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PREAMBLE

From the 1980's onwards scientific studies altered the world conscience regarding the existing straight relation between green house effects (GEE) and world climate alteration. Consequently, this evidence decided the idea of creation a Convention about Climate Changes, that came to effect in June 1992 in Conference of the United Nations about the Environment and Development in Rio de Janeiro, in view to create mechanisms orienting better control of antropic actions that affect the world climate.

Sao Tome and Principe as an integral part of the International Community and being also concerned with climatic alterations that the world will be subject to, due to antropic actions, signed this Convention in June 1992 at the time when this Conference was held, and this same Convention has been ratified by the National Assembly in May 1998, leading the country to be, another integral part of the UNFCC.

In this framework, after the country elaborated its First National Communication on Climate Changes, delineated main lines framing into a National Strategy of Adaptation to these changes, as well as reduction of green house effects.

The efforts that the country has developed in view to put available instruments to facilitate a sustainable intervention at the climate component, as well the Communication as National Strategy, reflect how important is the environmental issues, in general, and particularly, the issues referring to climate changes.

The present document results from an effort in view to manifest the willingness of several sectors involved in the climate issue, as the way to mitigate the effects of climate changes and the way of adapting to them. Considering that the document itself is not a dogmatic one, the National Strategy intends overall, to dispose the country with a vision concerning climate changes and be able in this sense, to have a field of intervention that allows coordinating and sustaining actions for the well being of the present and coming generations.

This concerted action allows the intervention of all the actors of the socio-economic life in the country, mainly those sectors considered more dynamic and that have a more direct relation with environment.

In order to materialize this effort, the country expected also with a precious intervention of the international institutions in the issue of environmental management, mainly, those specialized agencies of the United Nations with vast programme of building capacities, put available financial, material and human resources, destined to support the activities of the national teams, that made possible the elaboration of this First Communication.

Minister of Natural Resources and Environment
Arlindo de Ceita Carvalho

GREETING AND THANKFULNESS

As soon as the National Communication on Climate Change was ready, the elaboration of both Strategy for National Adaptation and Reduction the Green House Effects, became one of the initiatives of capital importance, because they allow the country to launch the basis of adaptation to future constrains provoked by Climate Changes. Such constrains result from antropic actions due to the process of progress and development.

The implementation of this initiative it was only possible thanks to the will expressed by the Government in order to contributed actively, in general international issue in its engagement to contribute for a healthy salutory environment in Sao Tome and Principe.

We would like first of all, to be thankful for all prestigious collaboration and support given to us from international institutions such GEF, UNDP, PNUE and other United Nations Agencies that contributed to supply the country with necessary financial and material means for the successfulness of the initiative.

We would like to take this opportunity to recognize the valuable collaboration of the International Consultant, Mr Raymond Malu, from Senegal, specialist in issues related to climate changes, who did not gave up efforts on himself, just to orient the National Consultant teams, to define a consentaneous Strategy in Sao Tome and Principe context.

Our sincere thanks is also addressed to all those that direct or indirectly participation contributed to make the elaboration of this Strategy a reality.

Another word of recognition is addressed to all national institutions that were always available to furnish necessary data, including suggestions, comments and critiques to enrich the document. In the same way, a especial address must be elevated to UNDP, for its contribution to Project in implementation.

SYNOPSIS

The present document entitled National Strategy for the Implementation of the United Nations Framework Convention about Climate Changes (NSUNFCCC) allows the country, in the same way that other Parties to Convention do, to demonstrate the International Community how the country intends to integrate the climatic alteration dimension in its social and economic development policy. This document of strategy comes in the sequence of the elaboration of National Communication whose information about its engaged compromises comes to an end.

The strategic options described in this initial document demonstrate the willingness of the country to integrate a profound dimensional climate change in all the sectors of the national life.

Inscribed, then, in the spirit of Rio's Conference about the implementation of UNFCCC, this National Implementation Strategy presents globally all the country's data in terms of green house effect and vulnerability before the elaboration of a list of group of priority actions that the country intends to realize as quickly as possible.

This first actions has to do with main vulnerable sectors such as :

- The entire society itself, in general, regarding the geo-climatic position of the country,
- The coastal zone, strongly endangered by the extraction of inert for construction,
- The forestall resources that constitutes the main source of energy and revenue over those severe antropic pressure is felt,
- The agriculture, facing a big recession due to lack of agricultural policy deserved to it.

The definition at the end of the document of a institutional coordination framework, the process of implementation of the UNFCCC must begin for the implementation and follow up of the all the strategic actions.

INTRODUCTION

The elaboration of National Strategy for the Implementation of the United Nations Framework Convention about Climate Changes, inserts in the scope of conclusions of Rio's Conference organized in 1992.

