

Midterm Review Report of the project
“Enhancing capacities of rural communities to
pursue climate resilient livelihood options in
the Sao Tome and Principe districts of Caué,
Mé-Zochi, Príncipe, Lembá, Cantagalo and
Lobata (CMPLCL)”

FINAL REPORT

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1. Executive Summary

Sao Tomé and Príncipe (STP) is a small island country particularly vulnerable to climate-related hazards, which is showing significant signs of change, such as decrease and variation of the rainfall pattern, longer episodes of drought, coastal erosion and temperature raise. In the future, this climate change pattern could lead to the decreasing of productive zones and culture productivity, changes to the soil's organic matter, decrease of farmers' revenue and the risk of revenue-generating crops to become unfeasible due to the rainfall reduction. Despite the recurrent rainfalls, the country has been experiencing longer periods of drought, which constitutes a constraint to food production, predominantly in the north. In Sao Tome and Principe, agriculture, particularly the cocoa production, remains the main economic activity and the main source of revenue for rural households. It generates 70% of rural employment and about 80% of exports revenues, according to project's documents data. But despite its importance for the economy and communities, STP agriculture is characterized by a very low productivity mainly due to the lack of good farming practices, the bad state of agricultural support infrastructures (irrigation schemes, rural markets, rural roads), the absence of efficient advisory support, and the failures of the agricultural inputs and product markets.

This agricultural framework has been progressively deteriorating due to the climate change effects. The climate vulnerability across country regions and the climate change adaptation needs and priorities are described and detailed in documents such as the Vulnerability Map and the National Adaptation Plan of Action on Climate Change.

In this context, the overall objective of the project "Enhancing capacities of rural communities to pursue climate resilient livelihood options in the Sao Tome and Principe districts of Caué, Me-Zochi, Principe, Lemba, Cantagalo and Lobata (CMPLCL)" is to strengthen the resilience of rural community livelihood options against climate change impacts in the mentioned intervention districts. To achieve its objective, the project will deliver the following three main outcomes: i) Strengthen the capacity of the Center for Agro-Pastoral Development (CATAP), and the Agronomical Research Institute (CIAT), District Governments and Assemblies, District Councils, Civil Society Organizations and Community Based Organizations to support the enhancement of climate resilience or rural community livelihoods; ii) Reduce the vulnerability of rural livelihoods to climate risks through climate risks management infrastructures and mechanisms; iii) Design and transfer adaptation strategies to strengthen communities' climate resilience in the 30 most vulnerable villages of the 6 districts of CMPLCL of Sao Tome and Principe.

The project's progress towards results is strongly dependent of two interconnected factors: i) on one hand, the selection of the communities and activities to be carried out did not consider the national strategic documents and vulnerability maps elaborated by the Directorate-General for Environment; ii) on the other hand, the low involvement of the Directorate-General for Environment during the project implementation made it impossible to define a strategy framed in the climate adaptation priorities already identified.

In view of the above-mentioned context, the following table presents an overview of the mid-term review:

Measure	MTR Rating	Achievement Description
Project Strategy	N/A	The objective of the project is aligned with the national adaptation to climate change priorities and identifies the need to act out at different levels: institutional capacities strengthening, direct support to the communities and the need to define decentralized strategies for adaptation, mobilizing different stakeholders. Despite the alignment between the project priorities and the country's adaptation priorities, the project still displays some fragilities, namely high geographical dispersion, the lack of clear and objective criteria to define the communities' selection, a budget and implementation period inappropriate with the territorial dispersal, the activities and agents involved, the structural fragility of the technical assistance foreseen by the project, the

		risks related to the institutional fragility and the coordination difficulty. Some of the risks could have been underestimated in the project design, as the networking and the construction of a joint vision shared by different institutions cannot be assumed as a simple process in the social, political and institutional context of Sao Tome and Principe.
Progress Towards Results	<p>Objective (Strengthening of community resilience to climate change) –</p> <p>Moderately Unsatisfactory</p>	The project was not undertaken in view of climate adaptation. Some of the activities may be framed in an adaptation process but the dispersion and lack of capacity to consolidate actions and results will cause the project to have a limited scope. The actions undertaken were directed towards an attempt to strengthen resilience of livelihoods without addressing the priorities identified in strategic documents such as the NAPA or Vulnerability Map.
	<p>Outcome 1 (Capacity Building)</p> <p>Moderately Satisfactory</p>	The actions undertaken have contributed to the institutional strengthening and regular functioning of the government bodies, even though the project has not been directed towards the long-term changes and a capacity building to climate adaptation interventions. The project does not present a strategic guideline in this matter which compromises the outcome and its contribution to the project objective.
	<p>Outcome 2 (Security Mechanisms and Community Investments)</p> <p>Moderately Unsatisfactory</p>	Contrary to what was envisaged in the project document, innovative strategies for the use of rainwater adapted to the country context were not developed – the absence of Technical Assistance did not create the necessary conditions for it. Furthermore, no solid strategies were developed to fight soil erosion even though the initial diagnoses of the project indicate this need. The infrastructures developed in the beneficiary communities were defined based on an agricultural support framework, with no clear and solid approach towards the reinforcement of climate change security mechanisms.
	<p>Outcome 3 (Adaptation Strategies)</p> <p>Unsatisfactory</p>	The project did not develop this component in accordance with the intervention logic initially proposed. There is no participatory planning rationale from which concrete actions at the community level should have been identified. At this level, this project component is analogous with component 2 activities, related to community investment.
Project Implementation	<p>Moderately Unsatisfactory</p>	The intervention model has not been allowing to shift the action to medium/long-term changes and towards its objective. The absence of an operational budget led to an ad-hoc management of the activities with no integrated view of the objectives and changes to be achieved by the project. Likewise, the non-existence of any climate risk perception diagnoses did not allow the design of activities aiming adaptation to climate change, and the surveys carried out in the communities did not always provide adequate responses to the identified needs. Moreover, the difficulty to develop a planning change-oriented and guided by a clear budgetary framework led to problems in the management of community expectations as a result of the delayed investments. It is

		deemed that the project has not been able to develop a joint vision between the different partners involved.
Sustainability	Moderately Unlikely	Most of the infrastructures built by the project is showing strong constraints which conditionate its future feasibility and sustainability. The lack of technical capacity to manage and maintain some structures, such as greenhouses, and the inadequacy of some equipment to the country context, combined with the community based organizations fragility and the difficulty to maintain the farmers' support after the end of the project, make it necessary to reassess the management models and intensify technical assistance. Additionally, occasional support and activities carried out at the final stage of the project have high risk of sustainability and feasibility.

The main conclusions from the midterm review are:

- The project is aligned with the national development policies and strategies, as well as the National Adaptation Plan of Action on Climate Change;
- Despite of its relevance, the project has wide geographical dispersion and presented a set of complex activities, which would require a strong planning and coordination capacity;
- Despite some components' fragility, the project was able to bring the topic of climate change to the public agenda and developed a noteworthy awareness campaign;
- Despite the project objective of strengthening the climate resilience of community, the implementation focused mainly on agricultural investment and the adaptation component is less weighty in the implementation strategy;
- The diagnoses of resilience undertaken were not based on the existing vulnerability maps but rather on diagnoses of agricultural development needs in each community;
- The absence of an operational budget for the whole implementation period hindered the results orientation and led to an ad-hoc management of the activities with no integrated view of the objectives and changes to be achieved by the project;
- Further to the geographical dispersion, the project broke up into several and diverse activities which increased the difficulty to have a focus and to be able to accomplish solid results in the communities;
- Within the scope of introducing new agricultural technologies, it is deemed that these require research and testing which was not respected in the case of the greenhouses, making operation difficult;
- In the absence of technical knowledge at national level about the functioning of the greenhouses, it would have been advisable to hire a technical assistance throughout the project to test, advise and monitor the implementation of the greenhouse models to be implemented;
- The lack of specialized technical assistance has also limited the project's ability to guide its intervention towards the development of new technologies for the use of rainwater and erosion control;
- It is also considered that the management of the community expectations was not the most adequate and represents a constraint for the present and future projects, which is boosted by the absence of a clear planning and operational budget from the beginning of the project and by the communication failures between different stakeholders in the project.

The main recommendations are:

- New initiatives should only be developed at Community level in cases where there is a minimum guarantee of associative organization and economic viability;
- Hire a technical assistance to reassess the greenhouses functioning and carry out the necessary adaptations;

- Develop an intensive training course on greenhouse production, in CATAP, for agricultural extension workers and technical staff from the Ministry of Agriculture, as well as cooperatives members;
- Still concerning the greenhouses, new management models should be developed and implemented;
- Develop rainwater utilization systems in greenhouses with major water supply problems, until the end of the project;
- Considering the project budget availability, install a greenhouse structure (with a smaller area than the models already implemented) in CIAT for research purposes;
- At the infrastructures' management level, develop business plans for greenhouses and remaining equipment, promoting an evidence-based decision-making about the best management models to implement;
- Pay particular attention to the team isolation in the Principe Island, guaranteeing the support to the identified projects in the region;
- Intensify the training activities and technical support to the project beneficiary communities in all the institutions involved in the project;
- The adaptation plans of action on climate change shall be developed only if the necessary connection to the Directorate-General for Environment and the National Committee for the Climate Change is guaranteed;
- Develop, by the end of the project, an assessment of the institutional capacities of the partners regarding the inclusion of climate change in their work plans;

For future actions it is recommended the following:

- Assure a greater involvement of the Directorate-General for Environment in climate change adaptation projects;
- Develop informed intervention strategies based in scientific research and solid data about agricultural production and community livelihoods;
- Support the Directorate-General for Environment to create a climate phenomena database including indicators about its impact in the communities;
- Make a strong commitment to the production of seeds adapted to each region ;
- Research and develop crop varieties adapted to the water and heat stress in CIAT;
- Assure a permanent technical assistance to partner institutions for the development of technology adjusted to climate change;
- Develop irrigation systems in the areas identified with longer periods of drought;
- Develop partnerships with civil society organizations to monitor and enhance the community work;
- Develop partnerships with the main cocoa and pepper cooperatives with a view to developing actions in the main production areas at risk of suffering from climate change;
- Focus on activities that institutionally leverage capacity for adaptation rather than on short-term actions with little capacity to effectively reinforce resilience to climate change;
- Enhance environmental education and awareness with the support of civil society;
- Ensure a permanent team in Príncipe Island that allows a close follow up to the actions to be developed and a better framework of the project in the priorities of the Regional Government.;
- Strive for a better coordination of the funds deployed in the country from different funding institutions and national authorities.

2. Introduction

The midterm review (MTR) has sought to evaluate the progress towards the results achieved so far considering the global results and objectives of the project, according to specified in the Project Document (PRODOC), and to assess the projects' signs of success or failure in order to redirect the actions, if necessary, to achieve the results and analyze the project strategy and the risks to the sustainability of the results achieved.

Methodology

The evaluation team developed a participatory approach, striving the involvement of all players involved in all stages, as well other relevant stakeholders, programmes and institutions within the same intervention sector. The midterm review guided the assessment to the changes promoted by the project using the Theory of Change principles, as a planning and evaluation methodology that allows: i) the involvement of all relevant players in planning the change, ii) shifting the focus of intervention from the achievements to what needs to be done; iii) represent the change processes based on evidence and facts; iv) integrate activities and strategies and v) attribute the effective impact to the intervention held.

Based on the orientation for changes promoted by the project, the evaluation team strived to coordinate the necessary work with the project team and the beneficiary communities through a wider analysis on the intervention sector and on the potential synergies from other ongoing projects in the country.

