

## 9.0 São Tomé e Príncipe

AAP	Africa Adaptation Programme
BMU	Bundesministeriums für Umwelt, Naturschutz und Reaktorischerheit (Germany)
CAR	Central African Republic
CCAA	Climate Change Adaptation in Africa
COMIFAC	Central African Forests Commission
DFID	Department for International Development (UK)
DRC	Democratic Republic of the Congo
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany)
IDRC	International Development Research Centre
LDCF	Least Developed Countries Fund
NAPA	National Adaptation Program of Action
NGO	non-governmental organization
SIDS	Small Island Developing State
STP	São Tomé e Príncipe
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

An archipelago comprised of two main volcanic islands and four islets in the Gulf of Guinea, the Democratic Republic of São Tomé e Príncipe is the smallest independent country in Africa, with a land area of 1,001 square kilometers. Its estimated population of 166,000 people primarily lives in urban centers (62.2 per cent) (USDS, 2010; UNFPA, 2010). The main economic sectors of the country are the production of agricultural commodities (particularly cocoa, coconuts and copra), fisheries and a small industrial sector (USDS, 2010). The concentrated use of São Tomé e Príncipe's limited arable land for export crops has led to a reliance on food imports to meet local consumption needs (USDS, 2010). The country has the potential to significantly expand its tourism industry and is in the process of exploring development of its offshore oil resources in partnership with Nigeria (USDS, 2010). GDP per capita in São Tomé e Príncipe is

US\$1,174 (2009 figure; USDS, 2010). The country is classified as a least developed country (OECD, 2009) and is characterized as having achieved a medium level of human development (UNDP, 2010a).

### **A. Adaptation Needs and Priorities**

São Tomé e Príncipe enjoys a humid, tropical climate with abundant rains throughout the year, with the exception of the dry season from June to August. Changes in this climate are being observed, with temperatures rising over time and the length of the dry season extending.<sup>124</sup> The decrease in rainfall over the years has led to reduced river flow and inadequate water supplies, with impacts on groundwater resources (STPMNRE, 2006).

Projections for the future suggest that the climate of São Tomé e Príncipe will remain relatively unchanged. Moderate temperature increases of 1 to 2.5°C are projected by 2050, along with no significant change in annual rainfall and no significant change in consecutive dry days or extreme rainfall events. Moderate decrease in runoff could take place, increasing the importance of strict water management and sustainable land uses for São Tomé e Príncipe (World Bank, n.d). Sea level rise is an additional concern for this island country, particularly as coastal erosion is currently leaving populations unprotected and impacting tourism (STPMNRE, 2006).

The key vulnerable sectors identified in the National Adaptation Programme of Action (NAPA) are the coastal zone, fisheries, forests, and human health, primarily due to flooding, coastal floods, storms, landfalls and drought. Adaptation solutions to these climatic vulnerabilities are presented in the country's NAPA in a number of related sectors:

- Agriculture and forests;
- Freshwater resources;
- Energy;
- Infrastructure, public works and tourism;
- Public safety and civil protection;
- Human health; and
- Fisheries.

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<sup>124</sup> In 2005, for example, São Tomé e Príncipe's dry season lasted for six months instead of the typical three months in length (STPMNRE, 2006).

It should be noted that while the coastal zone is not singled out in the adaptation solutions, their high vulnerability to sea level rise and erosion is acknowledged (particularly under infrastructure).

## B. National Level Policies and Strategic Documents

São Tomé e Príncipe submitted its First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) in 2004 and its National Adaptation Programme of Action (NAPA) in 2006. Both of these documents were prepared and submitted by the Ministry of Natural Resources and the Environment. As well, with the support of the United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP) and the Global Environment Facility (GEF), São Tomé e Príncipe also prepared a National Strategy for Climate Change Adaptation in 2004. Summary descriptions of all three documents can be found in Table 1.