With signing and ratification of the Framework Convention, Sao Tome and Principe wanted to demonstrate its active willingness, in particular in world environmental protection efforts and in the integration of climate changes dimension in its social economic development policy.

Even though the country is not obliged by the Convention to take measures for the reduction of green house effects, the country wants to give its contribution to global effort for the safeguard of the world climate.

This document of strategy has the following objective:

- To furnish a frame consolidation of information about climate changes,
- To explore policies and measures destined to integrate climate change dimension in the framework of a sustainable development.
- To guarantee the follow up and application of measures and options taken.

The definition of an institutional frame (National Committee of Climate Changes) in charge of coordination and application of all the policies and proposed measures, matches this objective. And an invitation to all category of actors for the identification of several impacts of climate changes in several sectors of economy in view to its integration initiatives and projects of development of the country.

Some identified strategies in this document are only the standing beginning point to a such extent in terms of taking in consideration the climate change dimension in the policies of development of the country.

CHAPTER I : SITUATION POINT OF GENERAL DISPOSITIONS OF THE UNITED NATIONS FRAMEWORK CONVENTION ABOUT CLIMATE CHANGES (UNFCCC)

I CONVENTION HISTORIC BACKGROUND

In the years of 1980's, Scientists have confirmed the existing straight relation between green house effects (GEE) and modifications on the world climate. This evidence raised a big concern in the international community that conceived the establishment of framework convention about climate changes. After several negotiations this Convention was definitely elaborated, and in May 1992 it was available for signature at the United Nations Conference about environment and development " Summit on Planet Earth" in Rio Brazil, in July 4 1992. The Convention entered into force in March 21 1994, 90 days after its ratification by 50 necessary countries. In July 1995, 166 countries had already signed the treaty, including the European Community and 137 countries have ratified the treaty.

II OBJECTIVES OF THE CONVENTION

The main objective of the United Nations Framework Convention about Climate Changes (UNFCCC) and all legal linked documents that the Conference of Parts has adopted, is to stabilize, according to pertinent dispositions of the Convention, the concentration of green house effects in the atmosphere at a level that impedes any dangerous antropic disturbance of the climatic system. It would be better suitable to reach this level in a significant short period in order to favour all the ecosystems be able to adapt naturally to climate changes, so that food and crops production would not be affect with this situation, nor the process of economic development, so that we could pursue all the activities in most sustainable way

III MAIN PARTIES COMPROMISES

One of the most important dispositions related to the application of the Convention, refers to communication and information. This disposition described in page 12 of the text of the Convention, invites the Parties to communicate at the Conference of the Parties, via Secretariat intermediation, the elements of information as it follows:

1. A national inventory of gas emissions and absorption by their wells of all green house effects not regulated by the Montreal Protocol, since the resources would allow, by using comparative methods over which the Conference of the Parties must understand and whose utility the Conference would encourage;
2. A general description of the measures that the Conference would take or intends to take to apply the Convention;
3. All and any other information that the Party judges to be useful to reach the Convention objective to be included in its communication, including, as much as possible, useful data to determine tendencies of world's green house effects.

4. Each one of developed Party countries and each one of other Parties inscribed in annex I must include in its communication information related to detailed policy descriptions and measures that each one adopted according to subscribed compromise in the article 4, paragraph 2 b). They must also proceed an exact estimated impacts that their policies and measures would have over the anthropic green house effects to their sources and the absorption by their wells.
5. Each one of the Party developed Countries and each one of the Parties developed included in annex II would furnish details of measures taken according to article 4, paragraph 3 and 5.
6. The Parties developing countries can, at voluntary basis, propose projects to be financed, including, technologies, materials, equipments, techniques or specific necessary practice to implement by furnishing if possible, an estimate of supplementary costs of these projects, of their expected progress in relation to reduction of green house and with the increase of the absorption of the green house effect, as well as an estimate advantage of what we can expect from it..
7. Each one of the Parties developed country and each one of the other Parties inscribed in the annex I will present their initial communication in subsequent six months after the concerned Convention comes into force. Each one of the Parties that will not be included in this list, will present its initial communication in three subsequent years after the Convention comes into force in respect to itself properly or due to availability of financial resources according to the article 4 of the paragraph.
8. The Parties that represent the number of lest develop countries are free to chose the date to their initial communication. Consequently, the frequency of the communication of all the Parties would be established by the Parties Conference that would take in consideration different dates from the one indicated in the present document.
9. The information exchanged by the Parties in the application of the present article will be transmitted as soon as possible to the Secretariat of Parties Conference and subsidiary competent organs. The Parties Conference can, in case it is necessary, revue the ways to broadcast information.
10. From the first session, the Parties Conference would take dispositions to assure the supply to countries in developing Parties, at their request, a support that may help them technically and financially and that may help them to gather and exchange information requested in the present article and select necessary financial and technical means to implement the proposed projects and propose taken reactions to the title of article 4. This aid can be given by other Parties, by competent international organizations and by the Secretariat, depending on their own convenience.
11. All the Parties group can, with reservation of orientation of the Parties Conference and with previews notice, renounce to all the enunciated obligations in the present article, just by presenting a joint communiqué, about the condition to follow about how to include information about the way each one of these Parties renounce form the obligations that the Convention obliges implicitly..
12. The information received by the Secretariat and whose Party that supply them would have indicated that they are confidential, according to criteria of the Parties Conference to be established, they are compiled by the Secretariat in order to preserve this character before being broadcasted by the organs responsible to receive them and analyse them.