Based on the Theory of Change methodology, the evaluation team proposed the following matrix of evaluation questions as a guiding instrument to gather information for all elements of analysis required by the Global Environment Fund (GEF) guidelines for midterm reviews:

Questions	Methodology
Project Strategy: To which extent the project strategy is relevant to the national priorities, national appropriation and represents the best solution towards the expected outcomes and objectives?	
The action presented an accurate identification of problems	Document Analysis, Semi-structured interviews with the project coordination team, UNDP and partner institutions.
Is the action aligned with the national and target-group needs?	
Is the action adjusted to the technical and institutional capacities of the implementation partners?	Meeting with beneficiary communities and partner institutions at the community level.
Were all the risks duly accounted?	Focus Group with implementation partners
Does the project present complementarities with other synergies and/or are there duplications considering other ongoing projects?	Theory of Change
Are the projected indicators and targets SMART?	
Is the project logframe clear and objective?	
Progress towards results: To which extent the project's foreseen changes and objectives are being achieved so far?	
Are the project results and objectives achievable within the implementation period?	Document Analysis, Semi-structured interviews with the project coordination team, UNDP and partner institutions.
	Implementation Reports / Technical Reports
What are the project components and results' level of range?	Meeting with beneficiary communities and partner institutions at the community level.
	Focus Group with implementation partners
	Theory of Change

Project Implementation and adaptive management: To which extent the project has been implemented efficiently and has been able to adapt itself to context changes?	
Are the implementation mechanisms suitable?	Document Analysis, Semi-structured interviews with the project coordination team, UNDP and partner institutions. Implementation Reports / Technical Reports Meeting with beneficiary communities and partner institutions at the community level. Focus Group with implementation partners
Is there a robust and result oriented monitoring system?	
Has the action planning been made in an adequate manner?	
To which extent the project shows a positive cost-effective ratio?	
To which extent there is appropriation and commitment from all the involved stakeholders?	
How is the project internal and external communication strategy developed?	
Sustainability: To which extent are there financial, institutional, social and environmental risks conditioning the ability to sustain the long-term project results?	
Can the project results and benefits be supported by project partners and beneficiaries after the end of GEF support?	Document Analysis, Semi-structured interviews with the project coordination team, UNDP and partner institutions. Implementation Reports / Technical Reports Meeting with beneficiary communities and partner institutions at the community level. Focus Group with implementation partners
Do the appropriation from different players contribute to the project sustainability?	
Have institutional capacities been developed to allow the project to continue?	
Are there environmental factors that can compromise the sustainability of the activities carried out?	

Risks and Limitations

The political instability in Sao Tomé and Príncipe (STP) has conditioned the midterm review preparation, which obliged the evaluation team to prepare the mission work and agenda in the course of the field work. Nonetheless, the workplan carried out allowed a wider perspective of the project's interventions, the perspective from the different partners and the potential synergies and/or duplication with ongoing projects. Despite the fragilities during the STP mission preparation, it was still possible to arrange several encounters with the main actors involved in the project implementation, a significant pool of beneficiary communities, and with other ongoing projects and programmes in the country. Additionally, it was held a preliminary restitution meeting with various institutions involved in the implementation of the project. This meeting allowed for a fruitful discussion of ideas and represented an important moment of evaluation.

Given that the midterm review mission was undertaken in an advanced stage of the project, it restricts the capability to propose deep changes to the implementation model for the remaining implementation period. Nevertheless, the evaluation team organized the recommendations to act out in the short-term as well as the recommendations for future actions that may follow-up the work accomplished so far.

The report starts to introduce a short description of the project and the project's social and institutional context. Thereafter the evaluation team presents its findings concerning i) project strategy; ii) progress towards results; iii) project implementation; and iv) sustainability of the actions carried out.

After presenting the analysis of each of the criteria above mentioned, the conclusions and recommendations withdraw from the midterm assessment are reported.

3. Project and Context Description

São Tomé and Príncipe (STP) is a small country comprised by an archipelago at the Gulf of Guinea and it is particularly vulnerable to climate change, such as flooding in coastal areas and storms. In addition to this, the country has witnessed a significant variability of the climatic pattern, with rainfall declining to around 1.7 mm / year from 1951 to 2010. This combined with the continuous increase of the Gravana period (Dry Season) that lasts 6 months (April to September), in contrast with the usual 3-month pattern (June to August), is causing relative drought periods in some parts of the country, notably in the North, constraining the production capacity.

Similarly to other developing small island countries, Sao Tome and Principe has a very limited internal market, it depends highly of a limited amount of export products (mainly cocoa), shows high levels of imports of goods due to the incapacity of internal production, and it is extremely vulnerable to exogenous factors, including the climate change global risks.

Despite the agricultural importance to the economy and the communities, the sector is characterized by a low productivity level mainly due to the lack of adequate agricultural practices, bad infrastructures (irrigation systems, rural markets, rural tracks), absence of efficient technical assistances, difficulty to access quality inputs and in market access. This agricultural framework is progressively deteriorating by virtue of climate effects, and it is expected a worsening scenario for food security, poverty level increase, higher dependency of import of goods and, as a consequence, an increase of the trade balance chronic deficit.

In this context, the overall objective of the project “Enhancing capacities of rural communities to pursue climate resilient livelihood options in the Sao Tome and Principe districts of Caué, Me-Zochi, Principe, Lemba, Cantagalo and Lobata (CMPLCL)” is to strengthen the resilience of rural community livelihood options against climate change impacts in the mentioned districts of intervention.

The project strives to achieve the objective through the intervention in three components linked with each expected result:

- Strengthen the capacity of the Center for Agro-Pastoral Development (CATAP), and the Agronomical research Institute (CIAT), district governments and assemblies, district councils, CSOs and CBOs to support the enhancement of climate resilience or rural community livelihoods;
- Reduce the vulnerability of rural livelihoods to climate risks through climate risks management infrastructures and mechanisms;
- Design and transfer adaptation strategies to strengthen communities’ climate resilience in the 30 most vulnerable villages of the districts of CMPLCL of Sao Tome and Principe.

The intervention areas were selected in each of the 6 districts chosen, having been identified the main characteristics of climate vulnerability in each of them:

District	Mé Zochi	Lobata	Cantagalo	Lembá	Caué	Pagué / Príncipe
Area (km ²)	122.0	105.0	119.0	229.5	267.0	142.0
Population	44,752	19,365	17,161	14,652	6,031	7,324
Climate Change induced Issues	Droughts and excess rainfall chiefly/Landslide /Erosion	Recurrent droughts of 5 months in the past 5 years	Increase in Storms /Recurrent droughts of 5 months in the past 5 years	Frequent and long lasting recurrent droughts of 5 months in the past 5 years	Reduction in rainfall/ Increase in Storms/ sea invasion/ Flooding	Increase in Storms/ Landslides / Severe Coastal Erosion

PRODOC also shows a list of indicators and targets for each project objective and outcome/component:

	Indicator	Targets
<p>Objective</p> <p>To strengthen the resilience of rural community livelihood options against climate change impacts in the São Tomé districts of Caué, Me-Zochi, Principe, Lemba, Cantagalo, and Lobata (CMPLCL).</p>	Percentage change in vulnerability of local community to climate risks via perception based survey (VRA)	At mid-term 25% increase of VRA score; at end-of-project 50% of VRA score.
<p>Outcome 1</p> <p>The capacity of the CATAP, CIAT, district governments and assemblies, district councils, CSOs and CBOs strengthened to support the enhancement of climate resilience of rural community livelihoods.</p>	1.1 Capacity perception index in CATAP, CIAT, CSE, CSOs, CBOs and districts councils.	1.1 VRA to be undertaken at the project onset.
	1.2 Number of Agricultural Extension staff (including on-the job trainings scheme) trained on adaptation strategies to support village climate change platforms.	1.2 By the end of the project at least 60 Agricultural Extension staff (including on-the job trainings scheme) have been trained on adaptation strategies to support village climate change platforms.
<p>Outcome 2</p> <p>Vulnerability of rural livelihoods reduced through climate risks supportive infrastructures and mechanisms.</p>	2.1 Number of small scale rainfall harvesting, number of water storage structures and/or small scale irrigation networks established at community level.	2.1 By the end of the project at least 1(one) rainfall harvesting, and/or 1(one) sizeable water storage structures and/or 1(one) irrigation network has been established at community level in the selected pilot sites particularly in drought prone areas.
	2.2 Number of ha that has benefited from any forms of erosion control as well as dykes and bunds to protect fields against flooding.	2.2 By the end of the project at least 30 (thirty) % of the identified eroded areas is benefited by any forms of erosion control as well as dykes and bunds to

		protect fields against flooding.
Outcome 3 Adaptation strategies are designed and transferred to strengthen communities' climate resilience in the 30 most vulnerable villages of the 6 districts of CMPLCL of São Tomé and Príncipe.	3.1 Number of CCA measures successfully implemented by the community members as a result of Project assistance.	3.1 By the end of the project, at least two CCA measures have been implemented by the community members as a result of project assistance.
	3.2 Number of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) that were successfully demonstrated and scaled up at community level.	3.2 By the end of the project at least 50% of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) have been successfully demonstrated and scaled up at community level in the target vulnerable villages

The key barriers that need to be overcome, identified in PRODOC, include:

- Limitations in climate change handling capacities of the key institutions of relevance to rural community livelihoods, notably Agricultural research institute (CIAT), Center for Agro-Pastoral Development (CATAP) and Center for the Support of Rural Development (CADR);
- High levels of rural poverty rural that limits the adaptive capacity and capability of individuals, farmers and villagers to undertake required investments that will help them to respond better to natural disasters, flooding, and droughts.

PRODOC also identifies the risks of the project, such as unsatisfactory institutional and political support and lack of coordination among different parties:

- Lack of capacity of communities to develop Integrated Adaptation Measures (IAMs)
- Weak institutional capacity at district and regional level to oversee and guide climate change adaptation strategies

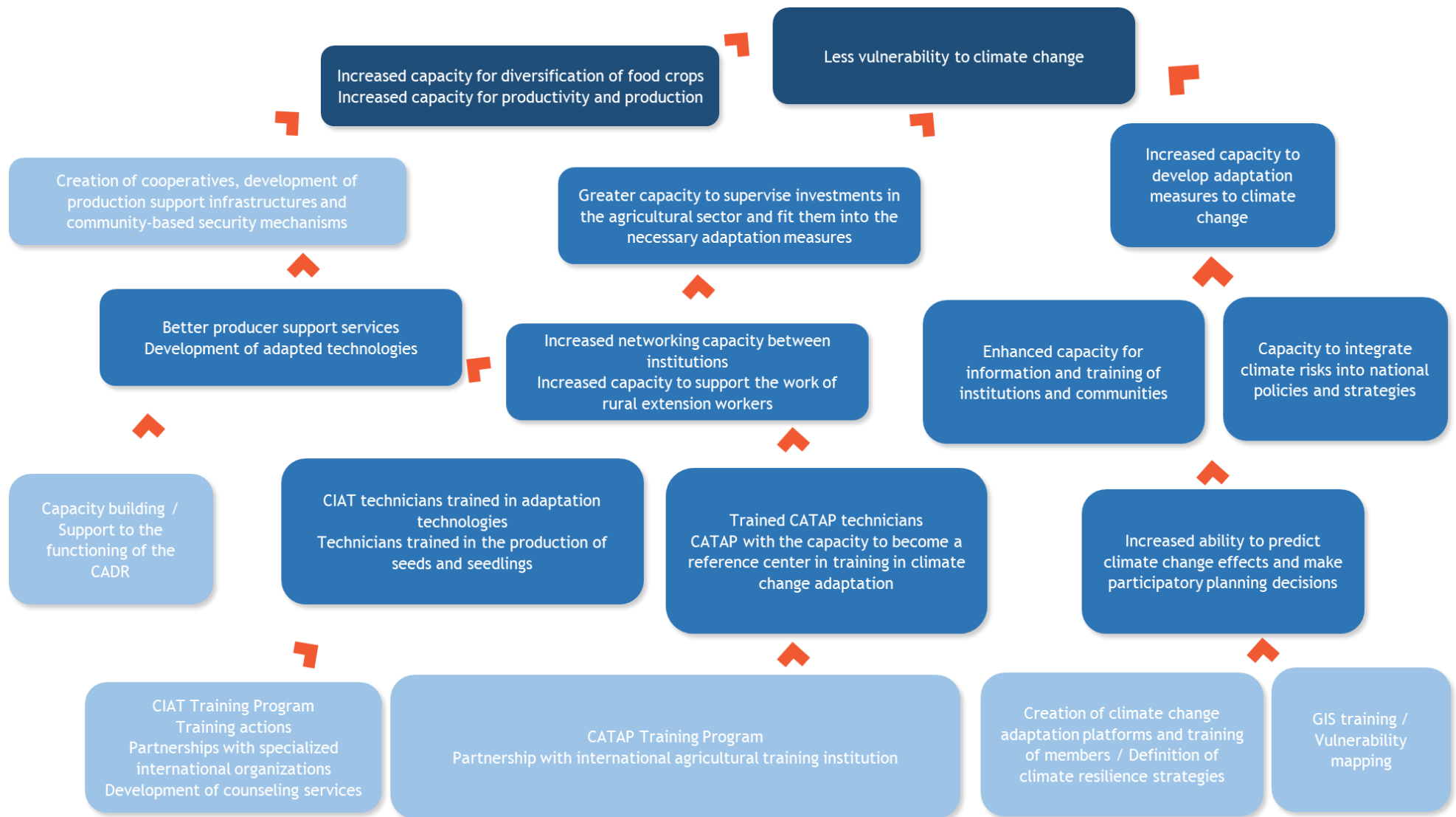
The key stakeholders involved in the project are:

INSTITUIÇÃO	INTERVENÇÃO NO PROJETO
Ministry of Agriculture and Rural Development (MARD)	<ul style="list-style-type: none"> • Implementing Agency, responsible for programme execution. • Implement Project Activities
Center for Agro-Pastoral Development (CATAP)	<ul style="list-style-type: none"> • Technical supervision of beneficiary farmers • Technical support and advice for the benefit of the beneficiary communities • Implementation of training programmes and extension of good agricultural practices to adapt • Support the CIAT in the design and implementation of a training package on climate resilient agriculture technologies packages • Ensure the integration of climate change in any research programme on agriculture
Agricultural Research and Technology Centre (CIAT)	<ul style="list-style-type: none"> • Responsible for the design and implementation of a training package on climate resilient agriculture • Responsible for the identification and tests of climate resilient agriculture technologies
The Centre for Support of Rural Development of the Ministry of Planning and Development (CADR)	<ul style="list-style-type: none"> • Responsible for carrying out agriculture and fisheries extension support to local communities
District Authorities	<ul style="list-style-type: none"> • Responsible for monitoring the activities and to develop and enhance the climate change platforms
Local Communities	<ul style="list-style-type: none"> • Main beneficiaries of the project
Observatory / Directorate-General for Environment	<ul style="list-style-type: none"> • Involved in the georeferentiation training
Civil Society Organisations	<ul style="list-style-type: none"> • PRODOC predicted the involvement of Civil Society Organizations in capacity-building actions at institutional and community level

4. Findings

4.1 Project Strategy

The analysis of the project design led to the construction of a theory of change logic model that displays the change mechanisms foreseen by the project. This process identifies the connections between the expected activities, the changes each activity intends to promote and how this set of changes predictably lead the expected outcomes to the project objective. The model is presented below.



