

# Funding Proposal

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## **SAP005: Enhanced climate resilience of rural communities in central and north Benin through the implementation of ecosystem-based adaptation (EbA) in forest and agricultural landscapes**

Benin | United Nations Environment Programme (UNEP) | Decision B.22/07

28 February 2019



# Simplified Approval Process Funding Proposal

Project/Programme title:	Enhanced climate resilience of rural communities in central and north Benin through the implementation of ecosystem-based adaptation (EbA) in forest and agricultural landscapes
Country(ies):	Benin
National Designated Authority(ies):	Martin Pepin AÏNA, Direction Générale de l'Environnement et du Climat (DGEC), (Directorate General of Climate and Environment), Ministère du Cadre de Vie et du Développement Durable (Ministry of Livelihood and Sustainable Development)
Accredited Entity:	United Nations Environment Programme
Date of first submission:	<u>2018/07/10</u>
Date of current submission/ version number	<u>2019/01/29 [v4]</u>
If available, indicate GCF code:	<i><u>This code is assigned to each project upon first submission of a Concept Note or Funding Proposal and remains the same throughout the proposal review process. If you have submitted this project/programme previously please indicate the GCF code here.</u></i>



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### Section A **PROJECT / PROGRAMME SUMMARY**

This section highlights some of the project's or programme's information for ease of access and concise explanation of the funding proposal.

### Section B **PROJECT / PROGRAMME DETAILS**

This section focuses on describing the context of the project/programme, providing details of the project/programme including components, outputs and activities, and implementation arrangements.

### Section C **FINANCING INFORMATION**

This section explains the financial instrument(s) and amount of funding requested from the GCF as well as co-financing leveraged for the project/programme. It also includes justification for requesting GCF funding and exit strategy.

### Section D **LOGIC FRAMEWORK, AND MONITORING, REPORTING AND EVALUATION**

This section includes the logic framework for the project/programme in accordance with the GCF Results Management Framework and Performance Measurement Framework, and gives an overview of the monitoring, reporting and evaluation arrangements for the proposed project/programme.

### Section E **EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**

This section provides an overview of the expected alignment of the projects/programme with the GCF investment criteria: impact potential, paradigm shift, sustainable development, needs of recipients, country ownership, and efficiency and effectiveness.

### Section F **ANNEXES**

This section provides a list of mandatory documents that should be submitted with the funding proposal as well as optional documents and references as deemed necessary to supplement the information provided in the funding proposal.

**Note to accredited entities on the use of the SAP funding proposal template**

- The Simplified Approval Process Pilot Scheme (SAP) supports projects and programmes with a GCF contribution of up to USD 10 million with minimal to no environmental and social risks. Projects and programmes are eligible for SAP if they are ready for scaling up and have the potential for transformation, promoting a paradigm shift to low-emission and climate-resilient development.
- This template is for the SAP funding proposals and is different from the funding proposal template under the standard project and programme cycle. Distinctive features of the SAP funding proposal template are:
  - *Simpler documents*: key documents have been simplified, and presented in a single, up-front list;
  - *Fewer pages*: A shorter form with significantly fewer pages. The total length of funding proposals should **not exceed 20 pages**;
  - *Easier form-filling*: fewer questions and clearer guidance allows more concise and succinct responses for each sub-section, avoiding duplication of information.
- Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other funding proposal documents such as project appraisal document, pre-feasibility studies, term sheet, legal due diligence report, etc.
- Submitted SAP Pilot Scheme funding proposals will be disclosed simultaneously with submission to the Board, subject to the redaction of any information which may not be disclosed pursuant to the [GCF Information Disclosure Policy](#).

**Please submit the completed form to:**

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**Please use the following name convention for the file name:**

“SAP-FP-[Accredited Entity Short Name]-[yyymmdd]”

A. PROJECT/PROGRAMME SUMMARY			
<b>A.1. Has this FP been submitted as a SAP CN before?</b>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>A.2. Is the Environmental and Social Safeguards Category C or I-3?</b>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>A.3. Project or programme</b>	<i>Indicate whether this FP refers to a combination of several projects (programme) or one project.</i> <input checked="" type="checkbox"/> Project <input type="checkbox"/> Programme	<b>A.4. Public or private sector</b>	<input checked="" type="checkbox"/> Public sector <input type="checkbox"/> Private sector
<b>A.5. Result area(s)</b>	<i>Indicate the result areas for the project/programme.</i> <b>Mitigation:</b> Reduced emissions from: <input type="checkbox"/> Energy access and power generation <input type="checkbox"/> Low emission transport <input type="checkbox"/> Buildings, cities and industries and appliances <input type="checkbox"/> Forestry and land use  <b>Adaptation:</b> Increased resilience of: <input checked="" type="checkbox"/> Most vulnerable people and communities, including women and girls <input checked="" type="checkbox"/> Health and well-being, and food and water security <input type="checkbox"/> Infrastructure and built environment <input checked="" type="checkbox"/> Ecosystem and ecosystem services		
<b>A.6. Total investment (GCF + co-finance)</b>	10 (million USD)	<b>A.7. Total GCF funding requested</b>	9 (million USD)
<b>A.8. Type of financial instrument requested for the GCF funding</b>	<i>Mark all that apply.</i> <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Loan <sup>1</sup> <input type="checkbox"/> Equity <input type="checkbox"/> Guarantees <input type="checkbox"/> Others:		
<b>A.9. Division of GCF funding by thematic funding window (if applicable)</b>	_____ USD or _____ % Mitigation _____ USD or _____ % Adaptation		
<b>A.10. Implementation period</b>	5 years. Start: <u>01/12/2019</u> ; End: <u>01/12/2024</u>		
<b>A.11. Total project/programme lifespan</b>	15 years 0 months	<b>A.12. Expected date of internal approval</b>	5/28/2018
<b>A.13. Executing Entity information</b>	Executing Entity: Direction Generale des Eaux, Forêts et Chasse (General Directorate for Water, Forest and Hunting – DG EFC) <sup>2</sup>		
<b>A.14. Scalability and potential for transformation (Eligibility for SAP, max. 50 words)</b>			
<p>The proposed project will, through an integrated approach of ecosystem-based adaptation and climate-resilient agriculture, effect a national paradigm shift in how Benin addresses current and future climate change impacts threatening the livelihoods of rural Beninese. Policies, legislation, and land-use planning will be reformed to catalyse the upscaling of climate-resilient management of agricultural lands and forests across Benin. This upscaling will also be facilitated through rigorous analysis and dissemination of information on the positive socio-economic and ecological effects of the project's interventions and by building technical capacity within the Benin government to integrate agricultural and ecological interventions into their adaptation investments.</p>			
<b>A.15. Project/Programme rationale, objectives and approach (max. 250 words)</b>			
<p>Climate change and variability are increasingly detrimental to the livelihoods of rural agricultural communities in Benin. Communities in central and northern Benin are particularly threatened by shorter growing seasons, increased days with extreme heat, rising temperatures, more frequent and severe droughts, as well as more intense rain events. These</p>			

<sup>1</sup> Senior loans and subordinated loans.

<sup>2</sup> within Ministère du Cadre de Vie et du Développement Durable (Ministry of Livelihood and Sustainable Development – MCVDD)

climatic changes have caused marked reductions in agricultural productivity<sup>3</sup>, loss and desiccation of topsoils, flooding and reduced supplies of goods and services from natural ecosystems. Climate models show that these effects are likely to intensify dramatically in the decades ahead<sup>4</sup>. Vulnerable Beninese communities are increasingly using natural resources (e.g. charcoal production) to compensate for the reduced agricultural productivity and to address their intensifying poverty. This results in unsustainable forest resource use and a vicious negative cycle whereby rapidly degrading ecosystems<sup>5</sup> are leading to greater vulnerability of communities to climate change. The objective of the proposed GCF project is to interrupt this cycle in central and northern Benin and build the climate resilience of the local communities by integrating climate-resilient agricultural techniques with tailored restoration of degraded forest ecosystems. This Ecosystem-based Adaptation (EbA) approach will — under current and future climate change conditions — result in enhanced agricultural productivity (through judicious management of soils and planting of climate-resilient crops) and increased supply of ecosystem goods and services (including water availability, soil conservation and cooling, fibre, medicines, fruits, fuelwood and timber). The restoration of forests will focus intensely on using indigenous trees well-adapted to current as well as future climate conditions. These adaptation objectives will be achieved through three interconnected outcomes, namely: i) improved provision of ecosystem goods and services for climate change adaptation through forest restoration; ii) increased agricultural productivity to secure livelihoods in the face of climate change; and iii) strengthened capacity and awareness to implement EbA and climate-resilient agriculture.

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<sup>3</sup> Agricultural productivity across Benin declined by 10% between 1983 and 2008 because of climate change and baseline factors, and remains low. [Agricultural productivity measured as Total Factor Productivity (TFP), the ratio between total output (crop and livestock products) and total production inputs (land, labour, capital, and materials). Data from Engel et al. (2017). Benin: Towards Inclusive and Sustainable Rural Transformation. Centre for Rural Development (SLE), Berlin.]

<sup>4</sup> Predicted declines in crop yields as a result of climate change impacts include: i) a reduction of up to 40% in the yield of sorghum and millet yields in the north of Benin as a result of temperature increases; ii) a reduction of 5–25% in maize yields in the central and southern parts of the country; and iii) a decline of 18–33% in the yield of yams in the Upper Ouémé catchment in 2040–2050, unless farming techniques are improved. [Literature references are provided in Annex 2: Pre-Feasibility Study, Section 3.4]

<sup>5</sup> Deforestation occurred at a rate of 1.2% per year in Benin between 1990 and 2015. [DGEFC (2016) Diagnostic approfondi du cadre législatif et réglementaire du secteur forestier et proposition d'actions pour la mise en oeuvre de la REDD+ (Analysis of the legal framework and regulations for the forestry sector and recommendations to implement REDD+)]

## B. PROJECT/PROGRAMME DETAILS

### B.1. Context and baseline (max. 500 words)

#### Geographic, climatic and socio-economic context

Benin, a Least Developed Country (LDC) in West Africa, is one of the poorest countries in the world, ranking 150<sup>th</sup> out of 175 countries in terms of Gross Domestic Product per capita<sup>6</sup>. Most of the rapidly growing population of ~11 million people live in rural areas<sup>7</sup>. As a result, the country's economy is underpinned by agriculture, which provides ~80% of export income and supports the livelihoods of ~70% of the population<sup>8</sup>. Most crop farming is rainfed and crop productivity is consequently strongly affected by variations in Benin's tropical savanna climate. There are three distinct climate zones in the country, namely the: i) Sudanian zone in the north – with mean annual rainfall below 1,000 mm and a growing season of fewer than 145 days; ii) Sudano-Guinean zone in the centre – with mean annual rainfall of 900–1,100 mm and a growing season of ~200 days; and iii) Guinean zone in the south – with mean annual rainfall of 1,200–1,400 mm and a growing season of up to 240 days. Unlike the northern and central zones where rainfall is unimodal, the south has two rainy seasons. For more information about the geographic, climatic and socio-economic context in Benin, see Section C.2 and Annex 2: Pre-Feasibility Study.

#### Climate change context

The strong dependence on agriculture in Benin, combined with widespread poverty and severe environmental degradation, makes the country extremely vulnerable to the impacts of climate change. Over the past three decades, several changes in temperature and rainfall patterns have been observed in Benin, including: i) mean annual temperature increasing by 1°C; ii) a reduced number of days per year with precipitation; and iii) increased frequency and intensity of both droughts and floods. Climate models<sup>9</sup> predict that mean annual temperature is likely to continue increasing until 2100, particularly in central and north Benin, where temperature is predicted to increase by ~2.7°C between 2015 and 2100. These increased temperatures will intensify the effects of droughts. Climate models also predict increased intra-annual variability of precipitation, especially a delay in the start of the rainy season. However, by 2100, mean annual rainfall is predicted to increase slightly in all three of the country's climate zones. This increased rainfall combined with a longer dry season and shorter rainy seasons will result in more intense rainfall, leading to an increase in the frequency and intensity of floods. Climate change projections<sup>10</sup> estimate that mean annual temperatures in the country will increase by 3.3°C by 2100, with the highest rate of increase expected in the north. This will result in desiccation of soils, damage to forest ecosystems and reduced groundwater resources<sup>11</sup>. Water availability will also in all likelihood be negatively affected by changes in rainfall patterns. Indeed, mean annual rainfall has already declined during the last few decades and climate models predict increased intra-annual variability of precipitation – especially a delay in the start of the rainy season. More extreme rainfall events and floods can be expected across the country in the future. These climate change impacts will further reduce productivity in agricultural landscapes and forest ecosystems, thereby increasing food insecurity. Further details on the effects of climate change on the livelihoods of rural communities in Benin, particularly with regards to agriculture, forest ecosystems and water resources, are outlined below.

Water resources: Increased temperatures, as well as the shifts in rainfall seasonality and amount, caused by climate change are compromising the supply of both ground- and surface-water resources in Benin. This is caused by increased evaporation as a result of hotter temperatures, as well as decreasing inflows and reduced groundwater recharge as a result of fewer rain days and more extreme precipitation. Soil desiccation is yet another effect of climate change that greatly exacerbates reduced water flow into rivers and streams because rainwater does not percolate into deep soil layers and aquifers<sup>12</sup>. The pressure on water resources in Benin is likely to continue to increase beyond 2025, since

<sup>6</sup> Gross Domestic Product, Purchasing Power Parity. World Bank, 2016. Available online at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?view=chart>.

<sup>7</sup> Over 60% of Beninese live in rural areas. Benin Country Profile, World Statistics Pocketbook. United Nations Statistics Division. 2017. Available online at: <http://data.un.org/CountryProfile.aspx?crName=BENIN>. Accessed on 10 April 2017.

<sup>8</sup> Gain Report (2014), Benin: Agricultural situation. USDA Foreign Agricultural Service. Available at: [https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Situation\\_Lagos\\_Benin\\_3-20-2014.pdf](https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Situation_Lagos_Benin_3-20-2014.pdf)

<sup>9</sup> Scenarios A1B and B1 put forward by the Intergovernmental Panel on Climate Change (IPCC), and predictions for climate parameters at the 2020, 2025, 2050, 2075 and 2100 horizons were then made by running Atmospheric Ocean General Circulation Models (AOGCM).

<sup>10</sup> Government of Benin, 2011. Second National Communication on Climate Change.

<sup>11</sup> Government of Benin, 2008. National Adaptation Programmes of Action (NAPA).

<sup>12</sup> Sharma, A., Wasko, C. and Lettenmaier, D.P., 2018. If Precipitation Extremes Are Increasing, Why Aren't Floods?. *Water Resources Research*, 54(11), pp.8545-8551.

climate change will lead to shorter rainfall seasons and higher temperatures that further increase the evaporation of surface water and dessication of soils.

**Agriculture:** Climate change is affecting agriculture in Benin by causing: i) marked losses and degradation of topsoils (during intense rainfall events, raindrops strike the bare soil surface and disperse clay particles, which increases runoff and consequently erosion); ii) flooding (which leads to erosion, results in major crop losses, damages agricultural infrastructure, causes waterlogging in fields, and ultimately reduces crop yields); iii) fewer days with precipitation (which shortens the growing period); and iv) the late onset of the rainfall season (which results in field operations, such as seedbed preparation, planting and harvesting being performed at the wrong times, thereby leading to crop failure or reduced yields). Together, these impacts have reduced agricultural productivity nationwide; a decline in productivity of 10% was recorded between 1983 and 2008 and it remains low<sup>13</sup>. This has contributed to approximately 15% of rural households in the country suffering from severe food insecurity<sup>14</sup>.

**Forest ecosystems:** Climate change is negatively impacting forest ecosystems in Benin, both directly and indirectly. In terms of direct impacts, longer, hotter droughts and an increased frequency and intensity of wildfires are causing widespread tree mortality<sup>15</sup>. Additionally, the recruitment of tree seedlings is being reduced by the shortening of the rainfall season. In terms of indirect impacts, local communities are increasingly using natural resources to compensate for the reduced productivity in their agricultural fields and to address their intensifying poverty. This is resulting in the unsustainable use of forest resources – particularly through excessive fuelwood harvesting, the expansion of agricultural fields, and unsustainable non-timber forest product (NTFP) harvesting. As a result, a vicious negative cycle is occurring whereby ecosystems are rapidly degrading, which in turn leads to greater vulnerability of communities to climate change (Figure 1). This cycle is a major factor behind the decline of Benin's forests over the last few decades. Between 1990 and 2015 Benin lost 1.2% of its forests every year<sup>16</sup>. Local communities are as a result of this decline experiencing a reduction in the provision of important ecosystem goods and services, including for example reduced water provision, reduced flood buffering and reduced protection against soil erosion. Riverine forests are particularly important for the provision of these ecosystem services, but also particularly threatened by agricultural expansion.

