AFB/PPRC.17/9
28 September 2015

Adaptation Fund Board
Project and Programme Review Committee
Seventeenth Meeting
Bonn, Germany, 6-7 October 2015

Agenda Item 6 d)

PROPOSAL FOR GUINEA-BISSAU

Background

1. The Operational Policies and Guidelines (OPG) for Parties to Access Resources from the Adaptation Fund (the Fund), adopted by the Adaptation Fund Board (the Board), state in paragraph 45 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the endorsement of the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would ultimately require the Board's approval.

2. The Templates approved by the Board (OPG, Annex 4) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   5. Implementation Arrangements.

5. It is worth noting that since the twenty-second Board meeting, the Environmental and Social (E&S) Policy of the Fund was approved and consequently compliance with the Policy has been included in the review criteria both for concept documents and fully-developed project documents. The proposals template was revised as well, to include sections requesting demonstration of compliance of the project/programme with the E&S Policy.

6. In its seventeenth meeting, the Board decided (Decision B.17/7) to approve "Instructions for preparing a request for project or programme funding from the Adaptation Fund", contained in the Annex to document AFB/PPRC.8/4, which further outlines applicable review criteria for both concepts and fully-developed proposals. The latest version of this document was launched in conjunction with the revision of the Operational Policies and Guidelines in November 2013.

7. Based on the Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on April 8, 2010.

8. According to the Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat no less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

9. The following project concept document titled “Scaling up climate-smart agriculture in East Guinea Bissau” was submitted by the *Banque Ouest Africaine de Développement* (BOAD; West African Development Bank), which is a Regional Implementing Entity of the Adaptation Fund.

10. This is the first submission of the proposal. It was received by the secretariat in time to be considered in the twenty-sixth Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number GNB/RIE/Agri/2015/1, and completed a review sheet.

11. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with BOAD, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

12. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section. In accordance with decision B.25.15, the proposal is submitted with changes between the initial submission and the revised version highlighted.

Project Summary

Guinea-Bissau – Scaling up climate-smart agriculture in East Guinea Bissau

Implementing Entity: BOAD
Project/Programme Execution Cost: US$ 798,000
Total Project/Programme Cost: US$ 9,198,000
Implementing Fee: US$ 781,000
Financing Requested: US$ 9,979,000

Project Background and Context:

The overall objective of this project is to strengthen practices and capacities in climate-smart agriculture practices by family farmers in the project region of dryland East Guinea-Bissau, and at institutional level. Through the project's activities food security and livelihoods are planned to be strengthened at household level while simultaneously increasing capacities in climate risk management and adaptation planning at all levels of governance. The project is planned to solidify and expand the activities of the LDCF-UNDP project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" both in the 14 original tabancas in Gabú 'region' of that project while integrating an additional ca. 26 tabancas in the 'regions' of both Gabú and Bafatá into the project's scope of action, with a planned total beneficiary target population of approximately 37,000 people in East Guinea-Bissau. The project is planned to address key vulnerabilities in agriculture and water resources management, and thus contribute to immediate and longer-term development and resilience needs of extremely vulnerable farmers, with a particular focus on extremely vulnerable groups: women, elderly and children.

Component 1: Development of technical and institutional capacity to address increasing climatic risk in adaptation practices and planning (US$ 700,000)

According to the proposal, Guinea-Bissau has challenges in terms of the amount and quality of data and information as well as technical capacity to implement climate change adaptation. Despite progress through NAPA development, and an increasing number of scientific studies, important gaps remain with regards to climate impacts, socio-climatic vulnerability, and effectiveness of climate adaptation actions and planning. In this context, the project proposes a component for building technical and institutional capacity for climate change adaptation planning; both long-term perspectives on adaptive capacity building/policy development and near-term climatic risk management. Particularly this would include participative development of on-site agricultural and water-management adaptation actions and the development of contingency plans (e.g. flood protection) for climate-risk management. A further focus would be on the strengthening of interactions between relevant actors for climate change adaptation: government, meteorological services, agriculture sector, research institutions, regional and national government, and the media and local and indigenous communities.

Component 2: Enhance the resilience of existing agricultural productive systems, including water control and management measures (US$ 7,550,000)

This component would focuses on household-/village-level interventions in climate-smart agriculture practices in order to minimize damages from climatic change and variability, as well as to contribute to agricultural and rural livelihood development. In this, the project would take advantage of 'windows of opportunity' for adaptation: for example, agriculture in the country is

still largely organic, and relies on farmer's own seeds for cultivation. Agro-ecological approaches thus have a high potential, including in national adaptation strategies or policy design. While Component 1 is planned to serve as a key input for pre-selecting project sites, all field activities of project implementation would be carried out in Component 2. The total beneficiary target population is estimated at 37,000 people in East Guinea-Bissau.

Component 3: Knowledge management of lessons learned on climate-smart agriculture and adaptation planning (US$ 150,000)

In order to guarantee visibility of the project results a knowledge management strategy would be developed. The core dissemination product from the project would be a manual of practical and concrete best-practice in climate resilient agriculture. Various versions of the Manual would be produced, both technical and non-technical, in Portuguese, French and English, as well as smaller summary briefing sheets/pamphlets/calendars on relevant thematic topics. The manual would be disseminated through the project website and a suite of workshops at the national and provincial level. In addition, dissemination would take place across the West Africa region through workshops and dissemination of hard copies. The project team would further interact with national media outlets (newspaper, internet, radio, etc.) to make the public aware of climate risks and adaptation needs. Scientific publications with regards to impact assessment of components #2 is also planned. Finally, the project results would also be shared through international fora on climate change.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project Concept

Country/Region: **Guinea-Bissau**
Project Title: **Scaling up climate-smart agriculture in East Guinea Bissau**
AF Project ID: **GNB/RIE/Agri/2015/1**
IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): **9,979,000**
Reviewer and contact person: **Mikko Ollikainen**
Co-reviewer(s): **Jean-Marc Sinnassamy, Daouda Ndiaye**
IE Contact Person: **Mawuli Komi Amegadje**

Review Criteria	Questions	Comments on 25 August 2015	Comments on 15 September 2015
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.	
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes.	
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive	Yes, the project has potential to assist Guinea Bissau in addressing adaptive capacity to the adverse effects of climate change and build resilience. The project would build on an existing project "Strengthening adaptive capacity and	

	capacity to the adverse effects of climate change and build in climate resilience?	resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" funded by the Least Developed Countries Funds (LDCF) and implemented by the UNDP during 2011-2015, and "solidify and expand" its activities. One of the problems related to the baseline situation is widespread slash-and-burn agriculture which causes forest fires. The proposed project does not seem to include activities related to curbing that practice, which may undermine overall sustainability. **CR1:** Please explain whether slash-and-burn agriculture is a risk for the climate-smart agriculture supported by the project and if yes, what measures are in place to curb it. Component 1 aims to develop national and local capacities. However, it is difficult to be convinced that $600,000 will be enough to reach the two proposed outcomes related to capacities. **CR2:** Please explain how Component 1 could achieve its proposed outcomes related to capacities with the planned budget and if necessary, revise. **CR3:** Please also detail the outputs 1.2.3 "Development of contingency plans for climate risk management" and 1.2.4 "Technical Assistance and rural extension for subprojects".	**CR1:** Addressed. The proposal includes different types of measures to halt slash-and-burn: introducing and promoting alternatives to slash-and-burn, awareness raising, and building the capacity of rural fire brigades. **CR2:** Addressed. **CR3:** Addressed: the activities have been detailed.

	3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?	Yes, the project is expected to provide economic, social and environmental benefits. Preliminary plans for facilitating women's participation are in place. **CR4:** Please clarify whether there are existing land-use or water management plans that would need to be taken into account while constructing the small scale dams planned to be funded by the project, or whether such plans would need to be developed to ensure that these activities don't cause downstream harm. In many areas of Guinea Bissau, traditions are still strong and it is very important to involve the traditional authorities in projects related to land management. **CR5:** Please elaborate whether traditional authorities would be involved in the project and whether they would be empowered through it.	**CR4:** Not answered. The proposal has not referred to existing land-use or water management plans in the target areas. **CR5:** Addressed.
	4. Is the project / programme cost effective?	Requires clarification. The project is planned to build on the existing LDCF funded project, and partly take place in the same villages (*tabancas*). The activities of the LDCF project have included agricultural policy related work at the national level, small and medium sized demonstration actions in water, agriculture and livestock management in eastern Guinea Bissau, and dissemination of lessons learned and best practices. The present proposal refers (p. 23) to "rather high transaction costs and low pre-existing investments in	

		rural areas". **CR6:** Please explain, what the main achievements of the LDCF funded project are at the end of the project, and whether its implementation has resulted in opportunities to achieve higher cost-efficiency in the investments in the proposed project. **CR7:** Please explain why the proposed approach has been selected in preference of other less cost-effective options.	**CR6:** Partly addressed. The LDCF project is still underway, towards its end, and it has not been possible for the proponent to refer to its main achievements comprehensively, or explain how the proposed project would build on it. **CR7:** Not addressed. The selection of the proposed approach has not been clearly explained.
	5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	The proposal's alignment with NAPA and PRSP has been explained. **CR8:** Please explain whether there are applicable sector strategies or plans in the agriculture or water management sectors, or regional or local development plans for the planned project locations, and how the proposed project would comply with them.	**CR8:** Mostly addressed. Most relevant plans have been identified and compliance has been stated.
	6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the	The information on standard compliance is very limited. The proposal should identify relevant standards in the areas relevant to the proposed project, such as agriculture, water and natural resources management, and small infrastructure, as well as environmental and social standards. The statement that as the	

	Fund?	project follows relevant national regulations and rules, compliance with AF ESP “is not affected” is unclear. Compliance with the law is one of the 15 ESP principles. The application of the other 14 ESP principles does not depend on national regulations. **CR9:** Please identify relevant standards in the areas relevant to the proposed project, such as agriculture, water and natural resources management, and small infrastructure, as well as environmental and social standards. Please indicate compliance with the identified standards.	**CR9:** Not addressed. The proposal has not identified relevant standards.
	7. Is there duplication of project / programme with other funding sources?	Requires clarification. As noted above, the proposal should clearly outline the achievements of the LDCF funded project, and show how it would be complementary to it. **CR10:** The proposal should identify other relevant recent or on-going programs in agriculture and water management in the planned target regions, regardless of whether they explicitly address adaptation to climate change. **CR11:** Please explain how the project would avoid overlap and be complementary to the conservation project in the Gabu and Bafata regions “Support for the Consolidation of a Protected Area System in Guinea-Bissau's Forest Belt”.	**CR10:** Not addressed. Mapping of other initiatives should be carried out already at the concept stage. **CR11:** Addressed sufficiently to the concept stage.

	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes. **CR12:** Please describe, how the project would make use of the lessons learned and best practices from the LDCF project. Some elements seem to be lacking for illustrating how the proposed outputs under the component 3 would help to reach the expected outcome. **CR13:** Please be more explicit on what is planned under the output 3.1.4 "dissemination of results to other regions of Guinea Bissau and West Africa". Please explain the strategy for reaching outcome 3.1, based realistic assumptions. Please clarify how the planned budget (US$ 500,000) would be used to ensure the adoption of CSA practices in other regions of Guinea Bissau and West Africa.	**CR12:** Not sufficiently addressed. The proposal refers to the planned activities of the LDCF project but not to its actual lessons learned and best practices. **CR13:** Addressed – focus is on Guinea Bissau.
	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	The proposal builds on previous work on NAPA and the LDCF project but specific consultation has also been conducted for the purposes of this project. **CR14:** The concept should explain whether minority groups and indigenous peoples have been identified in the target area, and how they have been consulted.	**CR14:** Addressed sufficiently to the concept stage.
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Yes. In addition, the RIE has committed US$ 5 M as co-financing for the project, if it is approved. **CR15:** Please clarify whether the co-financing would be integrated into the proposed project, or whether it is parallel	**CR15:** Not applicable. The co-financing has been removed.

		financing for separate activities.	
	11. Is the project / program aligned with AF's results framework?	Yes.	
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	Yes. **CR16:** Please explain who would be responsible for the maintenance of the community level infrastructure after the end of the project, and whether commitment has be sought for such maintenance.	**CR16:** Addressed sufficiently to the concept stage.
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	Yes. However, the proponent should provide brief explanation for each of the 15 principles. Of particular consideration of principles that were tagged not requiring further analysis: - Involuntary settlement: please consider whether the dams and other community level infrastructure will cause relocation of people of their livelihoods - Pollution prevention and resource efficiency: please consider whether the construction and operation of dams would cause deterioration in water quality downstream, or detrimental effects through limiting access to water by downstream users - Public health: please consider whether reservoirs caused by dams would cause health concerns **CR17:** Please provide a brief	**CR17:** Addressed sufficiently to the concept stage, although the determination of risk is somewhat ambiguous: risks are identified and management measures outlined, yet remaining risk is listed as "none".

		presentation for each of the 15 principles of the AF Environmental and Social Policy, on whether or not there are anticipated risks.	
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes. **CR18:** Please provide an exact, not estimate figure for the total funding request.	**CR18:** Addressed.
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes. **CR19:** Please provide an exact, not estimate figure for Implementing Entity Management Fee.	**CR19:** Addressed.
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget?	Yes. **CR20:** Please provide an exact, not estimate figure for Project Execution Costs.	**CR20:** Addressed.
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes.	
Implementation Arrangements	1. Is there adequate arrangement for project / programme management?	n/a	

	2. Are there measures for financial and project/programme risk management?	n/a	
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund? Proponents are encouraged to refer to the draft Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details.	n/a	
	4. Is a budget on the Implementing Entity Management Fee use included?	n/a	
	5. Is an explanation and a breakdown of the execution costs included?	n/a	
	6. Is a detailed budget including budget notes included?	n/a	

	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	n/a	
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	n/a	
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	n/a	
	10. Is a disbursement schedule with time-bound milestones included?	n/a	

Technical Summary	The overall objective of this project is to strengthen practices and capacities in climate-smart agriculture practices by family farmers in the project region of dryland East Guinea-Bissau, and at institutional level. Through the project's activities food security and livelihoods are planned to be strengthened at household level while simultaneously increasing capacities in climate risk management and adaptation planning at all levels of

	governance. The project is planned to solidify and expand the activities of the LDCF-UNDP project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" both in the 14 original tabancas in Gabú 'region' of that project while integrating an additional ca. 26 tabancas in the 'regions' of both Gabú and Bafatá into the project's scope of action, with a planned total beneficiary target population of approximately 37,000 people in East Guinea-Bissau. The project is planned to address key vulnerabilities in agriculture and water resources management, and thus contribute to immediate and longer-term development and resilience needs of extremely vulnerable farmers, with a particular focus on extremely vulnerable groups: women, elderly and children. The specific objectives of the proposed project would be to: 1. Develop technical and institutional capacity of government and civil society (private sector, local communities, NGOs) to address increasing climatic risk in climate change adaptation planning; 2. Enhance the resilience of existing agricultural productive systems and contribute to the diversification of production, including via implementation of climate resilient water control and management actions to minimize risks from intense droughts and floods; 3. Promote knowledge dissemination of lessons learned on climate-smart agriculture and adaptation planning to other regions of the country, other countries in West Africa and to international climate change negotiations and fora, including the UNFCCC process. The initial technical review made several clarification requests: **CR1:** Please explain whether slash-and-burn agriculture is a risk for the climate-smart agriculture supported by the project and if yes, what measures are in place to curb it. **CR2:** Please explain how Component 1 could achieve its proposed outcomes related to capacities with the planned budget and if necessary, revise. **CR3:** Please also detail the outputs 1.2.3 "Development of contingency plans for climate risk management" and 1.2.4 "Technical Assistance and rural extension for subprojects". **CR4:** Please clarify whether there are existing land-use or water management plans that would need to be taken into account while constructing the small scale dams planned to be funded by the project, or whether such plans would need to be developed to ensure that these activities don't cause downstream harm. In many areas of Guinea Bissau, traditions are still strong and it is very important to involve the traditional authorities in projects related to land management. **CR5:** Please elaborate whether traditional authorities would be involved in the project and whether they would be empowered through it. **CR6:** Please explain, what the main achievements of the LDCF funded project are at the end of the project, and whether its implementation has resulted in opportunities to achieve higher cost-efficiency in the investments in the proposed project. **CR7:** Please explain why the proposed approach has been selected in preference of other less cost-effective options.