As referred in the previous sections, Sao Tomé and Principe shows a strong vulnerability to climate change, thus projects related to climate adaptation and resilience are fundamental tools to support the national efforts for development and adaptation.

The National Adaptation Plan of Action on Climate Change (NAPA) is the national strategic document at this level, which have already identified the most critical climate change phenomena in STP:

- Decrease in riverflow;
- Decrease in rainfall;
- Increase in the length of the dry season;
- Increases in temperature;
- Rise of the sea level;
- Floods and consequent contamination of water;
- Coastal erosion

The priority actions outlined were the following: i) construction of dikes; ii) construction of reservoirs of drinking water; iii) rehabilitation of overhead irrigation; iv) rational exploitation of forest resources; v) reinforcement and diversification of the agricultural and animal production; vi) relocation of some communities in risk or part of them; vii) Improvement of management of the country water resources.

In the same document, the main climate change impacts, in the different regions of the country, and respective adaptation measures proposed, were identified:

Vulnerability Factors	Priority Areas	Impacts	Adaptation Measure	Monitorization indicators and Evaluation of Options
Drought	Porto Alegre, Malanza, Plancas I, Praia das Conchas, Mato Cana, Bernardo Faro, Cadão, Abade, Belo Monte, Porto Real	Fall of animal and plants production. Vegetation degradation and reduction of the biodiversity (decrease of fauna and flowers resources)	To rehabilitate the overhead irrigations. Intensive plantations of trees (reforestation campaign)To rehabilitate the shadow of cocoa and coffee plantation. To build reservoirs of water for animals. To eliminate arbitrary trees cuts.	Amount of trees planted annually by unit of area. Number of water reservoirs of capacity built in each affected area. Reduction to 70% of arbitrary tree cuts.
Land Destruction	Bernardo Faro, Santa Catarina	In viability of the access roads in the rural areas. Loss of animal and plant resources.	To plan trees to protect the hillsides. To create civil protection service. To prohibit severely cut of trees in the hillsides.	Amount of tree planted annually by unit area. Number of units of protection service in the affected area.
Floods and marine invasion	Malanza, Praia Pesqueira, Santa Catarina, Abade.	Mortality in the animals. Loss of some fruit trees and forest formation	To build dikes. Plantation of adaptable arboreal species to the vulnerability factors	Number of dikes built in the affected areas. Amount of planted trees
Whirl	Porto Alegre	Vegetation destruction, including forest formation	Construction of barriers with resistant trees to strong winds	Number of constructed barriers in the priority areas
Tempest line	Cadão	Destruction of cultures and forest formation	Construction of barriers with resistant trees to strong winds	Number of barriers constructed in the priority areas.

Within the scope of São Tomé and Príncipe's Second National Communication for the United Nations Framework Convention on Climate Change, were also reported the potential effects of climate change on agriculture and fisheries in the country: i) reduction of agricultural extension zones and crops productivity; ii) increase of outbreaks of pests and diseases; iii) alteration of soil organic matter; iv) reduction of farmers' income; v) reduction of watercourses; vi) reduction of 50% in artisanal fishing; vii) risk of viability of cocoa production in certain areas due to reduced rainfall. Recently, for São Tomé and Príncipe's Third National Communication for the United Nations Framework Convention on Climate Change, several studies were carried out and one was concerned with vulnerability and adaptation. The evaluation of the climate change impacts on crops was carried out through the Culture Risk Index (IRC), constructed from the combination of indicators that estimate the stress in the crop due to air temperature, water stress, susceptibility to diseases and potential of crops. This study analyzed different scenarios for the cultivation of taro, corn, cocoa and pepper and identifies for each scenario the impacts in different areas of the country

The National Plan and Strategy for Biodiversity Conservation 2015-2020 refers to the climate change impact to agricultural production systems, mentioning the increase of rainfalls intensity, reduction of rain predictability, deforestation and soil erosion and impoverishment, which demonstrates the impact of climate change in the communities. They also refer the impacts of temperature raise on animal production. The increase of rainfall intensity and longer drought periods are outlined in these documents as it can impede cocoa production in some agricultural zones, which is the main income source for most households. Therefore, it is essential to develop climate change adaptation strategies promoting a higher resilience capacity for the communities.

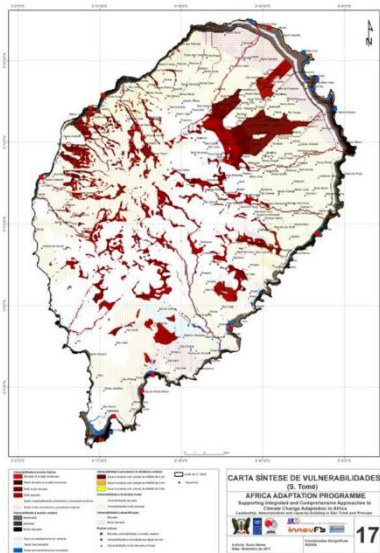
Thereby, the project displays a coherent objective with the national priorities to climate change adaptation and identifies the need to act out at different levels: institutional capacities strengthening, direct support to the communities and the need to define decentralized strategies for adaptation through the mobilization of different agents.

Despite the alignment between the project priorities and the national priorities for adaptation, the project revealed some fragilities, notably:

The **high geographical dispersion** was considered a potential jeopardy to the ability to promote an effective intervention capable to enhance climate resilience at the community level. The decision to intervene in 30 communities and 6 Districts in the country (including the Autonomous Region of Príncipe) was not followed by a solid diagnosis that could permit the identification of intervention priorities. Thus, the support to 30 communities (which increased to 32 in the course of the project) represented an operational obstacle that has conditioned the project capability to focus on its outcomes and objective.

The **lack of clear and objective criteria** to select the communities. In PRODOC we can find a characterization of the selected communities, but it is not clear how all the communities fit into the priorities identified both in the NAPA and the Vulnerability Map elaborated by the Directorate-General for Environment. In the latter document, the major vulnerability zones are mapped according different levels (potential drought, soil erosion, flooding, etc.). Even though most of communities in São Tome and Príncipe are vulnerable to climate change, this vulnerability should be prioritized according information collected, and defined by competent authorities at the national level. The preliminary diagnosis carried out in PRODOC matched some selected communities to the priorities identified in the NAPA and the Vulnerability Mapping, but mention that climate change effects are lower in other selected communities (Mendes da Silva or Paga Fogo) and no solid criteria for the selection of the communities is presented.

The budget and the implementation period are not suitable with the geographical dispersion, the activities and stakeholders involved – the project document identifies a set of relevant activities for climate change adaptation and reduction of communities' vulnerability. Nonetheless, it is considered that it would not be possible to develop a solid strategy of adaptation for 30 communities at the national level. This is particularly visible when taking into account the likely high costs of constructing/rehabilitating irrigation systems or erosion control measures.



The **introduction of new production technologies requires a strong investment in technical assistance and capacity building**. Even though this was referred in the project document, it may not have been duly accounted considering the available budget for that matter;

The **project strategy was complex and hard to implement** taking into consideration the identified risks (weak institutional capacity, fragility in the coordination between parties, lack of community capacity to implement adaptation initiatives), which are not risks but rather context characteristics;

The **project complexity would require a strong coordination capacity**, a joint vision and a results/change orientation from all the players, under the risk of fragmenting the cause-and-effect chain and start implementing the project in segments of activities by each of the partners. This requirement could have been undermined in the project design, as the networking and the construction of a joint vision shared by different institutions cannot be assumed as a simple process in the social, political and institutional context of Sao Tome and Principe.

Investing in decentralized structures to plan adaptation strategies at the local level poses an interesting and relevant strategy, although given the **local administration fragilities** this project component seemed overly ambitious for the period implementation and the management structure planned.

Logframe – Indicators

The theory of change previously presented shows a coherent approach in which every component is interconnected and contribute to midterm changes, outcomes and objectives of the project. This intervention logic is aligned with the logic structure presented in PRODOC. It reflects the strategic option to focus on institutional capacity building, on investment to infrastructures supporting vulnerable communities and the definition of participatory strategies as an instrument to plan climate change adaptation measures. Follows an analysis of each of the proposed outcomes and indicators:

Objective	Indicator	Targets
To strengthen the resilience of rural community livelihood options against climate change impacts in the São Tomé districts of Caué, Me-Zochi, Principe, Lemba, Cantagalo, and Lobata (CMPLCL).	Percentage change in vulnerability of local community to climate risks via perception based survey (VRA)	At mid-term 25% increase of VRA score; at end-of-project 50% of VRA score.

PRODOC proposed an index of vulnerability perception by the beneficiary communities as the indicator for the project global objective. Despite the limitations of any perception index, this indicator is considered appropriate to measure the risk perception related to climate change. Nonetheless, this instrument would have to be applied at the beginning of the project as the tool applied for the communities’ diagnosis. If not applied, the vulnerability perception assessment in the course of the project is strongly compromised. Additionally, to accomplish a robust analysis of the objective it would have been useful the inclusion of a complementary indicator to complement the communities’ perception with concrete data about the evolution of its production and livelihoods.

	Indicator	Targets
Outcome 1 The capacity of the CATAP, CIAT, district governments and assemblies, district councils, CSOs and CBOs strengthened to support the enhancement of climate resilience of rural community livelihoods.	1.1 Capacity perception index in CATAP, CIAT, CSE, CSOs, CBOs and districts councils.	1.1 VRA to be undertaken at the project onset.
	1.2 Number of Agricultural Extension staff (including on-the job trainings scheme) trained on adaptation strategies to support village climate change platforms.	1.2 By the end of the project at least 60 Agricultural Extension staff (including on-the job trainings scheme) have been trained on adaptation strategies to support village climate change platforms.

Regarding outcome 1 indicators, the vulnerability reduction assessment is not appropriate to measure the institutional capacities strengthening. On the other side, the indicator linked to the number of Agricultural Extension staff trained represents an output and it will have to be interpreted in a broad sense, as CADR technical structure does not have such a high number of extension workers. The capacity building of the institutions involved should be linked to an ability to measure not only the number of people targeted for training but also the ability to develop new intervention mechanisms at the level of adaptation, either through the production of adapted seeds (in the case of CIAT) or in the development of new training or innovative technologies (CATAP)

	Indicator	Targets
Outcome 2 Vulnerability of rural livelihoods reduced through climate risks supportive infrastructures and mechanisms.	2.1 Number of small scale rainfall harvesting, number of water storage structures and/or small sale irrigation networks established at community level.	2.1 By the end of the project at least 1(one) rainfall harvesting, and/or 1(one) sizeable water storage structures and/or 1(one) irrigation network has been established at community level in the selected pilot sites particularly in drought prone areas.
	2.2 Number of ha that has benefited from any forms of erosion control as well as dykes and bunds to protect fields against flooding.	2.2 By the end of the project at least 30 (thirty) % of the identified eroded areas is benefited by any forms of erosion control as well as dykes and bunds to protect fields against flooding.

The component related to direct investment in the communities was set towards infrastructures supporting community, connected to the rainfall utilization or rehabilitation/construction of irrigation systems. Given the budget limitations and the large number of beneficiary communities, the targets would be unbalanced as it would be not be possible to

fund the proposed systems in every community. PRODOC also mentioned activities to control erosion with a specific indicator for that purpose. However, the measurement of this indicator would require an initial mapping and georeferentiation that would allow the application of control measures.