Although the country has completed the development of these foundational documents, it has not yet mainstreamed climate change adaptation into specific policies and strategies. For example, there is no explicit mention of climate change adaptation in the country’s most recent Poverty Reduction Strategy Paper progress report, though mention is made of implementation of the UNFCCC more generally.<sup>125</sup> However, mainstreaming climate change into major strategies and policies is a key deliverable of the country’s current project financed through the Least Developed Countries Fund (LDCF), “São Tomé e Príncipe: Adaptation to Climate Change” (see Section C).

**Table 1: Key Government Policies and Reports reflecting Adaptation Needs, Priorities and Planned Actions**

Name of Policy Action		Government Division Responsible	Status	Sector(s) of Focus	Summary description
1.	First National Communication to the UNFCCC	Ministry of Natural Resources and the Environment	Submitted December 2004	Forests and soils; coastal zone and marine fisheries; population, health and education; water, energy and mines; and agriculture	This initial National Communication of São Tomé e Príncipe’s provides a summary of the country’s context, presents an inventory of domestic greenhouse gas emissions, and analyzes national vulnerabilities to climate change. It then presents adaptation options that can be implemented to address these vulnerabilities.

<sup>125</sup> The World Bank and International Monetary Fund have recommended that São Tomé e Príncipe present more information in their PRSP on the country’s natural disaster risks and mitigation strategy, to adopt a vulnerability reduction and adaptation plan to climate change, and to ensure that critical infrastructure is resilient to disasters (GFDRR, 2009).

Name of Policy Action		Government Division Responsible	Status	Sector(s) of Focus	Summary description
2.	National Strategy for Climate Change Adaptation <sup>126</sup>	Ministry of Natural Resources and the Environment	Submitted December 2004	Human health, freshwater supply, agriculture, marine fisheries, coastal zone management	This initial national strategy for climate change adaptation described the steps São Tomé e Príncipe is taking to implement the UNFCCC. It provides a description of the national context and an inventory of domestic greenhouse gas emissions, and discusses both mitigation and adaptation strategies. Adaptation strategies focus on a number of priority areas: health, poverty, observation data, water, agriculture, marine fisheries and coastal erosion.
3.	National Adaptation Programme of Action <sup>127</sup>	Ministry of Natural Resources and the Environment	Submitted December 2006	Infrastructure and public works, agro-livestock and forestry, health, water and energy, fishing, public safety and civil protection	This document identifies national climate change impacts and vulnerabilities, and lists 22 priority actions necessary for the country to begin adapting to the impacts of climate change. These actions focus on infrastructure and public works, agro-livestock and forestry, health, water and energy, fishing, public safety and civil protection.

### C. Current Adaptation Action

São Tomé e Príncipe is currently benefitting from a moderate number of adaptation projects relative to other Middle African countries—a total of five identified projects—most of which are part of larger African or global climate change adaptation initiatives. Adaptation projects in the country span a number of different sectors, including coastal management, food security and meteorology, and tend to focus on research and capacity building. The country has managed to secure funding from a diverse set of sources, including the Least Developed Countries Fund (LDCF), bilateral assistance (with Germany, Japan, Portugal and United Kingdom) and non-governmental organizations (International Development Research Centre [IDRC]).

The largest initiative being currently implemented is the six-year, US\$6.8 million project, “São Tomé e Príncipe: Adaptation to Climate Change.” This project, funded in part by the LDCF, broadly aims to increase the adaptive capacity of the Santomean population, with a focus on reducing the risk of climate-induced food insecurity in Lobata district, strengthening the resilience of coastal communities to sea level rise and extreme weather events, and mainstreaming climate change into the country’s major strategies and policies (GEF,

<sup>126</sup> UNFCCC, <http://unfccc.int/resource/docs/natc/stpnc1a1.pdf>

<sup>127</sup> UNFCCC, <http://unfccc.int/resource/docs/napa/stp01.pdf>



2009a). A second national-level project focuses on the generation of meteorological information for the benefit of environmental technicians, fishers, transport workers, policy makers, economic decision makers and the general public, and includes the donation of three new weather stations. The São Tomé e Príncipe Meteorological Institute is implementing the project in conjunction with Evora University in Portugal.<sup>128</sup>