IV - COMPROMISES ALREADY REALIZED BY THE COUNTRY

Sao Tome and Principe as a part of the Convention signed in June 1992 (for the occasion of World Summit about Environment and Development, realized in Rio de Janeiro) and ratified in May 1998, preoccupies then, regarding the means available, to fulfil dispositions and engagements assumed in relation to the international community.

In the chapter dedicated to documents already produced or in its phase of elaboration, portrays the following:

- a. The inventory of GEE realized in 1998,
- b. Vulnerability/adaptation studies to climate changes, realized in 2002,
- c. The initial Communication in its finalization phase which will be proposed in the 10th COP (Parties Conference)
- d. The strategies document of reduction gas emissions and options towards adaptation of adverse climate effects, which is the objective of this report entitled National Strategy for the Implementation of United Nations Framework Convention about Climate Changes. (NE/UNFCCC).

This document of strategy, while at the same time makes an approach of fundamental characteristics of level of the gas emissions and their vulnerabilities (analysed characteristics in to a minute way in National Communication), is a presentation of big projects of the country in terms of reduction of gas emission or the optimisation of this sequestration capacity (the country is a well of GEE than a gas emission itself, according to the inventory organized) and the adaptation to adverse climate, considering sustainable development.

CHAPTER II: BASIC INFORMATION OF THE COUNTRY

Basic country climate information, mainly, environmental and socio-economic can be found in document of initial Communication of the country.

V – IN THE GEO-CLIMATIC PLAN

Sao Tome and Principe is an archipelago of two islands and adjacent islets, located in the west African coast in the Guinea Gulf. The archipelago occupies an area of 1001km². The island of Sao Tome and the adjacent islets totals an area of 859km² while the island of Principe and the annexed islet totals an area 142km².

The islands locate away of west coast of Gabon and lie between the parallel 1° 45' North and 0° 25' South, and meridian 6° 26' East and 7° 30' West.

The islands are of volcanic origin, with a very mountainous relief, whose highest points are Pico of Sao Tome (200m), in Sao Tome, and Pico of Principe (948m) in Principe.

The Climate is tropical humid, characterized by the existence of two seasons. The hot season is the rain season which lasts about nine months, and Gravana, dry season, lasting about three months, from June to August. There an intermediate dry season called “Gravanito” that occurs transitionally between December and January according to movement of inter-tropical convergence. This season is characterized by diminishing of rain precipitations and an increase mean temperature in the air. In this time of the year, the wind blows from SSW and WSW accompanied by sand and dust coming from the main continent.

Due to the relief characteristics, there are several micro-climates. In the highest zones we can register strong rain fall (7.000 mm per year), while in lower zones (North and Northeast) we can register lower rain fall (about 1.000 per year).

The annual average temperature is, generally 26°C. In the coastal regions the temperature varies around 27°C and in the mountains the number reaches 21°

Air humidity is very high, reaching in high altitudes (Lagoa Amelia, for example) an average of 92% during almost the entire year. In low altitude the temperature is much higher varying from 70 to 80% during the entire year.

VI - IN THE SOCIO ECONOMIC PLAN

Sao Tome and Principe is a country of plantations¹. First, sugar cane in XV Century (1493), next coffee in XVIII century (1787) and finally, in XIX century, cacao (1822)² which is in ongoing process.

After the independence in 1975, there were an attempt to diversify economy with the implementation of a vast programme of investment support by the international community. This attempt to diversify, meanwhile, did not produced the expected results, due to its inadequate programme and plantation over dimension, that provoked low revenues and a considerable increase of current expenditure and an indebt to the country.

Bad results from public enterprises and lack of respect to the compromises assumed with external debt service, provoked an increase of budget deficit. To this we can add, from 1980, the fall down of revenues from the cocoa exportation which is the country main exporting product.