Climate change is also exacerbating unequal gender relations and poverty, particularly for natural resource- and subsistence agriculture-dependent communities. Gender gaps in terms of wages and participation in formal labour, as well as in terms of land and tenure security, limits the capacities of Beninese women to build climate resilience. The full gender assessment and action plan for the project is provided in Annex 4.

<sup>13</sup> Agricultural productivity measured as Total Factor Productivity (TFP), the ratio between total output (crop and livestock products) and total production inputs (land, labour, capital, and materials). Data from Engel et al. (2017). Benin: Towards Inclusive and Sustainable Rural Transformation. Centre for Rural Development (SLE), Berlin.

<sup>14</sup> World Food Programme (2014) Analyse globale de la vulnerabilite et de la securite alimentaire (AGVSA), Republique du Benin.

<sup>15</sup> Allen, C.D., Breshears, D.D. and McDowell, N.G., 2015. On underestimation of global vulnerability to tree mortality and forest die-off from hotter drought in the Anthropocene. *Ecosphere*, 6(8), pp.1-55.

<sup>16</sup> DGEFC (2016) Diagnostic approfondi du cadre legislatif et reglementaire du secteur forestier et proposition d'actions pour la mise en oeuvre de la REDD+ (*Analysis of the legal framework and regulations for the forestry sector and recommendations to implement REDD+*).

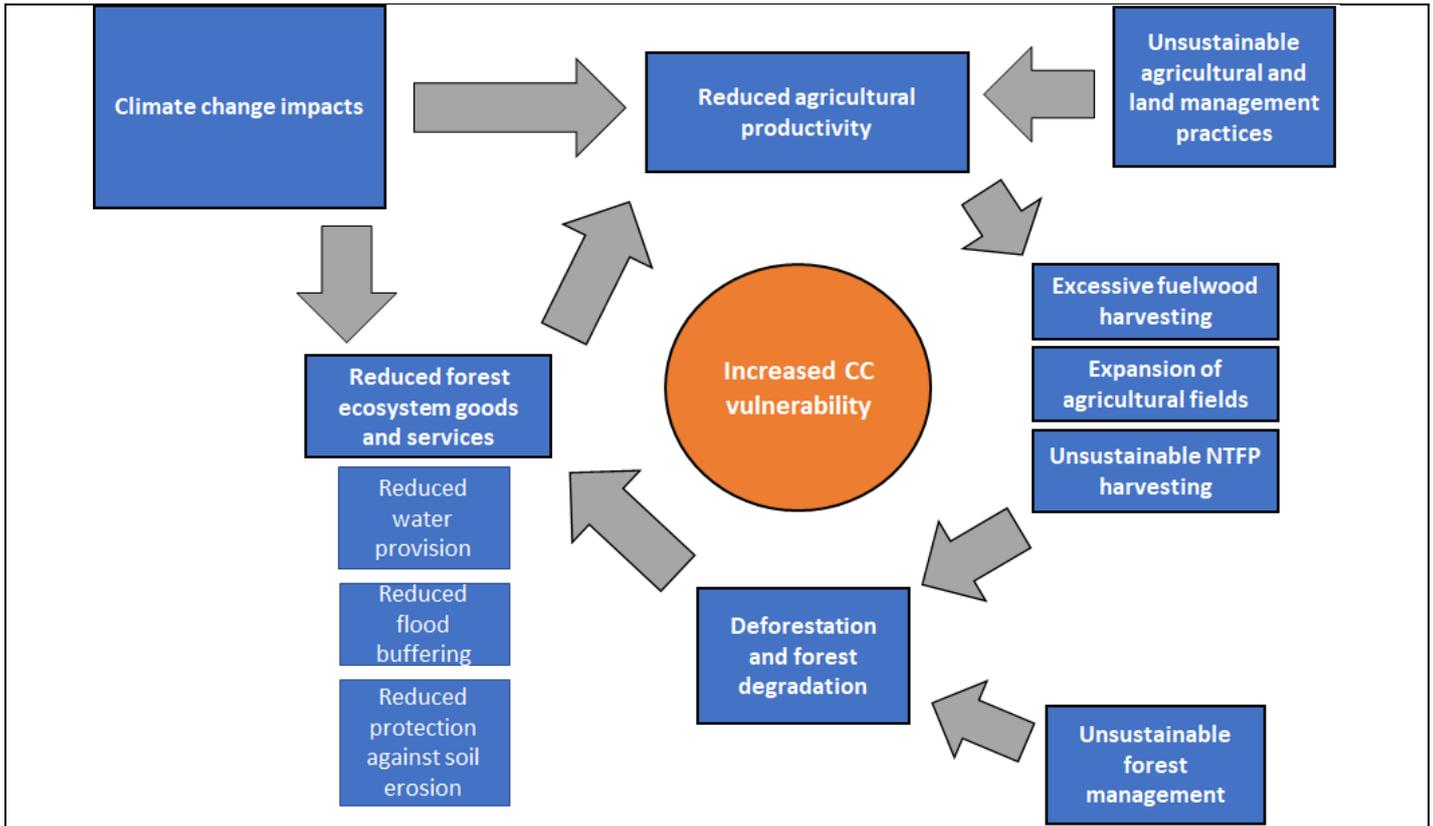


Figure 1. Vicious cycle showing the causes of climate change vulnerability among rural communities of central and north Benin.

### National plans, policies and projects for sustainable land management

The Government of Benin (GoB) is committed to initiating and supporting a shift in the way that forests and agricultural landscapes are managed in Benin. Notably, several progressive policies and strategies with regards to climate change, agriculture and forestry have already been adopted. For example, the GoB has undertaken a process to update and amend its existing Forest Law<sup>17</sup> to include new principles and priorities, including sustainable forest management. Moreover, the Strategic Plan for the Development of the Agricultural Sector [Plan Stratégique de Développement du Secteur Agricole (PSDSA)] was adopted in 2017. The plan aims to improve agricultural productivity, value chains and natural resource management in the agricultural sector. The GoB has also endorsed several past and ongoing projects, programmes and initiatives that focus on promoting climate-resilient, sustainable practices for forest and land management. This includes, for example, *Projet d'appui à la gestion des forêts communales (PAGEFCOM)*<sup>18, 19</sup> and *Projet Bois de Feu (PBF) Phase II [Firewood Project Phase II]*<sup>20</sup>. Further details on these policies, programmes and projects are provided in Annex 2: Pre-Feasibility Study, Sections 6 and 7.

The proposed project will be closely aligned with the above-mentioned projects and policies, specifically because it uses an Ecosystem-based Adaptation (EbA)<sup>21</sup> approach that integrates climate-resilient agricultural techniques with tailored restoration of degraded forest ecosystems. In addition, government technical staff and decision-makers, as well as local community members, will be kept informed of the considerable environmental and socio-economic benefits of sustainable management practices. They will also be trained to use EbA and climate-resilient agriculture

<sup>17</sup> The current Forest Law is Loi n° 93-009 du 02 Juillet 1993 portant régime des forêts en République du Bénin.

<sup>18</sup> African Development Fund (2005) *Projet d'appui à la gestion des forêts communales : rapport d'évaluation*.

<sup>19</sup> African Development Bank (2017) *Projet d'appui à la gestion des forêts communales – Phase 2 : Rapport d'évaluation*.

<sup>20</sup> African Development Bank (2011) *Projet Bois de Feu Phase II : Rapport d'Achèvement de Projet*.

<sup>21</sup> Ecosystem-based adaptation (EbA) is defined as the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change. IUCN, 2008. *Position Paper on Ecosystem-based Adaptation*

approaches. This close alignment with national policies, projects and projects will ensure the sustainability and replicability of project interventions.

### Barriers

There are three main barriers to implementing EbA and climate-resilient agriculture in rural areas in Benin<sup>22</sup>. Each of these barriers (described below) will be addressed comprehensively by the project interventions.

*Limited knowledge about climate change impacts on agricultural and forest landscapes and effective adaptation interventions.* Rural communities in central and north Benin have limited knowledge of climate change, how to adapt agricultural practices and how forests act as buffers against the impacts of climate change. Forest areas are often seen as fertile land for farming. Clearing forests for agriculture is thus common, as is cutting down trees to produce charcoal and firewood. These practices are used to increase crop yields and to provide a complementary source of income to agriculture, particularly in contexts where yields are declining. Communities have limited knowledge of climate-resilient agricultural practices that can increase yields. In these communities and more broadly across Benin, there is also limited awareness of the ecological and economic benefits provided by forests. Consequently, many forest areas are not managed sustainably and an EbA approach is not used. At the same time, there is limited scientific knowledge about climate change impacts and EbA options in Benin. As a result, limited information is available to inform policies and plans in the agriculture and forestry sectors. Furthermore, the knowledge that is available is not collected and disseminated effectively. In particular there is no platform where information about climate change impacts in Benin and best adaptation practices are stored and shared with policy- and decision-makers.

*Limited capacity in the government and local communities to implement EbA and climate-resilient agriculture.* The government ministries tasked with agriculture and forestry have limited technical and institutional capacity to implement EbA and climate-resilient agriculture in an integrated manner. There is also limited coordination between the forest and agriculture ministries in terms of policy and implementation. At the local level, small-scale farmers are not receiving the necessary support and training from extension services to implement climate resilient agriculture. One of main reasons for this lack of support and training is the priority given to export crops such as cotton by the government, at the expense of staple crops. Forest management is also hampered by a lack of capacity. Firstly, there is a lack of capacity to develop forest management plans that ensure effective community involvement and take climate change into account. Secondly, local forest wardens often lack the financial, technical and human capacity to enforce the Forest Law and to support communities to achieve sustainable forest management. Lastly, communities lack the technical and financial capacity to manage their forest areas to enhance climate resilience.

*Limited investments in community forest management and climate-resilient agriculture.* Benin is among the poorest countries in the world and poverty is particularly prevalent in the country's rural areas. Consequently, neither the government nor local communities have the means to invest in EbA interventions in agricultural and forest landscapes. This lack of investment results in local communities being unaware of the considerable environmental and socio-economic benefits that can be generated from EbA interventions. Underfunding of the agricultural and forestry sectors also means that communities are not receiving the necessary support and training from extension services to implement climate resilient agriculture and to adopt an EbA approach in their management of adjacent forests. In addition, lack of resources has hampered the revision of the Forest Law to provide for effective community involvement and address climate change. Ownership of protected forest areas – in particular the community forests – is not clearly defined by the law. This lack of clarity often results in unsustainable practices such as overexploitation of the natural resources by riparian communities.

### B.2. Project/programme description (max. 1,000 words)

The proposed project will address the impacts of current and future climate change on Benin's natural resource and agricultural sectors through three inter-linked components that focus on: i) tailored restoration of degraded forest ecosystems (particularly riverine forests) that increase the supply of ecosystem goods and services (including water supply, soil conservation, cooling of soils, fibre, medicines, fruits, fuelwood and timber); ii) enhanced agricultural productivity (through judicious management of soils and planting of climate-resilient crops); and iii) improved technical and institutional capacity of government and communities to manage agricultural landscapes and ecosystems to build climate resilience. The conceptual framework of the project is depicted in Figure 4, with a detailed description of all project outcomes, outputs and activities below it.

The overarching project objective is to halt the vicious negative cycle of climate change, agricultural yield depletion and natural resource degradation in central and northern Benin and in so doing build the climate resilience of local

<sup>22</sup> A detailed analysis of all the barriers is provided in Annex 2: Pre-Feasibility Study, Section 9.

communities. This will be achieved using an Ecosystem-based Adaptation (EbA) approach that integrates climate-resilient agricultural techniques with the tailored restoration of degraded forest ecosystems (particularly riverine forests). The seven targeted municipalities, which include ~22,000 direct (50% female) and ~1,100,000 indirect beneficiaries, are Dassa, Tchaourou, Djougou, Ouake, Boukoumbe, Coby and Banikoara (Figure 2). Within these municipalities, the project interventions will take place in the following areas: i) Betecoucou protected forest<sup>23</sup> in Akofodjoule district (Collines, central Benin); ii) Ouémé Supérieur N'Dali (OSN) forest in Beterou and Onklou districts (Tchaourou and Djougou municipalities, central-north Benin); iii) Salangawa protected forest in Ouaké (Donga); iv) Katenga protected forest (woody savanna) in Natta district (Boukoumbe, north-west of Benin); v) Didani protected forest in Coby district (Atacora, north-west of Benin); and iv) Deroudou protected forest in Sompérékou district (Banikoara, north Benin). These areas are depicted in Figure 3. The Betecoucou and OSN forests are located in the Upper Ouémé catchment; the forests of Coby and Boukoumbe in the Pendjari catchment; and the Deroudou forest in the Niger River catchment.

The seven target municipalities were selected through a comprehensive and consultative country-driven site selection process, including site visits by the project development team to assess social and environmental conditions. The site selection process was conducted by the Government of Benin, led by the Forest Department, and included the consideration of multiple criteria, namely: i) vulnerability of local communities to climate change, which was based on a detailed assessment of climate change vulnerability across Benin (presented in Section 4 of the Pre-Feasibility Study, Annex V); ii) number of potential beneficiaries; iii) potential to build on past/ongoing projects; iv) potential for support/buy-in from local stakeholders; v) potential to catalyse transformative change across all of central and northern Benin<sup>24</sup>; and vi) presence and state of degradation of valuable forest areas, particularly community forests along rivers, within or near vulnerable communities. Examples of the presence of community forests and state of degradation of ecosystems in the selected sites are presented below.

- Ouaké contains vulnerable forest areas such as the Salangawa community forest, which is vital to the impoverished local communities but severely threatened by the expansion of extensive agriculture and frequent fires<sup>25</sup>.
- Coby hosts the Didani community forest which is used extensively by local communities for NTFP harvesting but is threatened by agricultural expansion.
- Djougou, Tchaourou and Dassa include target sites located along the degraded riverine forests of the Ouémé catchment – Benin's largest river.

Restoring the degraded forest areas located at the seven project intervention sites is crucial for enhancing climate resilience in the region since they provide vital ecosystem goods and services, as described above. The exact configuration of restoration areas at each of these sites will be determined during the fine-scale land use planning in the first year of the project (Output 1.1). Wherever feasible large forest areas will be restored. However, even small isolated forest patches (a few hectares or less in size) will have major benefits: i) they will serve as proof of concept for local decision-makers to expand investments in forest restoration; ii) NTFPs will be supplied; and iii) agricultural fields adjacent to patches will benefit from services such as soil conservation and pollination. In terms of connectivity between the project's forest restoration areas and existing forests, four of the seven target sites are in or adjacent to large classified forest areas (Figure 3), while restoration at the other three target sites will consolidate the larger existing community forests. Forest restoration efforts will also link to forest conservation and restoration conducted by ongoing projects, ensuring synergies and economies of scale<sup>26</sup>. The forest restoration and protection by the proposed GCF project will therefore be contiguous with much larger areas, contributing to landscape-level provision of ecosystem services.

<sup>23</sup> Forests in Benin are categorised as: i) classified forest areas (forêts classées); and ii) protected forest areas (forêts protégées), i.e. non-classified forest areas. Classified forests are owned and protected by the government, and include national parks. The non-classified forest areas are called "protected forest areas". Despite their name, these forests are not formally protected by law, and include community forests. For a detailed description of the categories in the Forest Law of Benin, see Section 6.2.10 of Annex 2.

<sup>24</sup> The selection of seven different municipalities across central and north Benin was done in order to catalyse a paradigm shift across a larger area than would be possible if only working in one or a few areas. Each municipality will serve as a model for the surrounding municipalities, thereby facilitating upscaling across the department. In this way the local divisions of the Forest Department and MAEP at both municipal and department administrative level will be involved in the project in different areas of central and north Benin.

<sup>25</sup> The Salangawa and Didani community forest areas were assessed in March and August 2017 during visits by a team of international and national consultants who conducted surveys in the local communities.

<sup>26</sup> This will include working in the same municipalities, but not overlapping districts, i.e. PAGEFCOM 2 in Dassa (Collines) and Tchaourou (Borgou) and PANA-Biomass in Djougou and Dassa; as well as the same larger catchments, PANA-Energie in the Oueme and Pendjari catchments. Furthermore, all these projects also involve the Forest Department.