São Tomé e Príncipe is also participating in the program “Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa,” or Africa Adaptation Programme, a multi-national, US\$92 million initiative launched in 20 African countries by the Japan International Cooperation Agency in 2010. The Saotomean component of the program is a US\$3.25 million project (with co-financing from the World Bank and UNDP) focused on capacity building and leadership, with a geographic focus on both coastal zones and the northern part of the country (UNDP, 2010b).

As part of the UK Department for International Development (DFID) and IDRC’s Climate Change Adaptation in Africa program, a fourth project will help the capital city’s municipal government incorporate climate change adaptation into their long-term planning and decision-making, through the use of participatory scenario development and analysis in São Tomé, the capital (IDRC, 2009). This is also being implemented in Cape Verde, which will allow for a sharing of experiences, approaches and lessons learned between the two small island developing states.

In addition, as a member of the Central African Forests Commission (COMIFAC), São Tomé e Príncipe will also benefit from their current project on climate change scenarios for the Congo Basin. The extent of activities being carried out in São Tomé e Príncipe under the project is unknown, but it is hoped that these scenarios will enable decision makers throughout the COMIFAC region to adapt and prepare their natural resource management strategies to meet the regional challenges of climate change (BMU, 2010).

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<sup>128</sup> See <http://www.siclimad.com/> and GEF (2009).

**Table 2: Current Adaptation Projects and Programs active in São Tomé e Príncipe**

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
<b>National Action</b>							
1. SICLIMAD: System for Climatic and Sea Information to Support the Sustainable Development of São Tomé e Príncipe <sup>129</sup>	This project is aimed at supporting adaptation to climate change by monitoring the regional climate, climate variability and its impacts, and conducting numerical modeling of the weather and sea conditions. The project beneficiaries include environment technicians, fishers, transport workers, policy makers, economic decision makers and the general public. The project includes the donation of three automatic weather stations.	Portuguese Institute for the Environment , São Tomé e Príncipe Meteorological Institute	São Tomé e Príncipe Meteorological Institute, Evora University, Audimobil	Research; Capacity building	Unclear	Climate information services; Marine fisheries; Marine management	São Tomé e Príncipe. Similar projects in Cape Verde and Guinea Bissau
2. São Tomé e Príncipe: Adaptation to Climate Change <sup>130</sup>	To increase the adaptive capacity of the São Tomé and Príncipe population to reduce their vulnerability to the adverse impacts of climate variability and change.	LDCF, other co-financing	World Bank, Ministry of Natural Resources, Energy and Environment	Capacity building; Policy formation and integration	2009 – 2015	Agriculture; Coastal zone management; Disaster risk management	São Tomé e Príncipe, Lobata district, coast
<b>Participation in Regional and Global Projects</b>							
3. Climate Change Scenarios for the Congo Basin <sup>131</sup>	The project aims to provide national and regional decision-makers with climate change scenarios that have been calculated specifically for the Congo Basin, and which will enable them to adapt natural resource management strategies to climate change.	BMU (Federal Ministry for the Environment , Nature Conservation and Nuclear	GIZ and COMIFAC	Research	2009 – 2011	Climate information services	<i>African:</i> COMIFAC (Burundi, Cameroon, CAR, Chad, Congo, DRC, Equatorial Guinea,

<sup>129</sup> GEF, [http://207.190.239.148/uploadedFiles/Focal\\_Areas/Climate\\_Change\\_\(PDF\\_DOC\)/LDCF1/Sao\\_Tome\\_Principe\\_07-22-09\\_Adaptation\\_to\\_CC\\_PIF.pdf](http://207.190.239.148/uploadedFiles/Focal_Areas/Climate_Change_(PDF_DOC)/LDCF1/Sao_Tome_Principe_07-22-09_Adaptation_to_CC_PIF.pdf)