Due to this catastrophic situation that shacked heavily the national economy, it was adopted in 1987 a Structural Adjustment Programme (PAE) wit a certain number of partners, particularly with World Bank (WB). International Monetary Fund (IMF) and African Development Bank (AFD).

In 1990's there were profound transformations in the government system which lead to the installation of integral multiparty system and for instance democratic elections in 1991. After these elections, new political conditions allowed to return to SAP with creation of mechanisms leading to macro-economic stabilization such as :

- Structural reform fund,
- Institutional Reform,
- Slippery devaluation of Dobras, local currency,
- Reforms of agricultural public administration, financial, of public investment programmes, trade and prices

Although significant progress were obtained regarding macro-economic stabilization, adopted measures by PAE revealed insufficient to face the population needs. In effect, shopping power of these populations has reduced and poverty raised significantly.

At this time, macro economic deviations are controlled and the difference of dobras rate between official market and black market was solved. However, the economy, still yet paralysed. The production still low and there still lack of investments to develop the economy, to create employment, and to overcome poverty.

The country would experience a bit easy situation with petroleum exploration, expected for the coming years.

¹ Ver Gerhard Seibert – Comrades, clients and cousins, Colonialism, Socialism and Democratization in Sao Tomé & Principe- Thesis from the University of Leiden, 1999.

² Agência-Geral do Ultramar-S. Tomé e Príncipe, Pequena Monografia-Lisboa, 1969

VI.1 GROWTH POPULATION RATE

Comparing to other African countries (Liberia(5,5%), Eritrea (4,2%), etc.), santomean population registers low growth rate between 1960 and 1981 (the growth passed from 0,7 to 2,5% during this period), the population of the archipelago registers a clear regression during the two last decades to reach roughly 1,5% in 2001.

VI.2 POPULATION DENSITY

In 1960 Mé Xochi district was the most populated one. Other districts had population rates around 5% and 15%. From 1970, this population territorial distribution experienced big transformations with reduction in Me-Zochi with benefit to Agua Grande. Other districts had, during this time, a certain stagnation of their populations. This population dynamism is due to migratory direction to the capital of the country (Sao Tome city) located in the district of Agua Grande.

This unequal distribution occurs because big disparities of population density, with locations of 20 inhabitants per Km² in relation to others that have population densities of 2.500 inhabitants per Km²

VI.3 POPULATION LEVEL OF LIFE

From the years 1980's bad rural population conditions provoked a strong rural exodus. Entire families abandoned the plantations to install in the cities, particularly in the capital where they expected to find better life. A demographic pressure has raised in the cities, which provoked considerable degradation to the level of urban populations.

Thus, between 1998 and 1997, even though PIB knew an improvement in real terms, the level of population life continued to be under the limit of poverty (National Poverty Reduction Strategy, 2002)

Poverty reaches 53,8% of the population, being mainly most poverty families women households (55,7%)

VI.4 HEALTH OF THE POPULATIONS STATUS

Health situation in the country is a worrisome one considering the low level public sanitation (almost the inexistence of collection and drainage of used waters as well as distribution system of potable water, abundance of drainage pipe lines, animals wandering, etc). This situation leads to the point that malaria, diarrhoea diseases (dysenteries, typhoid fever, cholera) and respiratory infections (pneumonia, tuberculosis) be endemic in the archipelago, particularly in big agglomerations such as Agua Grande district. These diseases are the main cause of infantile mortality and school absenteeism.

On the contrary sanitary coverage of the country is more or less satisfactory for an underdeveloped country. There is one doctor for 2.000 inhabitants and this considering only the number of national doctors (considering that most of specialists doctors are foreigners), medical coverage for this way satisfactory (one doctor for 3.000 inhabitants). It is clear that medical coverage of the country is due to weaken existing disparities between urban and rural areas, with higher density in big agglomerations such Água Grande district.

In terms of medical infra structures, S. Tome island is better equipped than Principe island, in a ratio of one per cent of health to 1.208 inhabitants against 4.577).

Speaking about the beds available in the hospital, there are around 3 per 1.000 inhabitants. Meanwhile, certain locations like districts of Lembá, Caué, Lobata and Principe have better medical coverage than others.

VI.5 EDUCATION

Education is a social component sector of capital importance to the society. The Constitution of Sao Tome and Principe consecrates, in its article 54, education as a citizen fundamental right and confers education a preponderant role in development of the country while be a source that must allows a complete capacity building.

I.5.1 National Education System

National Education System of Sao Tome and Principe is ruled actually by the Law n° 2/2003.