	CR8: Please explain whether there are applicable sector strategies or plans in the agriculture or water management sectors, or regional or local development plans for the planned project locations, and how the proposed project would comply with them. **CR9:** Please identify relevant standards in the areas relevant to the proposed project, such as agriculture, water and natural resources management, and small infrastructure, as well as environmental and social standards. Please indicate compliance with the identified standards. **CR10:** The proposal should identify other relevant recent or on-going programs in agriculture and water management in the planned target regions, regardless of whether they explicitly address adaptation to climate change. **CR11:** Please explain how the project would avoid overlap and be complementary to the conservation project in the Gabu and Bafata regions "Support for the Consolidation of a Protected Area System in Guinea-Bissau's Forest Belt". **CR12:** Please describe, how the project would make use of the lessons learned and best practices from the LDCF project. **CR13:** Please be more explicit on what is planned under the output 3.1.4 "dissemination of results to other regions of Guinea Bissau and West Africa". Please explain the strategy for reaching outcome 3.1, based realistic assumptions. Please clarify how the planned budget (US$ 500,000) would be used to ensure the adoption of CSA practices in other regions of Guinea Bissau and West Africa. **CR14:** The concept should explain whether minority groups and indigenous peoples have been identified in the target area, and how they have been consulted. **CR15:** Please clarify whether the co-financing would be integrated into the proposed project, or whether it is parallel financing for separate activities. **CR16:** Please explain who would be responsible for the maintenance of the community level infrastructure after the end of the project, and whether commitment has be sought for such maintenance. **CR17:** Please provide a brief presentation for each of the 15 principles of the AF Environmental and Social Policy, on whether or not there are anticipated risks. **CR18:** Please provide an exact, not estimate figure for the total funding request. **CR19:** Please provide an exact, not estimate figure for Implementing Entity Management Fee. **CR20:** Please provide an exact, not estimate figure for Project Execution Costs. The final review found that the revised proposal had addressed several of the clarification requests made by the initial review. However, the proponent had had difficulties accessing information on lessons learned from an on-going project in the same region and sector, implemented by UNDP and financed by the LDCF. Also, a number of other issues remain that would need to be addressed in a revised proposal: - The proposal should clarify whether there are existing land-use or water management plans that would need to be taken into account while constructing the small scale dams planned to be funded by the

	project, or whether such plans would need to be developed during the proposed project. - The proposal should more comprehensively identify other relevant past and on-going initiatives, and explain complementarity and lack of duplication. The proposed project should more clearly identify outcomes and lessons learned of the existing project “Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau” funded by the Least Developed Countries Funds (LDCF) and implemented by the UNDP, and explain complementarity with it. - The proposal should explain why the proposed approach has been selected in preference of other less cost-effective options. - The proposal should identify relevant standards in the areas relevant to the proposed project, such as agriculture, water and natural resources management, and small infrastructure, as well as environmental and social standards, and indicate compliance with them.
Date:	15 September 2015

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular
Country/ies:	Guinea Bissau
Title of Project/Programme:	Scaling up climate-smart agriculture in East Guinea Bissau
Type of Implementing Entity:	National
Implementing Entity:	West African Development Bank (BOAD) Regional Implementing Agency)
Executing Entity/ies:	General Direction of Environment/Secretariat of State of Environment and other Line Ministries
Amount of Financing Requested:	9,979,000.00 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

Introduction

The Republic of Guinea Bissau is a small West African coastal country with an area of 36,125 km^2 and a population estimated to 1.73 million. Located east of the Atlantic Ocean, it borders Senegal to the North and the Republic of Guinea to the East and South. The country organized into 8 major administrative 'Regions', which further divide into 'Sectors', 'Sections' and finally 'Tabancas' (villages) in decreasing levels of administration. Population density is 47.8 habitants per km^2. The annual rate in population growth is 1.9%. Despite high urbanization in recent years still about 58% of the population lives in rural areas. Bissau is the capital of Guinea-Bissau and the main administrative center, with about one quarter of the population living there. The major socio-economic activities in the country lie in the exploitation of resources from agriculture, fisheries, forestry, livestock and mining extraction. Agriculture as primary economic sector of Guinea Bissau – alongside services – is largely based on subsistence farming, focusing predominantly on rice, cashew and livestock, employing 82% of the active population, generating 45% of GDP as well as the majority of exports receipts. The industrial sector is low in weight to the economy and focuses on the processing of cashew nuts.

The landscape of Guinea-Bissau comprises lowland coastal plains and mangrove swamps, which to the inland East give way to a savannah woodlands (deciduous) region, where this project ('regions' of Gabú and Bafatá) is to develop its activities (see Figure 1). Tree growth in the savannah forest is limited mostly to the proximity to (perennial) streams and hillsides. Forest fires, either induced (slash-and-burn agriculture) or due to high temperatures and low rainfalls, occur frequently in the East, with an average fire density of 1.3 to 2.3 fires per km^2 per year, but on occasion up to 3.0 to 7,6 (World Bank, 2015). Ferrasoils and Lixisoils are the primary agricul-

tural soils in the region. These are less productive than those found in rice cultivation in the country's flooded lowlands.

Source: Wikipedia.

Figure 1: Political map of Guinea-Bissau

As of today, over 70% of Guinea Bissau is still forested, 45% of which primary forest. Guinea-Bissau's forests constitute an important carbon stock for West Africa: the total forest above-ground biomass (ABG) carbon stock in the region has been estimated at 96.93 Mt, with a mean forest AGB value of 65.17 Mg per hectare. Savannah woodlands in East Guinea-Bissau show lower average AGBs (Carreiras et al., 2012), but are important for conservation because of their spatial extension over the national territory (15,035 km^2 or 42%). The country is home to 620 species of amphibians, birds, mammals and reptiles (0.8% of which endemic) and over 1,000 species of vascular plants (1.2% endemic). In 2013, 61 species were considered as 'threatened species' under the IUCN Red List. Twelve species in this list (20%) are native species to Guinea-Bissau (IUCN, 2015).

The project region (Gabú and Bafatá 'regions') covers a total area of 15,131 km^2, or 42% of Guinea-Bissau. Gabú with an area of 9,150 km^2 or 25% of the country is also the largest 'region' of all administrative regions. Its population was estimated at 178,318 in 2004, but has since increased to 205.608, with a population density of 22.5 habitants per km^2. The Bafatá administrative 'region' has seen a similar development: population has increased from 182,954 in 2004 to

225,516 in 2009 (population density of 37.7 habitants per km^2). In the rural parts of both 'regions', pastoralists and small-scale farmers of different ethnics (Fula, Mandinga, other) have settled in the forest savannah thousands of years ago, relying on shifting cultivation of sorghum, millet, maize, peanuts and sometimes rice and cattle raising (for milk as component of their diet). Cashew nuts are the main cash crop for >80% of rural households, which is either sold to traders or exchanged directly for rice when own rice stocks are low or production fails. Although permanent agriculture has increased in the region (Temudo et al., 2014), overgrazing, deforestation (annual rate at 1%) and soil erosion (especially under shifting cultivation) continue to exert pressure on regional ecosystems.

Itinerant slash-and-burn agriculture poses a substantial risk for sustainable land management in both Gabú and Bafatá regions. Fula and Mandinga, which are the most important ethnicities in absolute numbers in those 'Regions', routinely practice slash-and-burn agriculture to clear land for staple food production (sorghum, millet, corn or rice); but this practice is directly linked to ongoing land degradation, loss of soil nutrients and drying up of springs, and affects the resilience of their cropping systems. In this context, promising market development for cashew nuts in the past two decades has led to an intensification of slash-and-burn practices in the project region as many farmers decided to participate in the commodity boom and clear forests near their villages to make room for cashew agroforests that show lower biodiversity compared to the traditional mix of croplands, fallows and forests. More recently, slash-and-burn agriculture is now used to clear older cashew orchards for cereal production in order to guarantee food production and security (Temudo and Abrantes, 2014, 2013). Otherwise, modern agricultural practices such as small-scale irrigation or animal traction for preparing soils are little disseminated.

The country's hydrological network is large and complex, comprising rainwater resources, surface-water resources and underground-water resources, with significant stationary water bodies including lakes (such as the 35,000 ha Lake Cufada), inland valley depressions (*bas-fonds*), temporary water bodies (*vendus*) in the east, and aquifers. However, water access continues to be a main limiting factor for agricultural development in Guinea-Bissau's east region: tidal saline intrusion up to 175 km inland introduces salt water into aquifers which causes problems during dry season if extraction exceeds recharge rates. The low altitude of most parts of the country increases the risk of flood events near watercourses and coastal areas, particularly during and following the rainy seasons. Drainage in the interior of the country is problematic due to the limited permeability of many soils, exacerbating impacts of floods. Uses of perennial water courses are also very important to populations, but few freshwater courses in Guinea-Bissau are perennial, leading populations to rely on groundwater resources during the dry seasons. One exception is the Corubal river, the principal national surface water resource with average annual water volume of 130bn m3, whose rocky estuarine threshold protects the river from saline intrusion. However, the discharge rate of the Corubal is strongly seasonal, with its low at 8m3/s in May (before rainy season) and 1,120m3/s in September (end of rainy season). A second exception is the considerably smaller Geba river (annual water volume of 0.8bn m3) in eastern Guinea Bissau. However, the Geba suffers from water extraction upstream in Senegal for irrigation and further diverting due to dam construction, essentially rendering available dry-season volumes half of this total, exacerbating saline intrusion and threatening agriculture in east Guinea-Bissau. Both watercourses of the Corubal and Geba rivers follow through the project region.

Guinea-Bissau is a Least Developed Country (LDC). The country has recently benefitted from considerable debt relief, which has helped the country to reduce its public debt to GDP ratio from a peak 113% of GDP end of 2009 to 28% of GDP by end of 2013 (IMF, 2014). While this has contributed to the stabilization of the economy with a GDP growth rate at 2.6 in 2014, 69% of the population continue to live below the poverty line, with 33% in conditions of 'extreme pov-

erty' (<US$1/day). GDP per capita is only US$1,400. Guinea Bissau's health situation is equally characterized by low use of health services and vulnerability of populations, particularly mothers and children under 5 years. Life expectancy is low (50 years) and infant mortality rates are high. During the last severe cholera epidemic in 2005, about 25,000 cases were reported, mostly due to unsanitary conditions, resulting in 400 deaths by the national report on human development published by the United Nations (PNUD, 2008). Food insecurity in Guinea Bissau is also common: despite high rice production 30% need to be imported in order to cover the population's needs.

Food security is connected to world market transactions: in 2010, a strong rise in Thai rice prices (benchmark price for rice) from US$380 to US$495 due to heavy floodings in Thailand increased pressures on Guinea-Bissau's food supply. Climatic conditions also play an important role: low rainfalls in the beginning of the 2015 cropping season have led the World Food Program (WFP) to issue a warning on critical food security conditions for East Guinea-Bissau where, due to below average precipitation, cereal production could be expected to decrease by over 32% compared to the five-year average level (WFP, 2014). Currently 18% of children under 5 years are underweight, and the 3-year average prevalence of undernourishment is at 20% of the population (FAO, 2015). As a consequence, Guinea-Bissau's score on the Human Development Index (HDI) is only 0.396 or place 177 out of a total of 187 countries (2013). This value is both significantly below average of the Human Development Report's 'Low Human Development Group' (0.493) *and* below the average of Sub-Saharan African countries (0.502) (UNDP, 2014). Fallow periods under slash-and-burn agriculture necessarily surpass those of alternative agricultural practices such as conservation agriculture, but currently land under fallow in Guinea-Bissau is often reused before a regeneration of soil fertility has occurred due to increasingly scarce land for food production (SEAT/DGA and Republic of Guinea-Bissau, 2011).

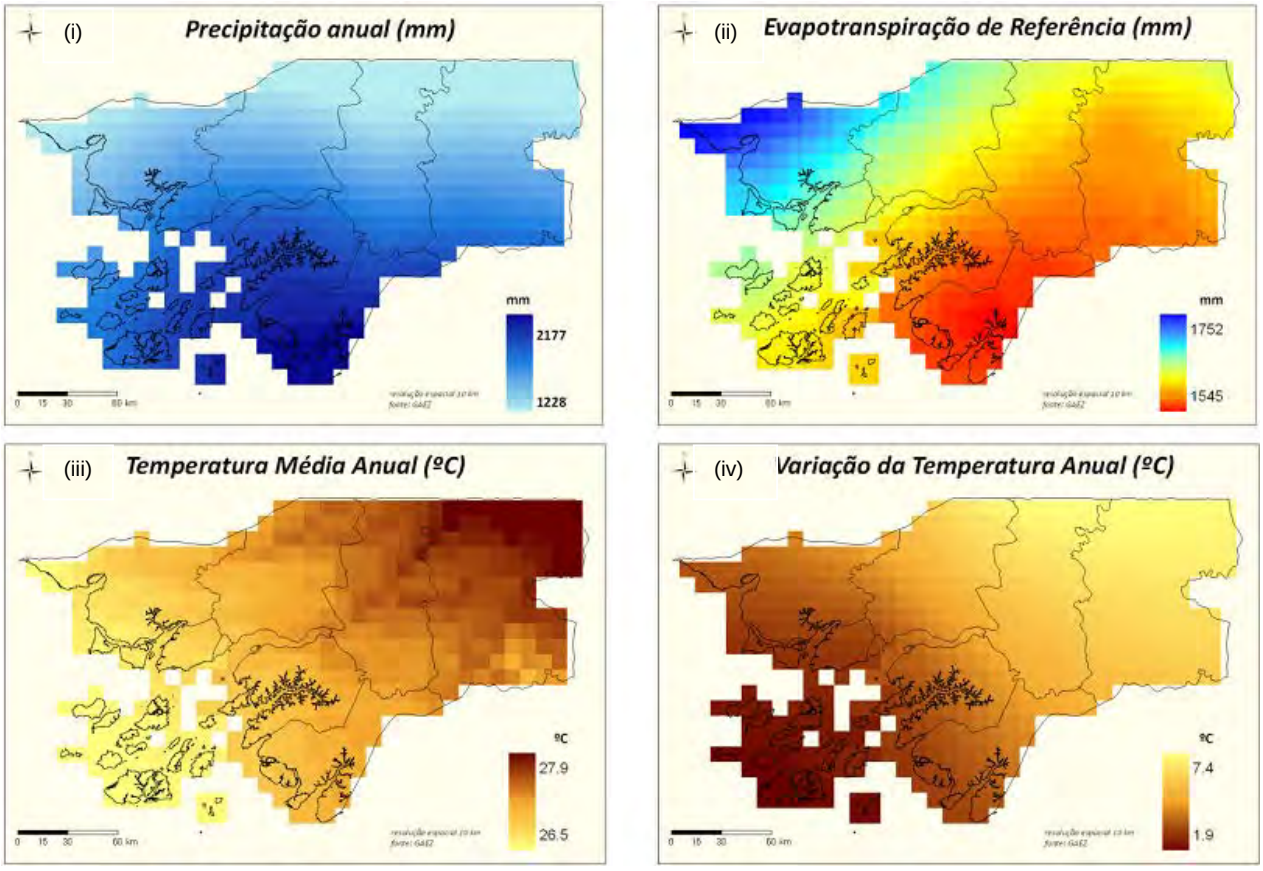
Guinea-Bissau has suffered from repeated, ongoing, political unrest in recent decades since independence in 1974, worsening already precarious economic and social conditions. Heads of state have been deposed or assassinated in repeat military skirmishes and coups, the most recent in 2009. The 2006 National Poverty Reduction Strategy Paper (PRSP) highlights government instability, mismanagement of public funds, structural constraints in the economy as key issues, including little diversification of income sources, low internal resource availability, weak human capital and lack of private sector dynamism. The PRSP's strategy focuses on a broad spectrum of issues to address these endemic problems, including instigating good governance, battling corruption, improving human rights, building institutional capacity and human resources, and increasing agricultural and fishing productivity alongside improving environmental protection. In addition, the PRSP points to an increasing involvement of well-informed NGOs and participation of a strong civil society, which can be mobilized to improve social and economic conditions. However, following the 2009 coup d'état political stability has been considerably strengthened, particularly after the successful elections early 2014. This has led to renewed donor presence in the country and successful regional bond issuance, among other.