<sup>130</sup> GEF, [http://207.190.239.148/uploadedFiles/Focal\\_Areas/Climate\\_Change\\_\(PDF\\_DOC\)/LDCF1/Sao\\_Tome\\_Principe\\_07-22-09\\_Adaptation\\_to\\_CC\\_PIF.pdf](http://207.190.239.148/uploadedFiles/Focal_Areas/Climate_Change_(PDF_DOC)/LDCF1/Sao_Tome_Principe_07-22-09_Adaptation_to_CC_PIF.pdf)

<sup>131</sup> BMU, <http://www.bmu-klimaschutzinitiative.de/en/projects?p=1&d=550>

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)	
		Safety, Germany)					Gabon, Rwanda, Sao Tome and Principe)	
<i>In São Tomé e Príncipe: More information required</i>								
4.	CapaSIDS: Capacity Building and Knowledge on Sustainable Responses to Climate Change in Small Island States <sup>132</sup>	This project aims to enable municipal governments in SIDS to incorporate climate change adaptation into their long-term planning and decision-making. Researchers will facilitate participatory scenario development and analysis in two municipalities, São Vicente in Cape Verde and São Tomé in São Tomé e Príncipe. Geographical information system tools will be used to help stakeholders visualize the impacts of their socioeconomic and climate change scenarios, and to appraise a number of adaptation options.	DFID and IDRC through the CCAA program	Instituto De Engenharia Mecanica	Research; Capacity building	2009 – 2012	Disaster risk management; Urban areas	African: São Tomé e Príncipe, Cape Verde
<i>In São Tomé e Príncipe: Research is focused on the city of São Tomé</i>								
5.	Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa (or Africa Adaptation Program – AAP) <sup>133</sup>	Under this program, UNDP will assist 20 African countries in implementing integrated and comprehensive adaptation actions and resilience plans. The projects will ensure that national development processes incorporate climate change risks and opportunities to secure development gains under a changing climate. UNDP will help countries establish an enabling environment and develop the capacity required to design, finance, implement, and monitor long-term and cost-	Japan International Cooperation Agency  Budget: US\$92 million	UNDP	Capacity building; Policy formation and integration; Knowledge communication	2008 – 2011	Government	African: 20 African countries <sup>134</sup> including Cameroon, Gabon, Republic of Congo, and STP
<i>In São Tomé e Príncipe: “Supporting Integrated and Comprehensive Approaches to</i>								

<sup>132</sup> IDRC, [http://www.idrc.ca/ccaa/ev-148720-201\\_105838-1-IDRC\\_ADM\\_INFO.html](http://www.idrc.ca/ccaa/ev-148720-201_105838-1-IDRC_ADM_INFO.html)

<sup>133</sup> ALM, <http://www.adaptationlearning.net/program/africa-adaptation-programme> and UNDP-APP, <http://www.undp-aap.org/>

<sup>134</sup> These countries are Burkina Faso, Cameroon, Congo, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Malawi, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome et Principe, Senegal, Tanzania and Tunisia.

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
	effective adaptation policies and plans.						<p>Climate change Adaptation in Africa: leadership, demonstration and capacity-building in São Tomé e Príncipe.” The project will help to address climate change risks under the five APP Global Project outputs, focusing on strengthening: (1) adaptive long term planning capacities, including baseline meteorological and population vulnerability measurement (2) institutional and human resource capacities at all levels (3) policies and measures, with a focus on the already degraded area of northern São Tomé for pilot activities in developing community climate change adaptation strategies and improving livelihood resilience in priority sectors. World Bank funded components will focus primarily on coastal areas. The project will strengthen adaptation and lead to improved resilience to climate change at local, district and national levels.</p> <ul style="list-style-type: none"> <li>• <i>Budget:</i> US\$3.25 million with co-financing from World Bank/UNDP</li> <li>• <i>Implementing agencies:</i> Ministry of Natural Resources, Energy and Environment and the World Bank.</li> <li>• <i>Priority sectors:</i> Coastal zone management; Climate information services</li> <li>• <i>Geographic focus:</i> Research is focused on Northern São Tomé, coastal zones</li> </ul>