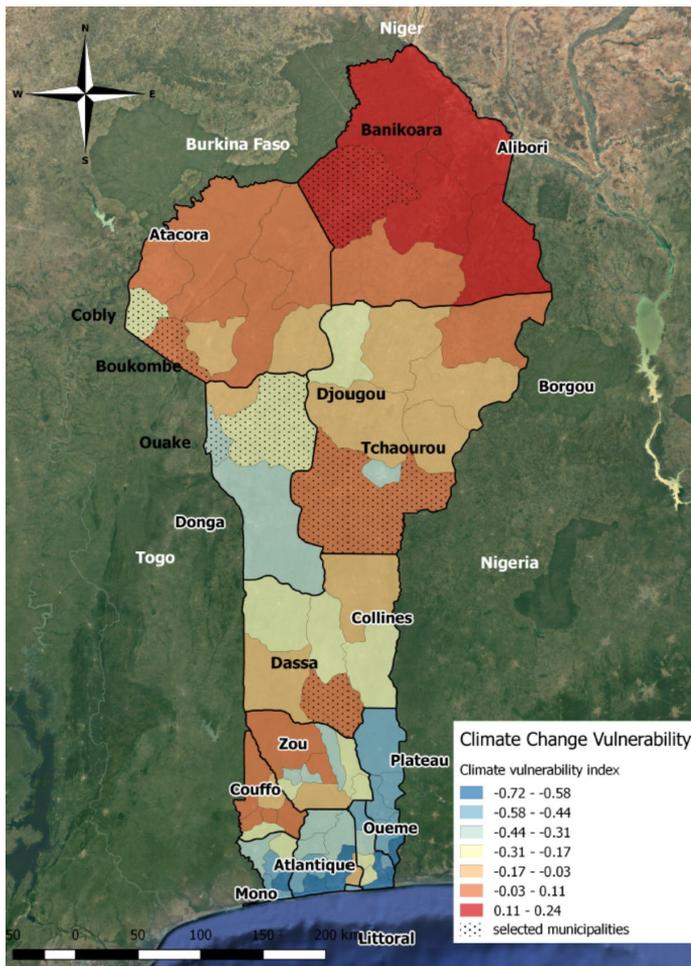


Figure 2: Target municipalities in Benin, indicated by dotted areas and solid black labels. Colours show climate change vulnerability, with red being the most vulnerable and blue the least vulnerable, according to the vulnerability assessment presented in Annex 2: Pre-Feasibility Study.

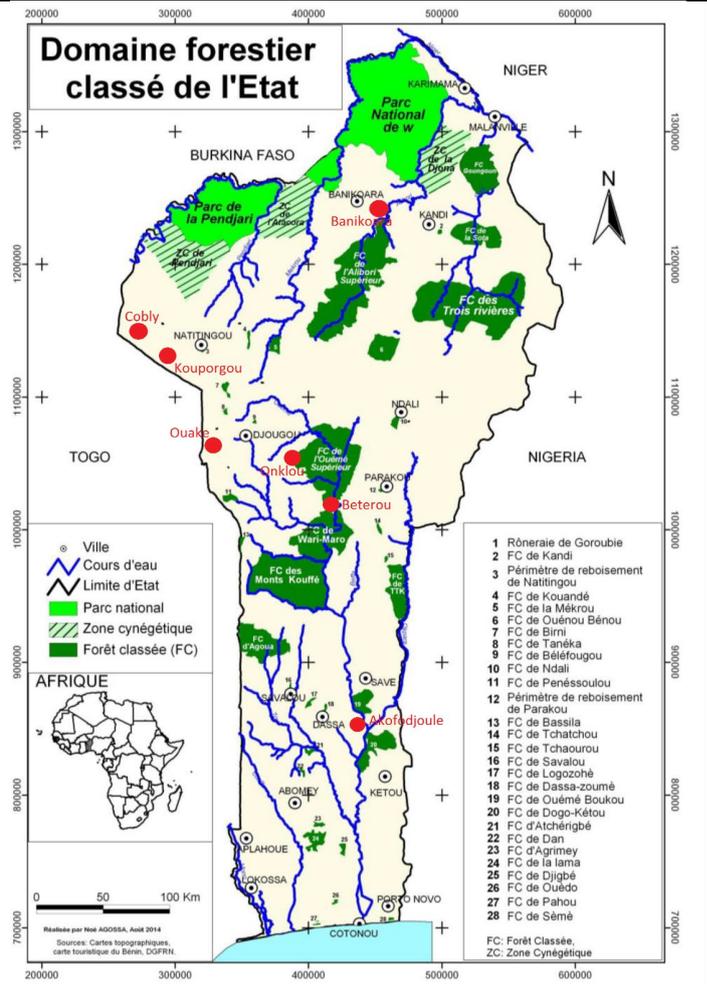


Figure 3: Location of target sites (red dots) in the target districts relative to classified forest areas in Benin. Non-classified forests, such as community forests are not shown<sup>27</sup>, therefore the target forest areas of districts such as Cobly, Kouporgou and Ouake are not visible on the map.

<sup>27</sup> Forests in Benin are categorised as either: i) classified forest areas (forêts classées); or ii) protected forest areas (forêts protégées), i.e. non-classified forest areas. Classified forests are owned and protected by the government, and include national parks. Despite their name, protected forest areas are not formally protected by law, and include community forests. For a detailed description of the categories in the Forest Law of Benin, see the Pre-Feasibility Study, Section 6.2.10.

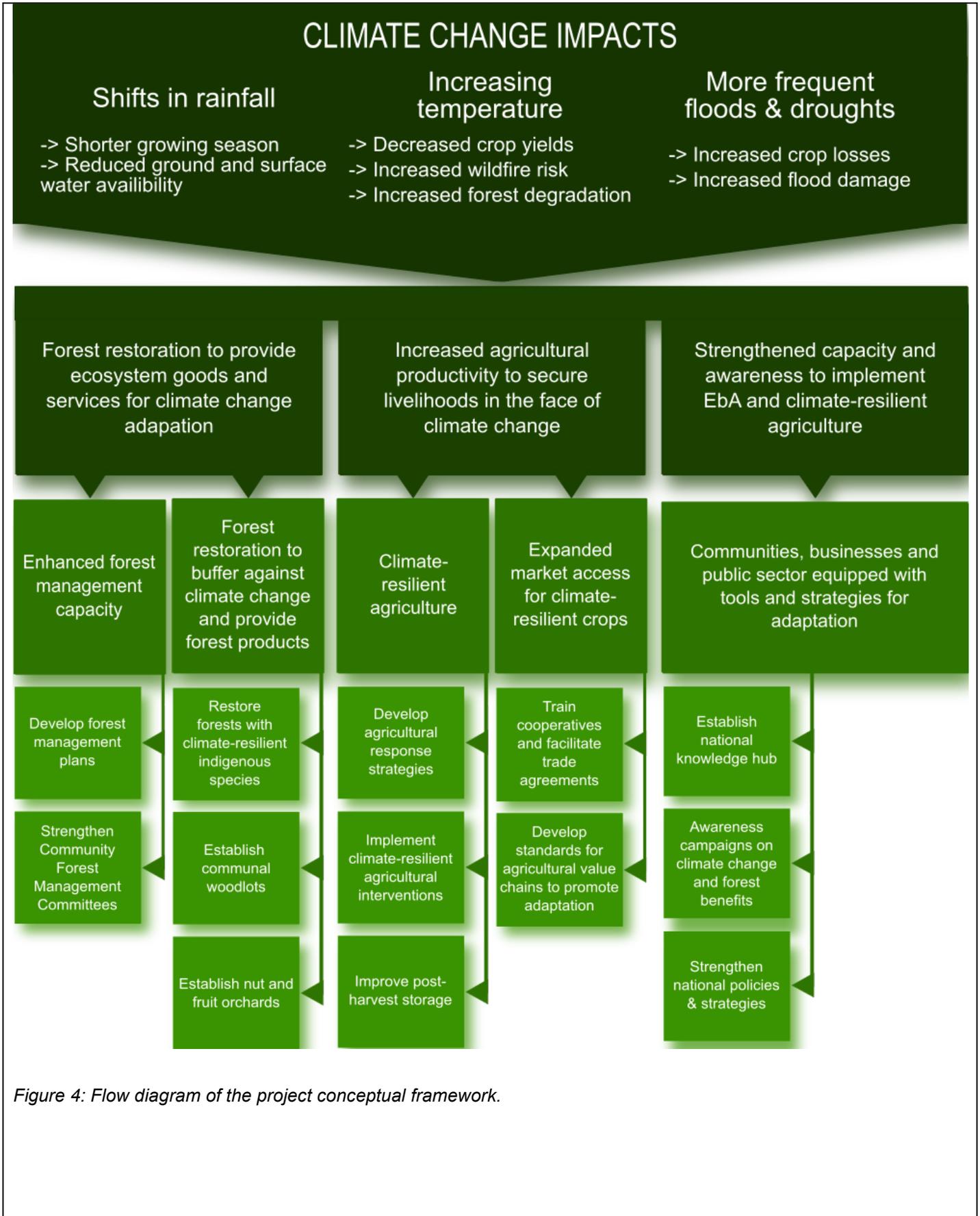


Figure 4: Flow diagram of the project conceptual framework.

The objective of the proposed project will be achieved through three outcomes. The outputs underneath each outcome, as well as the activities are described below. For further descriptions of activities refer to the project logic framework (Annex 2: Pre-Feasibility Study, Appendix IV).

**Outcome 1. 3,600 hectares of land restored for multi-use energy and livelihood benefits.**

Forests provide vital ecosystem good and services in Benin, but are being severely degraded and lost at a rapid rate. This is increasing the vulnerability of rural communities to climate change. Deforestation and forest degradation in Benin are mainly caused by agriculture, wood harvesting and overgrazing. Agriculture is the most important driver of deforestation. Farmers use slash-and-burn techniques and often establish new fields in fertile forest areas to increase yields. In addition, wood harvesting for charcoal production and firewood is a major cause of forest degradation in Benin. Forests are also often degraded through overgrazing, especially by the livestock of transhumant herders. Other notable causes of forest degradation are timber harvesting, which is often done illegally<sup>28</sup>, as well as too frequent fires caused by human activities<sup>29</sup>. Wild fires burn over approximately 2 million hectares of forest in Benin each year<sup>30</sup> and the frequency of fires in forest areas has increased substantially as a result of human pressure.

Without the proposed project interventions, this degradation and loss of forests is expected to continue in the target areas and across Benin, thereby increasing the vulnerability of communities to climate change. The outputs and activities under Outcome 1 will address the drivers of forest loss and degradation, and restore significant areas of forest. Forest restoration will be done through an EbA approach. This will entail: i) focusing on the adaptation needs of local communities; ii) using local indigenous species that are specifically adapted to future climate change conditions, e.g. drought-tolerant trees; iii) using fast-growing species that provide quick benefits, as well as slow-growing species that provide long-term benefits<sup>31</sup>; iv) using as many tree species as possible as diversity enhances resilience; and v) combining forest restoration with climate-resilient agriculture through detailed land-use planning. Agricultural activities under Outcome 2 will also be tailored to benefit restored and intact forests where feasible, to increase resilience of the forests to climate change. For example, agroforestry belts may be used as buffers between protected forests and agricultural fields where appropriate. Forest restoration will be complemented by the planting of woodlots for fuelwood to reduce pressure on forest areas, as well as by planting orchards of valuable nut and fruit trees such as cashew and shea. Overall, these interventions will be implemented within a framework of improved forest management, resulting in capacity building of local government and communities. The total investment of Outcome 1 is \$ 6,436,116, of which \$ 589,609 will be provided as co-financing to support trainings, transportation costs and venue costs for workshops, partial financing of forest equipment, seeds and tree seedlings, plus certain equipment and O&M. This outcome will be delivered in two outputs.

**Output 1.1. Seven forest management plans revised or developed and put into practice by Community Forest Management Committees, to include EbA and climate-resilient sustainable forest management practices.**

Given the reliance of vulnerable rural communities in the target municipalities of Benin on ecosystem goods and services, effective management of forest resources is essential to secure their livelihoods under future climate conditions. Such management needs to involve comprehensive community-based planning that takes multiple criteria into consideration, including land use practices, socio-economic attributes of the community, cultural systems, land tenure and the impacts of climate change, as well as the extent and primary causes of ecosystem degradation. Activities under Output 1.1 will develop such plans and in the process build the technical capacity of target communities to plan for and implement climate-resilient, sustainable forest management practices. This will include the establishment and/or strengthening of Community Forest Management Committees, which – under the guidance of forest wardens and extension officers – will be responsible for the development and implementation of forest management plans in the target municipalities. Details of these activities are provided below.

*Activity 1.1.1. Develop or strengthen forest management plans.*

Communities in central and northern Benin are increasingly using natural resources to firstly compensate for the reduced productivity in their agricultural fields resulting from climate change and to secondly address their intensifying poverty. Without effective management, these natural resources will become increasingly degraded and the services they provide will be lost. Forest management plans have been demonstrated to be an effective tool for managing forest resources in Benin, having been successfully implemented through several projects, including the ProCGRN, PAGEFCOM and PGTRN (see Annex 2: Pre-Feasibility Study, Section 8.2). However, despite their benefits, many

<sup>28</sup> Siebert, U. and Elwert, G., 2004. Combating corruption and illegal logging in Benin, West Africa: recommendations for forest sector reform. *Journal of Sustainable Forestry*, 19(1-3), pp.239-261.

<sup>29</sup> Sinsin, F., Kakaï, R.G., Orthmann, B. and Sinsin, B., 2015. Tree-ring: a suitable implement for spatial and temporal fire distribution analysis in savanna woodland and dry forest. *Journal of Forestry Research*, 26(2), pp.435-446.

<sup>30</sup> NAPA Energy. 'Renforcement de la resilience du secteur de l'énergie aux impacts des changements climatiques au Benin'

<sup>31</sup> for example, slow-growing hardwood species that will yield timber after several decades.

communities across Benin – including the seven target municipalities – either do not have forest management plans or the existing plans are not comprehensive enough to address the additional impacts of climate change on forest ecosystems. Without comprehensive plans, the vicious cycle of climate-driven degradation will continue. The proposed project will, therefore, develop or strengthen forest management plans in the seven target municipalities to ensure the sustainable management of forest ecosystems under future climate conditions. These plans will specify how the available resources will be allocated in the community, including when the resources may be harvested and what quantities of the different resources can be used.

The development of the forest management plans will be led by Community Forest Management Committees (CFMCs), in cooperation with local forest wardens, representatives of DG EFC, representatives of communities living near the forest (including leaders and traditional chiefs) and forest users (e.g. charcoal producer associations, herders, etc.). Forest wardens will receive specific training on how to implement the revised forest management plans and provide long-term technical support to the CFMCs established under Activity 1.1.2. Furthermore, forest wardens will be trained on how to provide training to charcoal producers on sustainable harvesting practices.

The revised plans will focus on five approaches to forest management, namely: i) restoration of natural forests – in particular protected areas along river banks (Activity 1.2.1); ii) establishing woodlots for climate-resilient production of fuelwood (Activity 1.2.2); iii) designating grazing corridors for livestock; iv) establishing firebreaks around forested areas; and v) establishing climate-resilient agricultural plots – including orchards (Activity 1.2.3) and agroforestry (Activity 2.1.2). Where appropriate, these approaches will include both restoration and conservation activities that increase the provision of forest ecosystem services and support climate-resilient livelihoods.

To ensure the long-term enforcement of the new forest management plans, a permit sale system will be established based on consultations with local communities, community leaders and traditional chiefs<sup>32</sup>. Through this system, local forest wardens or members of CFMCs will sell permits to individuals or companies who want to use forest resources. The permit system will ensure fair and equitable access to forest resources for all members of the community, including women and men. Benefits from the sale of permits will be shared between local and national stakeholders including: i) members of CFMCs; ii) forest wardens; and iii) local municipalities.

The specific steps under Activity 1.1.1 are listed below, with full descriptions provided in the project framework (Annex 2: Pre-Feasibility Study, Appendix IV).