	Indicator	Targets
Outcome 3 Adaptation strategies are designed and transferred to strengthen communities' climate resilience in the 30 most vulnerable villages of the 6 districts of CMPLCL of São Tomé and Príncipe.	3.1 Number of CCA measures successfully implemented by the community members as a result of Project assistance.	3.1 By the end of the project, at least two CCA measures have been implemented by the community members as a result of project assistance.
	3.2 Number of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) that were successfully demonstrated and scaled up at community level.	3.2 By the end of the project at least 50% of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) have been successfully demonstrated and scaled up at community level in the target vulnerable villages

In spite of the proposed indicators reflecting a change rationale based in a participatory discussion and planning of adaptation actions to be carried out, its application and dissemination, PRODOC targets are unsuited to the context of the country and the national institutions, notably the local authorities. The weakness of decentralized institutions should have led to a less ambitious strategy for the 3rd component, and respective indicators and targets. It is considered that it would have been more cautious to turn this component to awareness and dissemination actions on climate change, which is appropriate to the country and institutional background. As an alternative, the model could have been tested in a specific District or Region allowing its future dissemination.

4.2 Progress towards results

The project towards results is highly constrained by two interconnected factors: i) on one hand, the selection of communities and activities to be developed was not based in national strategic documents and vulnerability maps elaborated by the Directorate-General for Environment, though in occasional cases the communities and activities undertaken may fit together; ii) on the other hand, the low involvement of the Directorate-General for Environment during the project implementation made it impossible to define a strategy framed in the climate adaptation priorities already identified. The combination of these two factors led to a preliminary diagnosis of the identified communities that resulted in a diagnosis on the livelihood's vulnerabilities rather than a diagnosis on climate vulnerability.

At this level the non-application of the vulnerability reduction assessments (VRA) are a demonstrative sign of this lack of orientation or climate "lens" on the activities to develop. In practice, the diagnostics end up addressing some phenomena related to climate change, but they do not do so in a systematic way that allows measuring the impact of the project on the perception of risk by the communities. The table below systematizes the instrument that could have guided the elaboration of the diagnoses:

APF Step ¹	VRA Indicator	Example of VRA Question
Assessing current vulnerability	Vulnerability of livelihood/welfare to existing climate change and/or climate variability	What happens when there is drought? How does this affect you and your community?
Assessing future climate risks	Vulnerability of livelihood/welfare to developing climate change risks	What would happen if drought was twice as frequent? How would this affect you and your community?
Formulating an adaptation strategy	Magnitude of barriers (institutional, policy, technological, financial, etc) barriers to adaptation	What stands in the way of adapting to increasing drought? What means do you or your community have to manage events occurring more frequently?
Continuing the adaptation process	Ability and willingness of the community to sustain the project intervention	Rate your confidence that the (project activity) will continue after the project period

Follows an analysis of each of the project components:

1. Strengthening of Institutional Capacities

CIAT

In the previously presented theory of change, the support to Institutional Capacities strengthening included technical assistance partnerships and involved the development of production advisory services, the development of production technologies adapted to climate change and a capacity building programme as a tool to enhance better services to support the producer, disseminate new technologies and increase the capacity of crop diversification. The intervention logframe presumed a strive towards innovations and new adaptation technologies. CIAT intervention in the project, in practice, focused on equipment support, training and following-up the greenhouses' work. As of the capacitation for the introduction of new technologies, we only consider the greenhouses work as innovative, but it should have been tested before its dissemination. The introduction of new technologies requires research and trials, and so this new technology would require this same effort from CIAT in order to examine and propose better alternatives tailored for each community. The absence of a specialized technical assistance was a barrier to move forward the introduction of new technologies and made it impossible the networking led by CIAT but executed in partnership with CATAP and CADR. In terms of the climate change adaptation strategy, the seeds production adjusted to each crop and region of intervention should have been the central activity of CIAT intervention, as the national capacity able to ensure crops production adapted to climate change will be crucial to enhance communities' capacity for climate change adaptation.

CATAP

The project had a change rationale overly ambitious for Sao Tome and Principe (STP) institutional context. The goal to transform CATAP in a training center of excellence for climate change adaptations did not consider the effective institutional starting point and intervention profile. Despite the institutional fragility of CATAP, it would have been essential to have a specialized technical assistance (foreseen in PRODOC) to develop new training curricula and define the introduction of new technologies (in partnership with CIAT). So far, the strengthening of CATAP capacities confines itself to equipment reinforcement and a few training sessions for the technical staff. This institution involvement in the project is limited and occasional, so it would be desirable to have a higher involvement in the development of training

¹ Source: UNDP (2008) A Guide to the Vulnerability Reduction Assessment

actions together with the beneficiaries. CATAP also elaborated a diagnosis on the processing potentials within the scope of project component 3, however it did not have any follow-up thus questioning the investment.

CADR

CADR took over the role of central institution within the Ministry of Agriculture responsible to monitor actions at the beneficiary communities, leveraging its rural extension role and its team presence in all STP Districts. CADR has benefitted from equipment support and organizational support, which provided the needed resources for its regular presence in the course of the activities and increased presence among the farmers. This is an extremely relevant point as most of the international projects often assume that government agencies are able to fulfill their mandate. CADR is an example of an institute with no budget support from the government and depends highly from provision of services to projects, which confirm the institutional fragility in the country. CADR technical staff benefitted from training in climate change, pest and diseases control and greenhouses operation. Still, the introduction of new technologies, namely greenhouses, requires a follow-up and a specialized technical assistance in the medium term ensuring an effective strengthening of CADR technical capacity.

Still with regard of capacities building component, it is considered that local administration participation was very sporadic. In the project formulation, one of the methodological objectives was to strengthen local administration and support its capacity to monitor activities. To this end, motorcycles were provided and the focal points were identified to follow up the ongoing activities. The involvement varies per District but overall the involvement by the local administrations is fragile and does not derive from a strategic model of project design based on decentralized structures.

The role of civil society was also very residual, confining itself to a few training sessions. This strongly limits the objective to leverage the project as a capacity strengthening tool for civil society organizations and start including them in the planning and implementation of adaptation strategies at the local level.

In general terms, each partner presents a set of occasional activities which were not implemented strategically in view of creating synergies and did not allow to consolidate the high-level changes identified in the Theory of Change. As such, the preparation of the several institutions, and respective staff, for the development of new adaptation technologies, adjusted seeds production, better networking and strengthening of institutional capacity to climate change adaptation is still far from being reached.

The lack of a climate “lens” and an adequacy between the national strategies for adaptation in the selected communities constrained the project since the design phase. At this level, it matters to display the analysis of different project documents to reveal the consistency or inconsistency in the decision-making. Follows a brief analysis of the diagnoses carried out so far in each community:

Caué District

This district has been impacted by climate change through sea level rise, sea water intrusion in locations such as Malanza, Praia Pesqueira, Praia de Yô Grande, and reduced fisheries in these coastal areas. The diagnosis confirms this impact, and PRODOC identifies as potential adaptation measures the population displacement (Malanza), the support to water access, new reservoirs and provision of seedlings, seeds and agricultural inputs. In the case of Ponta Baleia, the diagnosis detects land erosion. In this villages the project has chosen to construct a fish conservation unit in Malanza (in construction) and to support the remaining coastal villages with solar freezers for fish conservation, managed by groups of 8 beneficiaries in each community. This example demonstrates both the coherence in identifying problems from all project documents and the difficulty to present a global solution for all the communities, leading to small occasional supports which may have low influence to change the existent vulnerabilities. On the other hand, Soledade community shows excess rainfall, soils erosion and impoverishment. The suggested adaptation measures were related to the rehabilitation of reservoirs and support to agricultural seedlings and inputs, however, the project ended up to install a greenhouse for 8 beneficiaries in the community.

Cantagalo District

In Cantagalo District we observe contrasts among communities. While some communities have torrential rains (Colonia Açoriana), some are facing rainfall reduction (Uba Budo) and others have no major climate change effects (Mendes da Silva) questioning the involvement of this community in the project. The foreseen adaptation measures focus on water

access, provision of seedling, construction of pigsties and coves. The diagnosis exposed the occurrence of torrential rains and humidity that limits cocoa production (Colónia Açoriana) and suggested the introduction of climate resilient crops. Given the limited financial capacity to cover the communities' priority needs, the project has chosen to build a communal pigsty for 15 beneficiaries. The pigsty built for Uba Budo community was initially targeted for a higher number of beneficiaries but it has been used by a residual number.

Mé-Zochi District

In most of the selected communities, the identified problems were related with water scarcity for irrigation. In this District, the project deemed to meet this concern by intervening in the irrigation systems of the communities of Bom Sucesso and Rio Lima, and building greenhouses in the communities of Saudade, Bemposta and Bom Sucesso.

Lembá and Lobata Districts

In the Districts of Lembá and Lobata, the identified problems were also related with water supply for irrigation. In Lobata, the most affected District by drought periods, the project rehabilitated Irrigation Systems in Santa Luzia, but could not meet similar intervention needs in the communities of Plancas I, Plancas II, Canavial and Fernão Dias. In the same District, the project supported the construction of 2 greenhouses, and it is foreseen poultry farming support in the communities not yet benefitted. This reflects the unbalance between the operational and financial capacity of the project and the communities' adaptation needs, which could be overcome with a smaller number of beneficiaries. In the case of Lembá District, the communities identified in PRODOC as the ones with no significant effects from climate change, such as Paga Fogo, are expected to have a rural track rehabilitation and solar freezers, while in the communities with problems with water supply for irrigation, such as Ponta Figo, the project will only support poultry farming.

In **autonomous region of Principe**, there are no diagnosis data in PRODOC. Nonetheless, the diagnosis carried out at the initial phase of the project identified lack of water supply for irrigation and lack of agricultural productivity (Santa Rita, Azeitona), landslides (Ponta do Sol), sea level rising (Abade) and deterioration of irrigation systems (Nova Estrela). So far, the project built 2 greenhouses in Nova Estrela and Santa Rita, 1 pigsty in a new selected community (Praia Campanha), and it is foreseen to support matabala production (Ponta do Sol), poultry farming (Azeitona) and pigsty construction (Abade).

These examples demonstrate consistencies and inconsistencies in identifying problems and solutions in each community and display how difficult it is to meet central concerns such as irrigation systems strengthening, particularly due to wide geographical dispersal and budget limitations.

The current project implementation state for each community is as follows:

Caué	
Malanza	Fish Processing Center under construction / Reforestation actions
Ponta Baleia	Solar Freeze (not yet in operation)
Iô Grande	Solar Freeze (not yet in operation)
Praia Pesqueira	Solar Freeze (not yet in operation)
Soledade	Greenhouse
Cantagalo	
Colónia Açoriana	Built Pigsty
Mendes da Silva	Poultry Farming (not yet in operation)
Monte Belo	Poultry Farming (not yet in operation)
Quimpo	Poultry Farming (not yet in operation)
Uba Budo	Built Greenhouse and Pigsty
Mé-Zochi	
Rio Lima	Irrigation System Rehabilitated
Agua das Belas	Built Pigsty
Bom Sucesso	Irrigation System Rehabilitated, Greenhouse
Saudade	Built Greenhouse
Bemposta	Built Greenhouse

Lobata	
Plancas I	Poultry Farming in study
Plancas II	Poultry Farming in study
Santa Luzia	Irrigation System Rehabilitation
Canavial	Built Greenhouse
Fernão Dias	Built Greenhouse
Lembá	
Roça Lembá / São João	Built Greenhouse and Pigsty
Paga Fogo	Planned the support with one solar freezer and rural track rehabilitation
Ponta Figo	Poultry Farming in study
Generosa	Poultry Farming in study
Ribeira Funda	Expected support at terracing level for erosion control
Príncipe	
Santa Rita / Praia Campanha	Built Greenhouse / Pigsty (none of them functional during evaluation)
Azeitona	Support for poultry farming
Ponta do Sol	Support provided at the matabala crop level
Abade	Expected construction of community pigsties
Nova Estrela	Built Greenhouse (not in operation due to water supply problems but problem is in the resolution phase)

This table demonstrates the diversity of the project interventions and the potential delay of their execution, as a significant part of the interventions is still ongoing when we are so close to the final stage of the project. It also shows the investment in greenhouses (10), pigsties and poultry farming structures, with no clear rationale between these investments and the strengthening of climate change resilience in each of the beneficiary communities. The budget limitation to meet the priority needs, such as irrigation water, and the expectation to benefit 30 identified communities in PRODOC led to small community supports, such as solar freezes or poultry farming support, and it is deemed that these occasional micro-supports are not the best adaptation strategy given the minor number of beneficiaries and later implementation of these activities. Activities like the rehabilitation of the rural track in Paga Fogo, despite its relevance to the community, does not go in line with project objective, but could be reasonable in projects similar to PRIASA - Infrastructure Rehabilitation for Food Security Support Project funded by the African Development Bank. The above list reflects how the project strategy is moving away from PRODOC predictions or from National Strategic Documents, such as NAPA, which is leveraged through the low involvement of the Directorate-General for Environment. It seems that the project has turned its rationale from climate change adaptation to communities' agricultural support. These rationales may be linked, however the project strategy was not cautious to guarantee sustainable outcomes.