#### D. Proposed Adaptation Action

São Tomé e Príncipe’s NAPA contains proposals for 22 adaptation projects (the relevant projects are listed below). Prioritized projects focus on food security, but the projects in general cover a number of different sectors, including health, water, energy and infrastructure. The majority of the proposed projects deal with capacity building, research, community-based adaptation and infrastructure building. Project proposals range in size (from US\$21,250 to 2,915,000 in budget), with most falling within the range of US\$300,000 to US\$500,000.

In addition, the Directorate of Animal Husbandry has submitted a significant proposal (US\$9.76 million) to the LDCF for strengthening the adaptive capacity and resilience of the country’s livestock sector. The proposed project has not yet been approved.



**Table 3: Adaptation Projects and Programs proposed in São Tomé e Príncipe**

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)	
<b>A) Projects not mentioned in STP's NAPA</b>					
1.	Strengthening the Adaptive Capacity of most Vulnerable Sao Tomean's Livestock-keeping Households <sup>135</sup>	Improve the resilience of the livestock systems in support of the productivity of stockbreeding.	Capacity building <b>Notes:</b> Project proposal submitted November 2010 to the GEF for funding through the LDCF. Currently awaiting CEO approval. <i>Proposed budget: US\$10,087,275</i> <i>Proposed Implementing Agency: AfDB</i> <i>Proposed Executing Agency: Directorate of Animal Husbandry</i>	Agriculture	
<b>B) Projects identified in STP's NAPA (STPMNRE, 2006)</b>					
2.	Establishing an early warning system of climate alert	To strengthen forecasting capabilities, to maintain/improve weather stations, and to establish a dissemination network for climate information (radio, television, newspaper, telephone).	Capacity building; Knowledge communication; Field implementation	Climate information services; Disaster risk management	Airport
3.	Communication action for behavior change	To change peoples' behavior with respect to climate change-related health impacts, such as vector-borne diseases, water-related diseases, and so on.	Knowledge communication	Human health	
4.	Construction and installation of a device for fish concentration on coastal zone	To increase the productivity and safety of local fisheries through the installation of devices for fish concentration (which attract fish populations to areas closer to the coast).	Field implementation	Marine fisheries	15 fishing communities
5.	Construction of two systems of drinking water supply in rural zones	To increase the population's access to safe drinking water, to reduce the incidence of water-borne diseases, and to contribute to a reduction in the infant mortality rate.	Field implementation	Freshwater supply	
6.	Reinforcement and diversification of agricultural	This project will include efforts to increase agricultural production, increase the number of	Community-based adaptation	Agriculture	

<sup>135</sup> GEF, <http://www.gefonline.org/projectDetailsSQL.cfm?projID=4274> and [http://www.thegef.org/gef/sites/thegef.org/files/documents/Progress%20Report.rev1\\_.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/Progress%20Report.rev1_.pdf)