The system comprehends a group of 3 modules that includes relative aspects to training , namely:

- Kindergarten Education;
- Regular School Regime;
- Extra Regular school Regime.

Regular School Regime is the central axis of National Education System. It is composed of three level of education:

- Primary School system;
- Secondary School system;
- Higher Education.

Expenditures involving education increased in a significant way during last five years, with increasing rate of 3337,7% between 1997 and 2001. This investment, on behalf of education, still going on, meanwhile, in insufficient proportion, if compared with other countries of geographic region of comparable economy and where public expenditures concerning this sector represent about 4%.

I.5.2 Schooling rate

Number of effective students attending school experienced significant progress rapidly between 1974 and 1994, jumping from 10.803 students in 1974 to 14.290 in 1975, and from 18.806 in 1990 to 38.548 in 1994, a figure that represents annual average growth about 210%

From 1994 the education system registered a clear regression, namely in primary and secondary school sector, which are the basis of the entire education system.

I.5.3 Literacy rate

The level of literacy in Sao Tome and Principe is enough high, with about average of 85% in Agua Grande against 65% in Caué. There is a good record of these levels of literacy between 1991 and 2001 which reached about 9.16%.

VI.6 AGRICULTURE

Sao Tome and Principe disposes of 44.757,99 hectare of uncultivated land (according to the Statistics data of Agrarian Reform Cabinet of 2002), and possess a total cultivated area of 41.367 hectare (Agricultural census of 1990). The distribution of these area according to the types of agriculture exploration is the following:

- Cocoa 26.076 hectares,
- Coffee 984 hectares,
- Coconut palm trees 7.676 hectares,
- Food Crops 2.110 hectares,
- Banana trees 592 hectares,
- The remain agricultural land is occupied by several other agricultural exploration and by cattle.

With agrarian reform, the problem of cultivated land by small farmers is no longer raised. The main problem is raised at the moment is lack of financial resources to cultivate the land. According to Agriculture Census of 1990, agricultural sector employs 35.072 people, whose 35% of them are women.

Agriculture plays an important role in the economy of the country, by contributing together with forest (in 1993) an amount of 44, 663 thousand dobras, correspondent to 18,4 of GDP. Cattle for instance contributes with 895 millions dobras, or let say in a percentage of 5,3%.

Fishing is also one of the country most important activities . It is practiced in an artisanal way by populations living near the city and for those settled all over coastal land.

All the captures totals around 12 tones of sea food per year (7.500 in Principe and 4.500 in Sao Tome). In 2002, the captures reached a number in tones 4.284, furnishing 63.723.200 Dobras)

To these revenues we must include contributions in terms of fishing agreement (particularly tuna fishing) established by European Union and Eastern countries evaluated about 1 million dollars, and the end of 1990's). This figure is, meanwhile, very low to potential contributions considering what the country is able to do so, because the country does not dispose of observers on board of fishing vessels for the verification of exporting quota

However, fishing contributes about 3% to PIB which represents about 85% animal protein to population. Meanwhile, the sector is badly managed causing an enormous environmental and economic damage to the coast level. This is a factor limiting considerably real contributions to the national economic sector.

VI.7 HYDRIC RESOURCES

In Sao Tome and Principe rain falls are characterized by a big space-temporal variable, a situation that has an impact in river streams. With its minimum lapse of few hours, these rain fall can last several days and provoke floods of variable complexity. The response time of stream rivers is equally variable, varying from few minutes to hours. We can note that there exist a big difference between river basins upstream (located in altitude) and river basins downstream (located in low altitude)..

The country disposes of hydrographical network formed by more than 50 water streams of an average length balancing from 5 to 27km and a flux density of 1.000 and 1.500 meters. It refers to an hydrographical network of radial character that begins in the centre of the island (located in altitude) moving to the coast line that surrounds the country.

River streams are loaded up to certain extent by rain falls during the rain season, but also by underneath waterbed, during dry season...

The capacity of stream rivers is of 2,1 millions m³ of water , amount equivalent to a capacity to water supply of about 10.0000m³ per year and per inhabitant. More than 60% of stream rivers are locate in southeast and south parts of the country.

There are meanwhile, few studies about these river streams. Only Rio Yô Grande was studied (1959 to 1985) in the station Manuel Carôça and LGP – 84, and it was taken as example for situation development of stream rivers in the country.

There has been a record pointing certain tendency for a decrease of rain falls during 3 last decades, what reflects in cut down stream river.

VI.8 ENERGY

The country disposes of big non explored energetic potentials (mainly in terms of hydro-electricity). The hydro-energetic potentials of the country (247 GWh/year) is actually very little explored considering effective consumption of exploring enterprises what leads to calculate that the potential energetic hydric origin can cover about 70% of the country total need.