Given its budget relevance, we highlight the investment in greenhouses for vegetable production. Greenhouse production has been mentioned as a way to produce vegetables in areas with excess rainfalls, thus it is relevant both for the agriculture sector and for national climate change adaptation, and it could be relevant to test it in the current project. It is deemed that new technologies must be tested before being disseminated and, in this case, it was applied a unique greenhouse model in 10 beneficiary communities with different backgrounds. The lack of technical preparation by the farmers and fragile capacity of the extensionist workers to support and monitor the activities would require a medium-term technical assistance. The greenhouse models chosen have big dimensions (around 800m²) and were not installed with effective measures to control ventilation and temperature. This situation can lead to a great difficulty to produce some crops which and it can easily lead to problems with pests and plant diseases. Therefore, it would be prudent to have tested the greenhouse in CIAT before the dissemination of these equipments. It is also worthy to note the importance of CIAT technical support to local producers. Local farmers have a poor knowledge about greenhouses production and this leads to options like shifting from drip irrigation to irrigation with a watering can, boosting the potential of pests and diseases.

The absence of business plans for the greenhouses and the general lack of knowledge about its production potential shows the weak preparation of these equipment's installment which is reflected on the issues faced nowadays. We may observe a lack of connection between CADR and CIAT work in some localities, and an inability to control production recordings, fertilizer utilization and chemical treatments, as well as lack of quality control in production can hinder greenhouses functioning in the short term. The fact that some greenhouses are already closed indicate this fragility. Choosing a cooperative model for greenhouse management naturally involves coordination challenges and building the necessary trust among members, risks that can be potentiated after the end of the project. This is especially evident in a context where failed cooperative experiences are widespread and there is no professionalization of agricultural practices compatible with the management of equipment such as a greenhouse with the characteristics of those installed by the project. In addition, the existence of 10 greenhouses in the country would require a coordination in production among them, since the limited market of the country may lead to excess production of some products at certain times of the year.

There are no solid registrations about greenhouses production, but the data collected by the evaluation team enable us to claim that most of the greenhouses are producing less than their potential, even when generating significant revenue in the short-term. However, none of the visited cooperatives was aware of the short-term need to replace the greenhouse cover nor the costs involved, showing, once again, the brittleness of the business models, which are currently being enhanced by the project team.

Bearing in mind the data collected by the project team and the visits undertaken for the midterm assessment, the Canavial greenhouse is the one demonstrating higher level of production with around 2 tons of tomatoes and 2 tons of pepper produced in the course of 1 year with a total revenue of around 9.000 Euros, highlighting this technology potential. However, only the greenhouses in Saudade and Uba Budo exhibit similar levels while the remaining are producing down below with little revenue. Even in the case of Canavial, the business model is only being developed at the moment, so it is unclear to the producers if the current revenue level is positive given the maintenance needs and short-term reinvestment.

The data collected by the evaluation team enables a preliminary analysis of the greenhouses feasibility and the potential future problems. In the case of Uba Budo greenhouse, tomato production during the period of November 2017 to April 2018 was estimated in 1,220kg with a revenue of 32,222 Novas Dobras and a production cost of 10,200 Novas Dobras. In this example, there is a balance of 29,022 Novas Dobras, equal to 1,200 Euros, which can allow funds accumulation for future reinvestment.

Likewise, the Canavial greenhouse produced pepper from February to August 2018² with a total production of 2,327kg, a revenue of 164,270 Novas Dobras and a production cost of 28,780 Novas Dobras, resulting in a significant positive balance and indicates the potential feasibility and autonomy of this cooperative, though the equipment amortization costs are being included.

In the case of Roça Lembá , in the first harvest they had a production of around 1 ton of tomato and 68kg of pepper to a revenue of 25,840 Novas Dobras and a production cost of 5,640 Novas Dobras. Once again, there is a positive balance, though less significant, and in the second harvest there was a break in the production from pests and diseases in plants, reflecting the midterm challenges in greenhouse production and the need to follow-up.

Another interesting example is the case of Santa Rita greenhouse, in the autonomous region of Príncipe. This greenhouse is facing difficulties due to high temperature in the inside and the absence of ventilation. In the first harvest it was possible to produce around 400kg of tomato with a revenue of 16,740 Novas Dobras. However, the cooperative distributed 12,250 Novas Dobras to its members and did not save enough funds for reserve funds. This greenhouse is currently shut down because it was not able to overcome its difficulties and it is an example of the challenges related to cooperative models and collective management, which was leveraged for using the land of a non-member. In most of the greenhouses visited it is clear that collective management is not the most appropriate model because the division of it's not clear and this can lead to future conflicts that must be safeguarded.

² Source: Aitlon Mandinga Master's Thesis (ISA/UL): Potencial e viabilidade económica da utilização de estufas para produção de hortaliças em São Tomé e Príncipe

The remaining greenhouses exhibit low levels of production, not enough to reach the minimum level that can enable their viability, and, in some cases, the productivity level by m² is lower than production in outside producing fields.³

Still in this component of the project, pigsties were built in some communities such as Praia Campanha, Roça São João or Uba Budo and none of them is in full operation, being generalized the problems related to the community management of these equipment's. There is a history of failure in the country at this level and the risks may not have been properly considered by the project team.

The rehabilitation of the irrigation systems is aligned with the project objectives and have a strong impact in the farmers whenever it is ensured its sustainable functioning and an appropriate management model. It is noteworthy that these rehabilitations were carried out in communities previously benefitted with irrigation systems that quickly became inoperable, arising the need to new interventions. This is the reality in all the 3 beneficiary communities but it is particularly visible in Rio Lima, with investments amounting a total of around 200,000 USD among different projects, including PRIASA interventions, to a community of 70 farmers. Even with the current intervention, the irrigation problem remains to be solved reflecting the necessity to develop detailed studies to fundament solid investments rather than short-term solutions. Even though PRODOC focused the intervention in the development of rainfall utilization systems, it is deemed that is still lacking a strategy for research, testing and introduction of new technologies at low costs potentially appropriate in some country areas. The project has benefited some pigsties built with rainfall deposits but does not show any strategic approach at this level, as it would have included a specialized technical assistance from partner institutions from countries like Brazil or Cape Verde.

Regarding the project component 3, aiming the definition of strategies for climate adaptation, at the local level, and a participatory planning for adaptation measures to adopt, the evaluation team considers that the foreseen model was not appropriate to the country context. Developing adaptation measures through annual plans elaborated by each municipality could become a very complex task given the local administration fragility. To date, there are only 2 adaptation plans from municipalities that were elaborated within the scope of a different project.

The Climate change platforms created by the project are seen as project activity rather than a tool to achieve adaptation objectives in the long-term. There is a general lack of knowledge about the facilities' objective, at the municipal and community level. These facilities have not only the purpose to define project strategies, but also to promote awareness and information dissemination about climate change, which is the appropriate role taking into account the current capacities.

The fact that the adaptation plans are drawn up at the end of the project makes the investment questionable, especially given the fragile link with the Directorate-General for Environment and the National Committee for Climate Change.

Furthermore, the processing unities foreseen in PRODOC are not going to move forward, as well as the microcredit support.

In this respect, the progress towards results overview is presented below:

³ Same as above

Description							
Objective							
To strengthen the management effectiveness and sustainability of the three selected protected areas of different types, thereby providing models and best practices replicable throughout the national PA system.							
Indicator	Baseline Level	Midterm target	End of Project Target	Level of 1st PIR	Midterm Level and Assessment	Rating	Justification for Rating
Percentage change in vulnerability of local community to climate risks via perception based survey (VRA)	The PIF and local level assessments at demonstration sites during PPG consultation process indicates high vulnerability of the selected sites.	Non-Applicable	At mid-term 25% increase of VRA score; at end-of-project 50% of VRA score.	The project considers that communities are now more prepared to adapt to climate change, due to the support they have received from the project and the activities carried out to date (diagnosis, creation of climate change committees, infrastructure to support community resilience and capacity building actions).	The VRA diagnosis was not performed at any point in the project, so it is not possible to assess its progression in each of the beneficiary communities.	Moderately Unsatisfactory	Project was not conducted with a climate-adaptive "lens". Many of the activities are framed in an adaptation process but the dispersion and lack of capacity to consolidate actions and results will limit the project scope at the level of its objective
Outcome 1							
The capacity of the CATAP, CIAT, district governments and assemblies, district councils, CSOs and CBOs strengthened to support the enhancement of climate resilience of rural community livelihoods.							

Indicator	Baseline Level	Midterm target	End of Project Target	Level of 1st PIR	Midterm Level and Assessment	Rating	Justification for Rating
1.1 Capacity perception index in CATAP, CIAT, CSE, CSOs, CBOs and districts councils.	1.1 VRA to be undertaken at the project onset. Necessidade de qualificar recursos humanos; ausência de um programa de formação nacional dos técnicos em adaptação às alterações climáticas	Non-Applicable	1.1 By year 4 of the project Target ≥ 3	Project states that the VRA diagnostics will be performed at the end of the project. Several training actions were carried out for CATAP, CIAT and CADR technical staff, and the material resources for their operation were strengthened, considering that they are now better equipped to support communities in the adaptation process.	An initial institutional diagnosis has not been made and it is not possible to measure the indicator.	Moderately Satisfactory	Although the project has not been geared towards long-term changes and a real strengthening of the capacity for climate adaptation, it is considered that the actions developed have contributed to some institutional strengthening of the institutions involved and to the regular functioning of government entities. However, there is no strategic orientation for institutional capacity-building for climate
1.2 Number of Agricultural Extension staff (including on-the job trainings scheme) trained on adaptation strategies to support village climate change platforms.	1.2 Currently The Ministry of Agriculture, Fisheries and Rural Development (MAPDR) has only two Agricultural Extension staff in each of the six CADR Extension delegations at	Non-Applicable	1.2 By the end of the project at least 60 Agricultural Extension staff (including on-the job trainings scheme) have been trained on adaptation strategies to support village	Project reports the training of 70 technicians from the Ministry of Agriculture and 300 members of the climate change platforms (training in adaptation and technical training in pesticide use and control, greenhouse production, etc.)	Considering the training of agricultural extension workers, other technical staff and the farmers themselves, the target was achieved. However, since no adaptation strategies have been developed, it is not possible to say that agricultural extension		

	district and village level.		climate change platforms.		personnel are trained at this level.		adaptation and this undermines the outcome and its contribution to the project objective.
Outcome 2							
Vulnerability of rural livelihoods reduced through climate risks supportive infrastructures and mechanisms.							
Indicator	Baseline Level	Midterm target	End of Project Target	Level of 1st PIR	Midterm Level and Assessment	Rating	Justification for Rating
2.1 Number of small scale rainfall harvesting, number of water storage structures and/or small sale irrigation networks established at community level.	2.1 Currently no rainfall harvesting, no sizeable water storage structures and/or irrigation networks have been established at community level in the selected pilot sites.	Non-Applicable	2.1 By the end of the project at least 1(one) rainfall harvesting, and/or 1(one) sizeable water storage structures and/or 1(one) irrigation network has been established at community level in the selected pilot sites particularly in drought prone areas.	Project reports the construction of irrigation systems in the communities of Bom Sucesso, Santa Luzia and Rio Lima. It refers to the construction of reservoirs for the use of rainwater in the built pigsties, mentioning to the existence of studies for the development of new rainfall utilization systems. It also refers to the existence of a hybrid system for the utilization of rainwater in Rio Lima	Two traditional irrigation systems and one system of well were developed in Rio Lima. These systems derived from the rehabilitation of already existing systems that were not in operation. In spite of the construction of small reservoirs for the use of rainwater in the built pigsties, there is no use of rainwater in any of the greenhouses. In Rio Lima it is considered that the system can not be considered hybrid, being a	Moderately Unsatisfactory	Innovative strategies for the use of rainwater, adapted to the country context, have not been developed - absence of Technical Assistance has not created the necessary conditions for this purpose. Likewise, erosion strategies were not developed in a solid way, even