- Provide support to DG EFC to analyse and revise or produce forest management plans with input from the social and environmental assessments and in consultation with local forest wardens, representatives of communities living near the forest (including leaders and traditional chiefs) and forest users (including charcoal producer associations and herders); in order to produce fine-scale land use plans.
- Design/strengthen permit sale systems to regulate the collection of forest resources including wood, non-timber forest products (NTFPs) and small game.
- Train municipal and district forest wardens and extension officers on how to provide technical support for the implementation of EbA and climate-resilient agriculture.
- Provide equipment – such as motorbikes, GIS tools and computers – to municipal and district forest extension services to monitor forests and results from EbA interventions.

#### *Activity 1.1.2 Establish and/or strengthen seven Community Forest Management Committees.*

Community Forest Management Committees (CFMCs) offer multiple benefits in terms of effective management of forest resources, including improved: i) stakeholder engagement and awareness of the benefits of sustainable forest management; ii) collaboration between multiple stakeholders for the implementation of forest management plans (which enables coordination, efficiency and improved effectiveness of interventions involving local forest wardens and communities); iii) implementation of forest monitoring and protection activities; and iv) enforcement of environmental laws and regulations regarding natural resources. To maximise these benefits, the project will establish and/or strengthen CFMCs in each of the seven target municipalities. Members of the CFMCs will be selected from each community. Comprising at least 30% women, these committees will support local forest wardens in ensuring that forest management plans are enforced at the local level. Committee members, together with local charcoal producers, will be trained on EbA and sustainable forest management practices. The necessary equipment such as motorbikes for patrolling will also be provided to the committees.

<sup>32</sup> Details of existing permit sale systems in Benin are provided in Annex 2: Pre-Feasibility Study, Section 6.2.10.

**Output 1.2. Land reforested to buffer against the impacts of climate change such as floods and soil erosion, and to enhance the provision of non-timber forest products (NTFPs) such as fruits, medicines, nuts, fuelwood and fibre.**

Based on the forest management plans developed in Output 1.1, activities under Output 1.2. will implement large-scale EbA in the seven target municipalities to buffer against the impacts of climate change and to build a climate-resilient natural resource base that yields goods for consumption and sale. This will be achieved using two approaches. Firstly, 3,600 ha of natural forests will be restored using indigenous species to promote the provision of vital ecosystem goods and services to vulnerable communities – including water supply, soil conservation, cooling of soils, fibre, medicines, fruits, fuelwood and timber. Secondly, tree plantations will be established in the target municipalities to reduce extraction pressure on resources from natural forests. Specifically, woodlots will be planted to provide a sustainable supply of fuelwood for local communities and charcoal producers, while orchards will be planted to supply economically important nuts and seeds.

*Activity 1.2.1. Plant trees using selected species to buffer against the impacts of climate change such as floods and soil erosion, and to enhance the provision of non-timber forest products.*

Climate change is having a severe impact on the livelihoods of vulnerable rural communities, with shortened growing seasons, increasing temperatures, more frequent and severe droughts, as well as more intense rain events causing a decrease in agricultural productivity. Consequently, rural communities are becoming increasingly reliant on natural resources, resulting in the unsustainable use and degradation of forest resources. This disrupts the provision of ecosystem goods and services and, in turn, increases the vulnerability of communities to climate change. To address these climate-related problems, the project's EbA interventions will restore 3,600 ha<sup>33</sup> of degraded<sup>34</sup> and deforested<sup>35</sup> land across the seven target municipalities, thereby providing forest resources and reducing the rate of soil erosion, increasing the infiltration of rainwater into soils, increasing the recharge of groundwater, reducing the deposition of sediment into local rivers and creating cooler micro-climates around forested areas. These EbA interventions, in conjunction with the introduction of climate-resilient agricultural practices (see Activity 2.1.2), will improve the provision of ecosystem goods and services, thereby buffering communities against the impacts of climate change.

Restoration of forest areas will be done using indigenous species that are particularly well-adapted to climate change conditions. Depending on the site, forest species that are adapted to increased temperatures, more extreme rainfall events and more severe droughts will, for example, be selected. Detailed inventories of existing tree species in each site – including their uses by men and women – and ecological surveys will be conducted to develop site-specific EbA protocols. Given that the resilience/stability of forest ecosystems in the face of extreme weather events (such as droughts or floods) increases with an increase in species diversity, at least eight indigenous tree species will be used at each site. This will not only increase the resilience of the local communities reliant on natural resources, but also the resilience of the forests themselves. The resulting protocols will guide all reforestation interventions, thereby increasing their efficiency and effectiveness in building climate resilience.

To reduce degradation of forest areas, firebreaks will be established to prevent the spread of wildfires into reforested areas. Fires are known to be a major cause of forest degradation in Benin and are expected to increase in frequency and intensity as a result of climate change. The firebreaks will consist of strips of land that are cleared annually of vegetation around reforested areas<sup>36</sup> and will be maintained by forest wardens and DG EFC, who are familiar with this fire management tool. Additionally, transhumance corridors will be established to avoid conflict between herders and farmers, thereby protecting the livelihoods of both these groups and increasing their climate resilience. Corridors also reduce the impacts of livestock on forested areas.

Details of forest restoration interventions and lists of appropriate species are provided in Annex 2: Pre-Feasibility Study, Section 10 and Appendix IV. The specific steps under Activity 1.2.1 are listed below.

- Develop site-specific EbA restoration protocols based on detailed site surveys and species inventories that form part of the adaptation process. These protocols will provide details on preferred EbA interventions in each target municipality, including species assemblages and reforestation techniques.

<sup>33</sup> The target of 3,600 ha of forest areas restored was provided by the Forest Department of Benin during stakeholder consultations in the country, specifically in consultation with the head of the Forest Department and the head of the research division of the Forest Department. This was based on the knowledge of the Forest Department on the extent of degradation and deforestation in the target areas.

<sup>34</sup> A degraded forest refers to a forest in which some trees still exist, but there has been a significant decrease in total number of trees and/or species diversity.

<sup>35</sup> A deforested area refers to a site in which all trees have been lost.

<sup>36</sup> Firebreak costs were thus calculated as a repeated expense across project Years 2 to 4. For further information refer to the detailed budget notes in Annex 3.

- Collect climate-resilient seeds and establish tree nurseries for EbA interventions, growing trees from the seeds collected.
- Prepare forest restoration areas and plant trees from nurseries into the selected sites<sup>37</sup>.
- Establish fire breaks and transhumance corridors around forest areas.

*Activity 1.2.2. Establish at least seven climate-resilient communal woodlots for the production of fuelwood.*

As described above, climate change is having a negative impact on agricultural productivity, resulting in increased pressure on forests as vulnerable communities become more reliant on natural resources to supplement their livelihoods. In particular, an increasing number of charcoal producers are having a considerable impact through the collection of fuelwood. To reduce some of this pressure, woodlots will be established in each of the target municipalities to provide an alternative and sustainable supply of fuelwood. These woodlots will be established using appropriate climate-resilient tree species that will be selected based on detailed site surveys. Indigenous species will be planted as far as possible, with exotic species only being used if they are known to be non-invasive both locally and in Benin in general. The woodlots will be managed by charcoal producer associations, who will receive trees from specially established nurseries (see Activity 1.2.1) to plant on their site. Charcoal producers will also be involved in establishing and maintaining the woodlots. They will be trained on how to harvest seeds, grow and plant seedlings, and sustainably balance harvesting and planting activities within the woodlots. The specific steps under Activity 1.2.2 are listed below.

- Develop site-specific planting protocols for the establishment of woodlots in each targeted area, based on the detailed site surveys conducted under Activity 1.2.1.
- Grow seedlings in nurseries to establish woodlots.
- Train charcoal producers on sustainable charcoal production, including how to maintain woodlots and balance harvesting and planting activities.
- Clear land and prepare ground for woodlots.
- Transplant trees into prepared areas.

*Activity 1.2.3. Establish seven orchards using climate-resilient tree species to supply nuts and seeds.*

Nuts and seeds provide food and income for local communities. Cashew nuts are an important tree crop, while shea nuts and néré seeds are traditionally harvested from forests and the parkland agroforestry landscape for consumption, processing and sale. The orchards established under this activity will increase the supply of these nuts and seeds to complement harvests from forest areas, increase opportunities for processing and sale, and supplement agricultural income. At least one orchard will be established in each of the seven target municipalities, using climate-resilient tree species to the above-mentioned nuts and seeds, as well as fruits and other NTFPs (for more details see the market analysis in Annex II: Pre-feasibility Study). These orchards will be managed by local cooperatives, the members of which will be involved in growing and planting activities. The members will also be trained on how to harvest seeds, grow and plant seedlings. The specific steps under Activity 1.2.3 are listed below.

- Develop site-specific planting protocols for the establishment of orchards in each targeted area, based on the detailed site surveys conducted under Activity 1.2.1.
- Grow seedlings in nurseries to establish orchards.
- Train cooperatives on how to harvest seeds, and plant/grow seedlings, to further supplement the supply of seedlings provided by the project.
- Clear land and prepare ground for orchards.
- Transplant trees into prepared areas.

***Outcome 2: Higher productivity from agricultural livelihoods secured in the face of climate change.***

Climate change is having a severe impact on agricultural productivity across Benin, with a steady decline in crop yields exacerbating the already low productivity of small-scale agriculture in the country. As a result, approximately 15% of rural households in Benin suffer from severe food insecurity. Furthermore, as declining productivity threatens their livelihoods, vulnerable farmers are placing increasing pressure on natural resources.

To address the impacts of climate change on agriculture productivity, activities under Outcome 2 will support farmers to maximise agricultural productivity by: i) improving climate forecasts and early warning systems; ii) investing in

<sup>37</sup> The primary strategy for reforestation will be tree planting as most sites are too degraded for natural regeneration of forests to occur. Planted trees will facilitate further recruitment of other trees and plants. Assisted natural regeneration is a traditional practice in the parkland agroforestry landscapes of north Benin; this practice will be incorporated into forest management plans and agricultural training in the project in a manner that promotes climate change adaptation.

climate-resilient agricultural practices; iii) improving post-harvest processing and storage practices; and iv) improving market access for farmers to sell climate-resilient crops. The total investment for Outcome 2 is \$ 2,260,674, of which \$218,291 will be provided as co-financing to support trainings and provide seeds.

**Output 2.1. Climate-resilient agriculture interventions, which increase agricultural yields under climate change conditions, implemented on 3,000 hectares.**

The agricultural practices of small-scale farmers in central and north Benin need to be urgently altered in order to respond effectively to climate change threats. This includes planting appropriate crops at the appropriate times, dependent on the conditions expected for any given year. These responses, however, need to be informed by seasonal and short- to medium-term forecasts that guide farmers on what conditions to expect for that year's growing season. To produce such forecasts, the technical and institutional capacity of Météo Bénin will be enhanced by the proposed project to produce more accurate forecasts and to communicate advisories to relevant stakeholders in an appropriate manner. This will be complemented by the installation of weather stations at selected target sites to improve the availability of meteorological data at the local level.

To assist farmers to respond to climate threats, climate-resilient agricultural practices will be promoted in the target municipalities. The selection of appropriate practices will be based on expert knowledge and local community engagement. These interventions will be directly implemented across the target municipalities, while gender-responsive training will be held at each site to demonstrate the techniques and benefits of the interventions to beneficiary communities and neighbouring communities. Seeds of climate-resilient crop varieties will be provided to communities, and training will be held on seed saving and multiplication. To mitigate against post-harvest crop losses due to pests and climate change threats – such as extreme heat and floods – the post-harvest storage capacity in target communities will also be improved. Beneficiary communities will be selected at project onset based on transparent selection criteria that will be developed which will include the motivation to participate in adaptation activities and some sort of in-kind co-financing model that will provide assurance of commitment to success.

*Activity 2.1.1. Develop agricultural response strategies to short- and medium-range forecasts.*

To allow farmers to adequately prepare for the growing season in a changing climate, accurate short- to medium-term climate forecasts are required. Such forecasts support farmers in deciding which crops to plant and when to plant them in a particular season, based on expected temperature and rainfall patterns. This allows farmers to adapt their agricultural practices in response to climate change, thereby increasing their climate resilience. Such climate forecasts are most accurate when data is collected through a well distributed meteorological network. However, based on WMO standards, there are currently insufficient weather stations across central and north Benin to adequately provide local-level forecasts. The project will therefore contribute to bridging this gap by establishing automatic weather stations in strategic areas near project sites<sup>38</sup> to support the production of locally appropriate seasonal and short- to medium-range forecasts<sup>39</sup>. These weather stations will be designed by international experts and integrated into the national network, following intensive consultation with Météo Bénin to ensure alignment with local activities and national strategies. The new weather stations will be managed by local branches of Météo Bénin, with 10 meteorological staff being trained to produce department-level forecasts at seasonal and short to medium terms. The weather stations will also enable stakeholders to correlate local climatic data with the yields of climate-resilient crops and with the efficacy of forest EbA interventions; such information will be used to improve agricultural methods and EbA protocols through time. This will demonstrate to government the value of weather stations as part of an integrated EbA approach.

To support the effectiveness of the short- and medium-term forecasts in managing agricultural livelihoods under changing climate conditions, agricultural response strategies will be developed by an international and a national agricultural expert<sup>40</sup>. The design of response strategies will be based on engagements with communities and representatives of Météo Bénin and MAEP to identify best climate-resilient practices for each site. This process will take gender-specific agricultural practices into account and will include the establishment of communication protocols for weather forecasts and response strategies. The specific steps under Activity 2.1.1 are listed below.

- Establish/upgrade weather stations based on a detailed review of the distribution and state of existing stations.

<sup>38</sup> Information collected during the project preparation phase indicates that the baseline for the project sites is zero i.e. there are no automated weather stations at the sites. This will need verification during the project inception phase to ensure the baseline status has not changed between project design and project implementation.

<sup>39</sup> Seasonal outlooks indicate how climate parameters such as rainfall will deviate from the long-term seasonal average; short-range forecasts cover periods of 12 hours to 3 days in the future; medium-range forecasts cover periods of from 3 to 10 days in the future. For further details, see WMO definitions: <http://www.wmo.int/pages/prog/www/DPS/GDPS-Supplement5-Appl-4.html>

<sup>40</sup> These strategies will respond to the best available forecasts in Benin for each of the target districts in particular. This will complement previous national-level efforts; refer to past and ongoing projects in Annex 2: Pre-Feasibility Study, Section 7.

- Build the technical and institutional capacity of Météo Bénin to produce agricultural advisories based on meteorological forecasts, building on existing initiatives<sup>41</sup>.
- Establish communication protocols to improve the dissemination of meteorological forecasts and agricultural advisories to vulnerable farmers.

*Activity 2.1.2. Implement climate-resilient agriculture interventions which increase agricultural yields under climate change conditions.*

Climate change is having a severe impact on farmers in central and northern Benin. The combination of shorter growing seasons, a greater number of days with extreme heat, rising temperatures, more frequent and severe droughts, as well as more intense rain events have caused marked reductions in agricultural productivity, loss and desiccation of topsoils, and flooding. To address these impacts and improve agricultural productivity under changing climate conditions, the project will introduce improved, climate-resilient agricultural practices to farmers in the seven target municipalities, with farmers from surrounding areas benefiting indirectly through field visits to demonstration sites established by the project. Under the guidance of an agriculture expert, a menu of locally appropriate agriculture interventions<sup>42</sup> will be developed for each site. This process will include extensive consultations with local stakeholders – including farmers and extension officers – to determine what techniques and crop varieties are the most appropriate for the local climate conditions. Indicative adaptation interventions<sup>43</sup> include: i) crop rotation, intercropping, cover cropping and agroforestry; ii) slash and mulching, organic composting and planting zaï; iii) contour bunding and vegetative barriers; and iv) ridging. Once the menus of intervention have been finalized, gender-responsive training will be organized at each project site, to demonstrate how the appropriate climate-resilient agricultural techniques can be implemented. This will include the establishment of demonstration fields at each site, which will provide practical examples for the implementation of each intervention. At least 22,000 individuals across the seven project sites will receive direct support through these trainings, resulting in the adoption of climate-resilient agricultural practices in over 3,000 hectares of agricultural land<sup>44</sup>. These farmers will also receive input kits with seeds and the basic equipment necessary to adopt climate-resilient practices<sup>45</sup>. The impact of training and demonstrations will be further enhanced and upscaled by organising field visits for neighbouring communities to observe and learn from project interventions. This training and demonstration process will be facilitated by representatives of Météo Bénin and MAEP, supported by national agriculture experts hired by the project.