This potential source is in condition to supply the entire territory in electricity. We would need, therefore, a minimum of thermic plant to cover the need during the dry season,

Actually electric network is global rudimentary comprising isolated units in thermic electrogeny and hydraulic groups. The energetic coverage continues, in general, in an insufficient way by justifying constant cuts loading electric power most frequent.

This situation, meanwhile improved a bit since the year 2000 with rehabilitation of Hydro-Electric power plant of Contador river as well as and the installation of three generators of 1.500 KW (each) in the Thermic Power Plant in the Sao Tome city.

On the other hand, the country can in near future become a petroleum producer, if we rely on recent oil researches from certain enterprises, such as PGS – Exploration or Exxon Mobil that point significant reserves (superior to 8.000.000. 000 – eight billion barrels of oil) in North Region of Principe island.

If all the data will confirm itself, petroleum exploration can start from 3 to 5 years after Blocs Public Bids (organized in April 2003). Depending then, from sole single source of energy the country can develop hydro-electric potential that it disposes..

VI.9 INDUSTRY

The only important industry experienced by the country refers to the past sugar cane exploration. It happened between the years 1578 and 1582. At the time there about 60 factories of sugar cane

After independence the State Government decided to launch basis for an industrial development through the creation some industrial unities.

In last years, the industry sector was not considered a priority one. That is why there was no worthwhile investments in this sector, nor even a significant one in global production. The industry represents about 6% of GDP of the country

VI.10 FORESTRY AND SOIL

I.10.1 Forestry

Democratic Republic of Sao Tome and Principe has abundant forestry classified in three categories:

1. Firstly, the dense and humid forestry, located in high altitude and of difficult access.
2. Secondary forestry, (capoeira), located in dense periphery forestry and corresponds to ancient coffee and cocoa plantations that were abandoned which for instance invasion of huge trees. It is located in half altitude in very high landscape with difficult access due to high slopes.

3. Forestry shadow is characterized by the presence of cocoa and coffee with more or less dense coverage in arboreal stratification composed of tree natural and introduced species.
4. Arboreal savannah and Northeast under shrub. In Northeast region of Sao Tome (Praia das Conchas and Lagoa Azul) prevail weak rainfalls (1.000 mm/year) comparatively with rest of the country, in relation to dry season very well expressive. The relief in this area is relatively plan compared with rest of the archipelago. The zone is covered by a mosaic of herbaceous savannah, fulfilled here and there with arboreal and under shrub agglomeration of short dimension making a contrast with entire forestry of the country. Probably this vegetation is a result of itinerant process of burning of trees prevalent in this zone since the colonization period, namely since the sugar cane exploration time.

Woody resources of Sao Tome and Principe are essentially used as a source of energy, but also as source to handcraft made, building construction, and furniture, and also in small quantity used adorning objects and yet as posts to support electric wire.

To note that Principe island has less woody resources per area unit than Sao Tome, either by stand point of view in commercial species or in global sense. In Sao Tome, the exploration is not homogeneous. In some regions like district of Lobata there is an over wood exploration.

I.10.2 Soils

Soils are mainly of basaltic origin and they present in general, good fertility. They present a composition a pH slightly acid (near neutrality), including a good taste in potassium and phosphorus, as well as a good cationic capacity and water retention.

From the black tropical type, they present paraferalitic fersialitic and litolic and they can be rich in humus or not, if the organic material in the horizon A1 be superior to 7,5 % (in heavy or medium textures) and 4,5% (in case of light textures). In Principe island, the textures are paraferalitics and litolics

VI.11 COASTAL ZONE

The littoral zone of Sao Tome and Principe is located between the limit of Exclusive Economic Zone (ZEE) which expands up to 200 maritime miles and to continental limit up 100 meters of altitude from the coast

The salinity of water varies according to each singular season. The production of seaweed is relatively limited due to smallest continental platform and lack of depth.

The “upwellings” are more frequent during “Gravana” due to influence of Benguela

Temperatures near the coast are very high (until 26°C) from March to May, but enough mild from July to August (between 23 and 23,5° C)

The ecosystem of salubrious water transitional zone and of mangroves is very particular. It is characterized by big biodiversity with rare species such music shell of Rolas islet at the south of Sao Tome

The continental platform is relatively reduced with about 1.500 km², in which two thirds (1.023 km) belong to Principe island and only 436 to the island of Sao Tome³.

Most part of the coast zones are rocky with high relief, but there is enormous sandy days that constitute the entire beaches through out the coast.

Coastal zone of Sao Tome and Principe is felt of vast biodiversity, made of an abundant fauna and flora as well as hydric and mineral resources.