Climate Change and Vulnerability in West Africa and Guinea Bissau

Climate variability and change

Guinea-Bissau has a typical hot, humid monsoon-like tropical climate, with two well-defined seasons. The rainy season is from mid-May to mid-November, with the dry season occupying the rest of the year. May and November are transition months between both seasons. Average temperatures in the rainy season range from 26°C to 28°C (30.5°C in April and begin of May), but are lower at <24°C during dry season when harmattan (dusty winds) may blow in from the

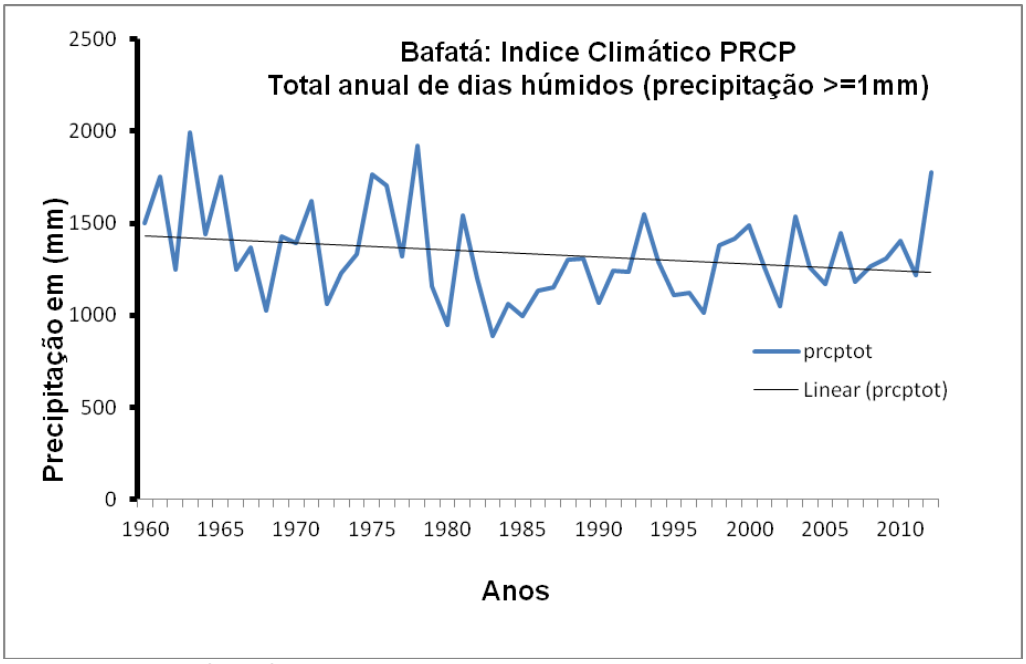
Sahara. The coldest months of the year are December and January. Rainfall varies greatly regionally and seasonally, with overall rainfall reaching up to >1,800mm in the country's southern provinces, but only <1,200mm in the east. Historical observations show July and August as the rainiest months in Guinea-Bissau. Major droughts occurred in 1977, 1979, 1980, 1983, 2002, 2004 and 2013. The drought of 2002 affected an estimated 100,000 people which is more than any other climate-related disaster (including epidemics) between 1980 and 2010. High tides and torrential rainfalls in 2003, 2004 and 2005 destroyed makeshift housing and bridges in east Guinea-Bissau, forcing family farmers to abandon their houses (some permanently) and causing severe harvest losses. Floods of Geba and Corubal rivers' tributaries are particularly relevant in this respect (World Bank, 2015).



Source: SEAT/DGA (2013).

Figure 2: Climate in Guinea-Bissau: annual precipitation (mm) (i), reference evapotranspiration (mm) (ii), average annual temperatures (°C) (iii) and intra-annual temperature variations (iv), from upper left to lower right.

In comparison to other 'regions', Gabú and Bafatá show considerably (i) lower rainfalls, (ii) lower evapotranspiration, (iii) higher temperatures and (iv) higher intra-annual temperature variability (Figure 2) (SEAT/DGA, 2013). Average high temperature between 1981 and 2010 at Bafatá Station (main observation unit for East Guinea-Bissau) was at 34.6°C (30,9°C to 39,3°C) and average low temperature at 20.5°C (16,0°C to 23,2°C). For the same time period, average precipitation ranged between 1000mm to 1500mm, with ~80% of the rainfalls concentrated in the monsoon months of July, August and September. During the dry December to March months average monthly rainfalls fall to 0,0mm.



Source: INM-GB (2014).

Figure 3: Total humid days per year (precipitation ≤ 1 mm), 1960-2010

According to data from Guinea-Bissau's National Meteorology Institute (INM-GB, 2014), several important changes in rainfall/humidity levels have been observed in the past decades. While the rainy season during the 1960s to 1970s usually started in the second half of May, observations now point at a later starting point in the month of June. There has also been a reduction in the total number of humid days per year: annual total wet-day precipitation (PRCPTOT) (precipitation ≥ 1 mm/day) shows a linear declining trend between 1961 to 2010 from ~1,500mm annual to ~1,250mm (Figure 3). This trend is indicative of a drier climate, and, most importantly, a higher susceptibility to drought in the region. These findings are confirmed by independent long-term (20 years) ethnographic studies in the project region: as related in Temudo and Abrantes (2014), family farmers find that more frequent poor cereal harvests are increasingly caused by a higher rainfall variability, particularly through longer dry spells. Higher frequency in pest and disease occurrence, as well as destructions of swamp rice field dykes by unusually high tidal waves are also observed by farmers in the region (Temudo and Abrantes, 2014).

The recent IPCC AR5 chapter on Africa (Niang et al., 2014) finds that current changes in mean annual temperatures and precipitation will continue to show effect over the whole African continent, independent of low RCP2.6 or high RCP8.5 emission trajectories, with climatic change on the continent to occur at a faster speed than anywhere else on the globe. In general, temperature projections for West Africa show a mean +3°C to +6°C increase until 2100 above the late 20th century baseline, with RCP4.5 at the lower range and RCP8.5 at the upper range (Niang et al., 2014). For the mid-century (2031–2060) mean warming is expected to reach of +2.8°C compared to 1961–1990 (Thornton et al., 2015). Unprecedented climatic conditions may occur both in the Sahel and tropical West Africa as early as 2040. The high level of uncertainty regarding these projections is largely due to low to medium confidence in the robustness of computed future rainfall change, both in amplitude and direction of precipitation signals. Based on earlier CMIP3 GCMs projections, extreme rainfalls over West Africa and the Sahel zone nevertheless

would increase until end of the 21st century (low to medium confidence). Of particular relevance is that Guinea-Bissau's highlands in the East may experience a higher number of days with extreme rainfalls in the monsoon season (Niang et al., 2014).

In general, higher temperatures and a higher frequency of droughts and floods will likely to become more important in the future. Water resources in dry regions such as Guinea-Bissau may be strongly affected by overall rainfall reductions due to higher than average surface drainage sensitivity. There is also evidence for a potential southward shift of the Sahel, Sudan, and Guinean savannah vegetation zones with potentially adverse consequences for the region (Niang et al., 2014). For example, projected changes in potential evapotranspiration (PET) and negative rainfall anomalies for the western Sahel might cause a virtual elimination of the region's growing season by 2041–2060. The western Guinean coastal region itself may suffer a 20% decrease in growing season days, differently to other parts of Africa where increases up to 5-15% can be expected (Cook and Vizy, 2012).

Vulnerability to Climate Change

Vulnerability to climate change depends on exposure of social systems (e.g. family farmers) or natural systems (e.g. ecosystems) to climatic events, their sensitivity to the (expected) impacts, and their capacity to respond and recuperate after an impact has occurred. These three dimensions – exposure, sensitivity and adaptive capacity – are formed not only by the magnitude and frequency of current or future climatic variability, but also a variety of factors that affect human systems, such as water access, infrastructure, political stability, market access, prices, availability health services etc. (Eakin et al., 2014; IPCC, 2014a; UNFCCC, 2010).

In this context, Guinea-Bissau's National Adaptation Programme of Action (NAPA) (Republic of Guinea-Bissau, 2006) identified the agricultural sector as the most vulnerable to climate change for a number of reasons: it is the dominant component of the GDP, the livelihood for a majority of the poor population depends on agriculture, with climatic change potentially causing significant damage to the sector. With decreases experienced in the duration of the rainy season (now limited to 5 months) and the overall volume of rain having led to a decline in production often associated with water shortage, acute droughts are identified as the most significant risk. However, increased winds and intense rainfall may also lead to loss of production (and stored crops) as well as periodic localized floods, either through destruction of dykes and rice fields or salinity intrusion from the sea. A reduction in the duration of cold periods may exacerbate heat stress on plants and animals. The NAPA further estimates that there has been a 20–30% fall in agricultural production with one third of the population of Guinea-Bissau being threatened by food insecurity. The shortfall in national cereal production, predominantly rice, is expected to rise to 75,000 tons per year, which would increase the need for imports.

Recent scientific evidence from the IPCC AR5 (IPCC, 2014b, 2014c) and other studies confirms this assessment for the West African region, and Guinea-Bissau in particular. Subsistence agriculture and food security are directly vulnerable due to both future, but also existing climatic and non-climatic stressors, such as existing lack of inputs (e.g. lack of irrigation or fertilizer application), infrastructure deficits and weak services. In assessing African corn yield data from 1961 to 2010, Shi and Tao (2014) find that a 1°C average temperature increase reduced corn productivity by >10% for 8 African countries, including Guinea-Bissau. Furthermore, droughts tended to worsen these impacts: a 0.5 decrease in the standardized precipitation evapotranspiration index (SPEI) led to >30% losses in 32 African countries, with Guinea-Bissau again included (Shi and Tao, 2014). Temperature increases may also reduce crop cycle duration and create higher wa-

ter stress for plants due to higher evapotranspiration demand, with PET also being a primary constraint on corn water usage in Guinea-Bissau (Estes et al., 2014).

Future median losses in crop yields are estimated at an average –13% for Guinea-Bissau, caused mainly by drier and warmer climate in northern West Africa. Importantly, potentially positive feedback effects for crop yield because a of higher CO_2 fertilization effect may not contribute to higher food security as many West African staple crops (corn, millet, sorghum, with the exception of rice) are C_4 crops which are less sensitive to higher CO2 concentrations (Roudier et al., 2011). Another recent study projects a decline in sorghum yields in the order of 16–20% by 2031–2060, with agricultural output becoming more and more affected as temperatures increase (Sultan et al., 2014). Potentially higher rainfalls would have only limited impacts under these scenarios: already under a >2°C warming scenario any potentially positive effect on millet and sorghum yields would be cancelled out (Thornton et al., 2015). Livestock is also extremely vulnerable to climate change: under a RCP8.5 high emission scenario Aboveground Net Primary Productivity (ANPP) of the Guinea-Bissau's rangelands could decrease by a mean –87.9% until the 2050s, compared to a 1971–1990 baseline. In fact, of all African countries, only Gambia is projected to suffer higher losses in ANPP, which is closely linked to the profitability and productivity of pasture (Thornton et al., 2015). The incidence of crop and animal diseases or pests is also to be affected by a warming climate, as are climate-related damages to essential infrastructure (roads, storage, communication, electricity supply, etc.) and services (health, etc.), putting considerable additional risks on food security and agricultural production (Niang et al., 2014; Porter et al., 2014).

Further reasons for concern relate to climate change impacts on biodiversity, health, civil conflict and economic costs in the region. Habitat loss, environmental degradation and unsustainable agricultural practices already affect biodiversity and species in West Africa, but under increasing climatic stress amphibians in particular could become very vulnerable in semi-arid Guinea-Bissau (Carr et al., 2014). Higher rainfalls may make cholera outbreaks more frequent in Africa, particularly where it is already endemic (Niang et al., 2014); this again includes Guinea-Bissau. There may also be a link between climatic change and political stability: Burke et al. (2009) find a significant relationship between the occurrence of armed conflict in sub-Saharan Africa and increasing temperatures. This implies that warmer years would also increase the likelihood of civil conflict. Guinea-Bissau's coup d'état of 1998 has been specifically mentioned in this context (Solow, 2013). Finally, the economic damages caused by climatic change may be immense the national economy: according to a 2013 vulnerability assessment by Verisk Maplecroft (2013) Guinea-Bissau's economy is extremely vulnerable to economic output losses, second only to Bangladesh at global level.

Adaptation needs in East Guinea-Bissau

Current coping mechanisms of family farmers in East Guinea-Bissau are inadequate to protect rural livelihoods from increasing climatic stress. Two examples are pastoralism and permanent agriculture: temporary moving of cattle during times of droughts has augmented pressure on water and forest resources elsewhere, and an increasing number of families have reported to suffer violence and robbery while away from their home regions. In agriculture, strong reliance on cashew nuts for family income turns farmers vulnerable because yields have declined and world market prices have become more volatile. In particular, recently falling average cashew prices have increased food insecurity as the exchange rates between rice and cashew changed: instead of receiving 3 kg of rice for 1 kg cashew between 2011 and 2012, farmers only received 1 kg of rice for 1 kg cashew in 2013 (WFP, 2013). Other coping strategies such as reduced food consumption below nutritional needs, sales of household assets in order to buy cereals, or ac-

quiring rice through high interest loans given by cashew merchants (Temudo and Abrantes, 2014) also affect livelihoods negatively.

The Nairobi Work Plan (UNFCCC, 2010) recognizes the implicit relationship between climatic and social stressors when stating that adaptation can either include climate-proofing of existing socio-economic activities (by integrating future risk) or the expanding of adaptive capacity of activities or systems to deal with increased climatic variability and change. In both cases, potentially critical thresholds in existing climate risk management strategies are modified through adaptation in order to reduce vulnerability to climate change impacts, either via incremental, systemic or transformational changes (UNFCCC, 2010).

In practice, adaptation options for climate-smart agriculture – that is agriculture that sustainably increases productivity, resilience (adaptation), reduces or removes greenhouse gases (GHG) (mitigation), and enhances achievement of national food security and development goals (FAO, 2010) – focuses on practices to build resilience to existing risks and to changes in an evolving climatic and socioeconomic context (Meybeck et al., 2012). In this context, climate-smart agriculture adaptations include a variety of potential actions: implementation of climate forecasts (for crop risk management) or early warning systems, promoting behavioral change (e.g. through promoting efficient water use in times of droughts, or changing of planting dates), improving water access conditions (sustainable use of groundwater resources, increasing water storage capacities, rainwater harvesting, etc.), agricultural development (deficit irrigation, crop rotation practices, short cycle crops, use of drought-resistant seeds, measures to reduce soil erosion, cereal storage facilities or animal traction), livestock management (manure management, improved feeding or grazing management), biodiversity conservation (e.g. agroforestry to improve microclimatic conditions for livestock and to mitigate surface water runoff) or health interventions (FAO, 2010; Niang et al., 2014; Porter et al., 2014; Schaeffer et al., 2013; Thornton et al., 2015; UNFCCC, 2010).

In dryland regions adaptations are often autonomous and reactive to short-term motivations (Niang et al., 2014). However, in the context of Guinea-Bissau's resource-poor family farmers it is clear that few families have the opportunity uptake any set of more ambitious adaptation options mentioned above. Welfare and off-farm income have been identified as important indicators for autonomous adaptation (Thornton et al., 2015); both conditions which are notably absent in the majority of East Guinea-Bissau farmers. Other constraints for the adoption of adaptation options that increase the resilience or diversity of agricultural systems, or enhance food security and climate risk management are also frequent. For example, weather information for crop and livestock management may be unreliable or inaccessible, while improved feeding may prove as too costly for farmers (Thornton et al., 2015).

Supporting family farmer families in East Guinea-Bissau through strengthening of climate-smart agricultural practices may thus provide important benefits, both in terms of sustainable livelihoods and resilience to climate change. At the same time, delaying broader adaptation approaches is likely to increase overall costs in the future and lead to higher levels of vulnerability of the affected communities (Schaeffer et al., 2013; UNFCCC, 2010). Many LDCs, including Guinea-Bissau, have now developed their National Adaptation Programmes of Action to Climate Change (NAPAs) which identify priority adaptation projects. Next to climatic risk, these priority measures also address immediate social and environmental needs of communities. In this context, the UNFCCC has adamant in urging LDCs to carry out these projects soon as possible (UNFCCC, 2010).

In the past decade, Guinea-Bissau has reduced important information and data knowledge gaps required for impact, vulnerability and adaptation assessment. Positive contributions have come from the GEF/UNDP project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" (00077229) which has started climate-smart agriculture pilot initiatives in 14 tabancas of the Gabú 'region'. In this context, the present project proposes to scale-up identified climate-smart agriculture practices in East Guinea-Bissau, using the GEF/UNDP project as a starting point for mainstreaming adaptation into development planning and institutional capacity building.

Project / Programme Objectives:

List the main objectives of the project/programme.

In the context of extreme vulnerability of family farmers to climate change in dryland East Guinea-Bissau the overall objective of this project is *to strengthen practices and capacities in climate-smart agriculture practices in the project region and at institutional level*. Through the project's activities food security and livelihoods are to be strengthened at household level while simultaneously increasing capacities in climate risk management and adaptation planning at all levels of governance. In particular, the project will solidify and expand the activities of GEF/UNDP-00077229 project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" both in the 14 original tabancas in Gabú 'region' of that project while integrating an additional ~26 tabancas in the 'regions' of both Gabú and Bafatá into the project's scope of action, with a total beneficiary target population of approximately 37,000 people in East Guinea-Bissau.[1] Key achievements of the project include the (i) integration of climate change adaptation concerns into regional and sectoral development plans; (ii) establishment of a Rural Climate Change Forum (RCCF) for the project intervention area, which is composed of 23 members (4 of which female) from 14 villages, including ranchers and farmers; (iii) and climate adaptation interventions at community-scale, including 622 people trained on climate-resilient agricultural practices (crop rotation, terracing, intercropping, etc.), introduction of three rice short-cycle varieties, installation of 9 demonstration fields, implementation of eleven seed banks, construction of eight waterholes and three wells, among other. This project proposal can thus build on a solid institutional framework – both regionally and locally – for project implementation and capacity building, as well as build on existing lessons for precise adaptation interventions. This project proposal will solidify and expand upon on the key achievements obtained so for from the existing project.