Community members will be provided with improved climate-resilient seeds by Institut National des Recherches Agricoles du Bénin (Benin National Institute for Agricultural Research – INRAB)<sup>46</sup>, which along with MAEP will set up agreements with local seed providers to ensure locally-appropriate seeds are available at local markets. Climate-resilient crop varieties that have desirable adaptation attributes, including yield stability and drought-tolerance, will be promoted. The selection of seeds will include short cycle seed varieties that help farmers adapt to shorter growing seasons, as well as traditional varieties that are resilient to climate threats such as drought and flooding, for example local sorghum varieties.

To ensure that the supply of the selected crop varieties meets the demand and will continue to be sustainable in the future, the crop and product preferences of smallholder farmers will be taken into account. This demand-driven approach is not only a means of safeguarding food security but also of maintaining and improving crop genetic diversity in a changing climate. INRAB will draw on its knowledge from ongoing research programmes on climate resilient seeds, which will be complemented by the selection of traditional varieties/landraces in the target areas. The project management team will sign an MOU with INRAB for the purchase of appropriate seeds for the project activities. Farmers will also be trained on climate-resilient seed saving and multiplication. Furthermore, raising awareness of the benefits of climate-resilient seed varieties established by the project and the demand for these seeds will encourage local seed producers to produce and supply these seeds to local farmers.

<sup>41</sup> Including: Strengthening the Resilience of Rural Livelihoods and Sub-national Government System to Climate Risks and Variability in Benin; Strengthening Climate Information and Early Warning Systems in Benin; Integrated Adaptation Programme to Combat the Effects of Climate Change on Agricultural Production and Food Security in Benin; Lessons from an Agro-meteorological Early Warning System using Local Climate and Cultivation Knowledge. Full descriptions of these projects are provided in Annex 2: Pre-Feasibility Study, Section 7.

<sup>42</sup> The main agricultural techniques appropriate for the conditions in central and north Benin are identified in the Feasibility Study (Annex 2), and include a water-efficient farming methods.

<sup>43</sup> Descriptions provided in the Annex 2: Feasibility Study, Section 10.4 and Annex I

<sup>44</sup> The 3,000 ha of agricultural land is additional to the 3,600 ha of land targeted for forest restoration under Output 1.

<sup>45</sup> These farmer kits will contain durable equipment such as spades and wheelbarrows. This will complement training, as the major factor limiting adoption of better agricultural practices is knowledge, rather than any advanced equipment.

<sup>46</sup> INRAB has a coordination role for all agricultural research activities in Benin, where the concept of National Agricultural Research System (NARS) has been adopted. Plant breeding programmes in Benin focus on improving yielding ability, grain quality and resistance to diseases and insect pests.

The specific steps under Activity 2.1.2 are listed below.

- Hold consultations with interested community members to identify: i) the major climate change impacts on the agriculture sector; ii) which climate-resilient agriculture interventions are the most appropriate under local climate conditions; and iii) which crop varieties and species are most appropriate for each site.
- Hold trainings in the seven target sites on the implementation of locally-relevant climate-resilient agricultural techniques, using demonstration plots that showcase locally-relevant interventions.
- Provide training, equipment, technology and climate-resilient seeds to support farmers in implementing climate-resilient agriculture interventions.
- Organise field visits to project sites and demonstration plots for the surrounding communities to learn from project interventions.

*Activity 2.1.3. Build the technical capacity of vulnerable farmers for post-harvest storage interventions in the seven communities.*

As climate change reduces agricultural productivity, the need for effective post-harvest storage becomes increasingly important. Effective storage will safeguard food supplies against post-harvest losses resulting from pests, extreme heat, and flooding – all of which will be exacerbated by climate change. The project will, therefore, build the post-harvest storage capacity of vulnerable farmers, thereby enhancing the climate-resilience of these target communities by increasing food security and reducing the pressure on forests by expanding crop production areas (see Annex 2, Feasibility Study: Section 10 and Annex I). Post-harvest storage infrastructure such as hermetically sealed bags and metal silos (see Annex 2 - Pre-FS for details) will be provided to communities to protect their harvests of maize, sorghum, and fonio<sup>47</sup>. Community members will also be made aware of the climate-related risks for harvested crops and trained to manage and maintain the post-harvest storage infrastructure with the support of farming cooperatives or other existing community structures.

Communal storage facilities such as metal silos will be owned and run by community groups (farmers' cooperatives). Beneficiary communities will be selected at project onset based on transparent selection criteria that will be developed which will include the motivation to participate in adaptation activities and some sort of in-kind co-financing model that will provide assurance of commitment to success. In the case of individual post-harvest storage solutions, such as hermetically sealed bags, households will be invited to purchase the bags from the increased production secured through the project. Subsidisation of these bags to promote experimentation will be considered during project implementation.

## **Output 2.2. Market access created for climate-resilient crops to support EbA.**

To maximise the benefits of improved agricultural practices, activities under Output 2.2 will improve market access for climate-resilient crops and establish trade agreements between farmers' cooperatives and relevant national and regional companies that buy and sell agricultural products and NTFPs. The income from these products will also be enhanced through the implementation of standards and innovations that promote adaptation through the agricultural production value chain.

*Activity 2.2.1. Train several cooperatives located in project sites on basic business and financial management and connect them to local and national wholesale traders.*

To maximize the opportunities from improved agricultural practices, it is necessary to improve business practices and market linkages for farming communities. More specifically, linking farmers to local and national wholesale traders will enable them to sell their produce more efficiently, maximizing profit and reducing wastage. To facilitate these linkages, this activity will train farmers from local cooperatives on basic business and financial management skills that are required to sustainably operate their business and supply produce to wholesale traders. This will support the transition of farmers and their communities away from unsustainable practices that magnify their vulnerability to climate change and towards more secure livelihoods and expanded income opportunities. The project will target one to two cooperatives per project site, which will be identified by members of DQIFE and local extension officers. Training will particularly focus on women's cooperatives, to support their production and sale of popular NTFPs such as shea. Sale agreements will be signed between cooperatives and local and national wholesale traders. The specific steps under Activity 2.2.1 are listed below.

- Identify relevant cooperatives within selected municipalities and provide processing equipment and training on processing techniques and maintenance, as well as marketing techniques, including the development of business plans.

<sup>47</sup> The metal silos will be managed by community members through farming cooperatives or other existing community structures

- Develop trade agreements between farmers' cooperatives and relevant national and regional companies that buy and sell agricultural products and NTFPs.

*Activity 2.2.2. Finalise and implement the EBAFOSA (Ecosystem Based Adaptation for Food Security Assembly) standards and innovations for the agricultural production value chain that can promote adaptation.*

This activity will provide expertise for the finalization and implementation of the national standards on climate-resilient agricultural value chains that are under development by the Ecosystem-Based Adaptation for Food Security Assembly (EBAFOSA) in Benin. EBAFOSA will provide support for the agricultural production value chain, promoting adaptation at the national level. Through the EBAFOSA process, cooperatives will be linked to regional and national traders, producers and processors. This will facilitate macro-level connections between stakeholders and enable the establishment of value chain agreements at the national and regional level. The EBAFOSA process will also be conducted with the Benin Bureau of Standards (Agence Béninoise de Normalisation, ABENOR) under the Ministry of Industry and Trade (MIC). Dialogue on the harmonisation of intervention policies, concerned with agri-processing that can advance climate change adaptation and agricultural production, will take place at regular intervals between the ministries through the Benin EBAFOSA Inter-Agency Policy Task Force on climate resilience and food security. Information and Communication Technologies will be explored to create mutual partnerships between complementary actors along the targeted value chains. Finally, partnerships will be promoted between farmers, processors, traders, suppliers of technology, and MFIs for the development of the value chains for cashew, shea, nere, soybean and sorghum.

***Outcome 3. Strengthened technical and institutional capacity of the government and communities for implementing EbA and climate-resilient agriculture and enhanced awareness of the adaptation benefits.***

All knowledge generated through this project on the effects of climate change on forest and agricultural systems in Benin and how to mitigate these impacts will be disseminated via a national knowledge hub, with packaged knowledge produced being disseminated to government, private sector companies, and the general public. This will contribute to effective management of the risks of a changing climate on forest management and agricultural productivity. Outcome 3 will deliver technical capacity, knowledge and awareness of EbA and climate-resilient agriculture through three inter-linked activities that contribute to a single output. The total investment for this outcome is US\$825,710 with co-financing of \$ 125,900.

**Output 3.1. Tools, instruments and strategies developed to enable communities, businesses and the public sector to respond to climate change and variability.**

Activities under Output 3.1. will improve the knowledge management and dissemination processes in Benin to enhance the capacity of communities, businesses and the public sector to respond to climate change and variability. In particular, the activities will focus on disseminating lessons learned from project interventions on EbA and climate-resilient agriculture to various stakeholders, including rural communities, businesses and the public sector. At the core will be a national knowledge hub that will offer a central location for the collation, analysis and packaging of climate and adaptation information. The packaged information will then be disseminated through various channels, including community radio, awareness campaigns and national policy briefs.

*Activity 3.1.1. Establish a national knowledge hub to disseminate lessons learned, cost effectiveness and benefits information on gender-sensitive EbA and climate-resilient agriculture interventions.*

To effectively promote the upscaling and replication of project interventions, it is necessary to gather lessons learned, analyse the identified problems and solutions, and then package the resulting information in a manner that can be easily disseminated to and assimilated by end users. To facilitate this process, the proposed project will establish a national knowledge hub that will be used to share relevant information on EbA and climate-resilient agriculture in Benin. Lessons learned from existing initiatives, as well as from the project interventions, will be collated within the knowledge hub, analysed and disseminated to decision-makers within and outside the government as packaged knowledge products. The hub itself will be hosted on a user-friendly website that will be accessible to everyone, including government decision makers, the private sector and farming communities. To facilitate the dissemination of information to rural areas without reliable access to internet services, the online hub will be supported by a community radio campaign across the country. The radio shows will be tailored to each region individually in terms of language and content, focusing on climate change impacts in the region, EbA and climate-resilient agricultural techniques suited to local climates, and sharing lessons learned from the project. Finally, policy and information briefs will be prepared for decision-makers within relevant ministries and the private sector (for example, farmers' cooperatives and wholesale traders) to promote the inclusion of climate change in policy and planning processes (see Annex 2 – Pre-feasibility

study for more details on relevant policies and planning processes). The specific steps for knowledge management and dissemination through Activity 3.1.1. are listed below.

- Identify best host/co-hosts for the national knowledge hub and design a user-friendly website to share relevant information.
- Analyse lessons learned and cost-benefits of EbA and climate-resilient agriculture in Benin and disseminate results through the knowledge hub.
- Synthesise and package information according to users' needs.
- Host community radio shows in local languages in each target municipality.
- Prepare policy and information briefs on climate change and EbA for sectoral ministries and stakeholders within the private and public sectors.

*Activity 3.1.2. Organize awareness-raising campaigns for local communities on climate change and the services provided by forest ecosystems.*

To facilitate the dissemination of lessons learned to rural communities, the project will host public-awareness raising campaigns in communities across central and northern Benin. These campaigns will use knowledge products produced through Activity 3.1.1 to increase community support for EbA and climate-resilient agriculture interventions. This will not only foster project ownership at the local and national level, but will also promote upscaling and replication of interventions. To ensure that the information presented is locally relevant, a baseline study will be conducted to assess gaps and weaknesses in knowledge on climate change and forest ecosystems within selected communities and among decision-makers. Using results from the baseline assessment, local- and national-level awareness-raising campaigns on climate change, forest degradation and EbA will be designed and implemented.

*Activity 3.1.3. Strengthen national policies and strategies to support an integrated EbA and climate-resilient agriculture approach for sustainable management in forests and adjacent lands.*

To ensure that climate change is considered fully in future planning for forestry management and agriculture the long term, the project will provide technical support for strengthening relevant national policies and strategies. Specifically, the Forest Law and agricultural policy (PSDSA) will be reviewed, synergies between these two documents identified, and policy or regulatory mechanisms that will need to be amended underlined. A participative consultation with stakeholders from MCVDD and MAEP will then be held to present and discuss the reviews' results and to develop guidelines to revise the Forest Law and PSDSA in synergy. In addition, national- and local-level decision-makers in agriculture and forest management will receive training on mainstreaming approaches for EbA into planning tools, processes and budgets. The specific steps under Activity 3.1.3. are listed below.

- Analyse relevant policies to identify areas where EbA and climate-resilient agriculture can be mainstreamed.
- Hold workshops with relevant governmental stakeholders to develop guidelines to integrate EbA and climate-resilient agriculture into the existing legal frameworks.
- Provide technical support for updating the agricultural policy and Forest Law to fully incorporate EbA and climate-resilient agriculture.
- Hold workshops for sectoral ministries at national and municipal levels on climate change, EbA and climate-resilient agriculture in Benin.

All activities are described in more detail in Appendix IV of the Pre-Feasibility Study (Annex 2). Information on the best practices and lessons learned from experience that underpins the project strategy and the Theory of Change is also presented in Annex 2.

### **B.3. Implementation / institutional arrangements (max. 750 words)**

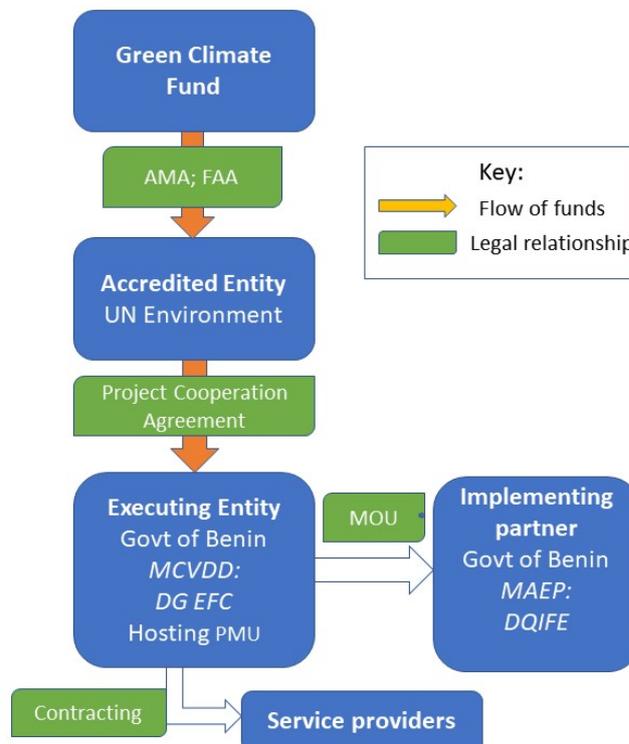
The United Nations Environment Programme (UNEP<sup>48</sup>) will be the Accredited Entity (AE) designated by the Government of Benin. The AE will be responsible for overseeing the implementation, financial management, evaluation, reporting and closure of the project, as well as having overall fiduciary responsibility for the project.

The Government of Benin, acting through the Direction Générale des Eaux, Forêts et Chasse (DG EFC) – a directorate under the Ministère du Cadre de Vie et du Développement Durable (MCVDD) – will serve as the Executing Entity (EE). It will collaborate with the Direction de la Qualité, de l'Information et de la formation entrepreneuriale (DQIFE) under the Ministère de l'Agriculture, de l' Elevage et des Peches (MAEP). The EE will assume overall responsibility for the effective delivery of required inputs in order to achieve the expected project outputs. UNEP will work with the EE and the DQIFE to build their capacity to execute this project. The Direction de la Qualité, de l'Information et de la formation

<sup>48</sup> Also known as UN Environment

entrepreneuriale (DQIFE) under the Ministère de l’Agriculture, de l’ Elevage et des Peches (MAEP) will collaborate with the EE on activities under Outcome 2.

UNEP will enter into an appropriate agreement (Project Cooperation Agreement) with the EE for the execution of the project. The Project Cooperation Agreement will establish clear roles and responsibilities for both parties for the delivery of the proposed activities, the schedule and conditions for instalments, the determination of the prevailing fiduciary standards and the terms and conditions for arbitrations and termination of contract. The PCA will include specific obligations for the EE on project execution, financial management, personnel administration and reporting, as well as on arbitration and liability terms. The EE will be required to comply with UNEP rules, policies and procedures on procurement.



### Roles and responsibilities

UNEP, as the Accredited Entity, will manage the funds for the implementation of the project. In addition, UNEP will co-chair the National Project Steering Committee to ensure that appropriate project management milestones are managed and completed. As an Accredited Entity to the GCF, UNEP is required to deliver GCF-specific oversight and quality assurance services including: i) day-to-day project oversight and supervision; ii) oversight of project completion; and iii) oversight of project reporting.