The main mineral vault are made of petroleum *off-shore* zones (discovered recently), beaches of inerts for construction, coral reefs near Lagoa Azul and pottery used in ceramic. Most wood-energy comes from littoral forestry. Potable water available in coastal zone is limited due to salty water interference in freatic water bed

The table below discriminates up-to-date data as it follows:

Table: I Country's Over View

Data base	2001
Area	1001 km ²
Population	137599 hab.
Density	137,5 hab/Km ²
Demographic decreasing rate	1,6
Urban Population	74.303
Urban population increasing rate	36%
Rural Population	63.295
Rural population increasing rate	-0,3%
GDP	557,98 milhões de Dobras
GDP increasing rate	9%
GDP/inhabitant	3.986.276 Dobras
Impact of the informal sector in economy of the country (in % of PIB)	60%
Impact of primary sector (in % of GDP)	27,2%
Impact of secondary sector (in % of do GDPG)	15,9%
Impact of tertiary sector (in% of GDP)	56,9%
Agricultural active area	44.757,99 ha
Forestry area	91.091,00 ha

VII LEVEL OF PRODUCTION GEE

Energy and forestry sectors are responsible for almost all production of CO₂, totalling 507.876,63 tones. However, the forest absorb in return, 1.582.287,00 of CO₂. Other gas produced by the country are CH₄ (3.498,43 tones), o N₂O (40,05 tones), o NO_x (1.022,73 tones), CO (21.085,08 tones and NMVOC (344,54 tones).

In terms of the equivalent of CO₂, according to the formula $E-CO_2 = CO_2 + 24,5CH_4 + 320N_2O$, the evaluation of gas emissions is largely deficient and attributes the country a capacity of absorption of 975.883 tones. E- CO₂. Sectors of residuals and industrial proceeding, agriculture and cattle are the producers of CO₂.

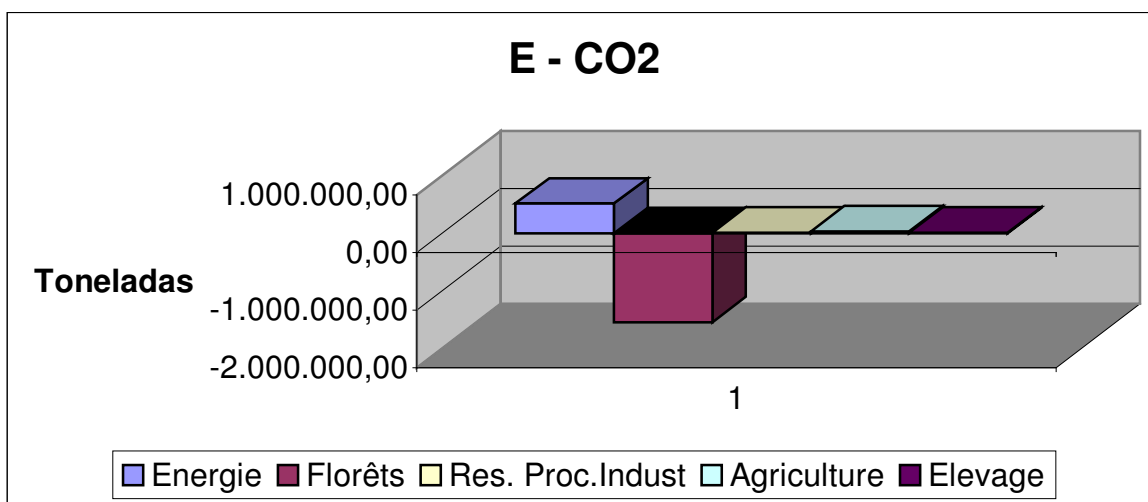
Energy sector is responsible for 43% of production of CH₄, 70% de N₂O, 81% of No_x and 83% of CO.

Forestry sector disposes of a sequestration capacity of 1.544.546,70 E-CO₂. The table and figures below reveals the situation point of these level of production

Table II : Balance of production and absorption

Sectors	GEE (ton)			E-CO ₂	
	CO ₂	CH ₄	N ₂ O	Émissions	Absorptions
Energy	471.357,63	1.487,88	29,24	517.167,49	
Forestry	-1.545.768,00	45,8	0,31		-1.544.546,70
Residual and Proc. Indust.				0,00	
		360,47	6,1	10.783,52	
Agriculture		1.258,00	2,9	31.749,00	
Cattle		346,28	1,5	8.963,86	
TOTAL	-1.074.410,37	3.498,43	40,05	568.663,87	-1.544.546,70
Balance of emissions.				-975.883	

$$E - CO_2 = CO_2 + 24,5CH_4 + 320N_2O$$



Picture 1 : Balance of Emissions and Absorption of coal in E-CO₂

For a total 507.876,63 tones of CO₂ produced in 1998, 411.300 tones comes from wood combustible production, as well wood consumption in industries and in households (in food preparation), totalling 80%. The consumption of fossil combustible in mechanic vehicles and for electricity production produces only 20% of CO₂.