The project will address key vulnerabilities in agriculture and water resources management, and thus contribute to immediate and longer-term development and resilience needs of extremely vulnerable farmers, with a particular focus on extremely vulnerable groups: women, elderly and children. As such, the project is in line with the recommendations of the UNFCCC Nairobi Work Programme (UNFCCC, 2010) and the best available scientific evidence on climate change impacts, vulnerability and adaptation in agriculture, water resources as well as food security (Niang et al., 2014; Porter et al., 2014).

In accordance with the initial scoping of vulnerability and adaptation needs the three specific objectives of the project are thus:

[1] Despite all efforts, it was not possible to receive any reports on the lessons learned and key achievements from the LDCF project. These lessons and achievements will be discussed in detail should the project be considered for a Full Proposal. An e-mail has been sent to the UNDP office to obtain the information, but as of 1 September 2015 no answer has been received.

1. Develop technical and institutional capacity of government and civil society (private sector, local communities, NGOs) to address increasing climatic risk in climate change adaptation planning;
2. Enhance the resilience of existing agricultural productive systems and contribute to the diversification of production, including via implementation of climate-resilient water control and management actions to minimize risks from intense droughts and floods;
3. Promote knowledge dissemination of lessons learned on climate-smart agriculture and adaptation planning to other regions of the country, other countries in West Africa and to international climate change negotiations and fora, including the UNFCCC process.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Development of technical and institutional capacity to address increasing climatic risk in adaptation practices and planning	1.1.1 Socio-climatic vulnerability assessment for East Guinea-Bissau	1.1 Increased technical capacity of government and field workers to assess impacts, vulnerability and adaptation needs in extremely vulnerable regions	0.7M
	1.1.2 Technical capacity needs assessment for ministry and field operatives		
	1.1.3 Detailed intervention plan for pilot climate-smart agriculture actions in East Guinea-Bissau		
	1.2.1 Technical trainings for identified target groups (based on 1.2)	1.2 Family farmers, development professionals, and government experts have integrated knowledge on climate-smart agriculture, in practice (on-site) and adaptation planning	
	1.2.2 Participative development of on-site agricultural and water-management adaptation actions		
	1.2.3 Development of contingency plans for climate-risk management		
	1.2.4 Technical assistance and rural extension for subprojects		
	1.2.5 Capacity building of fire brigades to prevent forest fires		

2. Enhance the resilience of existing agricultural productive systems, including water control and management measures	2.1.1 Construction of small-scale irrigation systems to maintain agricultural production in drought periods	2.1 Agricultural and livestock activities are climate-smart and contribute to sustainable increases in productivity and enhance national food security	7.55M
	2.1.2 Construction of mini-dams for irrigation of rice and vegetable crops		
	2.1.3 Rehabilitation of soil productivity before planting through agro-hydro management, including small-scale investments into machinery and tools		
	2.1.4 Rain and storm water retention systems for improved domestic and livestock water supply		
	2.1.5 Construction of wells for supplying livestock with water		
	2.1.6 Monitoring and evaluation (M&E) of resilience and adaptive capacity		
3. Knowledge management of lessons learned on climate-smart agriculture and adaptation planning	3.1.1 Knowledge management strategy developed	3.1 Sustainable climate-smart agriculture practices and management is adopted in comparable regions of the country ~~and West Africa~~, and disseminated to other West African countries, contributing to resilience and development needs in those regions	0.150M
	3.1.2 Project website developed and active		
	3.1.3 Manual and other materials on best practices and measures for climate-smart agriculture are developed		
	3.1.4 Dissemination of results to other regions of Guinea-Bissau and West Africa		
	3.2.1 Dissemination of results to UNFCCC process and other relevant international negotiations	3.2 International negotiations on climate change adaptation recognize and integrate new knowledge on climate-smart agriculture in LDCs in their policies and practices	
5. Project/Programme Execution cost			0.798M
6. Total Project/Programme Cost			9.198M
7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			0.781M
Amount of Financing Requested			9.979 M

~~Note: the Project may receive US$ ~5,000,000.00 co-financing from BOAD in addition to the amount of financing requested.~~[2]

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	June 2016
Mid-term Review (if planned)	June 2019
Project/Programme Closing	June 2021
Terminal Evaluation	December 2021

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Component #1: Development of technical and institutional capacity to address increasing climatic risk in adaptation practices and planning

Guinea Bissau has challenges in terms of the amount and quality of data and information as well as technical capacity to implement climate change adaptation. Despite progress through NAPA development, and an increasing number of scientific studies (see review in introductory section), important gaps remain with regards to climate impacts, socio-climatic vulnerability, and effectiveness of climate adaptation actions and planning. In this context, the project proposes a component for building technical and institutional capacity for climate change adaptation planning; both long-term perspectives on adaptive capacity building/policy development and near-term climatic risk management. Particularly this will include participative development of on-site agricultural and water-management adaptation actions and the development of contingency plans (e.g. flood protection) for climate-risk management. A further focus will lie on the strengthening of interactions between relevant actors for climate change adaptation: government, meteorological services, agriculture sector, research institutions, regional and national government, and the media and local and indigenous communities.

Outputs of this component include an assessment of socio-climatic vulnerability in order to identify agricultural systems and communities most at risk. This will integrate field interviews, focus group meetings, data collection and intervention assessment compared to non-intervention cases (Chambwera et al., 2014) with medium- to long-term climate change

[2] 5-7 August 2015 a meeting between members of BOAD and the Government of Guinea-Bissau was held in Bissau. At the meeting, the Government of Guinea-Bissau decided to use the US$ 5 million BOAD loan for another project (TBD). This decision only affects the scale of this project's field activities, but not the full cost of adaptation principle or the project outcomes.

downscaled GCM projections. The identified locations through this vulnerability assessment will form the main target for project interventions, including future possible projects.

To further raise the technical capacity of the main governmental organizations involved, a training needs assessment will be carried out to identify required capacity developments for effective and efficient implementation of the project and adaptation planning capacity, with a focus on climate resilience in the agricultural and water sectors. This assessment will identify the specific needs of specific groups at both ministerial (Bissau) and field-level (regional governments, extension workers), and will be implemented through a range of technical training events. Possible topics are based on key identified vulnerabilities, in may include: water management, control and conservation; best practices in climate-smart agriculture; basic GIS training for use in planning project interventions. The needs assessment will also consider possible linkages between traditional knowledge and scientific knowledge. Once capacity has been enhanced, a detailed intervention plan will be developed across all those sectors involved. This will outline the key vulnerable locations, the proposed interventions on a site-by-site basis, the institutional framework and the lines of reporting and responsible contacts.

Technical assistance and rural extension for adaptation subprojects (component #2) will also be carried out under this component. The technical assistance and rural extension for subprojects integrates sharing, demonstration and implementation of climate-smart agriculture management techniques, including livestock. Particular focus is on training agroforestry and conservation agriculture methods that reduce soil disturbance, focus on retention of crop residues and other surface cover, and promote crop rotation; therefore stabilizing production and income as well as reducing environmental pressures. Small-scale market development and efficient water use will also be included in the training programs. The rural extension team will integrate specialists for each of the project's key areas, including agriculture and water resources. The project will also engage in training of young men and female in two areas: (i) to undertake smaller maintenances of project infrastructure, thus also contributing to local capacity building and empowerment; and (ii) to combat forest fires that endanger agricultural production and biodiversity in the project region. This part of the project will include the development and dissemination of simple rules, such as avoiding smoking in forests, good practices for palm wine production (which requires fire) or teaching hunters to build low-risk fires while in the forests.

The project's contingency plans are planned to cover extreme weather events and their impacts, particularly droughts, floods, forest fires and saline water intrusion. This includes crop and live-stock contingency planning (improving irrigation, crop diversification, alternate land uses, animal health) and avoiding harm to human life (identification of safe places in case of flash floods). Each contingency plan will be elaborated by field extension officers in direct collaboration with each community. Participation of women and other vulnerable community members (especially the poor) will be particularly promoted. Field extension officers will furthermore provide to sea-sonal forecasts to the communities and help farmers to use the information properly to increase productivity and food security. Forecasts will be presented before the rainy season, and will in-clude an evaluation of previous seasonal forecast as well as possible harmonization with tradi-tional forecasts. Farmers in each tabanca will be trained in using rain gauges to keep a record of rainfalls to identify possibly changing rainfall patterns in the community, as well as to identify the best possible planting days. The project will also engage in capacity building for rural forest fires; namely in (i) organizing rural fire brigades, (ii) train them to combat forest fires that endan-ger agricultural production and biodiversity in the project region, (iii) provide them with tools to do so, (iv) sensitize fire brigades on good practices to avoid fire, and (v) train fire brigades to sensitize rural populations before any drought season on fire risks and good practices to avoid them. This part of the project will include the development and dissemination of simple rules,

such as avoiding smoking in forests, good practices for palm wine production (which requires fire) or teaching hunters to build low-risk fires while in the forests. Finally, forest fires will also be covered by the project's contingency plans for climate risk management.

Expected outputs from Component #1 are:

- Agricultural and water resources vulnerability assessment for East Guinea-Bissau for climate risk identification and determination of locations most at risk;
- Technical needs assessment for ministry and field operatives carried out to promote climate-smart agriculture practices and planning capacities;
- Detailed intervention plan for most vulnerable systems and villages drafted and agreed through consensus with rural dwellers
- Technical trainings for identified target groups in topics related to climate-smart agriculture, including water control, basic GIS for intervention planning, etc.;
- Participative development of on-site agricultural and water-management adaptation actions, where the precise adaptation strategy choice will be made by the communities themselves – following the example from the World Bank's approach and that of others, which do not specify activities before workshops, NGO projects and a typology list of activities that could be discussed at community level during the project. Adaptation actions will thus be detailed once the project starts;
- Development of contingency plans for climate-risk management, e.g. for increasing protection against high tidal waves or droughts; and
- Technical assistance and rural extension to facilitate the implementation of the adaptation subprojects in component #2.
- Capacity building of fire brigades to prevent forest fires.

In terms of component outcomes technical capacity of government and field workers to assess impacts, vulnerability and adaptation needs in extremely vulnerable regions is to be increased, while the target groups will be able to plan and implement climate-smart agricultural practices in the project region. The expected outcomes of Component 1 include (i) increased capacity with regards to identification of vulnerability and adaptation needs, and (ii) integration of knowledge on climate-smart agricultural practices on-site as well as into adaptation planning. Both outcomes build upon the experiences from GEF/UNDP-00077229 project; therefore the planned capacity building modules will require mainly adequation of existing practices from that project, but not the design and implementation of entirely new modules. For the capacity building module on forest fires and slash-and-burn agriculture an additional US$100,000 will be added to Component 1. Therefore, an overall budget of US$ 700,000 could be appropriated for Component 1.

Component #2: Enhance the resilience of existing agricultural productive systems, including water control and management measures

This component focuses on household-/village-level interventions in climate-smart agriculture practices in order to minimize damages from climatic change and variability, as well as to contribute to agricultural and rural livelihood development. In this, the project is to take advantage of 'windows of opportunity' for adaptation: for example, agriculture in the country is still largely organic, and relies on farmer's own seeds for cultivation. Agro-ecological approaches thus have a high potential, including in national adaptation strategies or policy design. While component #1 serves as a key input for pre-selecting project sites, all field activities of project

implementation will be carried out in this component. The total beneficiary target population is estimated at 37,000 people in East Guinea-Bissau.

Table 1: Simulated mean benefit for different crop management adaptations

Management option	Cultivar adjustment (n=56)	Planting date adjustment (n=19)	Planting date and cultivar adjustment (n=152)	Irrigation optimization (n=17)	Fertilizer optimization (n=10)	Other (n=9)
Benefit (%) from using adaptation	23 (6.8, 35.9)	3 (2.1, 8.3)	17 (9.9, 26.1)	3.2 (2, 8.2)	1 (0.25, 4.8)	6,45 (3.2, 12.8)

Source: Porter et al. (2014). Difference between the yield change from baseline for the adapted and non-adapted cases. N represents the number of estimates used for each adaptation. The numbers in parentheses are the 25th and 75th percentiles.

Table 1 is taking from the IPCC AR5 chapter on food security and food systems (Porter et al., 2014) and summarizes the mean impact of different adaptation actions on increasing crop yield/reducing climatic impacts on crop yields. While the exact impacts are site-specific, the table shows that small-scale incremental or systemic adaptations such planting date adjustment and/or cultivar adjustment can be very effective for promoting climate resilience.

With regards to water resources the problems with agricultural water management in dryland East Guinea-Bissau are becoming more severe due to climate change. The problems involve drought (acute and seasonal) as well as inundation and flooding of villages and swamp rice fields due to intense periods of rain. Saline water intrusion (more frequent due to sea level rise) is a potential further problem: it affect the existing rice crop as rice is not halophytic, thus leading to losses or a decline in harvest, but more importantly it can also salinize the soil limiting future production. This process can lead to abandonment of rice paddies, displacement of farmers and their families and threats further mangrove destruction to create new paddies. In summary, different approaches to make water control and management more resilient to the future climate changes are required; from water management techniques to the construction of micro-dams and small reservoirs to preserve water and agricultural production to drainage dykes and channels to minimize flooding damage on crops and other infrastructure.

Planned interventions will be at the farm, or a small of farming community level. All interventions undertaken will focus on principles of climate-smart agriculture, i.e. contributing to productivity, resilience and adaptation, climate change mitigation as well as food security and other development goals.

To help combat drought small scale dams and water storage pits will be constructed to help preserve water within the agricultural systems. This will be done through selection of lower, or flood prone areas, and construction of simple earthen works to promote water storage. Associated with these water storage facilities will be simple-design irrigation systems which will be used to maintain the required moisture level in the fields/paddies. The water storage will also help with water supply to livestock on the farm. The constructions will be small-scale and use simple technology – this means they are more likely to be maintained post-project by the local farmers and can be repaired/enhanced in the future. Guinea-Bissau's Second National Communication to the UNFCCC (SEAT/DGA and Republic of Guinea-Bissau, 2011) and NAPA (Republic of Guinea-Bissau, 2006) highlight the relevant plans and policies for agricultural development and water resources management, where the construction of small-scale dams

considered as an important adaptation activity to increase resilience of cropping systems. The 2013 National Plan of Agricultural Investment (PNIA) further promotes the adoption of integrated water resources management (IWRM). To assure safety of small dams and prevent harm, including to populations downstream, the project will undertake, when the full project will be designed, surveys, studies and assessments for identifying the risks and impacts of mini-dams on the villagers and plan possible mitigation measures. These undertakings will be based on the environmental and social safeguards, including gender mainstreaming policy, of the West African Development Bank (BOAD) and GEF as well as relevant national environmental and social regulations.

To combat flooding events and improve crop resilience to heavy inundation, in flood prone areas, ditches and dykes will be built to channel water away from the crops and associated infrastructure. Again the design will be of low complexity and involved earthworks with some associated rock armoring. In particular vulnerable areas single-farm grain storage facilities will be constructed to protect the harvest from flooding. Targeting the effects of drought and the impacts of flooding can be of significant help in maintaining or increasing agricultural production in East Guinea-Bissau, and thus securing these vulnerable livelihoods.