				and a rainfall utilization system in the greenhouse of Nova Estrela.	system of small individual reservoirs that seeks to complement the previously existing deposit that has not been reinforced.		though the initial diagnoses of the project indicate this need. The infrastructures developed in the beneficiary communities were defined following a rationale of agricultural support without a clear and solid rationale of reinforcing the security mechanisms for climate change.
2.2 Number of ha that has benefited from any forms of erosion control as well as dykes and bunds to protect fields against flooding.	2.2 In the baseline no erosion control measures are being developed in the selected vulnerable locations.	Non-Applicable	2.2 By the end of the project at least 30 (thirty) % of the identified eroded areas is benefited by any forms of erosion control as well as dykes and bunds to protect fields against flooding.	Terracing is foreseen in Ribeira Funda as an instrument to combat erosion, as well as erosion control activities in 30% of the beneficiary communities.	So far, there is no solid strategy for this indicator and merely occasional reforestation activities have been carried out in some communities, without the necessary involvement of the General-Directorate for Forestry		
Outcome 3							
Adaptation strategies are designed and transferred to strengthen communities' climate resilience in the 30 most vulnerable villages of the 6 districts of CMPLCL of São Tomé and Príncipe.							
Indicator	Baseline Level	Midterm target	End of Project Target	Level of 1st PIR	Midterm Level and Assessment	Rating	Justification for Rating
3.1 Number of CCA measures successfully implemented by the community members as a result of Project assistance.	3.1 Currently there is no GoSTP or Private assistance scheme operating in the selected vulnerable villages supporting	Non-Applicable	3.1 By the end of the project, at least two CCA measures have been	The project reported all interventions carried out for the 30 communities.	In general, the project is seeking to support the 32 selected communities with small grants that will find it difficult to	Unsatisfactory	The project did not advance this component according to the initially proposed

	implemented CCA measures by the community members and there is no CCA measures successfully implemented by the community members.		implemented by the community members as a result of project assistance.		contribute consistently to the project goal. No annual plans have been developed, identifying the actions to be developed. High risk associated with the spraying of supports. Structuring actions such as irrigation systems that benefit a larger number of farmers emerge as responses more suited to an adaptive logic.		intervention logic. There is no participatory planning logic from which concrete actions should be identified at the level of each community. At this level, the project reporting in this component is similar with the activities of component 2 in which the actions in the communities are presented.
3.2 Number of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) that were successfully demonstrated and scaled up at community level.	Não existência de planos ou estratégias de adaptação ao nível local ou comunitário	Non-Applicable	3.2 By the end of the project at least 50% of Integrated Adaptation Measures (IAMs) included in the annual and multiyear adaptation plans (CC-VAAP) have	Creation of climate change platforms and climate change committees in each of the intervention communities and districts.	Climate change platforms play a role of awareness rather than strategic definition. Adaptation plans have not yet been made and this activity can not be considered to be in progress.		

			been successfully demonstrated and scaled up at community level in the target vulnerable villages.				
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4.3 Project Implementation

Most of the features connected to the project implementation were addressed during the progress towards results assessment. The main elements of analysis in this evaluation criterion can be summarized as follows

The **lack of a clear and transparent operational budget** available to all parties involved hampered the planning process. Despite the existence of a global budget disaggregated by each component, there is no operational budget to guide the activity planning for each partner and region of intervention. The annual planning enables the definition of annual activities, bringing together all the partners for discussion. However, it is not possible to guide a project towards changes and midterm objectives when deprived of a stable budget framework capable to plan actions over the implementation period of 4 years. Without this crucial tool, the project followed an ad-hoc management of activities with no integrated vision of the changes and objectives to be accomplished by the project. Additionally, the frequent request for conceptual notes to assess upcoming activities relevance, which were suspended or retained due to lack of funding, triggered a distrust among partners. These barriers could have been avoided with a solid budget framework capable to guide the project during its implementation, even with the necessary flexibility.

The **lack of diagnosis about climate change perception** in the communities led the project to an agricultural support rationale instead of agricultural support for climate resilience. This feature has conditioned the project from the beginning. Despite the framework carried out in the diagnoses about climate change, there is no clear framework for the identification of needs in the priorities previously identified by NAPA or other documents, such as the climate vulnerability map. The project has lost its climate focus when moved forward to the quick rural diagnoses. Moreover, the low involvement from the Directorate-General for Environment in the project activities is barely understandable for a project of this nature.

In this respect, **the needs assessments carried out did not always provided the appropriate responses to the identified needs**. Choosing geographical dispersion would always jeopardize the capability to have a solid approach to the selected communities. However, the lack of alignment between the diagnosis instruments and the identified priorities by the Directorate-General for Environment led the project to question the communities about its global needs, not only their climate vulnerability perception. The project quickly came across with the expectations of 30 communities and the limited budget, making it impossible to meet the primary needs related to irrigation water. The project have decided to move forward with the selected amount of beneficiary communities, even with mentioned constraints and national context. Without questioning and revising its initial strategy, this decision limited the project capacity to act in a reliable way and to promote adaptation measures.

There are still significant problems about the **management of community expectations** and the project capacity to meet them. This issue was more visible in the communities of Paga Fogo, Abade, Ponta do Sol or Azeitona. This communities did not benefit from any intervention but still expect to beneficiate from the project. In the Principe Island there is a clear lack of communication between the regional team and the general coordination team which results in confirming short-term support to Principe communities and, on the other hand, a negative perception on the part of the coordination team. This may represent a considerable constraint on this and future projects, as some of the communities visited were already uncomfortable about the lack of definition of the support they will receive. This situation is not very understandable at this advanced stage of the project where efforts should be made to consolidate processes and not to launch new support.

The project has a **planning and monitoring system focused in activities rather than results / changes / objectives**. There is no change orientation and all the management instruments are related to activities implementation. This conditionate the global vision of the project and drives to a partial management of each activity and each partner.

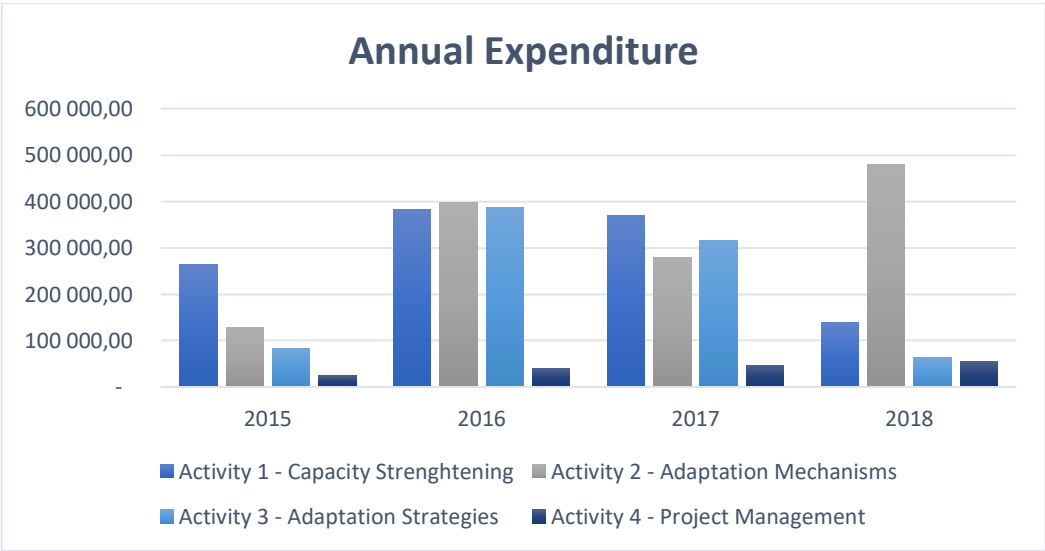
The **lack of a joint vision and the segmentation of activities by partner** also leads to the lack of ownership by several of the project stakeholders. There seems to be a certain blockage in communication between the parties and the project is not considered to be defined from the bases to higher levels. It is considered that this should be the model of implementation, facilitating the implementation of a joint vision between the different partners involved, turning the coordination unit as facilitator and manager of common will around a shared goal.

The project complexity and related challenges required a networking capacity, which is deficient among project stakeholders. Likewise, the lack of local capacity to manage project funds require that most of expenditures are managed through UNDP local office. This constraints the strengthening of national institutions capacity and their liability, which is an additional burden to the already complex management.

The involvement of **local authorities is still vulnerable**, which is considered normal in the country context. The project presented overly ambitious objectives and the evaluation team cannot claim the existence of a strategic involvement at this level, though there were local focal points to monitor project activities. In the case of the Autonomous Region of Prince there could have been a greater delegation of powers to the regional authorities, in particular in the planning of the activities to be carried out. Given the greater degree of maturity and strength of regional structures, this could have represented an opportunity for the project to serve the objectives and priorities of regional development.

Likewise, the **absence of the civil society organizations involvement in the project** was an obstacle to leverage the organizations level of experience and knowledge about climate change. It is deemed that in a background characterized by its institutional fragility it is important to enhance the government bodies but the civil society organization networking should not be neglected.

At the financial level, the project presents a high level of execution, having in the last year advanced significantly in the execution of component 2, focused on community actions. To date, the project already executed 87% of the budget which demonstrates the clear limitation to redeploy the project.



In terms of synergies with other projects, they are clearer with PRIASA project, since both projects are coordinated by the Ministry of Agriculture.

Within the framework of projects funded by the Global Environment Fund (GEF) and implemented by UNDP, there are regular meetings for the exchange of information.

However, it can not be said that there is a rational coordination of resources among the various projects in the country. The Government of São Tomé and Príncipe formally co-finances the current project through PRIASA Project funds worth USD 8,000,000. In addition to this project, the following projects fostering climate change adaptation are currently under way in the country, with complementary objectives and deserving better joint planning and creation of synergies:

Title	USD Amount	Implementation	Scope
Reforço das capacidades das comunidades rurais para a adaptação aos efeitos das mudanças climáticas em São Tomé e Príncipe, nos distritos de Cauê, Me-Zochi, Região Autónoma do Príncipe, Lembá, Cantagalo e Lobata (CMPLCL)”	4,000,000	UNDP Directorate- General for Agriculture	Cauê, Cantagalo, Lobata, Lembá, Mé- Zóchi, RAP Districts
<i>Projeto de Adaptação às Alterações Climáticas para as Zonas Costeiras (PAMCZC)</i>	4,100,000	World Bank Directorate- General for Environment - DGA	National coastal shoreline (STP)
<i>Promoção de rede resistente ao clima e ambientalmente sustentável/ rede isolada de electricidade hidroeléctrica e através de uma perspectiva integrada energia- solo e floresta em São Tome e Príncipe</i>	5,274,000	UNDP/ Central Bank/ EMAE/ DGRNE/ DA/DF/District Municipalities	National
Sistema de Alerta Precoce In São Tomé e Príncipe	4,000,000	UNDP National Institute for Meteorology	
Projecto de Redução da Vulnerabilidade Climática em São Tomé e Príncipe – AMCC	3,000,000	European Union Directorate- General for Environment - DGA	Lembá e Mé- Zóchi

Taking into account the analysis presented above, the evaluation team classifies the criteria “Project Implementation” as Moderately Unsatisfactory, according GEF scale from 1 to 6, where classification 3 is moderately unsatisfactory, revealing that some of the components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.

4.4 Sustainability

The sustainability of the initiatives undertaken by the projects is linked with its capacity to develop a strategy of capacity strengthening and to define feasibility strategies for supported structures in the country. The project coordination team is in a moment of definition of management models for the built infrastructures and this effort must be valued. However, there are risks associated with the fact that these models will be implemented in a final phase of project implementation.

Concerning the project implementing partners, which are government structures, they will keep playing a role in each of their areas of intervention. Still, it is not expectable that these institutions are able to promote the continuity of training sessions about climate change, to develop research and testing initiatives in new adaptation technologies or even to follow-up the work in greenhouses (in the case of CIAT this issue is taken more clearly than in the case of the CADR which naturally assumes that its function is to continue the follow-up of farmers' work).

There are high risks resulting from:

Lack of institutional coordination among partners, which hampers the strengthening of national capacities to develop, support and maintain new adaptation technologies. As of example, in most of the visited greenhouses technical staff from CADR were not aware of the reports elaborated by CIAT;

Lack of technical capacity to manage and maintain some structures by farmers. The management of agricultural equipment requires knowledge and technical and management capacity which may not be within the reach of the beneficiary communities. In the cases of the greenhouses in Canavial, Bom Sucesso or Saudade they face a different dynamics given the choice of the project to support farmers with experience, while in communities such as Soledade, Roça Lembá e Bemposta there are high level risks related to greenhouses management. It would be relevant to enhance the technical assistance model and reflect on the management model being applied to the equipment built.

Fragility in associative networks. It is understandable the choice of a collective management model over individual supports, but it must be considered the country context and past related experiences. The widespread failure of collective management models should alert to their related potential risks. Within the project scope we face a list of cases showing the infrastructures fragility, even in their early stage. In a significant pool of cooperatives there is no quota payment and the equipment, such as greenhouses and pigsties, are nonoperational. Additionally, in some cases the equipment was not built and there are conflicts within the community (namely in Abade, where people want individual pigsties but the project foresees collective pigsties). A cooperative requires a clear definition tasks and an effective leadership which sometimes is not accomplished in the project context.

