DATE** *(MM/dd/yyyy)*	**Project Contact Person**	**Telephone**	**Email Address**
Brennan van Dyke Director, GEF Coordination Office, UNEP, Nairobi		May 19, 2014	Ermira Fida, Head-GEF Adaptation Unit, UNEP	+(254)20 7623113	ermira.fida@unep.org

ANNEX 1: Climate change vulnerabilities of the baselines projects versus the adaptation measures under the LDCF project.

Baseline projects **Goals and activities**	**Climate change hazards affecting the project area**	**Impacts to the baseline projects and targeted populations as a result of climate change**	**Ecosystem services targeted by the SCCF project**	**Adaptation measures supported by LDCF project**	**How the LDCF project will contribute towards increasing the resilience of the baseline projects**
Project targeted vulnerable sites and communities: Three islands of the Union of the Comoros : Anjouan, Moheli and Grande Comore.					
National Programme on Forestry 1. Strengthening forestry institutions and mechanisms. 2. Land use planning and participatory management of natural forests. 3. Establishing plantations for hardwood, fuelwood products including through a national reforestation programme and the development of community-based woodlot management 4. Support to local forest management initiatives.	Acceleration of the process of soil erosion (due to increase in air temperature combined with high intensity rainfall events)	Decrease in agricultural productivity Decrease of soil fertility and plant growth rates Negative impact on water quality Risk of pollution to groundwater sources	Soil moisture conservation Nutrient cycling and soil fertility Agro-biodiversity	Providing an assessment and high-quality knowledge of climate change impacts on forests. Piloting resilient forest rehabilitation technologies	Targeted knowledge products on the impacts of climate change on forests are developed. National government is empowered through policy briefs and technical guidelines on the integration of ecosystem-based adaptation into forest rehabilitation and management Reforestation initiatives take climate change into consideration. Resilient agro-forestry plans and land use mechanisms based on climate-risks assessments are developed.
National Programme for Sustainable Human Development **1.** Reduction of poverty by promoting better natural resource management **2.** Increase of agricultural production **3.** Transfer of	More frequent and severe droughts (due to increased temperature and decreased precipitation). Increase of extreme meteorological phenomena Increase in	Exacerbation of the shortage of water supply and quality for drinking, irrigation, agriculture and hydro-electricity production Increase vulnerability of crops cultivated in the open field system (given the lack of	Aquifer recharge Water provision Agricultural productivity (food and non-food products, such as timber or traditional	Strengthening the capacities of local and national governments to address climate risks through resilient watershed management. Rehabilitating and achieving resilient	Geo-referenced information system on climate change impacts for major watersheds or sub-catchment, including socio-economic and environmental data, are developed. Watershed management practices

Baseline projects **Goals and activities**	**Climate change hazards affecting the project area**	**Impacts to the baseline projects and targeted populations as a result of climate change**	**Ecosystem services targeted by the SCCF project**	**Adaptation measures supported by LDCF project**	**How the LDCF project will contribute towards increasing the resilience of the baseline projects**
basic agricultural technologies **4.** Terracing and watershed protection in coastal areas	frequency of severe rainfall events and flooding Increase the rapidity of sea level rise	vegetation and forest cover of such system of production) Livelihoods of local communities are affected because of their reliance on monocultures (threatened by underground and surface salt-water intrusion)	medicine products).	watersheds. Deploying a diversified array of resilient livelihood strategies for the communities.	and policies consider climate change. Guidelines for watershed management as a resilience strategy are produced. Local ownership of ecosystems and their services and direct evidence-based understanding of the benefits of ecosystem-based adaptation for local and national decision-making are builded. Innovative community-based EBA monitoring and assessment programme as well as a crowd-sourcing data collection platform are integrated into the national watershed information system.