Marginal land use profitability and ongoing land degradation cause severe problems for farmers, perpetuating the poverty cycle and exhausting natural resources. Current itinerant slash-and-burn agricultural practices in the project region are connected to soil erosion, loss of soil nutrients and drying up of springs, and have a negative effect on productivity of rice and other crops. The project will address risks related to slash-and-burn agriculture through four integrated strategies: (a) focus on irrigated agriculture interventions, which will directly reduce pressures on land clearance, and therefore necessity to practice slash-and-burn agriculture; (b) use of agroforestry interventions, where farmers know that they cannot practice slash-and-burn agriculture in such fields or orchards; (c) dissemination and strengthening of climate-smart agriculture practices. This particularly includes agroforestry and conservation agriculture methods, i.e. methods which minimize soil disturbances, utilize retention of crop residues and other surface cover, and promote crop rotation. While the focus of these measures is to contribute to stabilization of production and incomes, there are also important benefits to be realized with regards to reducing slash-and-burn agriculture and forest fires: (i) by creating buffers against drought impacts (through higher soil moisture retention); (ii) by recomposition of soil fertility; (iii) through lower fallow periods, thus directly reducing needs for slash-and-burn agriculture; and (iv) the possibility to work on any given cultivated field for much longer periods than would be possible under slash-and-burn agriculture (due to soil fertility maintenance and higher soil moisture retention). Finally, the project will also (in capacity building of rural fire brigades (see Component 1)

Based on initial scoping studies (see Part II.H), review of climate change adaptation literature, and lessons from project GEF/UNDP-00077229 the following list of adaptation options is currently being considered for implementation:

- Construction of small-scale irrigation systems to maintain agricultural production in drought periods;
- Construction of mini-dams for irrigation of rice and vegetable crops. While these are more ‘costly’ items and likely not feasible in each and every village, many villagers see this as a potential major improvement in the quality of life. The project will take care that villagers will take ownership of the mini-dams and be sufficiently organized to secure their maintenance;
- Rehabilitation of soil productivity before planting through agro-hydro management, including small-scale investments into machinery and tools (e.g. tractor, fuel);

- Rain and storm water retention systems for improved domestic and livestock water supply; and
- Construction of wells for supplying livestock with water. This will take into account development needs while taking extreme climatic conditions into consideration.

Adaptation subproject implementation will be accompanied by a monitoring and evaluation (M&E) framework to measure progress in resilience and adaptive capacity of farmers and regions. As such, the outcome of this component will be that agricultural and livestock activities in the region are climate-smart, thus contributing to productivity increases and to the enhancing national of food security targets.

Component #3: Knowledge dissemination of lessons learned on climate-smart agriculture and adaptation planning

In order to guarantee visibility of the project results a knowledge management strategy will be developed. The core dissemination product from the project will be a manual of practical and concrete best-practice in climate resilient agriculture. Various versions of the Manual will be produced, both technical and non-technical, in Portuguese, French and English, as well as smaller summary briefing sheets/pamphlets/calendars on relevant thematic topics. The manual will be disseminated through the project website and a suite of workshops at the national and provincial level. In addition dissemination will take place across the West Africa region through workshops and dissemination of hard copies. The project team will further interact with national media outlets (newspaper, internet, radio, etc.) to make the public aware of climate risks and adaptation needs. Scientific publications with regards to impact assessment of components #2 is also planned. Finally, the project results will also be shared through international fora on climate change (including, in particular, UNFCCC).

The lessons learned are used to strengthen climate-smart agriculture in Guinea-Bissau. Interesting results and new lessons are expected from result the implementation of the project regarding (i) climate-smart agriculture, and its linkages to climate adaptation, water resources management, sustainable use of natural resources, and buffer against drought impacts; (ii) managing climate risk through contingency plans (contingency plans for crop and livestock management, seasonal forecasts for adapting planting calendars, protection against impacts from extreme weather events, such as flash floods or forest fires – i.e. contingency plans that both protect interventions carried out under Component 2 as well as contingency plans to protect human life directly against adverse impacts from extreme weather events); and (iii) mainstreaming of adaptation into development planning, taking into consideration that this project is the continuity of a pilot project at national level (GEF/UNDP-00077229). Reflections will also include (iv) identified project weaknesses in order to propose new solutions for new beneficiaries of other projects.

Lessons learned will be of interest to Donors, Government, civil society and vulnerable populations. Knowledge sharing and learning will count on a project knowledge management strategy, with communication products tailored for different target groups (including hard copies, electronic form), alternative communication means such as community theatre, radio and story-telling, project website, technical reports and documents on lessons learned to UNDP's Adaptation Learning Mechanism (ALM) and other relevant platforms, hands-on study visits and annual RCCF meetings to join and share experiences with Gabú and Bafatá farmers. The project will target existing institutions and fora (e.g. RCCF, inter-ministerial committees) and contribute to the strengthening of subproject replication under GEF/UNDP-00077229, thus contributing to

increased capacity in adaptation practices and policy in the focal area of climate-smart agriculture and resilience.

Expected key outputs for component #3 are:

- Knowledge management strategy developed
- Project website developed and active
- Manual and other materials on best practices and measures for climate-smart agriculture are developed
- Dissemination of results to other regions of Guinea-Bissau and West Africa
- Dissemination of results to UNFCCC process and other relevant international negotiations. The project may also contribute to a revision of Guinea-Bissau's NAPA with a focus on climate-smart agriculture

Outcomes of component #3 will thus be (1) adoption of sustainable climate-smart agricultural practices and risk management in comparable regions of Guinea-Bissau ~~as well as in West Africa~~, contributing to resilience and development needs in those regions; and (2) recognizing and integration of new knowledge on climate-smart agriculture generated by the project in LDCs policies and practices as well as in the international negotiations on climate change adaptation, particularly the UNFCCC. Note that the knowledge dissemination to other West African countries will be based on internet communication and website information. Given that communication channels with other West African countries have already been established through GEF/UNDP-00077229 project this new focus will only have limited impact on the project's outreach activities. Therefore, an overall budget of US$ 150,000 could be appropriated for Component 3.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

East Guinea-Bissau is a dryland region which is extremely vulnerable to climatic change and variability. Family farmers' coping mechanisms in Gabú and Bafatá 'regions' (temporary nomadism, reduction of food intake, cashew as only cash crop, selling of household assets, migration to cities, etc.) are insufficient even under current climatic variability (dry and wet seasons) and extreme events (droughts, inundations, etc.), and given their scarce assets (economic, financial, education, etc.), an autonomous uptake of sustainable water and agriculture technologies and practices (i.e. climate-smart agriculture) which would permit them to improve their livelihoods is highly unlikely in absence of the project's interventions.

In this context, the project's components will provide economic, environmental and social benefits to the communities in Gabú and Bafatá, particularly to farmers more at risk. Economically the interventions aim to improve and stabilize income from agricultural activities through diversification of income streams to farmers, with secondary economic benefits in the near- to mid-term through the strengthening of both 'regions' economies. Socially, the main benefits will be to stop the displacement of people, both by reducing susceptibility to extreme events, as well as through decreased need to move cattle herds temporarily due to low feed availability (caused by climatic events and/or overgrazing); reduced loss of livelihood security caused by extreme events or overall annual climatic variability would be an additional social

benefit of the project. With respect to environmental sustainability, the project will reduce pressure on forest resources, deforestation and soil erosion through promotion of agro-ecological practices and 'environmental vigilance committees' (both implemented successfully under GEF/UNDP project 00077229) which monitor illegal deforestation, overuse of forest resources (e.g. hunting) or pollution of the environment, among other. These actions are particularly important in the context of newly protected areas (+8.8%) in the eastern hinterlands of Guinea-Bissau.

All activities in the project component #2 will be developed jointly with the rural villagers and their representative institutions in order to create a shared understanding on climate adaptation; including the assessment of concerns and needs of the most vulnerable communities as identified under component #1. The team will initiate activities using diagnostic and rural planning techniques common in rural extension activities (PRA and RRA). NGOs to be selected as partners for local implementation will have solid experience in these techniques, having used them with local communities in the area as they developed 'local tabanca development plans' during the last few years. Principles to be considered for local interventions will include, among other:

- Encouragement of participants to take responsibility;
- Respecting the diversity of the tabancas;
- Promote full participation;
- Reconciling different interests; and
- Involving multidisciplinary approaches and teams (on the project's technical side).

Children, women and the elderly are frequently amongst the more vulnerable of the poor. Women in rural Guinea-Bissau are responsible for 55% of agricultural production, with their role especially important in the dry season when they focus on garden produce. There is further evidence that programs focused on women improve food security of their family more directly than those focused on men (Asian Development Bank and FAO, 2013). However, despite their important role in agriculture and for food security, gender issues are little considered in Guinea-Bissau's policy considerations. In the villages, their participation may be limited/suppressed where elders or religious leaders opine directly against women participation due to conflictions with traditional religious laws. The project team is aware of these problems, and will openly encourage women empowerment at all stages of the project; this includes (i) discussing the need to integrate women into projects with village elders and other leaders; (ii) opening subproject grants for women's associations; (iii) strengthening their role in the relevant institutions on climate change in the region (particularly the Rural Forum on Climate Change – see section III); and (iv) promote their participation in broader land and water management issues which are traditionally led by male members of the tabancas. At national level, the Project Management Unit (PMU) will also pursue the inclusion of qualified women technical personnel into the project team. As such, the project is to make an important contribution to women empowerment in Guinea-Bissau, not limited to the project region.

In order to mitigate and/or avoid negative impacts specific indicators on key economic, social and environmental variables will be integrated in the results-framework, therefore assuring compliance with the Adaptation Fund's Environmental and Social Policy (ESP). These indicators are to be monitored and evaluated regularly throughout the project, and will be reported to the PMU in order to prevent violation. Field teams and PMU will regularly interact with the relevant persons and institutions in the project region and tabancas to resolve any possible conflicts.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

Vulnerability to climate change is multi-faceted; this is why additionality to a socioeconomic baseline scenario is hard to prove. Furthermore, there are limited options for Bafatá and Gabú farmers in terms of alternative actions to build climate resilience in their agriculture and water resources management. The project thus proposes a combination of strengthening rural livelihoods with integrated climate risk managed that take into account local development needs of the communities. Such incremental and/or systemic adaptations are being proposed and carried out by various international institutions, and follow the UNFCCC's recommendations on adaptation projects for LDCs (UNFCCC, 2010). While most of these adaptation projects currently address climate variability and not precisely future climate change, they follow clearly the adaptation concepts and planning related to recent UNFCCC and World Bank conceptions – particularly no-regret and low-regret strategies, and avoiding mal-adaptation (Adger et al., 2007; Barnett and O'Niell, 2010; Heltberg et al., 2009; UNFCCC, 2010).

All project interventions target the most vulnerable communities in the project region, some of whom have already been displaced, who produce considerable amounts of the countries' staple food crops and where the most vulnerable sector as identified in the NAPA is important in economic and social terms. Total investment of pilot activities will likely be around US$200–250/inhabitant (based on GEF/UNFP project 00077229 preliminary estimates). As a matter of comparison, an adaptation project at community level run by the NGO Practical Action spent about $150 per inhabitant in Pakistan, although population was more densely spaced in sites targeted and the project had a shorter duration. In a country like Guinea-Bissau, with rather high transaction costs and low pre-existing investments in rural areas, $200–250/inhabitant in the Gabú and Bafatá region over a five-year period is quite reasonable, and the proposed adaptation measures (component #2) are deemed cost-effective. Furthermore, in order to assure effectiveness and efficiency, both costs and benefits of the particular technological interventions will be assessed at household and community-level before implementation (see Chambwera et al., 2014). The criteria for the basis of discussion will include:

The proposed approach integrates urgent rural development needs (food security, income generation, sustainable use of natural resources, etc.) with climate risk management. While investments in small-scale infrastructure (e.g. irrigation or small dams) and technical assistance are necessary, but not sufficient for allowing rural populations to adapt sustainably to climate change, project outcomes (resilience) of this proposed project are nevertheless conditional on those investments. This is highlighted in Guinea-Bissau's Second National Communication to the UNFCCC (SEAT/DGA and Republic of Guinea-Bissau, 2011) and NAPA (Republic of Guinea-Bissau, 2006).

This project follows the country's NAPA's adaptation priority list, which already considers cost-effectiveness as a key concern for the prioritization of measures. The measures are furthermore linked to recent UNFCCC and World Bank concepts such as no-regrets and low-regrets strategies for adaptation. The specific project interventions will follow a ranking of costs and benefits, including inputs needed (e.g. labor, materials, finances, time) and positive outcomes (e.g. increased income, increased livelihood security, better flood/drought protection). Underlying needs or demand for the activity, level of familiarity with, and acceptability of activities (including attention to differing responses by gender) and environmental benefits will also be considered.

In order to keep transaction costs related to project implementation and technical assistance within safe limits, the project sites in Gabú and Bafatá 'regions' will be within maximum 6 hours

travel of one another, and within 4 hours of Gabú administrative center. This means that efforts can be focused, and technical assistance can be located within a reachable distance (as opposed to being located in Bissau).

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The National Communication to the UNFCCC, the National Adaptation Programme of Action (NAPA), and the National Poverty Reduction Strategy Paper (PRSP) are the principal national development/climate change documents linked to this proposal. The country's Second National Communication on Climate Change (SNCCC) reports that both high and low emissions scenarios for climate models downscaled to Guinea-Bissau predict average temperature to increase by about 1.0ºC to 2020 under different IPCC scenarios in relation to the average temperatures established for the period 1960–1991. Different to the country's first Fommunication to the UNFCCC, the SNCCC now highlights the role climatic variability for vulnerability, thus calling for the strengthening of current climate risk management strategies and integration of development needs.

The NAPA (Republic of Guinea-Bissau, 2006) has been instrumental in analysing and prioritising the country's key pressing climate change problems and establishing the foundation for this project. Key results related to this proposal are that (i) the economy is largely dependent on agriculture, whose activity relies on rainfall intensity and regularity, and where cashew is the predominant crop, contributing with 62.6% for the GDP in 2004; (ii) that a large part of population depends vitally on the direct exploration of natural resources for its survival, (iii) a lack of infrastructure in East Guinea-Bissau's regions; (iv) that the country faces difficult economic and social conditions, characterised by extreme poverty and a high unemployment rate; (v) very fragile soils, exposed to rain-driven erosion (vi) expansion of agricultural production associated to forest felling and slash-and-burn practices (itinerant agriculture); (vii) bad soil occupancy, due to a lack of agricultural zoning; (viii) an accelerated destruction of forests, estimated at 30,000-60,000 ha/year, with negative effects on current sequestration capacity estimated at 11,288,401 atmospheric CO_2, (ix) a relatively high rate of population growth (2.05% nationwide, and 4% in the capital, Bissau); (x) water-related problems; (xi) outdated and/or ill applied legislation, or even not applied legislation; (xii) weak or non-existent intervention capacity on the part of institutions; (xiii) absence of protection rules and norms against climate risks linked to the construction of infrastructure; and (xiv) the very precarious nature of traditional housing (made of mud and covered with straw).

The NAPA's project priority list is shown in Table 2. This project principally NAPA priority #1, although for a slightly different region, as per explicit recommendations by national stakeholder involved in the consultation process during this project's development. The project also combines and/or integrates elements of priorities #2 (water supply in Gabú and Bafatá), #6 (impact assessment on producers), #7 (small-scale irrigation), #10 (food security) and #13 (short-cycle production of animals) in the project region in East Guinea-Bissau. Note that the project outlines listed below do not address the central aspect of capacity building on climate change, nor the need to mainstream climate change into national policy and awareness raising. The NAPA prioritisation is also gender-blind. For these reasons, the NAPA priorities in Table 2 were used as a basis for the decisions but not as a blueprint to be used unquestioningly; this takes into account that the knowledge on climate change adaptation and 'windows of opportunity' for action have considerably changed in the years since NAPA publication in 2006.

The missing regional focus on Bafatá (5 projects) and particularly Gabú (1 project) 'regions' within NAPA prioritiation would be partially corrected under project implementation.

Table 2: NAPA priorities in Guinea-Bissau

Order of priorities	Project denomination	Geographical intervention zone
1	Support diversification of production and food	Southern provinces
2	Improvement of water supply in rural zones	Other, Bafatá and Gabú 'regions'
3	Capacity building in prevention and protection of mangrove Bolanhas against high-tide invasion	Southern and northern provinces
4	Observatory for mangrove monitoring and evaluation	Northern and southern provinces
5	Monitoring of coastal area erosion	Northern and southern provinces
6	Assessment of impact of climate change in producers' sectors	Nationwide
7	Promotion of small-scale irrigation in Geba and Corubal rivers	Bafatá and Gabú 'regions', other
8	Prevention of natural catastophes	Nationwide
9	Protection, conservation and enhancement of fishing and coastal resources	Coastal areas
10	Integrated system of information on food security (SISA)	Nationwide
11	Environmental education and communication in coastal areas	Coastal areas
12	Rehabilitation of small perimeters of mangrove soils for rice growing in Tombali, Quinara, Bafatá and Oio	Bafatá 'region', other
13	Support to production of short-cycle animals	Bafatá 'region', other
14	Reforesting of degraded areas	Bafatá 'region'
Total		

Source: Republic of Guinea-Bissau (2006).

The 2006 National Poverty Reduction Strategy Paper (PRSP) highlights government instability, mismanagement of public funds, and structural constraints in the economy as key issues, including little diversification of income sources, low internal resource availability, weak human capital and lack of private sector dynamism. The PRSP's strategy focuses on a broad spectrum of issues to address these endemic problems, including instigating good governance, battling corruption, improving human rights, building institutional capacity and human resources, and increasing agricultural and fishing productivity alongside improving environmental protection. In addition, the PRSP points to an increasing involvement of well-informed NGOs and participation of a strong civil society, which can be mobilised to improve social and economic conditions. The present project is therefore in line with the key PRSP recommendations.