Operational difficulty to maintain the support to farmers after the end of the project. As previously referred, CADR is responsible to support farmers and it claims to have enough capacity to keep monitoring their activities. Still, it is deemed to have strong limitations that will leverage the already lack of monitoring in some Districts. Concerning CIAT follow-up of greenhouses, the Institution clearly confirms the need of external support to enable this task.

Some **equipment and infrastructures are not appropriate for the country and local context**, restraining its sustainability. For instance, some greenhouses are not the most appropriate to the climate of the benefitted regions, and the collective pigsties or the solar freezers were distributed in communities without the minimum requirements to maintain them, such as Ponta Baleia and Papa Fogo. Likewise, the strong investment in equipment, such as the trailer for CADR, that are not adequate nor used should be avoided.

The **lack of business plans and updated data** difficult the feasibility analysis of the supported structures, as well as most of infrastructure are still in a starting phase. The business models should have been structured before building the infrastructures to assess their feasibility and design an appropriate management model. To ensure the infrastructures sustainability it is import the not only define business model, but also reflect on the management model, including the division of tasks among the partners, to capitalize the investment made. To exemplify, we highlight the following potential greenhouse depreciation exercise, using the data from the biggest production so far at Canavial community.

Calculation with data from Canavial Greenhouse ⁴					
	Production Amount	Production Cost	Members Revenue	Annual amount of depreciation	Depreciation Period
ndb	182.680	38.780	96.000	47.900	26,3
USD	8.699	1.844	4.571	2.281	

In this example, the cooperative would have a depreciation period from the greenhouse investment (not considering earthwork, land preparation, etc.) of 26 years, which reveals the economic feasibility problem that is worse in the remaining greenhouses with less productive capacity. This information is crucial to determine the economic feasibility of the greenhouse production and the most appropriate models to the country context which should prioritize a rationale of economic capitalization rather than to promote the agricultural production

⁴ Source: Aitlon Mandinga Master’s Thesis (ISA/UL): Potencial e viabilidade económica da utilização de estufas para produção de hortaliças em São Tomé e Príncipe

subsidization as a free support. This is particularly important in equipment requiring high level costs of maintenance with the replacement of the coverage every 3 years and no internal supplier nor institutional capacity to support these unities.

Occasional supports and actions carried out in the final stage of the project have high risks in terms of sustainability and feasibility. The distribution of solar freezers with no complementary action, such as community support, or the structures start-up in the last months of the project pose a strong constraint to the financial and institutional sustainability. It is worth to highlight the fisheries conservation center, in Malanza, still in development. Given the social context of the locality and the successive failures of projects support, as well as management problems encountered in similar centers from different communities, it is essential to take action and invest in intensive training to the beneficiaries and permanent monitoring of the center functioning in the course of the project implementation. The potential risks linked to this unity feasibility requires the supervision and technical assistance.

With regards of **climate change platforms**, these were created as project structures rather than a structure for strategic planning able to move forward after the end of the project. The lack of connection between these structures and the National Committee for Climate Change (even considering the fragility of this structure) is a hazard for their future functioning and will eventually disappear.

In this context, the sustainability criteria is evaluated as **Moderately Unlikely (2)**, in the GEF scale from 1 to 4, in which this assessment corresponds to the perception that most outcomes will not carry on after project closure, although some outputs and activities should carry on.

5. Conclusions and Recommendations

5.1 Conclusions

The analysis presented in the course of the report allows the following presentation of the conclusions summarized:

The project is aligned with National Development Policies and Strategies, as well as the National Plan for Climate Adaptation. Sao Tome and Principe is particularly vulnerable to climate change, thus adaptation projects and plans are essential to enhance resilience in the country. Therefore, storm-induced flash flooding in rivers and coastal areas, longer episodes of drought, coastal erosion and temperature raise require a capacity for adaptation through rehabilitation and construction of irrigation systems and deposits, national exploitation of forest resources and the agricultural production strengthening and diversification, indicated in NAPA. All the same, some crops, including cocoa, the main source of rural households income, may be at risk in areas where rainfall decrease to lower levels than 1,500 mm/year which is of concern and requires adjustments.

Despite relevant, the project was overly geographical disperse and included a set of complex activities requiring a strong planning and coordination capacity. The geographical dispersion constrained the capacity to develop solid strategies for adaptation at the community level. Likewise, the strengthening of national institutions was relevant but required a strong coordination capacity and technical assistance that could leverage the joint vision about the project's objectives. Some of the project components were overly ambitious, notably accounting the capacity to develop adaptation plans and strategies annually and at district level to guide the forthcoming community initiatives. Despite the pertinent logic of intervention, both the budget and the governance model were inadequate to the project complexity. Some identified assumptions and risks, such as the lack of institutional coordination, are rather context features that should have led to a more focus, cautious and adjusted approach.

Despite some components' fragility, the project was able to bring the topic of climate change to the public agenda and developed a noteworthy awareness campaign. Although this was not the project objective, it was possible

to take off an awareness process about climate change and its impact in the communities livelihoods and warned the national institutions to the need of capacities strengthening enabling the promotion of effective adaptation measures.

Regardless of the objective to increase communities climate resilience, the project was implemented focusing on agricultural investment and neglecting the adaptation component. The fact that the Directorate-General for Agricultural is the execution agency and the low involvement of the Directorate-General for Environment leveraged this condition and made it difficult to align the activities framework with the national priorities for climate adaptation.

The resilience diagnoses carried out were not based in existent vulnerability maps and resulted in agricultural development needs diagnosis for each community. The climate risks identified in the Vulnerability Maps could have been a relevant starting point for this process. It is deemed that the diagnosis carried out was not the most appropriate for the project objectives and it does not provide any tool for the monitoring of activities. In this sense, it would have been more appropriate to carry out Vulnerability Reduction Assessments (VRA) foreseen in PRODOC. Undertaking a participatory rural diagnosis allowed the identification of a set of problems within the community, some connected to climate change, though it was not developed any monitoring instrument oriented for climate vulnerability adaptation.

The **absence of an operational budget for the whole implementation period hindered the results orientation** and led to an ad-hoc management of the activities with no integrated view of the objectives and changes to be achieved by the project. The existent global budget by component was not disaggregated by each one of the activities to be carried out by different partners. This is an essential missing part to undertake a planning towards results and forces the project to have a permanent adaptive management. The lack of budget transparency between partners also hampers the project planning and enhanced the creation of several "projects" within the project, proposed by all the different parties and frequently retained by lack of funding. This dynamic is similar to a fund's distribution with no consistent strategy;

Further to the geographical dispersion, **the project broke up into several and diverse activities** (greenhouses support, irrigation systems, solar freezers, fisheries center, reforestation, pigsties, poultry farming) which increased the difficulty to have a focus and to be able to accomplish solid results in the communities.

Within the scope of introducing new agricultural technologies, it is deemed that these require research and testing which was not respected in the case of the greenhouses, making operation difficult. Greenhouse production requires the control of the conditions inside the greenhouse (temperature, rain, light, ventilation), and the model implemented only allows to manage the rainfall and the luminosity. In this context, some of the greenhouses have created additional problems for producers who do not dominate the greenhouse production technique and do not have all the means to control the factors influencing production. The evaluation team considers that overall, the greenhouse model implemented is not appropriate to the country's reality, either because of its high cost or because of the technology itself, especially given the fact that in many areas of the country, simpler models that work as a "rain hat" and models that allow easier ventilation are more suitable to country context and have a lower investment cost;

In the absence of technical knowledge at national level about the functioning of the greenhouses, **it would have been advisable to hire a technical assistance throughout the project** to test, advise and monitor the implementation of the greenhouse models to be implemented. In this context, greenhouses have potential for some communities but require an improved management model ensuring their sustainability.

The lack of specialized technical assistance has also limited the project's ability to guide its intervention towards the development of new technologies for the use of rainwater and erosion control. Once again, it would have been important to collaborate with specialized institutions that could help with exchange of ideas, research and testing on the most appropriate models in each region. At this level, it is considered that all greenhouses could have tested low-cost models of cistern-type stormwater retention, widely disseminated in Brazil. Despite the specific focus on collecting rainwater in the pigsties built, there is no strategy intervention at this level, as there is no consistent intervention at the level of erosion control in areas identified as being vulnerable.

When selecting the beneficiary communities, **the project has often focused on supporting structures managed by a small number of beneficiaries to the detriment of investments capable of leveraging the agricultural sector and promoting an effective reinforcement of community resilience.** Such is the case of greenhouses and pens, as opposed to interventions in the rehabilitation of irrigation systems. Also at this level, it is not always clear what criteria have led to the selection of equipment beneficiaries.

It is also considered that the **management of the community expectations was not the most adequate and represents a constraint for the present and future projects,** which is boosted by the absence of a clear planning and operational budget from the beginning of the project and by the communication failures between different stakeholders in the project. Also at this level, the implementation of core activities for the project only at the end of its implementation impedes the ability to consolidate results and take advantage of the activities as instruments at the service of a strategy and medium / long term objectives.

5.2 Recommendations

Taking into account the conclusions presented above, the evaluation team have the following recommendations to be included **until the end of the project:**

New initiatives should only be developed at Community level in cases where there is a minimum guarantee of associative organization and economic viability of the infrastructures to be supported. The investment decision will always depend on the decision of the project coordination and necessarily involve the consideration of the community expectations. However, moving forward with infrastructures that can not effectively contribute to project objectives and that do not have the effective commitment of communities is considered a mistake, by the evaluation team. The short- and medium-term consequences of supporting structures with limited viability should be taking into consideration.

Hire technical assistance to reassess the functioning of the greenhouses and carry out the necessary adaptations. This support should have been provided during the pre-installation phase of the equipment. However, given the high risk associated with the future operation of these equipment, it is considered that one of the current priorities of the project is to perform an analysis on the problems of operation and weigh better options for the management, operationalization and maintenance of greenhouses.

In the same line of thought, it is recommended the **development of an intensive training course on greenhouse production** to be held at CATAP for agricultural extension workers and technical staff from the Ministry of Agriculture, as well as cooperatives members.

Still in relation to greenhouses, a **new management models must be considered.** Several scenarios should be studied including a single cooperative model with an executive direction that ensures the planning and supervision of the work of all greenhouses. This model can ensure a balance between the members of the cooperatives and the necessary professionalism associated with the management. Additionally, the executive direction can be supported by the CADR until the end of the project, or move towards a management model with private participation. At this level, the support of a civil society organization with experience in associative mobilization should be considered and it should be promoted exchanges of experience with successful cooperatives in the country such as the Pepper and Spice Export Cooperative (CEPIBA) or the Export Cooperative of Organic Cacao (CECAB).

To develop **rainfall utilization systems in the greenhouses with greater problems of water supply.** At this level it is recommended the study of models of cement cisterns with capacity of 52,000 liters, widely disseminated in Brazil. There are several technicians in the country with knowledge acquired about this technology as a result of exchange visits to Brazil that can bridge with qualified partners to support the project coordination team;

Considering the budgetary availability of the project, ponder the construction of a model greenhouse (of smaller dimensions than the models already implemented) in CIAT for research purposes;

At the level of infrastructure management, develop business plans for greenhouses and other equipment in order to assess their feasibility and support evidence-based decision-making on the best management models to implement.

Pay particular attention to the isolation situation of the Príncipe Island team. Failures to communicate with project coordination may irreversibly jeopardize project intervention in this Autonomous Region, reinforcing the feeling that the project has failed. In this context and considering that the two greenhouses built are already inoperative, it is considered that the project foreseen for Azeitona (poultry farming) should be guaranteed as well as the project for Ponta do Sol (Matabala crop). This recommendation is related to the strong existing community mobilization as well as the commitment made by the project team in Príncipe Island, driving the communities to be expectant for the start of activities. The support should take into account the prior analysis of the economic viability of the structures to be supported, but are especially relevant for Príncipe Island in the context of the project's lack of success so far in this region. The case of the matabala crop it is justified by the table below, which demonstrates the significant decline of this crop and the need for its recovery.

Products ⁵	2010	2013	2015	2017
Conventional Cocoa	46.913	47.970	70.000	17.000
Biologic Cocoa	73.316	47.970	28.500	31.696
Silver Banana	61.849	68.566	72.500	70.300
Matabala	24.693	40.540	28.000	6.700
Cassava	25.039	37.944	32.000	39.800
Pepper	3.163	2.424	1.500	3.000

Intensify the training component and technical support to the beneficiary communities of the project, by all the institutions involved. In the case of CATAP it is considered that this institution can reinforce the follow-up to the communities supported through the training in practice and in the case of the CADR the technicians must intensify their follow-up actions, articulating whenever possible with CIAT in the case of greenhouses.