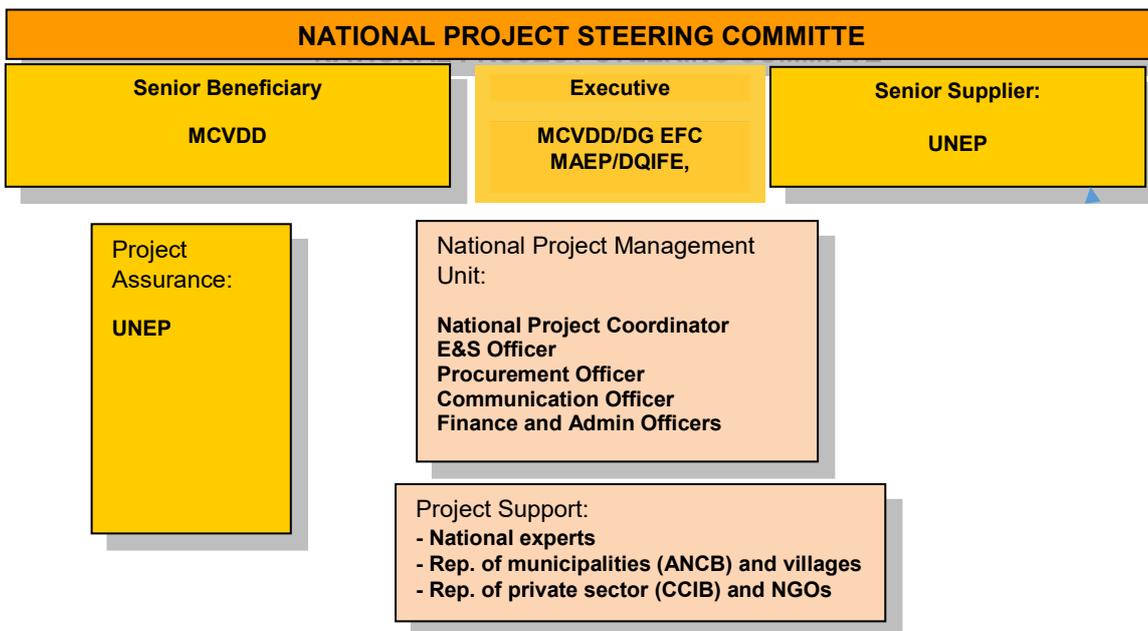
The MCVDD, as the lead ministry on climate change in Benin, houses the NDA for the GCF as well as the DG EFC. Day-to-day execution of the project will be under DG EFC, whilst overall coordination with other GCF projects and climate change initiatives will be undertaken by the NDA for the GCF.

On-the-ground interventions will also be designed and implemented with the support of community leaders and traditional chiefs. This will ensure community buy-in for proposed interventions – in particular the revision of forest management plans and design of a permit sale system – during and beyond the project’s lifetime. Extension services will be provided by local branches of MAEP, and supported where necessary by contracting NGOs with well-established local footprints. The role of the extension services will include assisting with training sessions and following-up on the implementation of relevant interventions to ensure that climate-resilient practices are adopted. In addition, extension staff of regional INRAB centres will be involved in supplying and promoting climate-resilient seed varieties.

UNEP will be responsible for overseeing the implementation of the proposed project in coordination with the Executing Entity, Project Steering Committee (PSC) and the Project Management Unit (PMU). In addition, a UNEP representative will fulfil the role of Task Manager (TM), taking responsibility for project oversight and supervision. The TM will also ensure consistency with GCF and UNEP policies and procedures, whilst: i) participating in the annual PSC meetings; ii) facilitating the project’s mid-term and final evaluations; iii) clearing the Progress Reports and Project Implementation

Reviews; iv) undertaking the technical review of project deliverables; v) providing input to the annual portfolio reporting to GCF; and vi) preparing requests for disbursements. As the Accredited Entity, UNEP will ensure that the project's activities are aligned with both GCF and Beninese policies and priorities. Operating policies and procedures will follow UNEP's programme manual, which includes provisions for financial management and procurement.

**National Project Steering Committee (NPSC):** The MCVDD will convene and chair the National Project Steering Committee (NPSC), while MAEP will assume the role of vice-chair. The EE and the AE will form part of the NPSC, along with the National Project Coordinator, one representative from FNEC (Fonds National pour l'Environnement et le Climat), CNCC (Comité National sur les Changements Climatiques/ National Climate Change Committee) and the GCF's NDA. Other members of the NPSC will include: i) one representative of Météo Bénin, ii) one representative of Ministry of Planning and Development (Ministère du Plan et du Développement – MPD); iii) one representative of Ministry of Water and Mining (Ministère de l'Elevage et des Mines – MEM); iv) one representative from each of the target municipalities; v) one representative of EBAFOSA Benin and vi) national experts on forestry, ecosystem restoration, climate change and agriculture. A gender balance will be ensured in the NPSC. The mandate of the NPSC will include: i) overseeing project implementation; and ii) reviewing annual workplans and project reports. The NPSC will meet at least twice a year – with *ad hoc* meetings held as and when necessary – to discuss the project's main performance indicators and provide strategic guidance.



**National Project Management Unit (NPMU):** The NPSC will be supported by the National Project Management Unit (NPMU), who will be based within the Ministry of Livelihood and Sustainable Development (MCVDD). It will be led by a National Project Coordinator (NPC) and include a Financial Officer, an Administrative Officer, a Communication Officer, a Procurement Officer and an Environmental and Social Officer (see roles and responsibilities in Annex 10). The NPMU will coordinate activities between the Accredited Entity (UNEP), Executing Entity (DG EFC) and various partners to oversee the implementation of the project's activities. The National Project Coordinator will: i) lead and direct the NPMU; ii) provide administrative and technical expertise; iii) be responsible for the day-to-day implementation and management of the project, iv) serve as the focal point for interactions between the project stakeholders and partner organisations (e.g. government departments, NGOs, civil society groups); and v) meet regularly with project managers of closely-related ongoing projects operating in the target areas to ensure synergy.

Field activities will be executed by MCVDD through its DG EFC (for Outcome 1) in collaboration with DQIFE (for Outcome 2) and respective line departments of forestry and agriculture at district and municipal levels. NGOs and representatives of selected communities will also be involved in executing field activities under the overall guidance and supervision of the DG EFC and DQIFE and the line ministries identified above. The DG EFC and DQIFE will also collaborate to implement project Outcome 3.

This project will contribute to Benin being able to access the GCF directly through a national accredited entity in future. FNEC (Fonds National pour l'Environnement et le Climat) is in the process of acquiring GCF accreditation and

will benefit from capacity development in the project, both from participating in the Steering Committee and from inclusion in activities in Component 3.

## C. FINANCING INFORMATION

### C.1. Total financing

<b>(a) Requested GCF funding (i + ii + iii + iv + v + vi)</b>		9		million USD (\$)		
GCF Financial Instrument		Amount	Currency	Tenor	Pricing	
(i)	Senior loans	Enter amount	Options	Enter years	Enter %	
(ii)	Subordinated loans	Enter amount	Options	Enter years	Enter %	
(iii)	Equity	Enter amount	Options		Enter % equity return	
(iv)	Guarantees	Enter amount	Options	Enter years	Enter %	
(v)	Reimbursable grants	Enter amount	Options			
(vi)	Grants	9	million USD (\$)			
<b>(b) Co-financing information</b>		<b>Total amount</b>		<b>Currency</b>		
		1		million USD (\$)		
Name of institution	Financial instrument	Amount	Currency	Tenor	Pricing	Seniority
Government of Benin	Grant	1	million USD (\$)	Enter years	Enter%	Options
<b>(c) Total investment (c) = (a)+(b)</b>		<b>Amount</b>		<b>Currency</b>		
		10		million USD (\$)		
<b>(d) Co-financing ratio (d) = (b)/(a)</b>		1/10				
<b>(e) Other financing arrangements for the project/programme (max ½ page)</b>		<i>Please explain if any of the financing parties including the AE would benefit from any type of guarantee e.g. sovereign guarantee, MIGA guarantee, etc.</i>				

### C.2. Financing by component

Outcome	Output	Indicative cost (USD)	GCF financing		Co-financing		
			Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institutions
3,600 hectares of land restored for multi-use energy and livelihood benefits.	1.1. Seven forest management plans revised or developed and put into practice by Community Forest Management Committees, to include EbA and climate-resilient sustainable forest management practices.	590,360	430,890	Grants	159,470	Grants	DG EFC

	1.2. Land reforested to buffer against the impacts of climate change such as floods and soil erosion, and to enhance the provision of non-timber forest products (NTFPs) such as fruits, medicines, nuts, fuelwood and fibre.	5,845,756	5,415,617	Grants	430,139	Grants	DG EFC
Higher productivity from agricultural livelihoods secured in the face of climate change	2.1. Climate-resilient agriculture interventions, which increase agricultural yields under climate change conditions, implemented on 3000 hectares.	2,000,869	1,795,033	Grants	222,036	Grants	MAEP
	2.2. Market access created for climate resilient crop to support EbA.	259,805	247,350	Grants	12,455	Grants	MAEP
Strengthened technical and institutional capacity of the government and communities for implementing EbA and climate-resilient agriculture and enhanced awareness of the adaptation benefits.	3.1. Tools, instruments and strategies developed to enable communities, businesses and the public sector to respond to climate change and variability.	825,710	699,810	Grants	125,900	Grants	<a href="#">Click here to enter text.</a>
<b>Sub-total activities (US\$)</b>		<b>9,522,500</b>	<b>8,572,500</b>		<b>950,000</b>		<a href="#">Click here to enter text.</a>
<b>PMC (US\$)</b>		<b>477,500</b>	<b>427,500</b>		<b>50,000</b>		<a href="#">Click here to enter text.</a>
<b>Indicative total cost (USD)</b>		<b>10,000,000</b>	<b>9,000,000</b>		<b>1,000,000</b>		

### C.3. Justification for GCF funding request (max. 500 words)

The Government of Benin (GoB) is seeking US\$ 9 million of grant funding to address the extreme climate change threats facing rural communities in central and northern Benin. The livelihoods of these communities (among the poorest in the country) are threatened by reductions in agricultural production, topsoil losses and decreased supplies of ecosystem goods and services as a result of shorter growing seasons, temperature increases and more intense rainfall events (see Annex 2: Pre-Feasibility Study, Section 4). These impacts are expected to intensify markedly under future climate scenarios and continue to be exacerbated by unsustainable land use practices and deforestation. The proposed GCF project's objective is to reduce unsustainable land use practices and deforestation and strengthen the climate resilience of local communities by integrating climate-resilient agricultural techniques with the tailored restoration of

degraded forests. As a result, the project will facilitate a paradigm shift in Benin's approach to addressing the impacts of climate change on the livelihoods of its vulnerable rural communities.

As a Least Developed Country, Benin faces multiple development challenges, including poverty, lack of infrastructure and limited access to healthcare and other public services. The government prioritises these pressing development needs; and, as a result, resources to invest in climate change adaptation are not readily available. There is also limited scope for Benin to incur further public debt since it is at medium risk of debt distress according to the International Monetary Fund<sup>49</sup>. Access to international capital markets is similarly limited, as Benin's sovereign bonds are rated non-investment grade<sup>50</sup>. Overall, loan financing is not appropriate for the proposed project, as the benefits from the project will mostly be public goods and it is unlikely that there will be a financial return on investment within the project timeframe to repay loans.<sup>51</sup> Consequently, the GoB seeks maximum concessionality from the GCF for the urgent adaptation actions proposed under this project.

Without GCF funding, under a business as usual scenario, inadequate technical and financial capacity at the national and local level will continue to hinder the efforts of rural communities in central and northern Benin to adapt their livelihoods to the impacts of climate change. Consequently, the vicious negative cycle of unsustainable forest use and ecosystem degradation will persist, reducing the supply of goods and services which buffer the impacts of climate change on rural communities, compounding their vulnerability. GCF funding is therefore vital to initiate progress towards a complete paradigm shift in GoB's approach to adapting the livelihoods of rural Beninese to climate change.

#### C.4. Exit strategy and sustainability (max. 250 words)

Extensive stakeholder engagement during the design and initial phases of the project will ensure that relevant stakeholders support the project interventions. The climate-resilient forests established through the project will be co-managed by the communities and the Forest Department according to the forest management plans developed through a participatory process. The Community Forest Management Committees (CFMCs), established/strengthened through the project, will co-manage the natural resources of their forest areas and receive income through a benefit-sharing system. This will result in their continued involvement in the sustainable management of the forest areas and ensure the maintenance of the equipment received through the project. Along with the CFMCs, the communities at large will continue to conserve the restored forests because they will benefit from the increased, sustainable supply of crops and NTFPs.

The project will designate maintenance responsibilities beyond the project period for the facilities established or equipment provided, namely:

- motorbikes, GIS tools and computers, provided to local forest extension services, to be maintained by these offices with support from the DG EFC;
- tree nurseries (used for reforestation activities, woodlots and orchards), to be maintained by the local forest extension services with support from DG EFC;
- weather stations, to be maintained by Météo Bénin;
- storage facilities, to be maintained by the beneficiary communities; and
- processing equipment, to be maintained by the beneficiary cooperatives.

The project will prioritise capacity building for local communities, cooperatives, CFMCs, civil servants and government institutions. This will ensure that these stakeholders are able to continue implementing EbA and climate-resilient agriculture once the project's funding ceases. In addition, farmers' cooperatives will gain an increased understanding of financial management techniques in order to sustain their marketing activities.

Integrating EbA and climate-resilient agriculture into national government administration, through Benin's Forest Law and Strategic Plan for the Development of the Agriculture Sector, will create a shift in the way forests and adjacent farmlands are managed across Benin. The socio-economic benefits of EbA and climate-resilient agriculture will also be shared through a knowledge hub to upscale and replicate these approaches.

Annexes 2 and 7 contain the theory of change and risk management for the project, respectively, that describe, in greater detail, the integrated exit and sustainability strategies.

#### C.5. Financial management/procurement (max. 300 words)

<sup>49</sup> IMF, 2017. Benin - Request for a three-year arrangement under the extended credit facility—debt sustainability analysis. Available online: <https://www.imf.org/external/pubs/ft/dsa/pdf/2017/dsacr17100.pdf>

<sup>50</sup> Benin has a credit rating of B+, i.e. "highly speculative". Standard & Poors, July 2018.

<sup>51</sup> Brief financial analysis and market overview Annex 2: Pre-Feasibility Study, Appendices IIa and IIb.

The financial management and procurement within the project will be guided by UN financial regulations, rules and practices, as well as UNEP’s programme manual. The financial rules of UNEP, which follow International Public Sector Accounting Standards (IPSAS), are promulgated pursuant to the Financial Regulations and Rules of the UN. Within this context, funding allocation mechanisms are managed as per UN rules and procedures, including eligibility criteria, proposal evaluation processes, quality assurance and control, project monitoring and supervision. UNEP is audited annually by the UN Board of Auditors and has established dedicated trust funds for Green Climate Fund resources.

The funding of a project will be established through a distinct grant within the Trust Fund, with the project itself being set up in the UNEP Enterprise Resource Planning (ERP) as a “Work Breakdown Structure” (WBS), which is itself further broken down into “Work Breakdown Structure Elements” (WBSEs), organised by output and outcome. The grant of the project will be linked to the WBSEs to fund the activities contributing to the delivery of specific outputs (as per the disbursement schedule detailed in the term sheet). The fee income will be managed through a dedicated grant independently and separately of the GCF project grant funds. In line with UNEP procedures, the project will appoint a Financial Officer within the PMU who will be responsible for monitoring, reporting on and approving requests for funds on a quarterly basis. Reports to summarize the disbursement and projected demands for project funding will be prepared and submitted to a UNEP Programme Officer who will conduct project supervision, in line with reporting standards and methodologies applied in past projects, such as those implemented using GEF modalities. The UN financial regulations and rules require the segregation of duties, and safeguards to ensure compliance with UN financial rules and regulations. In addition, a Fund Management Officer will be appointed to assist UNEP’s Programme Officer with all financial monitoring and supervision functions. All procurement will be undertaken in line with UN procurement regulations, rules and policies. UNEP’s modalities for project implementation, in the case of a national project, results in funds being transferred in tranches to the Executing Entity (EE) once the EE has satisfied the conditions that are defined under the legal instrument (Project Cooperation Agreement; PCA) to be signed between UNEP and the EE. The PCA will include specific obligations for the EE on financial management and reporting and will require periodic reporting from the EE to follow international financial and auditing standards. The PCA specifically requires the audit be undertaken by a recognised firm of certified public accountants or, for governments, by a government auditor. This auditor should state whether the GCF proceeds were covered by the scope of the audit.