How project activities fit with wider local or regional development plans and regional change (government, local NGOs, community and autonomous initiatives such as local small businesses) is a key concern for this project. In this context, the project follows key recommendations of Guinea-Bissau's NAPA and 2nd Communication to UNFCCC (Republic of Guinea-Bissau, 2006; SEAT/DGA and Republic of Guinea-Bissau, 2011), as well as those of relevant national strategies and plans along the lines of good agricultural management, improved water management and poverty reduction. For example, the Poverty Reduction Strategy for Guinea-Bissau (PRSP) integrates the agricultural sector's strategies into account in its fight against poverty, while the Charter for Agricultural Development aims to (i) guarantee

food security, (ii) increase and diversity agricultural export, (iii) ensure rational management and preservation of agro-sylvo-pastoral resources, and (iv) to improve living standards of rural populations. This includes the dissemination of practices such as promotion of low-cost irrigation systems, production diversification, construction of micro dams and small dykes for water retention, extension of short-cycle seeds, use of adapted varieties less demanding in water and resistant to prolonged drought periods, etc. The project also contributes to the Gabú and Bafatá sector regional development plans, which focus on livestock and agriculture development. In particular, the integration of climate change adaptation may provide key input to those plans which currently only consider actual climatic variability.

Despite all efforts it was not possible to carry out at this stage a thorough assessment of other relevant recent or on-going programs in agriculture and water management in the planned target regions, regardless of whether they explicitly address adaptation to climate change. This assessment is planned for the Full Proposal of this project. However, table 3 gives a preliminary overview on important plans and strategy papers in Guinea-Bissau and important issues in relation with this project proposal.

Table 2: Guinea-Bissau plans and strategies related to this project proposal

Scale	Name	Key objectives	Important issues in relation with the project proposal
National	Second Poverty Reduction Strategy Paper	• Short-cycle seeds • Dissemination of varieties less demanding in water and resistant to prolonged drought periods • Increase in hydraulic works, including construction of micro dams and small dykes for water retention • Promotion of low-cost irrigation systems • Production diversification • Improvement of grazing fields through introduction of plants with high nutritional quality and greater production potential, especially leguminous species • Promotion and strengthening of production of short-cycle animals (goats and sheep)	• Agricultural development for poverty reduction and increasing food security • Livestock development and increasing animal feed quality • Water resources management • Lack of climate change adaptation integration • Setting up of an Early Warning System against climatic risks
National	National Agriculture Investment Plan (NAIP)		
National	Letter of Agrarian Development		
National			
Regional	Gabú and Bafatá Regional Development Plans	• Development of agricultural activities and livestock creation	• Framework for implementing small-scale interventions on agricultural development, livestock and water resources management • Highlights importance of climatic conditions for production

National, Gabú	Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau	• Integration of climate change adaptation into development planning • Small and medium scale climate change adaptation practices for water, agriculture and livestock management • Capacity development on climate-resilient agriculture at local, regional and national scale	• Built the framework for promoting adaptive capacity and increase the agriculture and water sector's resilience to climate change, linking rural development and water resources management with climate adaptation
National	Forest Master Plan and Forest Law	• Setting-up of conservation units, especially in fragile ecosystems • Promotion of local conservation and development initiatives • Reforestation using endemic species	• Sets national framework for biodiversity conservation and sustainable use of natural resources • Conservation agriculture and agroforestry • Lack of climate change adaptation integration
Regional	Support for the Consolidation of a Protected Area System in Guinea-Bissau's Forest Belt	• Consolidation of protected areas (PAs) in the Forest Belt • Initial assessment of climate change risk on Guinea-Bissau's biodiversity	• Identified key risks for agriculture and water resources in project region • Highlights importance of reducing pressures from slash-and-burn agriculture
National	National Water Code	• Rehabilitation, renewal and extension of water infrastructure • Improving knowledge on water resources and sustainable use thereof (training) • Integrated management of water resources (IWRM) • Preparation of legislation on slash-and-burn agriculture	• Sets framework for integrated approaches towards water resources management • Puts slash-and-burn agriculture in the spotlight of policy discussions
National	Water Master Scheme		
National	National Health Development Program II and other	• Reducing child mortality • Research programs on climate and health	• Importance of food security for health • Improve understanding on climate-sensitive diseases

With regards to biodiversity conservation, as fragmentation and pressures on natural resources increase throughout West Africa, areas such as Guinea-Bissau's Forest Belt have become important refuges for threatened species, providing also important national and transnational biological corridors and migration routes for large mammals in the region. The "Support for the Consolidation of a Protected Area System in Guinea-Bissau's Forest Belt" project (GEF ID 3575, UNDP ID 3650) supported the consolidation of protected areas (PAs) in the Forest Belt through establishment on an interlinked protected area system containing of two inland PAs (Boé National Park, Dulombi National Park) and three biological corridors (Tchetche, Cuntabane-Quebo, and Salifo), located at the junction of Gabú, Bafatá and Tombali 'Regions' in

central south Guinea-Bissau. Furthermore, the project supported preliminary assessments on primary threats to biodiversity, including its root causes; undertook a detailed stakeholder analysis for PA implementation; and carried out an initial assessment of climate change risk on Guinea-Bissau's biodiversity. This latter study highlighted potentially disastrous impacts on land, water, and forest resources, with strong relevance for rural livelihoods across the entire Forest Belt region.

This projects build on the findings of the GEF/UNDP-3650 project in that it (i) targets key root causes identified (persistent rural poverty, weak institutional capacity and lack of coordination among authorities) through small-scale productive interventions and mainstreaming of adaptation into development planning; and (ii) reduces potential environmental pressures on the Forest Belt via conservation agriculture and agroforestry (including positive impacts via reduced slash-and-burn agriculture). In cases where project beneficiaries are located near or around the Forest Belt, rural extension and capacity building components will be used to incentivize beneficiaries to prevent deforestation and overuse of natural resources. Potential subprojects near the project belt will shortlisted as soon as the project starts in order to allow for timely implementation of these actions.

Otherwise the project's objectives have strong linkages to the Second National Health Development Plan of Guinea-Bissau, as well as the Millennium Development Goals (MDG) to eradicate extreme poverty and hunger, reduce child mortality, and ensure environmental sustainability. Finally, the project is also in concordance with the 'regional' development plans of Gabú and Bafatá and related documents which highlight the importance of livestock and agriculture in their economy and call for further actions to strengthen these sectors against climatic extremes such as droughts or floods. Water management is also discussed extensively in both 'regional' plans.

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project meets all relevant national technical standards, including forest codes, social and gender policies, or water regulations. In terms of project management all contracting for positions and infrastructure works will follow the relevant national regulations and rules for awarding. Therefore compliance with the Environmental and Social Policy of the Adaptation Fund is not affected. The project will comply with all relevant standards in the areas of agriculture, water resources, small scale dams, and natural resources management, and small infrastructure, as well as environmental and social standards. As part of the Full Proposal an Environmental and Social Impact Assessment (ESIA) will be carried out to assess the project's legal and regulatory compliance in detail, as well as to identify possible management options in case of conflicts. Therefore, the project will comply with the national environment and social regulations and with the Environmental and Social Safeguards of West African Development Bank (BOAD), which are aligned with GEF's and World Bank's Environmental and Social safeguards.

F. Describe if there is duplication of project / programme with other funding sources, if any.

This project is the currently the first integrated approach to scale-up climate-smart agriculture practices and planning across the two highly vulnerable regions in East Guinea-Bissau while contributing to institutional capacity building. The project components are based on the experiences GEF/UNDP project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" (00077229), but will go

beyond in terms of regional scope, integration of new agricultural technologies and the scope of monitoring & evaluation (M&E) and knowledge dissemination. GEF/UNDP project 00077229 is foreseen to end its activities by end of 2015 so that duplication of funding sources can be excluded. Other existing water and agriculture initiatives by government and NGOs in Gabú and Bafatá 'regions' do not currently integrate climate adaptation and resilience into their overall framework. These initiatives will be built upon for improved dissemination of project successes.

~~BOAD is committed to provide co-financing of US$ ~5,000,000.00 to the total amount requested by the project should it project be accepted by the Adaptation Fund.~~

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

A specific component #3 ("knowledge management of lessons learned on climate-smart agriculture and adaptation planning") is included in the project, focusing particularly on outreach and information exchange. As detailed in section II.A of this project concept note, different knowledge materials (manual, pamphlets, project website, newspaper media, calendars, conference presentations, etc.) will be produced for specific target groups (policymakers, field workers, farmers, scientific community, etc.), integrating practical lessons on climate-smart agriculture and water management in dryland regions. Further outreach will also occur at inter-ministerial meetings and COP/UNFCCC meetings. DGA/SEAD is the lead institution of this component.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The consultative process for project development built upon networks established under the NAPA and SNCCC, and furthermore GEF/UNDP project "Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau" (00077229). Workshops and meetings have been held in Bissau with various Ministries and institutions, in addition to consultations with the project region's Rural Climate Change Forum (RCCF, see section III) and other local/regional authorities. Furthermore, a one-week field trip was organized by DGA/SEAD in 2015 in order to receive feedback on planned project activities and needs. The field visit focused on extremely poor communities and women integration (either organized in associations or not) which are a focal objective under this project.

In each village visited, following local customs, the project team began by asking the village head for permission to present the project idea and then asked him to call all household heads to participate in a group focus meeting. Talks were conducted in Guinea-Bissau Kriol by the project team or in any local language/dialect when participants of the team were not fluent in the vernacular language. These meetings included clear presentations of the project idea and objectives as well as a stocktaking of household/village needs (focusing at the intersection agriculture, water resources and climate risk management). Through this approach the precise adaptation strategy choice is being made by the communities themselves – following the example from the World Bank's approach and that of others, which do not specify activities before workshops, NGO projects and a typology list of activities that could be discussed at community level. Women's participation and empowerment through the project was also discussed openly where elders or the village head judged this as problematic.

The list of stakeholders consulted during the one-week field trip can be found in Annex 2. Figure 4 consists of four photos taken at these meetings; they give the idea that voice and opinion of women and poor were promoted during the consultation process.

Figure 4: Participation of stakeholders during consultative phase for project development in four tabancas

Traditional authorities from the project region will be involved in the project and will be empowered through it. First, it is planned that two honorable members from traditional authorities involved in development issues in the project region (one from Gabú, one from Bafatá) from the Rural Climate Change Forum (RCCF) will participate in the Project Steering Board, in order to assure that knowledge and information needs of traditional communities will be integrated adequately. Arrangements will be made to have one female and one male member. Second, a regional pre-selection committee (RPPSC) will be created for the selection of subproject activities. This RPPSC will be based at regional level, and will be composed of four important and respected traditional authorities of the RCCF (one male and one female from Gabú, one male and one female from Bafatá) in the project region. Third, traditional authority involvement will be solicited along the entire project cycle (project design, implementation and monitoring).

The consultation phase has identified Fula, Mandinga and Dgancanca ethnicities in the project region. Both Fula and Mandinga are majority groups, and work as farmers and ranchers, whereas Dgancanca constitute a minority group working with rice farming. Each community has its own lands at their disposal; therefore the project activities can be carried out without problem

in collaboration with each ethnicity. The project will work with the majority and minority groups. The Full Project Proposal will follow relevant West African Development Bank (BOAD) environmental and social safeguards for the full project development. These include: (a) screening of communities; (b) social assessment of needs and conflicts; (c) free, prior, and informed consultation with the affected groups, if any; (d) preparation of a Minority Group Plan or Framework if required; etc.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Under a baseline scenario the semi-arid woodland savanna region would continue to be dominated by slash and burn, rain-fed agriculture and extensive-method for livestock. East Guinea-Bissau is already highly food-insecure, and under increasing temperatures it is highly likely that availability (production) and access (prices, income) to food would be further affected, potentially increasing the need for international food aid programs such as through WFP/FAO. Changes in total precipitation and higher drought or flood frequency would act in a similar direction.

While there is high uncertainty regarding the precise regional or local consequences of global warming, inaction would surely be detrimental for East Guinea-Bissau, both in terms of incurred losses due to current climatic variability *and* future change. Current coping practices (see Part I) by farmers in times of climatic stresses are clearly inadequate; reducing food consumption below nutritional requirements or selling household assets in order to survive in times of droughts directly counteracts the attaining of the MDGs (e.g. food security) and reduces the vector of assets a family has to react to an additional year of poor weather; where reducing food intake and selling assets as coping strategy cannot be repeated each year. In this context, socioeconomic scenarios point at increasing risks of poverty-related problems such as food insecurity, health or social welfare. Climate variability and change thus put heavy burdens on family farmers that will very likely exceed their coping capacities.

The project's integrated approach integrates both concrete adaptations, as well as strengthening capacities across scales in adaptation planning and climate risk management. While the project represents only a first step in scaling-up successful actions and learning, it outcomes of the project for the project region and country foresee a significantly positive alternative scenario compared to the baseline. In terms of the project interventions there are limited options available in terms of alternative actions to build climate resilience in the agriculture and water resources sectors. Additionality to a socioeconomic baseline scenario is hard to prove because of vulnerability's multi-faceted character (environmental, social, economic and institutional, among other).

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

The sustainability of the project outcomes relates to "practice-focused" component #2 (climate-smart agriculture and water management) and "capacity-focused" components #1 and #4 (technical capacity and outreach). Capacity-building at ministerial level will provide permanent benefits after project completion: trained government personnel will see their position strengthened, and may engage in future national adaptation project development, or continue research issues related to climate change and adaptation. Because of the project's novel but realistic character for Guinea-Bissau and the region of West Africa, its results will likely influence practice and policy beyond project implementation time.

Outcome sustainability of component #2 may be more complicated: even though local interventions may function at project end in 2020, a principal concern would be the abandonment of these subprojects after technical assistance and regular visits from the project team cease. Participative and integrative processes are key elements to avoid these developments. This includes taking into account needs of the communities, respecting different opinions, creating a project ownership for the participating tabancas etc. The project will also monitor and evaluate (M&E) project implementation continuously; therefore reducing the risk that families may be unsatisfied with the interventions. Preliminary lessons from the ongoing GEF/UNDP-00077229 project seem to indicate that the risk of subprojects terminating after project teams have left is relatively low and manageable.