Regarding pigsties, **partnerships should be sought with the pig farming support project** to make animals available in the new infrastructures not yet inaugurated. This support can guarantee a start-up fund that contributes to the viability of the units.

Climate change adaptation plans should be implemented only if the necessary liaison is ensured with the **Directorate-General for Environment and the National Committee for Climate Change** (even considering the fragility of this structure), as these are the institutions responsible for monitoring adaptation efforts at national level and those with the technical knowledge and ability to supervise the work to be carried out. The development and implementation of adaptation plans without their involvement will result in a project document without possible appropriation by the competent authorities.

Develop, by the end of the project, an **assessment of the institutional capacities of the partners regarding the inclusion of climate change** in their work plans. In the absence of an initial capacity assessment, it is not possible to develop a rigorous analysis of the impact of the project on institutional capacities. However it would be important to evaluate / reflect on the institutional changes promoted by the project and how these changes resulted in changes in the plans or work methodologies of each of the partners.

⁵ Source: Regional Direction for Agricultural of the Autonomous Region of Príncipe

For future actions it is recommended to:

Ensure greater involvement of the Directorate-General for Environment in climate change adaptation projects, in order to ensure more effective planning, activities aligned with national adaptation priorities, and greater capacity to promote results that lead to effective resilience of vulnerable communities to climate change;

Develop informed intervention strategies based on scientific studies and concrete data on agricultural production and community livelihoods, requiring a rigorous and informed assessment of the projects to be developed. In this sense, there must be a commitment to the collection of updated data on production and productivity and to the construction of databases that favor decision-making in the measures to be adopted;

Support the General-Directorate for Environment in building a **climate phenomena database** including indicators about their impact on communities;

Make a strong commitment to the **production of seeds adapted to each region** including greenhouse production, strengthening CIAT's capacity at this level and seeking specialized technical assistance for this purpose;

To study and develop crop varieties adapted to water and thermal stress, at CIAT;

Ensure **permanent technical assistance** from partner institutions such as the National Institute of Agricultural Research and Development of Cape Verde or EMBRAPA for the development of technologies adapted to climate change, enhancing the knowledge and technical capacity of these institutions and the experience in the development of technologies adapted to the country context;

Develop irrigation systems in areas identified as most affected by periods of drought, elaborating rigorous studies to that effect and avoiding short-term solutions without effective capacity to solve the problem of water supply in communities. At this level it is important to consider the development of new rainwater retention technologies with specialized technical assistance and taking into account all necessary technical studies for this purpose

Develop partnerships with civil society organizations to accompany and energize community work. A country with the institutional weaknesses of São Tomé and Príncipe needs to consolidate government structures, but it can not give up the involvement, technical capacity and accumulated experience of some of the national civil society organizations. The involvement of civil society should not create dependencies but rather reinforce areas where the Government is not able to ensure the mobilization and technical follow-up of communities;

Develop partnerships with the main cocoa and pepper cooperatives with a view to developing actions in the main production areas at risk of suffering from climate change. All adaptation strategic documents mention the vulnerability of some cocoa production areas to climate change, and pepper is another of the revenue source crops that can suffer from the effects of climate change, as shown in recent vulnerability studies prepared for the third communication to the UN Framework Convention on Climate Change. At this level, irrigation, production support and / or diversification strategies must be considered to guarantee the continuation of basic income sources for many families in rural communities;

Focus on activities that institutionally leverage capacity for adaptation rather than on short-term actions with little capacity to effectively reinforce resilience to climate change. At this level it is also important to avoid the dispersion of small activities in several communities in order to guarantee a greater capacity to obtain solid results;

Develop environmental education and awareness actions with the support of civil society. The theme of climate change is recent in the country and requires the consolidation of awareness actions, involving schools and the youth community in the country. At this level the involvement of civil society organizations with experiences in the development of environmental education campaigns should be considered;

Ensure a permanent team in Príncipe Island that allows a close follow up to the actions to be developed and a better framework of the project in the priorities of the Regional Government. Alternatively, reinforce the autonomy and delegation of competences for the Regional team. The specificities of this region are not

compatible with one-off monitoring and should, whenever possible, provide for a specific management model appropriate to a reality that does not exist in any of the remaining Districts. At this level, support should be directed to the adaptation priorities identified in the national strategies and to the needs identified locally by the regional authorities.

To seek **greater coordination of the funds applied in the country by different funding institutions and national authorities**. At this time and in recent years, there have been several projects with very significant funding that require co-ordination and joint planning to avoid duplication or segmented approaches. The projects could achieve stronger results if partnerships are more planned and effective. The absence of such coordination will lead to wasted opportunities for the development of the country and will contribute to the adoption of immediate solutions without the capacity to solve effective problems.

Annex 1 – Mission Schedule

Mission Chronogram

Day 22	Initial meeting with project team CADR team Workplan Preparation
Day 23	DGA meeting – Armando Monteiro Meeting with the project coordination - PNUD Meeting with CATAP Direction– Project Offices Meeting with CIAT Director- PNUD
Day 24	Visits to the Southern Communities (Soledade, Ponta Baleia, Malanza, Praia Pesqueira) Meeting with the Focal Point from Caué Municipality
Day 25	Visits to the South-Center Communities (Colónia Açoreana, Uba Budo, Bom Sucesso, Saudade) Meeting with the Focal Point from Mé-Zochi Municipality Meeting with MARAPA NGO
Day 26	Visits to the North Communities (Roça Lembá, São João) Meeting with the Focal Point from Lembá Municipality Meeting with the General Director for Environment and Coordinator of the Adaptation to Climate Change Project – World Bank Meeting with Direction of Forests – Meyer António
Day 27	Visits to the communities of Fernão Dias, Canavial, Santa Luzia Meeting with the CADR team and climate change platforms team
Day 28	Sunday – Work Session among consultants
Day 29	Visit to CIAT Visit to CATAP Observatory Meeting – Directorate-General for Environment Work meeting with the project responsible at PNUD
Day 30	Meeting with PAPAC Project Meeting with the project team of Alerta Prévio (Early Warning)– GEF Meeting with PNUD Deputy Representative

	<p>Meeting with PRIASA II Project</p> <p>Meeting with FAO</p> <p>Meeting with the Department of Associativism and Cooperativism</p>
Dia 31	<p>Travel to Autonomous Region of Principe</p> <p>Meeting with the project team in Principe Island</p> <p>Reunião com equipa do projeto da ilha de Príncipe</p> <p>Meeting with the President of the Regional Government</p> <p>Visit to the project beneficiary communities (Nova Estrela e Abade)</p>
Day 1	<p>Visit to the project beneficiary communities:</p> <ul style="list-style-type: none"> - Santa Rita - Azeitona - Ponta do Sol
Day 2	<p>Travel Príncipe – São Tomé</p> <p>Meeting with the Project Coordinator</p> <p>Visit to CADR – Meeting with the Director– Marcelino Tavares</p>
Day 4	<p>Meeting with the Focal Point of the United Nations Framework Convention on Climate Change (UNFCCC) – Adérito Santana</p> <p>PNUD Meeting</p> <p>Systematization of the gathered information</p> <p>Refund Preparation</p>
Day 6	<p>Extended refund meeting</p>

Annex 2 – List of interviewed people

NAME	POSITION
Armando Monteiro	Agriculture Director
Dinasalda de Ceita	Project Coordinator
António Viegas	Assistente do Representante Residente do PNUD/Programa
Maria Teresa Mendezebal	Coordinator / Environment Unity at UNDP
Manuela Batista de Sousa	Administrative Assistant in Environment Unity at UNDP
Claúdio Vicente	Principal Administrative Assistant in Environment Unity at UNDP
Cesaltina Seabra	Procurement Assistant in Environment Unity at UNDP
Edlena Barros	Communications Assistant in Environment Unity at UNDP
Ludmir Neto	Financial Assistant in Environment Unity at UNDP
Severino Neto	Director of CIAT
Jaciley Costa	Technician of CIAT
Crisóstomo Lopes	Mé-Zochi District Chamber
Arlindo Carvalho	General Director for Environment
Meyer Antonio	Direction of Forest Technician
Marcelino Tavares	Director of CADR
Eulalia Cunha	Director of CIAT
Abnilde Lima	Technician at the National Environment Observatory
Kassi Costa	Technician at the National Environment Observatory
Carminda Viegas	Director of PAPAC
Jarusalsky Dias	PAPAC Responsible
Cosme Dias	SAP Project Coordinator
Ayara Trigueiros	PRIASA Project Coordinator
Argentino Santos	FAO Office Responsible
Inicio Silveira	Cooperativism & Associativismo Department
Adney Sanches	Cooperativism & Associativismo Department
Alfredo Delgado	Project Focal Point in A.R Principe
José Miranda	Extensionist worker in A.R Principe
Daniel Ramos	Director of Principe Natural Park
Ilídio Mota	Direction Technician at Principe Natural Park
José Cassandra	President of the Regional Government
Adérito Santana	Focal Point for United Nations Framework Convention on Climate Change (UNFCCC)
Elaine Carvalho	CATAP
Capela	CATAP
Wanderley Araujo da Graça	Cantagalo District Chamber
Sadiel dos Santos	Câmara District Chamber
Osvaldo Godinho Alves de Carvalho	Câmara District Chamber
Helen Carvalho	Delegada do Distrito de Lembá
Gilson Carlô	Delegado do Distrito de Caué
Vanessa Nogueira Fereira	Secretária Administrativa do Projecto
Joaquim Rodrigues	Extensionist worker at CADR
Jarciley Costa	CIAT

Annex 3 – Documentation Consulted

PRODOC
Project Identification Form (PIF)
Project Implementation Review 2017 and 2018
Plano de Ação Nacional para a Adaptação às Alterações Climáticas (2006)
Plano de Ação de Adaptação às alterações climáticas do Distrito de Lembá (2018)
Plano de Ação de Adaptação às alterações climáticas do Distrito de Mé Zochi (2018)
Plano multi-setorial de investimentos para integrar a resiliência às alterações climáticas e o risco de desastres na gestão da zona costeira de São Tomé e Príncipe (2017)
V&A Assessment in the context of the preparation of the Third National Communication (TNC) report for submission to the UNFCCC Secretariat, in fulfilment of the reporting requirement under the United Nations Framework Convention on Climate Change (UNFCCC) (2018)
Relatório de Avaliação Externa Final do Projeto de Adaptação às Alterações Climáticas (2013)
UNDP Country programme document for São Tomé and Príncipe (2017-2021)
Embrapa Hortaliças – Circular Técnica - Construção de estufas para a produção de hortaliças nas Regiões Norte, Nordeste e Centro-Oeste (2005)
UNDP, A Guide to the Vulnerability Reduction Assessment (2008)
National Biodiversity Strategy and Action Plan, São Tomé and Príncipe 2015-2020
Ailton Mandinga, Potencial e viabilidade económica da utilização de estufas para produção de hortaliças em São Tomé e Príncipe (2018)
Diagnósticos Rápidos realizados nos distritos de intervenção do projeto (2015)
Relatórios do Comité de Pilotagem
Planos Anuais de Trabalho 2015, 2016, 2017 e 2018
Guidance for conduction midterm reviews of UNDP- supported GEF-financed projects.
Diagnóstico de Potencialidades - CATAP
Estudos sobre sistemas de irrigação de Rio Lima, Santa Luzia e Bom Sucesso
Manual de Formação de produção em estufa (2017)
Relatórios Anuais 2015, 2016 e 2017
Relatórios de Formação GIS
Relatórios de Formação em Alterações Climáticas
Relatórios trimestrais do projeto, incluindo todos os anexos.
Modelos de gestão de infraestruturas (2018)
Mapas Vulnerabilidade Observatório D.G. Ambiente
Relatório do levantamento cartográfico das ações e iniciativas desenvolvidas no quadro do projeto de Adaptação às alterações climáticas (2018)
Planos de Atividades da equipa da Região Autónoma do Príncipe

Annex 4- Ratings Scale

Progress towards Results

Highly Satisfactory	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as “good practice”.
Satisfactory	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
Moderately Satisfactory	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
Moderately Unsatisfactory	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
Unsatisfactory	The objective/outcome is expected not to achieve most of its end-of-project targets.
Highly Unsatisfactory	The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.

Project Implementation

Highly Satisfactory	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”.
Satisfactory	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
Moderately Satisfactory	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
Moderately Unsatisfactory	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
Unsatisfactory	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
Highly Unsatisfactory	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Sustainability

Likely	Negligible risks to sustainability, with key outcomes on track to be achieved by the project’s closure and expected to continue into the foreseeable future
Moderately Likely	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
Moderately Unlikely	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
Unlikely	Severe risks that project outcomes as well as key outputs will not be sustained