As a GoB authority, the EE follows the government’s financial and procurement rules and standards. During the proposed project’s inception phase, UNEP will conduct a thorough assessment of the EE’s capacity to undertake procurement in line with UN regulations, rules and processes. This assessment will guide the procurement monitoring plan which will be agreed upon between UNEP and the EE. The assessment will be conducted following project approval but prior to project implementation. It will include assessments of elements of governance and public accountability such as, *inter alia*, review of the existence and quality of policies, legal and institutional framework, and systems supporting transparency, accountability and controls, especially in the use of donor funds. The outcome of the assessment will determine the threshold for procurement that can be undertaken by the EE, which will be reflected in the procurement monitoring plan. The procurement monitoring plan is an annex to the PCA and will be shared with GCF upon signature, as required by the FAA. The procurement monitoring plan will also be reviewed periodically. The project’s investments in equipment will be undertaken in accordance with UN procurement procedures. Finally, in line with the UNEP Programme Manual, the EE will be requested to provide an annual compliance audit covering all aspects of the project execution including review of all expenditures incurred during the financial year.

## D. LOGIC FRAMEWORK AND MONITORING, REPORTING AND EVALUATION

*This section refers to the project/programme’s logic framework in accordance with the GCF’s [Performance Measurement Framework](#) under the [Results Management Framework](#) to which the project/programme contributes as a whole, including in respect of any co-financing. This is different from the project/programme-level log frame(as there may be other impact measures for example that go beyond those defined by the GCF).*

*A project-level logical framework, with specific indicators, baselines and targets, means of verification and assumptions should be provided as part of Annex 2.*

### D.1. Paradigm shift objectives

<i>Choose appropriate expected result</i>	<i>Elaborate on the paradigm shift objectives to which the project/programme contributes.</i>
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<i>Choose appropriate expected result</i>	<i>Elaborate on the paradigm shift objectives to which the project/programme contributes.</i>
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**D.2. Impacts measured by GCF indicators**

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
<i>A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions</i>	A.1.2 Numbers of males and females benefiting from the adoption of diversified, climate resilient livelihood options.	Random sampling; Project-level field surveys comprising interviews with local communities.	TBC during start-up assessment.	4,000 women and 4,000 men benefit from climate-resilient livelihoods.	11,000 women and 11,000 men benefit from climate-resilient livelihoods	Climate resilient agricultural strategies will improve the resilience of ecosystems and ecosystem services.
<i>A4.0 Improved resilience of ecosystems and ecosystem services</i>	A4.1 Coverage/scale of ecosystems protected and strengthened in response to climate variability and change.	Project-level field surveys including GIS mapping of project intervention sites showing forest coverage and density.	3600 hectares of land; the extent of degradation will be established in the start-up phase of the project.	1,200 ha of degraded forests protected and strengthened in response to climate variability and change.	3,600 ha of degraded forests protected and strengthened in response to climate variability and change.	The EbA measures implemented are effective in increasing resilience and improving the livelihoods of vulnerable people.

**D.3. Outcomes measured by GCF indicators**

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
<i>A7.0 Strengthened adaptive capacity and reduced exposure to climate risks</i>	Use by vulnerable communities, businesses, and public sector services of Fund-supported tools, instruments, strategies and activities to respond to climate change and variability.	Scorecard approach targeting beneficiary communities and technical officers in districts, municipalities and central government.	Zero	Tools and instruments developed by year 3: national knowledge hub, website; policy and information briefs; draft revisions to Forest Law and to associated strategies and policies; mainstreaming guidelines.	30% of 22,000 people in 7 communities, 30% of technical officers in the 7 Districts and 20% of technical officers in municipal and central government using Fund-supported tools, instruments, strategies and	The tools, instruments, strategies and activities developed by the project will improve adaptive capacity.

					activities to respond to climate change	
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**D.4. Arrangements for Monitoring, Reporting and Evaluation (max. 300 words)**

UNEP will be responsible for managing the Mid-Term Review (MTR) and the Terminal Evaluation (TE). The project team will carry out evidence-gathering exercises to verify this progress at baseline, mid-point and project end. The Means of Verification will include project level field surveys (comprising key information interviews, household surveys and focus group discussions with targeted communities); GIS mapping exercises and data-gathering using a scorecard.

The Task Manager will oversee the process of hiring an external expert to carry out the MTR, which will provide an assessment of project performance at the project's mid-point. This will be a formative exercise and will include analysing whether the project is on track, what problems and challenges the project is encountering, and what corrective actions are required for the project to achieve its intended outcomes by project completion, in the most efficient and sustainable way. The National Project Steering Committee (NPSC) will participate in the MTR process and develop a management response to the review's recommendations, along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented during the remainder of the project's operational life.

An independent Terminal Evaluation will take place at the end of project implementation. The Evaluation Office (EO) of UNEP will be responsible for the TE, which is a summative evaluation, and will liaise with the UNEP Task Manager and relevant stakeholders throughout the process. An independent assessment of project performance against standard evaluation criteria (e.g. strategic relevance, effectiveness, efficiency, likelihood of impact and sustainability) will be made based on documentary evidence, stakeholder interviews and, in most cases, a field mission. Each evaluation criterion will be rated using a six-point rating scheme and a weighted average will be determined to provide an overall performance rating for the project as a whole. Where there are any differences in ratings between the evaluation team and the Evaluation Office, a final determination will be made by the EO when the evaluation report is finalised.

The draft Terminal Evaluation report will be sent to project stakeholders during a consultation process managed by the EO. Formal comments on the report will be shared by the EO in an open and transparent manner. This evaluation report will be publicly disclosed and will be followed by a recommendation compliance process.

**E. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**

**E.1. Impact potential (max. 300 words)**

E.1.1. Expected tons of carbon dioxide equivalent (t CO <sub>2</sub> eq) to be reduced or avoided (Mitigation only)	Annual	Click here to enter text. tCO <sub>2</sub> eq
	Lifetime	Click here to enter text. tCO <sub>2</sub> eq
E.1.2. Expected total number of direct and indirect beneficiaries, disaggregated by gender	Direct	22,000 50% of female
	Indirect	1,073,989 50% of female
	<i>*For both, Specify the % of female against the total number.</i>	
E.1.3. Number of beneficiaries relative to total population	Direct	0,2 (Expressed as %)
	Indirect	10 (Expressed as %)

The proposed project will restore 3,600 ha of degraded forest areas and increase yields across 3,000 ha of agricultural lands. These interventions will directly benefit ~22,000 people (through Outcome 2's activities on climate-resilient agriculture), and indirectly benefit ~1,074,000 people from the project's seven target municipalities<sup>52</sup> in central and north Benin (through activities in Outcomes 1 and 3). Indirect beneficiaries of the project will benefit from: i) reforestation activities, which will reduce the occurrence and impacts of floods, maintain and enhance groundwater and surface water resources and stabilise soils in the target areas; ii) awareness-raising campaigns on climate change and

<sup>52</sup> Banikoara, Boukoumbe, Coby, Tchaourou, Dassa, Djougou and Ouake.

adaptation; and iii) enhanced capacity of national, municipal and District authorities to implement EbA and climate-resilient agriculture<sup>53</sup>.

**E.2. Paradigm shift potential (max. 300 words)**

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<sup>53</sup> Indirect beneficiary number is the sum of the total population sizes of the target municipalities. Further information on the calculation of beneficiary numbers is provided in Annex VIII of the Pre-Feasibility Study.

The proposed GCF project will break the current model of degradation and vulnerability by effecting a paradigm shift that results in improved, climate-resilient livelihoods in central and northern Benin<sup>54</sup>. In doing so, the project will demonstrate the considerable environmental and socio-economic benefits of sustainable, climate-resilient forest and land management, through on-the-ground implementation of EbA and climate-resilient agriculture interventions<sup>55</sup>. These interventions will maintain food security in a changing climate and promote natural resource-based, climate-resilient livelihoods. It will lead to a virtuous environmental and economic cycle in which agricultural yields improve and the supply of goods and services from forest ecosystems increase despite the predicted changes in Benin's climate. This virtuous cycle will be sustained and replicated across Benin as local communities, government technical staff and decision-makers will be informed of these benefits and trained to use this combined approach of EbA and climate-resilient agriculture in practice and policy making<sup>56</sup>. By raising the productivity and returns from cash crops and NTFPs for which there are growing market demand (including linking cash crops to markets), the project will shift producers to more productive agriculture which generates greater income under climate change conditions, and which feeds a virtuous cycle of increasing production and adaptation.<sup>57</sup>

The project will promote interventions that are effective for Benin by drawing on best practices and lessons learned from previous projects (see Annex 2: Pre-Feasibility Study, Section 7). Additionally, stakeholder consultations with representatives from municipal and district-level government departments, as well as communities from the target districts in central and north Benin, have provided insights on the local appropriateness of international best practices (for a summary of consultations during project development, see Annex 10 – Stakeholder Engagement Plan). By upscaling the successes of past and ongoing initiatives, future initiatives are more likely to succeed in achieving their adaptation outcomes in sustainable and cost-effective manner. The potential for upscaling is illustrated by the extent of Benin's forest areas. Classified forests cover 19%<sup>58</sup> of Benin and in total forest<sup>59</sup> covers 68% of the country. The project will restore 3,600 hectares of degraded forests in selected sites in central and north Benin. This will serve as a model for the upscaling of climate-resilient restoration to the degraded areas of the ~2.7 million hectares of classified forest in Benin, as well as the non-classified forests. Consequently, the project will initiate a national-level improvement in the supply of ecosystem goods and services to vulnerable rural communities, including water provision, flood buffering and protection against soil erosion. This enhancement is necessary because local communities are currently experiencing a reduction in the provision of these goods and services (as described above in Section B.1 above). The specific pathways to replication and scale are outlined below.

- The autonomous uptake of EbA and sustainable forest management interventions will be promoted among non-beneficiary communities around project sites, by: i) implementing demonstration plots; ii) holding training events; and iii) broadcasting informative radio programmes. EbA and the proposed climate-resilient agricultural techniques require small investments compared with the long-term environmental and socio-economic benefits they provide<sup>60</sup>. Past projects<sup>61</sup> have proven that the integration of EbA into land management interventions can facilitate the continuity and upscaling of such interventions. When the benefits of EbA are experienced by communities, EbA continues to be used locally and is taken up by neighbouring communities<sup>62</sup>.
- Upscaling and replication of the project's interventions across administrative regions will be facilitated through the capacity building and training at all levels of government in the Forest Department (DG EFC) and the Ministry of Agriculture (MAEP). Training and capacity building will target national policymakers at department and municipality levels, departmental managers, as well as local forest wardens and agricultural extension officers. This will ensure that: i) sustainable forest management plans are developed across the country and implemented on the ground; and ii) EbA and climate-resilient agricultural techniques are promoted by agricultural extension officers across Benin through training sessions provided to local communities.
- The project's scalability will be further enhanced by collaborating with ongoing initiatives on agricultural development, reforestation and sustainable forest management. For instance, the project is fully aligned with the Strategic Plan to Develop the Agricultural Sector (Plan Stratégique de Développement du Secteur Agricole – PSDSA), which provides strategic guidance for agricultural policies for the period 2017–2021. This plan aims to ensure sustainable food security in Benin by improving agricultural productivity, promoting climate resilience within the agricultural sector and strengthening value chains for selected crops and NTFPs. The proposed project's interventions on agriculture and value chains are closely aligned with the PSDSA, which will benefit from lessons learned from project interventions to upscale them across Benin. In addition, the revision and strengthening of forest management plans proposed in this GCF project are also aligned with the revision of the Forest Law in Benin, which was undertaken by the government to integrate the principles and priorities defined in REDD+ into the law. These priorities include sustainable forest management, which will be strengthened as a core principle of the Forest Law. By providing guidance to update and amend the Forest Law, the proposed project will ensure that sustainable forest management that accounts for climate change is replicated across the country.
- Since the project sites will be located in all four of the agroecological zones of central and north Benin, the project's agricultural interventions are replicable across this whole region. Likewise, there are numerous forest areas in Benin that face similar challenges as the target areas in terms of climate change and environmental degradation.

Replication across departments and to the national level will be facilitated by capacity building in the forest and agriculture ministries, technical input to update the Forest Law and national agricultural policy, and knowledge sharing via a national knowledge hub. The specific project interventions will also be suitable for replication in various other countries in West Africa that have similar climate and farming systems to Benin. Furthermore, the model of an integrated EbA and climate-resilient agriculture approach can be replicated in many other African countries. To this end, the project's best practices and lessons learned will be shared through the EBAFOSA network that includes 35 African nations.

### E.3. Sustainable development (max. 300 words)

#### *Environmental co-benefits*

- An EbA approach to restore forest ecosystems will reduce soil erosion, prevent siltation-induced damage to existing infrastructure, maintain hydro-electric potential of rivers, increase groundwater availability for domestic and agricultural use and reduce damages from floods.
- The restored forest ecosystems will contain many indigenous plant species that provide fibre, medicines, fruits, fuelwood, timber and habitat for animal species.
- Climate-resilient agriculture interventions will reduce soil erosion and soil fertility loss, enhance soil moisture retention and maintain soil temperatures suitable for crop production.
- The project will generate notable mitigation co-benefits. Carbon stocks will be maintained and carbon will be sequestered by: i) restoring and protecting forests over 3,600 ha; ii) planting woodlots for fuelwood<sup>63</sup>; iii) establishing orchards; and iv) through increased soil carbon through the climate-resilient agricultural practices which will be promoted<sup>64</sup>. The total carbon sequestration potential of the project has been estimated at ~855,000 tCO<sub>2</sub>-eq over the 15-year lifespan of the project<sup>65</sup>.
- Additional environmental co-benefits will be achieved by reducing the impact of fuelwood collection on natural ecosystems through the establishment of woodlots and raising awareness of sustainable forest management. By establishing woodlots, the rate of deforestation/forest degradation caused by fuelwood collection will be decreased. This will ultimately increase the health of forest ecosystems, thereby increasing the rate of carbon sequestration.

#### *Social co-benefits*

- Project interventions will yield considerable benefits for vulnerable communities, including: i) improved agricultural production; ii) reduced poverty; iii) reduced exposure to environmental and climate-related hazards such as floods; iv) increased provision of NTFPs; and v) improved awareness and knowledge of climate change and sustainable forest management practices.
- Conflicts between farmers and herders will be reduced as forest management plans that include transhumance corridors will be designed in a participatory way and enforced by local forest wardens and CFMCs.

#### *Economic co-benefits*

- The implementation of forest management plans will lead to benefit-sharing opportunities through the development of a robust and transparent permit system.
- The enhanced production of crops and NTFPs will increase direct consumption – reducing food insecurity in rural areas – and increase sales as links between farmers' cooperatives and supply chains are strengthened.
- Training on basic marketing techniques for individual farmers and cooperatives will allow beneficiaries to optimise their financial resources.

<sup>54</sup> As also described in Section D.1.

<sup>55</sup> See definitions of EbA and climate-resilient agriculture in Section C.2.

<sup>56</sup> For details of past projects that demonstrated replicability and scalability, see Annex 2, Section 8.

<sup>57</sup> For details of past projects that demonstrated replicability and scalability, see Annex 2: Pre-Feasibility Study, Section 8.

<sup>58</sup> DGEFC (2016) Diagnostic approfondi du cadre législatif et réglementaire du secteur forestier et proposition d'actions pour la mise en oeuvre de la REDD+ (*Analysis of the legal framework and regulations for the forestry sector and recommendations to implement REDD+*).

<sup>59</sup> This includes wooded savanna and open forests.

<sup>60</sup> Reid, H. 2015. Ecosystem- and community-based adaptation: learning from community-based natural resource management. *Climate and Development*, DOI: 10.1080/17565529.2015.1034233

<sup>62</sup> See for example in Ghana: CARE Adaptive Learning Programme for Africa (ALP). Available at: <http://careclimatechange.org/our-work/alp/>

<sup>63</sup> Growing of wood for fuel is considered to achieve net-zero carbon emissions over the entire lifespan of the trees.

<sup>64</sup> Soil carbon benefits from climate-resilient agriculture has been conservatively estimated at 1 tCO<sub>2</sub>-eq/ha/yr.