The project seeks commitment from the regional water authority (Regional Directorate of Water Resources) and other relevant local authorities to maintain small dams and other infrastructure after project end, in line with the institutional set-up of GEF/UNDP-00077229 project. Villagers are to take ownership of other small scale infrastructure, and young men and female will be trained by the project to undertake smaller maintenances, thus also contributing to local capacity building and empowerment. This commitment has been obtained during the project consultation phase, and will be a conditionality for any subproject implementation.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The table below constitutes of a preliminary assessment of environmental and social risks relevant to the project. Note: all items marked as "potential impacts and risks – further assessment and management required for compliance" will be integrated in the project's results-framework, and compliance with Adaptation Fund's regulations – including the Environmental and Social Policy – will be monitored and evaluated (M&E) during project duration using specific, verifiable and time-bound indicators. For the Full Proposal a comprehensive Environmental and Social Impact Assessment (ESIA) will be designed and carried out in order to identify potential impacts and risks to the relevant standards in the areas relevant to the proposed project, such as agriculture, water and natural resources management, and small infrastructure, as well as environmental and social standards, as well as the 15 principles below more precisely, as well as to identify potential management solutions to these risks.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	No project component or activity contravenes any laws or regulations currently in force in Guinea-Bissau. The project complies with the country's legal framework for agriculture, water and environmental protection. For the Full Proposal an Environmental and Social Impact Assessment (ESIA) will be carried out in order to identify any potential risks related to compliance with the law.	Very weak. The ESIA will ascertain whether there are any conflicts with other sectoral laws or policies.
Access and Equi-	The intervention logic of the project is to	None

ty	provide potential beneficiaries in the target region with fair and equitable access to project activities and equipment throughout both planning and implementation phases. All producer groups which request participation will have an equal opportunity to benefit from the adaptation activities proposed by the project. Eligibility criteria of the project will be clear and transparent, and defined together with all relevant stakeholders, including traditional authorities. For the project interventions it is planned to include (i) difficulty of access to water in the area; (ii) vulnerability in terms of biophysical and climate risks; and (iii) social vulnerability as selection criteria. Through these criteria the project will assure the participation of less empowered groups, including women, minorities and particularly vulnerable groups. The project's results-framework will measure developments related to 'access and equity for vulnerable groups' throughout the project duration.	
Marginalized and Vulnerable Groups	The project focuses on marginalized and vulnerable groups (minority groups, women, extremely poor, elderly, children etc.) and aims to assist them to improve their agricultural practices and living conditions. As such the project is not expected to have any negative impact on these groups. The consultation phase has identified Fula, Mandinga and Dgancanca ethnicities in the project region. Both Fula and Mandinga are majority groups, and work as farmers and ranchers, whereas Dgancanca constitute a minority group working with rice farming. Each community has its own lands at their disposal; therefore the project activities can be carried out without problem in collaboration with each ethnicity. The project will work with the majority and minority groups.	Very weak. The Full Project Proposal will follow relevant West African Development Bank (BOAD) environmental and social safeguards for the full project development. These include: (a) screening of communities; (b) social assessment of needs and conflicts; (c) free, prior, and informed consultation with the affected groups, if any; (d) preparation of a Minority Group Plan or Framework if required; etc.
Human Rights	The project affirms the fundamental rights of people in the intervention areas, and thus does not affect their freedom. Furthermore, the project does not integrate any activities contrary to custom law or traditions. Participation in the project cycle will be participatory and voluntary	None
Gender Equity and Women's Empowerment	The logical framework of the project foresees direct participation for women and women's associations so they can bene-	Very weak. Progress with regards to women's participation and equity will be measured through the project's M&E

	fit directly from project. In particular, the project proposes to support women to develop sustainable income generating activities and improve thereby their living conditions, therefore also empowering them in the context of a largely traditional and male-dominated society. The project will also promote women's participation in the RCCF and other regional and local fora: first, it is planned that the two honorable members from traditional authorities involved in development issues in the project region (one from Gabú, one from Bafatá) from the Rural Climate Change Forum (RCCF) will be one female and one male. Second, the preselection committee (RPPSC) to be created for the selection of subproject activities will be composed of four important and respected traditional authorities of the RCCF (one male and one female from Gabú, one male and one female from Bafatá) in the project region. Participation of women and empowerment will also be a key focus of the project's M&E framework.	framework, but compliance is not a problem.
Core Labour Rights	Core labor rights concern gender aspects, respect for workers; maximum work hours; child labor; etc. The project will ensure that national working standards are respected on production sites. The project will also ensure that appropriate wages will be paid per assigned task, and that no child labor will be employed. Social security standards (e.g. access to first aid) will also be respected and enforced.	None
Indigenous Peoples	The preliminary screening has not identified any indigenous communities in the project areas.	Very weak. The Full Project Proposal will follow relevant West African Development Bank (BOAD) environmental and social safeguards for indigenous peoples for the full project development. These include: (a) screening of communities; (b) social assessment of needs and conflicts; (c) free, prior, and informed consultation with the affected groups, if any; etc.
Involuntary Resettlement	Involuntary resettlement due to project activities is a potential problem with respect to micro-dam construction (including downstream) and irrigation implementation. As a consequence, the project will only build micro-dams that do not require involuntary resettlement. The ESIA will take care of these issues at the stage of the Full Proposal.	Weak. To assure safety of small dams and prevent harm, including to populations downstream, the project will undertake, when the full project will be designed, surveys, studies and assessments for identifying the risks and impacts of mini-dams on the villagers and plan possible mitigation measures. These undertakings will be based on the

		environmental and social safeguards, including gender mainstreaming, of the West African Development Bank (BOAD) and GEF as well as relevant national environmental and social regulations.
Protection of Natural Habitats	All project activities will be carried out on areas already under production by farmers, and the project will teach farmers practices to dispense traditional slash-and-burn agriculture practices, therefore reducing pressures on deforestation. Furthermore, the project will work with water-saving irrigation techniques to limit runoff and soil erosion in the project area. Nevertheless, the project may cause negative impacts on the biophysical environment, including natural habitats, if project activities are not monitored consequently. For this reason the ESIA (Full Proposal) and M&E framework will focus on assessing potential risks and impacts on natural habitats.	Weak. ESIA and M&E activities in order to identify potentially adverse risks and impacts on natural habitats.
Conservation of Biological Diversity	The project will adopt agricultural practices that increase biodiversity compared to the baseline scenario, including conservation agriculture and agroforestry. Furthermore, the project will not introduce any exotic or invasive species of crops in the intervention areas. However, as noted before, small-scale dams and irrigation may impact biodiversity particularly when areas need to be cleared	Weak. ESIA and M&E activities in order to identify potentially adverse risks and impacts on biodiversity. To assure safety of small dams and prevent harm, including to populations downstream, the project will undertake, when the full project will be designed, surveys, studies and assessments for identifying the risks and impacts of mini-dams on biological diversity and plan possible mitigation measures. These undertakings will be based on the environmental and social safeguards, including gender mainstreaming, of the West African Development Bank (BOAD) and GEF as well as relevant national environmental and social regulations.
Climate Change	Focus of the project is climate change adaptation through climate-smart agriculture, which from a climate perspective incorporates resilience (adaptation) and reduction or removal of greenhouse gases (GHG) (mitigation). All adaptation actions undertaken under the umbrella of this project will need to be assessed constantly in order to understand whether they contribute to building of resilience under increasingly variable climate. The final assessment of the project as well as the socio-climatic vulnerability assessment will support achieving this principle. Potential impacts on land use will also be registered, thus contributing to the assessment of GHG emissions reductions	Weak. Project foresees assessments on adaptation and mitigation.

	(mitigation).	
Pollution Prevention and Resource Efficiency	Water resources are currently exposed to various forms of pollution associated with the use of fertilizers and pesticides and manure. The project will work to prevent these types of pollution. There may be further pollution linked to the construction of small dams, including deterioration in water quality downstream, or detrimental effects through limiting access to water by downstream users.	Weak. ESIA will be undertaken to identify potentially adverse risks and impacts in this area. To assure safety of small dams and prevent harm, including to populations downstream, the project will undertake, when the full project will be designed, surveys, studies and assessments for identifying the risks and impacts of mini-dams on pollution and plan possible mitigation measures. These undertakings will be based on the environmental and social safeguards, including gender mainstreaming, of the West African Development Bank (BOAD) and GEF as well as relevant national environmental and social regulations.
Public Health	Disease-burden may be linked to vector-borne diseases of small dams. Otherwise, the project will promote organic fertilizer use and sustainable practices that may be beneficial to human health. By increasing food production and variety thereof the overall health of the population will be strengthened as calorie intake rises and nutritional quality of the food consumed is higher.	Weak. Application of ESIA in order to discern health impacts due to vector-borne disease occurrence, caused by small dam construction.
Physical and Cultural Heritage	No adverse impacts on physical and cultural heritage of the people in the intervention areas were identified. A public consultation was conducted in the project areas. The chances of damage to physical assets are extremely low.	None
Lands and Soil Conservation	The project will have positive impacts on the landscape of the intervention areas through the establishment of agro forestry systems and conservation agriculture. Soil conservation and restoring fertility is a key project activity.	None

~~No specific assessment and management for compliance is required at this stage.~~

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

The General Direction of Environment (DGA) of the Secretariat of the State of Environment and Sustainable Development of Guinea-Bissau (SEAD) will be the implementing agency for this project, responsible for coordination, monitoring and evaluation of the project. DGA/SEAD will implement a project management unit (PMU) whose role will be to (i) ensure the overall project management and monitoring, in accordance with Adaptation Fund rules; (ii) facilitate communication and networking among key stakeholders in Bissau; (iii) organize the meetings of

the Project Steering Committee (PSC); and (iv) support local stakeholders to realize the project's objective.

The proposed structure of the PMU consists of a Program Manager which will also function as National Project Coordinator (NPC) and support staff. The role of the NPC is to oversee the implementation of the project, including administrative and technical coordination and reporting back of progress upon feed-back received from the project partners, primarily to Adaptation Fund and SEAD's management. This function will be supported by streamlined secretarial, logistic and administrative support in Bissau, Gabú and Bafatá. The PMU will also consist of one dedicated national field coordinator (NFP) who is to lead the technical implementation process of Components 2 and 3, in collaboration with the relevant Ministries, technical organisms, regional governments, rural extensionists, and other regional/local partners. Both NPC and NFP shall be recruited through a selective process. Selection and contracting of field workers/other experts will follow relevant national legislation and/or BOAD/Adaptation Fund requirements.

Technical implementation of the project components will be entrusted to different technical organisms. Components 1 and 4 will be led by DGA/SEAD. The technical implementation of Component 2 will be under the jurisdiction of the Ministry of Agriculture and Rural Development with the support from local communities, private sector associations, NGOs and other representative civil society. Component 3 will be entrusted to the General Direction of Water Resources with support from the private sector, associations representing civil society, NGOs and research institutions on water use and quality. Technical implementation in the field will be supported by local associations, NGOs, women's associations, respected elders and traditional chiefs, particularly through the channels of the existing Rural Climate Change Forum (RCCF) in the Project Region. The RCCF will discuss and evaluate project activities, send in suggestions for improvement, and provide close ties with the tabancas. Through the RCCFs Sanitary Vigilance Committees further safeguards for forest preservation and climate change sensibilization will also be implemented. The RCCF will assure that the Project's activities continue after end of the official project.

A steering board is to support SEAD in coordinating and organizing the project. This board is to be composed of representatives from BOAD, relevant ministries and official organisms, including: Ministry of Agriculture and Rural Development; Ministry of Economy, Planning and Regional Integration; Ministry of Energy and Natural Resources; National Institute of Agrarian Research (INPA); National Research Institute (INEP); National Meteorology Institute (INM-GB); and by two independent and internationally recognized experts on tropical agriculture, agro-climatology, resilience and promotion of participatory adaptation practices. In order to assure that the project considers knowledge and information needs of traditional communities, two members from traditional authorities from the project region (one from Gabú, one from Bafatá) will also participate in the steering board, of which one will be female and one male. Further information exchange will be promoted through the Inter-Ministerial Committee on Environment (a high level policy body of the Council of Ministers) and country's Climate Change Committee.

It is the expected that Guinea-Bissau will reinforce its capacity to manage climate adaptation through this particular arrangement for project implementation.

B. Describe the measures for financial and project / programme risk management.

A detailed financial and project risk management framework will be developed during the full project development phase and will be outlined in the Operations and Procedural Manual to be agreed upon by the main donors such as the BOAD.

For financial risk management, the framework to be put in place is expected to draw heavily on the budgetary and fiduciary management arrangements which govern the operations of public sector institutions and agencies under the Government financial laws. The Government procurement policy, as well as the Adaptation Fund and BOAD financial management requirements will be integrated to the framework.

The following table summarizes the key project risks.

Table 2: Project risk matrix

Risks	Level	Mitigation measures
Reluctance to apply the knowledge and practices for adaptation to climate change	Medium	Awareness raising and training programs will be developed by the project under team under coordination of the PMU. Strong interaction with local stakeholders and their institutions (e.g. RCCF) with regard to project activities is to reduce reluctance further
Weak participation and involvement of public services at regional level	Low	Setting up project implementation committees at regional and local level and promoting regular 3 in 3 month RCCF meetings. These meetings will include government and civil society members
Failure in coordination of activities due to conflict of interest between stakeholders	Low	Establish a project consultative platform for sharing information and know-how among stakeholders, and promote frequent in person meetings. At national level inter-ministerial meetings will be held
Policymakers or politicians prioritize economic benefits over social and environmental needs	Low	Project activities explicitly integrate social, environmental and economic development needs in an integrative framework of climate-resilient agriculture. The project will prioritize low-regrets strategies for resiliency that have proven impact also on farmer income
Political instability leads to end of project/misappropriation of funds	Low	Although this risk is outside the jurisdiction of the project, it is deemed a low risk based on experiences made in other projects during times of political instability. In the past the Government of Guinea-Bissau has shown strong commitment to carry out projects even under political instability

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

Monitoring and Evaluation (M&E) of all project activities, including environmental and social consequences, are part of the project management responsibilities of the Secretariat of the State of Environment and Sustainable Development (SEAD). This includes tracking the implementation progress and learning in terms of social and environmental concerns, feedback, and knowledge sharing on results and lessons among the primary stakeholders. The Project Management Unit (PMU) and participating Ministries/technical agencies have built proven capacities in conducting inclusive and consultative processes (e.g. through in the development of Guinea-Bissau's First National Communication on Climate Change and the country's NAPA) which will be essential to mitigate any possible social or environmental risks. Participating farmers and their institutions (RCCF, women's associations, NGOs, etc.) will be key stakeholders in these processes. To screen and assess social and environmental risks, as well as to mitigate potentially adverse impacts, a specific, measurable and time-bound set of indicators reflecting these

risks will be integrated in the results framework of the project (to be developed in stage two of this proposal). In general, failure in compliance with the Adaptation Fund's Environmental and Social Policy is believed to be a low risk given that the project focuses strongly on increasing resilience of social and environmental systems in the Project Region.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Project M&E will be undertaken in accordance with the procedures and rules of partners and donors involved, including the Adaptation Fund and BOAD, with respect to business planning, reporting, monitoring and evaluation procedures for procurement as well as refunds to the beneficiary communities. A cell of the SESD will be responsible for coordination and M&E and report to the General Direction of Environment (DGA) and the Project Steering Committee (PSC), which will meet annually. A detailed schedule of project reviews will be developed by the project management unit, in consultation with project implementation partners during the early stages of project launch. Such a schedule will include methodologies and tentative time frames for PSC meetings.

Monitoring and evaluation (M&E) will be separated into technical M&E (adaptation actions and capacity building) and a financial and project management M&E. For the technical M&E the Project Management Unit (PMU) at SEAD will develop criteria for participatory monitoring of the project activities. For financial and project management M&E an appropriate mechanism and methodology will be established at the very outset of the project. M&E activities will be based on the logical results framework (to be developed). The overall M&E format for the project will follow the instructions and guidelines of the Adaptation Fund, including compliance with the Fund's Environmental and Social Policy (ESP).

Ongoing annual reviews which will involve the Project PMU, PSC, Executing Agencies and representatives from beneficiary communities. Under the supervision of the National Project Coordinator (NPC), it will lead to the development of the annual progress reports including recommendations to be submitted to the PSC for adoption. They will take into account the progress toward the objectives, lessons learned, risk management, executed budgets and the difficulties encountered. The monitoring undertaken by the PMU will be supplemented by financial monitoring carried out by a relevant organization. A mid-term evaluation will be conducted independently and focus on the effectiveness, efficiency and suitable character of the project implementation. The report will highlight issues that require decisions and actions, and reports of the first lessons learned from project design, execution and management. It will be preceded by a detailed financial audit. The Final Evaluation will occur at the end of the project and will be based on the same approach as the mid-term evaluation. It must also make recommendations on additional actions for sustainability. In addition, an ex-post assessment will focus on the sustainability of project results and lessons learned including best practices, anticipated costs, applying the lessons at the sectoral and thematic levels as the basis of the policy development and future planning. Independent of the Final Evaluation an ex-post assessment will be undertaken, focusing on assessing the sustainability of project results, lessons learned, including best practices and cost-benefit in relation to vulnerability and resilience. Both ex-post assessment and final evaluation will also provide key messages for policy development and future adaptation planning, including NAPA revision.

E. Include a results framework for the project proposal, including milestones, targets and indicators.

The results framework including all milestones, targets and indicators is to be developed in stage two of the application process. It will ensure compliance with the Environmental and Social Policy Framework of the Adaptation Fund, with a particular focus on gender, vulnerability and environmental protection, among other.

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

To be prepared for Stage Two of the application process.

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

A detailed budget, together with breakdown into cost categories, explanations, etc., will be developed for Stage Two of the project application process.

H. Include a disbursement schedule with time-bound milestones.

To be developed in Stage Two of the project application process.

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

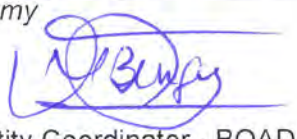
A. Record of endorsement on behalf of the government[3]

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Mr. Viriato Luis Soares Cassama National Program of Climate Change Secretariat of State for Environment and Sustainable Development Tel: +245 678 40 46 Email: cassamavilus@gmail.com	Date: *August, 3rd, 2015*

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (The National Communication to the UNFCCC, the National Adaptation Programme of Action (NAPA), and the National Poverty Reduction Strategy Paper (PRSP))and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
MBENGUE Almamy  Implementing Entity Coordinator - BOAD	
Date: *August, 3rd, 2015*	Tel. +228 99 86 86 60 / 22 23 25 24 Email: ambengue@boad.org
Project Contact Person: AMEGADJE Mawuli Komi	
Tel.: +228 90 04 62 54 Email: mawulikomi@yahoo.fr	

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

Annex 1

Literature cited

Adger, W.N., Agrawala, S., Mirza, M.M.Q., Conde, C., O'Brien, K., Pulhin, J., Pulwarty, R., Smit, B., Takahashi, K., 2007. Assessment of adaptation practices, options, constraints and capacity, in: Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J., Hanson, C.E. (Eds.), Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, pp. 717–743.