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)
production	farmers' associations, increase arable land, increases in the number of beneficiaries benefiting from agricultural support programs, and an increase in small farmers' incomes.			
7. Integrated project of livestock development	In the face of increasing drought and less livestock fodder, the project will focus on increasing the use of goats and sheep as livestock (vs. chickens, pigs).	Community-based adaptation	Agriculture	North of S. Tome island
<b>Notes:</b> Implemented by the livestock sector, in partnership with agriculture and forestry				
8. Sustainable management of forest resources	To strengthen institutional capacities for forest management, and establish a good database on national forest resources.	Capacity building; Research	Forestry	
9. Relocation of local community at risk of floods and landfalls	To strengthen the adaptive capacity of local communities and reduce their exposure to flooding and sea level rise.	Community-based adaptation	Migration; Disaster risk management	Malanza, Sta. Catarina, Sundry, Praia Melao, Praia Pesqueira, Ribeira Afonso
10. Construction of infrastructure for protection of vulnerable communities	To protect coastal areas and populations from coastal erosion, flooding, and sea level rise.	Field implementation	Coastal zone management	Coastal regions
11. Introduction of new technology for firewood use and to make charcoal	To reduce the national consumption of firewood and improve the use of the country's forests resources.	Field implementation	Energy	Focus on rural areas
12. Establishing agricultural tourism	To establish agro-tourism complexes in two regions in an effort to reduce poverty, increase adaptive capacity to deal with drought, and improve agricultural infrastructure.	Capacity building; Community-based adaptation; Field implementation	Tourism; Agriculture	Monte Café e Porto Real
13. Develop an epidemic database about potential diseases related to climate change	To develop and launch a database for monitoring climate change-related health impacts.	Assessment	Human health	
14. Elaboration of strategic and emergency plans emphasizing	To develop both strategic and emergency plans for responding to the health risks associated with	Policy formation and implementation	Human health	

Name	Objectives	Type of project	Priority Sector(s)	Geographic focus (if any)	
	the health sector	climate change.			
15.	Training and study visits (doctors, nurses, volunteers, students, etc.) for emergency needs	To train 500 health professionals in interventions to combat climate change-related health problems, with an emphasis on disaster-related health crises.	Capacity building	Human health	
16.	Sustainable management of water and energy	To reduce the amount of waste generated through the consumption of water and energy resources.	Research	Waste management	
17.	Development of a Geographical Information System to monitor health and vector-borne diseases	To develop a national system for the monitoring of climate change-related health risks, with a focus on malaria.	Capacity building; Research	Human health	
18.	Introduction of renewable energy	To evaluate the country's potential for renewable energy.	Research	Energy	Rural areas without electrification
19.	Construction of two hydro power-stations	To increase electrification in rural areas using clean energy for a reduction in greenhouse gas emissions and reduction in poverty.	Field implementation	Energy	Claudino Faro and Bernardo Faro
20.	Evaluation and planning on water resources	To conduct an inventory of the country's water resources, to develop a plan for the use of those resources, and the build capacity for national integrated water resource management.	Research; Capacity building	Freshwater supply	
21.	Construction of shelters and mooring stations for fishing boats		Field implementation	Marine fisheries	

### E. Assessment

The impacts of climate change on coasts, human health, freshwater, energy and forests, though identified as key national vulnerabilities, have not yet been addressed in detail through adaptation activities in São Tomé e Príncipe. Similarly, it is likely that more will have to be done on strengthening and adapting coastal infrastructure in the face of sea level rise and an increase in extreme weather events over the coming century. These shortcomings have been identified by the country, as is evident from the list of proposed adaptation projects in the NAPA. However, this has not yet translated into activities on the ground.

Nevertheless, given the country's small size and population, an encouraging amount of significant work, spanning a number of sectors, is currently underway on climate change adaptation in São Tomé e Príncipe. Projects are addressing a wide range of issues, including agriculture, coastal zone management, early warning, climate information services, marine management, disaster risk management, urban planning and policy formation; this ensures that one area of focus does not dominate research, efforts and policies at the expense of other equally relevant challenges. A gap appears with respect to effort to specifically understand the gender based implications of climate change, which is not a prominent component of any current adaptation project or proposed strategy.

Diverse funding sources indicate that the country has avoided building up a reliance on one particular funder (or type of funder); multilateral, bilateral and NGO funding has been secured for current initiatives. The capacity of domestic civil society to implement adaptation programs could be improved, as indicated by the fact that most projects are being implemented by government ministries, external partners and United Nations agencies.

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