<sup>65</sup> Mitigation benefits were calculated using the EX-Act tool for forestry-based interventions (Annex 10), with additional soil carbon sequestration estimated for 3,000ha of climate-resilient agriculture.

- The combination of improved agricultural productivity, a growing market for NTFPs, and improved market linkages between farmers and wholesale traders will shift producers towards climate-resilient agricultural practices. Farmers will consequently generate greater income, which can be reinvested into improved practices, thereby creating a virtuous cycle of increasing production and adaptation.

#### *Gender-sensitive development impacts*

Gender inequality in Benin pervades different sectors and society, and has direct and indirect ramifications for climate resilience and livelihood preservation for rural communities. Beninese women comprise ~38% of the agricultural labour force<sup>66</sup> and are responsible for ~60–80% of agricultural work. Women also derive livelihoods from NTFP collection, such as shea nuts which are in international demand. Despite this, women are largely under-represented in agricultural decision-making and forest governance bodies at the community level. Women's access to land and credit is also limited, which reduces their ability to invest in the necessary agricultural inputs and equipment (because of a lack of capital and stable financial resources). As a result of traditional cultural norms, women also undertake the bulk of unpaid care and reproductive work within the household. These factors have an overarching effect in determining the capacity of men and women to adapt to the negative effects of climate change.

Building on the above understanding, the proposed GCF project will conduct gender stakeholder consultations and workshops to map the different usage of forests by women and men, as well as seek to increase women's meaningful participation in decision-making and governance bodies (CFMCs). It will support women's cooperatives to access relevant agricultural inputs and equipment for post-harvest storage, and processing of crops and NTFPs. Moreover, marketing techniques and business management skills will be enhanced to bolster sustainable livelihoods among the more vulnerable and marginalized social groups. An EbA approach to forest restoration will boost the production of NTFPs, thereby greatly benefiting rural Beninese women. In addition, the project will work on male sensitization using qualitative methodologies such as focus-group discussions to strengthen gender mainstreaming efforts.

Overall, gender-disaggregated targets will be developed and used to monitor indicators. Annex 4 contains the gender assessment and action plan, and Annex 7 contains the risk management plan – these further elaborate the gender-responsive development impacts that can be expected from the proposed GCF project.

#### **E.4. Needs of recipient (max. 300 words)**

Benin is a Least Developed Country<sup>67</sup> that is among the poorest countries in the world in terms of GDP per capita (ranked 150th out of 175 countries<sup>68</sup>) and scores low in terms of the Human Development Index (167th out of 188 countries<sup>69</sup>). Approximately half of Beninese, i.e. ~5.6 million people live below the poverty line of US\$ 1.90 per day<sup>70</sup>. Given this high poverty rate, the GoB is constrained in its ability to fund investments in climate resilience through domestic financing. This is because much of government expenditure is focused on socio-economic development activities to address the widespread poverty. In particular, the GoB has limited financial capacity for the investments required to enhance the adaptive capacity of vulnerable rural communities. The economy of Benin is also vulnerable to climate change because ~70% of Beninese livelihoods are supported by rainfed agriculture, which is threatened by shorter growing seasons, rising temperatures, more frequent and severe droughts, as well as more intense rain events. This is in addition to the baseline reduction in staple crop yields over the past three decades because of land degradation.

Communities in central and northern Benin are particularly threatened by shorter growing seasons, a greater number of days with extreme heat, rising temperatures, more frequent and severe droughts, as well as more intense rain events. These climatic changes have caused marked reductions in agricultural productivity, loss and desiccation of topsoils, flooding and reduced supplies of goods and services from natural ecosystems. For the past three decades, these regions have been increasingly affected by floods, which severely damage infrastructure and crops causing agricultural losses of ~70% in some cases<sup>71</sup>. In addition to floods, crops are also negatively affected by increased air

<sup>66</sup> International Labour Organization, Key Indicators of the Labour Market database. Available online at: <http://donnees.banquemondiale.org/indicateur/SL.AGR.EMPL.FE.ZS?locations=BJ&view=chart>

<sup>67</sup> UN, 2015. Available at: <https://www.un.org/development/desa/dpad/least-developed-country-category-benin.html>

<sup>68</sup> Gross Domestic Product, Purchasing Power Parity. World Bank, 2016. Available at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?view=chart>

<sup>69</sup> Human Development Index, 2017. Available at: [https://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_Human\\_Development\\_Index](https://en.wikipedia.org/wiki/List_of_countries_by_Human_Development_Index)

<sup>70</sup> World Bank, 2015. Available at: <http://povertydata.worldbank.org/poverty/country/BEN>

<sup>71</sup> Akossou, AY, Attakpa, EY, Fonton, NH, Sinsin, B & Bosma, RH, 2016. Spatial and temporal analysis of maize (*Zea mays*) crop yields in Benin from 1987 to 2007. *Agricultural and Forest Meteorology*. 220: 177-189.

temperatures<sup>72</sup>. As a result of this, the yields of maize<sup>73</sup> and sorghum<sup>74</sup> – two staple crops in Benin – have already decreased in the central and northern parts of the country (see Annex 2: Pre-Feasibility Study, Section 3.4.3). These climate change impacts are projected to continue to reduce productivity in agricultural landscapes and forest ecosystems.

The proposed project will enhance the climate-resilience of these vulnerable rural communities by using GCF resources to catalyse a shift to EbA and climate-resilient agriculture, thereby directly addressing the threats climate change poses to the livelihoods of these communities. However, the benefits of such adaptation interventions are largely of a public goods nature, with limited financial return. The private sector is therefore not currently investing significant amounts into EbA and climate-resilient agriculture measures. Furthermore, impoverished rural communities, that would directly benefit from these measures, have inadequate resources and expertise to implement them. Without grant financing the required investments to reduce the impacts of climate change will thus not be made.

Additional information on the reasons why the GoB seeks maximum concessionality from the GCF for the urgent adaptation actions are presented in Section C.3 of this document. Further information on the needs of women specifically and various stakeholders overall is provided in the Gender Assessment and Action Plan (Annex 4) and the Stakeholder Engagement Plan (Annex 10).

### E.5. Country ownership (max. 500 words)

The proposed project is closely aligned with the NAPA's adaptation priorities for agriculture and water in Benin. It is also aligned with several priorities identified in Benin's Nationally Determined Contributions (Contributions Prévues Déterminées au niveau National, NDC), namely: i) sustainable forest management; ii) sustainable agriculture; and iii) improved institutional framework and regulations to support climate-resilient development. Benin's NDC adaptation strategy aims to reduce the vulnerability of communities and ecosystems to climate change by mainstreaming adaptation into existing policies and implementing appropriate adaptation measures, but specific adaptation targets are not quantified in the NDC. The proposed project will address this by delivering results that can be used to inform national adaptation planning. To implement Benin's NDC, the GoB has identified three requirements:

- **Technology transfer.** Aims to promote North-South and South-South technology transfer to enhance mitigation and adaptation in the following sectors: i) energy; ii) agriculture/forest; iii) waste; and iv) transport.
- **Capacity building.** Aims to strengthen: i) climate monitoring systems; ii) institutional capacity to mainstream adaptation and mitigation into development plans; and iii) adaptation and mitigation plans for agriculture, energy, water resources, biodiversity, human development, health and waste.
- **Mobilising finance.** Aims to mobilise domestic and additional funds from developed countries to implement the above mitigation and adaptation actions.

In addition, the proposed project supports the NAP process in Benin, launched in 2013. As part of this process, several stakeholder consultations and trainings were organised by UNDP in 2014. An inception workshop to advance the NAP process was also held in Benin in April 2017. The next steps of the NAP progress, supported by GIZ and UNDP, will serve to consolidate a draft roadmap for initiating the integration of climate change into relevant sectoral policies, which is well aligned with the proposed project.

The proposed GCF project was developed in the context of Benin's GCF Readiness Programme and in collaboration with UNEP. The project idea was identified in the course of 2016, through consultations with the NDA and several governmental departments. A Concept Note was presented to, and validated by, the CNCC (Comité National sur les Changements Climatiques/National Climate Change Committee) in June 2017. The CNCC confirmed that the proposed GCF project responds to Benin's needs and priorities for climate change adaptation. This funding proposal was then developed in close collaboration with: i) the NDA within the Ministry of Livelihood and Sustainable Development (MCVDD); ii) the Forest Department and its extension services in several districts of the following Departments: Alibori, Collines, Borgou, Donga, Atacora; iii) the Head of Centre de Recherche Forestier (CERF); iv) a member of the Ministry of Agriculture, Water and Fishery (MAEP); and v) a member of the EBAFOSA platform and researcher/professor at the National University of Agronomy, in Porto Novo. Two field missions – in March and August 2017 – were undertaken in the districts and villages of central and north Benin that were selected for this proposed GCF project (see Annex 10 for

<sup>72</sup> Jalloh A., Thomas TS, Zougmore R & Roy-Macauley, H. 2013. West African agriculture and climate change: A comprehensive analysis. IFPRI Research Monograph. Washington, D.C. International Food Policy Research Institute.

<sup>73</sup> Akossou, AY, Attakpa, EY, Fonton, NH, Sinsin, B & Bosma, RH, 2016. Spatial and temporal analysis of maize (*Zea mays*) crop yields in Benin from 1987 to 2007. *Agricultural and Forest Meteorology*. 220: 177-189.

<sup>74</sup> Sultan B, Roudier P, Quirion P, Alhassane A, Muller B, Dingkuhn M, Ciais P, Guimberteau M, Traore, S. & Baron, C, 2013. Assessing climate change impacts on sorghum and millet yields in the Sudanian and Sahelian savannas of West Africa. *Environmental Research Letters*. 8: 014040.

further details on stakeholder consultations). Costings of on-the-ground activities, including forest restoration costs, were provided by experts from the above-mentioned institutions.

### E.6. Efficiency and effectiveness (max. 1 page)

GCF financing will overcome the existing barrier of insufficient funding for sustainable, climate-resilient forest and land management in central and northern Benin in two ways. GCF financing will consequently promote public as well as private investments in EbA and climate-resilient agriculture. Economic efficiency in these investments will be achieved by: i) using proven EbA techniques to implement cost-effective, climate-resilient agricultural interventions; ii) building the capacity of the government and other stakeholders to plan and implement EbA; and iii) increasing efficiency through ongoing learning through the knowledge hub. The Government of Benin (GoB) will provide co-financing of US\$1 million.

The GCF investments in Benin will lead to several economic benefits. These include public goods such as reduced soil erosion and flood damage, as well as private benefits such as increased yields of crops and NTFPs. Project activities will enhance the production of economically-valuable crops and NTFPs, which have been shown to have net positive economic impacts (see the Market Analysis in Annex 2: Pre-Feasibility Study, Appendix IIb). Taken together, these activities will support and promote sustainable development of forest areas and adjacent agricultural lands in Benin within the context of climate change.

The effectiveness of the interventions will be ensured by using cutting-edge science and international best practices to inform the forest restoration and climate-resilient agriculture on the ground, as well as the capacity building, policy and legislative improvement and public awareness raising. The cost-effectiveness of climate-resilient agriculture and an EbA approach to forest management has been well documented in the scientific literature<sup>75</sup>. Such an approach provides an effective framework for building the climate-resilience of communities who are reliant on ecosystem goods and services. Furthermore, EbA requires small investments compared with the long-term environmental and socio-economic benefits it provides<sup>76 77</sup>. Finally, past initiatives<sup>78</sup> have proven that the integration of EbA into land management interventions can facilitate the continuity and upscaling of these initiatives. The positive impacts of EbA on the climate-resilience of local communities result in continued use and uptake by neighbouring communities.

Project effectiveness will be further increased by using the best practices and lessons learned from past projects on EbA in forest areas and climate-resilient agriculture (see Annex 2: Pre-Feasibility Study, Section 7) in this project. In addition, a report on best practices and lessons learned from this project (Output 2.1), as well as the development of a knowledge hub under the project (Output 2.2), will enable knowledge sharing among government divisions and local community members. Such sharing will further increase project efficiency.

### LIST OF ACRONYMS

ABENOR	Agence Béninoise de Normalisation/ Benin Bureau of Standards
AE	Accredited Entity
ANCB	Alliance Nationale des Communes du Bénin/ Benin National Union of Municipalities
CCIB	Chambre du Commerce et de l'Industrie du Benin/ Benin Chamber of Trade and Industry
CERF	Centre de Recherche Forestier/ Forest Research Center
CFMC	Community Forest Management Committee
CNCC	Comité National sur les Changements Climatiques/ National Climate Change Committee
DGEC	Direction Générale de l'Environnement et du Climat/ General Directorate for Environment and Climate
DG EFC	Direction Generale des Eaux, Forêts et Chasse/ General Directorate for Water, Forest and Hunting

<sup>75</sup> Munang, R. et al. 2013. Climate change and Ecosystem-based Adaptation: a new pragmatic approach to buffering climate change impacts. *Environmental Sustainability*, 5: 67-71; Colls, A. et al. Ecosystem-based Adaptation: a natural response to climate change. International Union for Conservation of Natural Resources (IUCN), Gland, Switzerland.

<sup>76</sup> 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.

<sup>77</sup> Reid, H. 2015. Ecosystem- and community-based adaptation: learning from community-based natural resource management. *Climate and Development*, DOI: 10.1080/17565529.2015.1034233

<sup>78</sup> See for example in Ghana: CARE Adaptive Learning Programme for Africa (ALP). Available at: <http://careclimatechange.org/our-work/alp/>

DQIFE	Direction de la Qualité, de l'Information et de la formation entrepreneuriale/ Department for Quality, Information and Entrepreneurship
EE	Executing Entity
EbA	Ecosystem-based Adaptation
EBAFOSA	Ecosystem-based Adaptation for Food Security in Africa Assembly
EO	Evaluation Office
FNEC	Fonds National pour l'Environnement et le Climat/ National Fund for Environment and Climate
GoB	Government of Benin
INRAB	Institut National des Recherches Agricoles du Bénin/ Benin National Institute for Agricultural Research
LOAs	Letters of Agreement
MAEP	Ministère de l'Agriculture, de l'Elevage et des Peches/ Ministry of Agriculture, Water and Fishery
MCVDD	Ministere du Cadre de Vie et du Developpement Durable/ Ministry of Livelihood and Sustainable Development
MEM	Ministère de l'Eau et des Mines/ Ministry of Water and Mine
MIC	Ministere de l'Industrie et du Commerce/ Ministry of Industry and Trade
MPD	Ministère du Plan et du Développement/ Ministry of Planning and Development
MTR	Mid-Term Review
NAPA	National Adaptation Programmes of Action
NDA	National Designated Authority
NDC	Nationally Determined Contributions
NPC	National Project Coordinator
NPSC	National Project Steering Committee
NTFPs	Non-timber forest products
PMU	Project Management Unit
PSDSA	Plan Stratégique de Développement du Secteur Agricole/ Benin's Strategic Plan for the Development of the Agricultural Sector
TE	Terminal Evaluation

## F. ANNEXES

### F.1. Mandatory annexes

- |                                     |         |  |
|-------------------------------------|---------|--|
| <input checked="" type="checkbox"/> | Annex 1 | NDA No-objection Letter(s)   |
| <input checked="" type="checkbox"/> | Annex 2 | Pre-feasibility study (including Theory of Change, project/programme-level log frame, timetable, map, and summary of stakeholder consultation and engagement plan) |
| <input checked="" type="checkbox"/> | Annex 3 | Budget plan that provides breakdown by type of expense (Template in excel sheet)   |
| <input checked="" type="checkbox"/> | Annex 4 | Gender assessment and action plan  |
| <input checked="" type="checkbox"/> | Annex 5 | Co-financing commitment letter   |
| <input checked="" type="checkbox"/> | Annex 6 | Term sheet and evidence of internal approval   |
| <input checked="" type="checkbox"/> | Annex 7 | Risk assessment and management   |
| <input checked="" type="checkbox"/> | Annex 8 | Procurement plan   |

### F.2. Other annexes to be submitted when applicable/requested

- |                                     |          |  |
|-------------------------------------|----------|--|
| <input checked="" type="checkbox"/> | Annex 9  | Environmental and Social Action Plan (ESAP) and Environmental and Social Safeguards risk screening if changed from Part A and B of the concept note submitted. |
| <input checked="" type="checkbox"/> | Annex 10 | Stakeholder Engagement Plan  |
| <input checked="" type="checkbox"/> | Annex 11 | EX-Act tool carbon sequestration estimations   |

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*