Asian Development Bank, FAO, 2013. Gender Equality and Food Security: Women's Empowerment as a Tool against Hunger. Asian Development Bank, Manila.

Barnett, J., O'Niell, S., 2010. Maladaptation. Glob. Environ. Change 20, 211–213.

Burke, M.B., Miguel, E., Satyanath, S., Dykema, J.A., Lobell, D.B., 2009. Warming increases the risk of civil war in Africa. Proc. Natl. Acad. Sci. 106, 20670–20674. doi:10.1073/pnas.0907998106

Carreiras, J.M.B., Vasconcelos, M.J., Lucas, R.M., 2012. Understanding the relationship between aboveground biomass and ALOS PALSAR data in the forests of Guinea-Bissau (West Africa). Remote Sens. Environ. 121, 426–442. doi:10.1016/j.rse.2012.02.012

Carr, J., Hughes, A., Foden, W., 2014. A Climate Change Vulnerability Assessment of West African Species. UNEP-WCMC Technical Report, Nairobi.

Chambwera, M., Heal, G., Dubeux, C., Hallegatte, S., Leclerc, L., Markandya, A., McCarl, B.A., Mechler, R., Neumann, J.E., 2014. Economics of adaptation, in: Field, C.B., Barros, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 945–977.

Cook, K.H., Vizy, E.K., 2012. Impact of climate change on mid-twenty-first century growing seasons in Africa. Clim. Dyn. 39, 2937–2955. doi:10.1007/s00382-012-1324-1

Eakin, H.C., Lemos, M.C., Nelson, D.R., 2014. Differentiating capacities as a means to sustainable climate change adaptation. Glob. Environ. Change 27, 1–8. doi:10.1016/j.gloenvcha.2014.04.013

Estes, L.D., Chaney, N.W., Herrera-Estrada, J., Sheffield, J., Caylor, K.K., Wood, E.F., 2014. Changing water availability during the African maize-growing season, 1979–2010. Environ. Res. Lett. 9, 075005. doi:10.1088/1748-9326/9/7/075005

FAO, 2015. FAOSTAT [WWW Document]. URL http://faostat3.fao.org/browse/D/FS/E (accessed 7.23.15).

FAO, 2010. "Climate-Smart" Agriculture Policies, Practices and Financing for Food Security, Adaptation and Mitigation. Food and Agriculture Organization of the United Nations (FAO), Rome.

Heltberg, R., Siegel, P.B., Jorgensen, S.L., 2009. Addressing human vulnerability to climate change: toward a `no-regrets' approach. Glob. Environ. Change 19, 89–99.

IMF, 2014. Guinea-Bissau - Request for Disbursement under the Rapid Credit Facility - Debt Sustainability Analysis Update. International Monetary Fund (IMF), Washington, D.C.

INM-GB, 2014. Perfil Climático - Guiné-Bissau (1981-2010), GNB/PNUE GFL/2328-2724-BBBB36-2212 for Third National Communication. Republic of Guinea-Bissau, UNEP, Bissau.

IPCC, 2014a. Summary for Policymakers, in: Field, C.B., Barros, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA, pp. 1–32.

IPCC, 2014b. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IPCC, 2014c. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IUCN, 2015. IUCN Red List.

Meybeck, A., Lankoski, J., Redfern, S., Azzu, N., Gitz, V. (Eds.), 2012. Building resilience for adaptation to climate change in the agriculture sector, Proceedings of a Joint FAO/OECD Workshop 23–24 April 2012. FAO, Rome.

MRG, 2015. World Directory of Minorities and Indigenous Peoples: Guinea-Bissau. Minority Rights Group International, London.

Niang, I., Ruppel, O.C., Abdrabo, M.A., Essel, A., Lennard, C., Padgham, J., Urquhart, P., 2014. Africa, in: Barros, V.R., Field, C.B., Dokken, D.J., Mastrandrea, M.D., Mach, K.J., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1199–1265.

PNUD, 2008. Rapport sur le Développement Humain en Guinée-Bissau 2006. Réformer les Politiques pour Atteindre les Objetifs du Millénaire pour le Développement en Guiné-Bissau. PNUD, Bissau.

Porter, J.R., Xie, L., Challinor, A.J., Cochrane, K., Howden, S.M., Iqbal, M.M., Lobell, D.B., Travasso, M.I., 2014. Food security and food production systems, in: Field, C.B., Barros, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., White, L.L. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel of Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 485–533.

Republic of Guinea-Bissau, 2006. National Programme of Actions to Climate Changes. Ministry of Natural Resourcesand Environment, GEF, PNUD, Bissau.

Roudier, P., Sultan, B., Quirion, P., Berg, A., 2011. The impact of future climate change on West African crop yields: What does the recent literature say? Glob. Environ. Change 21, 1073–1083.

Schaeffer, M., Baarsch, F., Adams, S., de Bruin, K., DeMarez, L., Freitas, S., Hof, A., Hare, B., 2013. Africa's Adaptation Gap. AMCEM/UNEP, Nairobi.

SEAT/DGA, 2013. Agro-climatic Maps and Vulnerability Maps for the Region of Gabu, Project PIMS N^{o} 0003977 – GNB 00077229/GEF/PNUD - Reforço da Resiliência e da Capacidade de Adaptação dos Sectores Agrário e Hídrico às Mudanças Climáticas na Guiné-Bissau. Secretaria de Estado do Ambiente e Turismo/Direcção Geral do Ambiente, PNUD, GEF, Bissau.

Shi, W., Tao, F., 2014. Vulnerability of African maize yield to climate change and variability during 1961–2010. Food Secur. 6, 471–481. doi:10.1007/s12571-014-0370-4

Solow, A.R., 2013. Global warming: A call for peace on climate and conflict. Nature 497, 179–180. doi:10.1038/497179a

Sultan, B., Guan, K., Kouressy, M., Biasutti, M., Piani, C., Hammer, G.L., McLean, G., Lobell, D.B., 2014. Robust features of future climate change impacts on sorghum yields in West Africa. Environ. Res. Lett. 9, 104006. doi:10.1088/1748-9326/9/10/104006

Temudo, M.P., Abrantes, M., 2014. The Cashew Frontier in Guinea-Bissau, West Africa: Changing Landscapes and Livelihoods. Hum. Ecol. 217–230.

Temudo, M.P., Abrantes, M.B., 2013. Changing Policies, Shifting Livelihoods: The Fate of Agriculture in Guinea-Bissau. J. Agrar. Change 13, 571–589. doi:10.1111/j.1471-0366.2012.00364.x

Temudo, M.P., Figueira, R., Abrantes, M., 2014. Landscapes of bio-cultural diversity: shifting cultivation in Guinea-Bissau, West Africa. Agrofor. Syst. 89, 175–191. doi:10.1007/s10457-014-9752-z

Thornton, P.K., Boone, R.B., Ramirez-Villegas, J., 2015. Climate Change Impacts on Livestock, Working Paper No. 120. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen.

UNDP, 2014. Human Development Report 2014 - Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience - Explanatory note on the 2014 Human

Development Report composite indices - Guinea-Bissau. United Nations Development Programme (UNDP), New York.
UNFCCC, 2010. Adaptation Assessment, Planning and Practice: An Overview from the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change. United Nations Framework Convention on Climate Change (UNFCCC), Bonn.
Verisk Maplecroft, 2013. Verisk Maplecroft [WWW Document]. URL http://maplecroft.com/portfolio/new-analysis/2013/10/30/31-global-economic-output-forecast-face-high-or-extreme-climate-change-risks-2025-maplecroft-risk-atlas/ (accessed 7.13.15).
WFP, 2014. Global Update - Food Security Monitoring: December 2014. World Food Programme (WFP), Rome.
WFP, 2013. Synthesis of WFP Rapid Food Security Assessment - June 2013. World Food Programme (WFP), Rome.
World Bank, 2015. Climate Change Knowledge Portal. The World Bank, Washington, D.C.

Annex 2

List of participants consultative phase

- Tabanca Mangui
- Tabanca Fosse
- Tabanca Camadjama
- Administration ‘Sector’ Pitche
- Tabanca Benfica
- Tabanca Sedjo Mandinga
- Tabanca Sonaco – Association Tessito

Tabanca: Copa Monjui

15/7/15

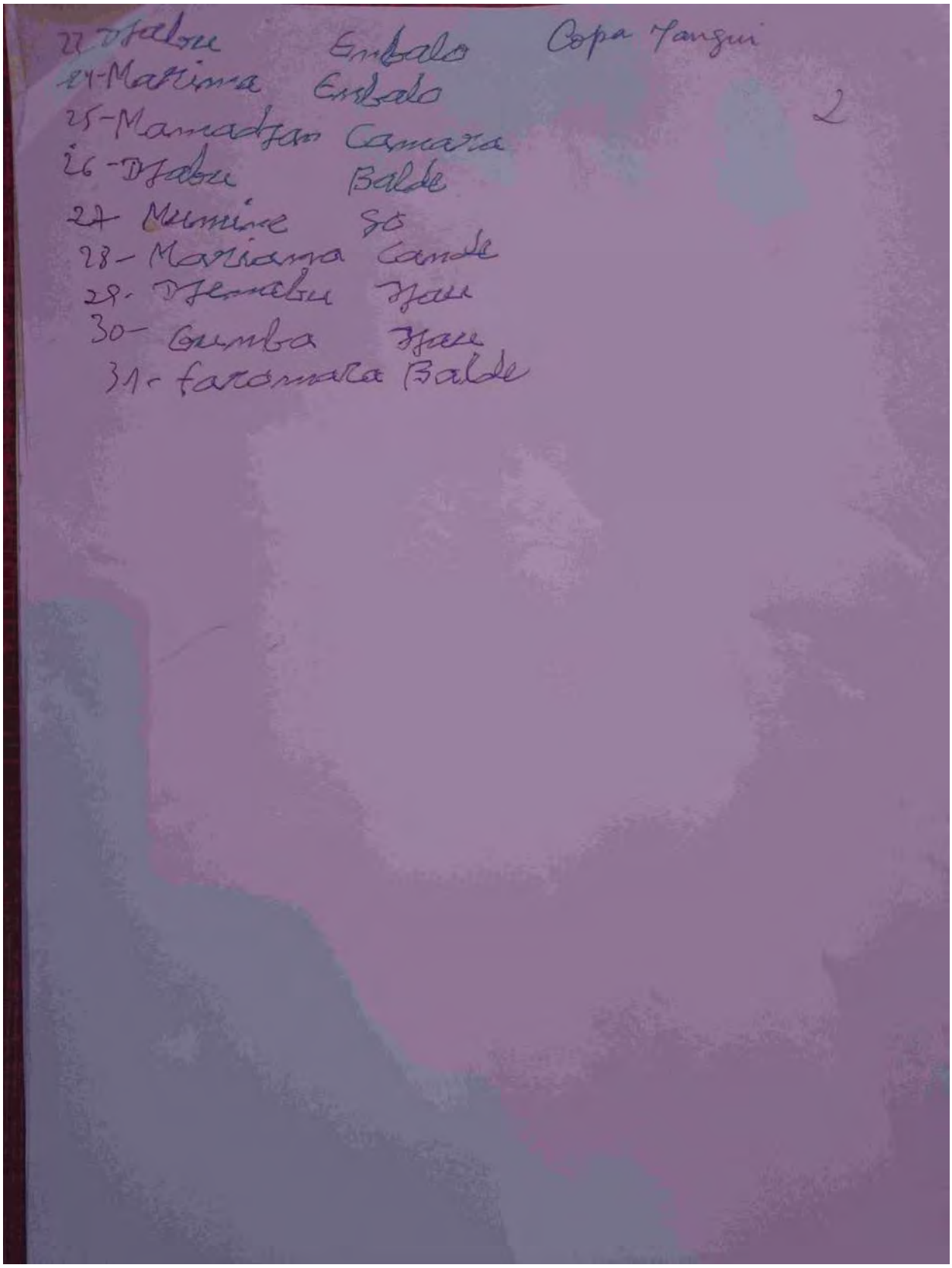
Lista de presença

(1)

1- Sene Embalo'
2- Mussa' Balde'
3- Braima Embalo
4 Galo Balde
5 Demba Balde
6 Mulai Embalo
7 Djam Sise
8 Sido Balde
9 Amadu uri So
10 Braima So
11 Usumane Balde
12 Bubacar So
13 Usumane So
14 Sadjo So
15 Tchamo So
16 Umaro So
17 Mamadu Balde
18 Saido Balde
19 Isaca Balde
20 Saliu Embalo
21 Hasane
22 Usumane So

Lamy Ary

— DRPCATAAGRC


22 Diallo Embalo Copa Tanguí
24-Mariama Embalo
25-Mamadjan Camara
26-Djabu Balde
27 Mamine So
28-Mariama Cande
29. Djenabu Djau
30- Gumba Djau
31- faromata Balde

15/7/15 Tabanca Fatic. (1)

Lista de presença - Homens

1. Sene Embaló
2. Garcia b. Embaló
3. SECO BALDE
4. AMadú Tidjane Sall
   IBNO DEMBO
   AMadú Tidjane Baldé
   BACIR Baldé
   AMadú guissé

Lista de presença Camadjama

N/O	Nome	Tabanca/sector	Contacto
71	Ismaba na Batcha	Direct	5360170
	Dunhé Bandjai	Camadjaba	5477613
	Djaba Ngofué	Camadjaba	543 29 43
	Fenda Cantore	Camadjaba	55427 55
	Adama Embalo	Camadjaba	573-1854
	Amado Auré	Camadjaba	543-2969
	Tombo na Camara	Camadjaba	16939966
	Natali Bandjai	Camadjabo	5511439
	ARFAN BANDJAI	Camadjab	5470613
	TUNCAN Camará	Camadjaba	6789864
	Amadou Touré	Camadjaba	5432977
	Bacar Camara	Camadjaba	5492842
	Carl Bolde		5860791
	BACIRO Camará		586-49-50
	SECO Sanha	Camadjaba	5702005
	Adama Embalo	Camadjaba	
	Tony Ant	PRAIA	6640955

Lista de presença 16/7/15

Administração do Sector de Pitche

1- Tony Cristo -5307577

2- Ignaba Na Batchá

3- Garcia Bacar Embaló

4- Maka Mané 6632306/5360994

5- Iaia Cassamá 6954061/5114978

6- Quemon Injai 5804391/6605183.

Lista de presença 16/7/15

Benfica

N/O	Nome	Tabanca	Contacto
01	Isnaba Na Batcha	Pitche	5360170
2	Mamadu Zeró Baldé	Benfica	6132247
3	Samba Djaó	Benfica	9276931
	Umaro Baldé	Benfica	925-29-38
	Alfa Baldé	Benfica	6115082
	Fodé Sudjai	Benfica	- - - - -
	Usumane Baldé	Benfica	5555779
	BOBOBALDE		5035385
	Lurino Sá		5307??
	Garcia Bacar Embaló		5367317
	Quem2 Sujai		5804391

Sedjo Mandinga 15/7/15

Lista presença

1- Sene Embalo
2- Suleimane Balde
3 Buli Fati
4- Mamadu Fati
5- Fodé Cassama
6- Talam Fati
7- Almamo Fati
8- Sadjo Quebé
9- Suntucum Fati
10- Seco Fati
11- Nembali Fati
12- Fodé Dabo
13- Queba Fati
14- Mamadu Sila
15- Caba Sila
16- Madinbim Fati
17- Marati
18- Queba Sila
19- Serifo Fati
20- Cadi Quebé
21- Binta Fati
22- Satú Sisse
23- Caramo Fati
24- Namo Fati
25- Demba Fati
26- Marabo Sisse
27- Sadjo Fati

Mulheres

28- Dusso Cassama
29- Djará Quebé
30- Fenda Fati
31- Udé- Fati I
32- Djará Sisse
33- Djara Cassama
34- Satam Fati
35- Bolom Indjai
36- Udé Fati II
37- Mandim Fati
38- Mayandim Quebé
39- Mariama Quebé
40- Assi Cassama

Associação Tessito - Sonaco 15/7/2018

Lista de presença

1- Queno Djaló 5804391
2- Sene Embaló 5329694
3- Amadú Embaló 5410894
4- Djalam fati 6448214
5- Ramato Djaló 6924015
6- Sene Tombom turé
7- Cadi Camará
8- Udé Taré
9- Tidandim turé
10- Ami Mané
11- Mandjilam fati
12- Djará turé
13- Fatumata Saidibé
14- Sumcar Sisse
15- Mané Sanhá
16- Nemó Biai
17- N'Djabi Cassamá
18- Aua Djecuré
19- N'GONH N'Dami
20- Gracia B. Embaló
21- Sandem fati