VIII – LEVELS OF VULNERABILITY TO CLIMATE CHANGES

Sao Tome and Principe is a tiny island nation whose sensibility to climate variations was supposedly not necessary to demonstrate by the vulnerability studies realized in the scope of the Project of Climate Changes financed by the World Bank Fund for the Environment (FEM). In effect, the islands are volcanic with high relief, lacking at the moment enough land space for agriculture and housing. The group of socio economic activities operates at the coastal level where it is concentrated most country's development infra-structures.

From social point of view, the country suffers from illiteracy, poverty, malnutrition and disease, particularly malaria, diarrhoea, pulmonary infectious diseases considered almost endemic in the country. The almost complete absence of sanitation network, lack of electric power and potable water supply are good indicators of populations low level of life.

Almost without industrial infra-structures, country's economy is only sustained by primary sector whose activities are fishing, agriculture and forestry products exploration..

In the political level the country enjoys a social and peaceful stability due to an integral multiparty system installed since 1990 and what favours democratic management of public affairs. Lack of investment capital is, however, a big difficult tat the country actually suffers from it.

From the environmental point of view, the country does not suffer from a significant atmospheric pollution, due to the inexistence of industrial infra-structure worthy of such name, due to low level of development of transport sector, and due to forestall mass protection that the country disposes as well. Public insalubrities are, for instance, a social badness due to lack of sanitation network and animals promiscuity..

From climate point of view, the country enjoys a strong inertia of essential variables, such as temperature, atmospheric humidity and pluviometry. This climatic stability has to with equatorial position of the islands and big mass of forestry available.

The country is meanwhile, in its global, a big exposure unit to world climate evaluation due its insular character, tiny low coastal land with big human concentration.

Sao Tome and Principe needs to adapt itself in order to respond to future climate changes, either from the economic point of view or institutional or scientific. The creation of a good national data base is one of the priority that must allow the identification of the real country needs in terms of assistance.

CHAPTER III : CONSIDERATION TAKEN REGARDING CLIMATE DIMENSION CHANGE IN DEVELOPMENT POLICY

In 2001 a group of experts, has identified the main sensitive sectors to climate variations. The analysis of vulnerability and the adaptation to climate changes done, refer namely, the following sectors:

1. Fishing and coastal zones,
2. Soils and Forestry resources,
3. Population, health and education,
4. Resources in water, energy and mines
5. Agriculture.

Having proceeded the analysis of its sensibility to climate variations, the group of experts identified a group of options and adaptation measures whose considerations taken in sectoral development policies, attributed to the initial Communication, became also object of a profound analysis and these analysis were structured obeying a strategic directive lines of consideration taken, regarding climate change in social economic development of the country.

These guidelines presented in a project form like to be included in State government policies, became the part of the present document entitled National Strategy for the Implementation United Nations Framework Convention about Climate Changes (NS/UNFCCC). The document is divided in two parts:

1. Regarding strategies of the reduction of GEE emission or attenuation of climate changes,
2. Regarding strategies of adaptation to adverse effects to climate.

IX - ATTENUATING POLICY

Apart from the idea to be a well of carbon, due to big mass forestry (with sequestration capacity of more than 1.000.000 tones of CO_2) the country can be inscribed in a clean dynamic development according to the concept of MDP. The following actions can be implemented in the following sense:

- Non polluted alternative industrial options with clean mechanism development (MDP),
- Development of new and renovated energies (eolic, solar, hydraulic energy, biogas, etc.) with objective to reduce the use of wood as a source of energy
- Struggle against burning agricultural fields
- Reforestation
- Definition of non polluted agricultural options

IX.1 STRATEGY N°1: SUSTAINABLE MANAGEMENT OF FLORESTAL RESOURCES

I.1.1 Project format and profile (justification).

Geo-climatic position of the country fostered the development of important agro forestall system (cocoa and coffee plantations) Big forestall masses which represents Shadow Forestry and Secondary Forestry represents main source of wealth of the country and raw material of social habit.

With application of the policy of privatisation of agricultural land and distribution of land to small farmer and medium ones, an enormous pressure became to be put on ligneous resources which consequences had to do with drastic diminishing of woody species of primary quality. This step can be seen as the stand point of soil degradation, loss of biodiversity, degradation of hydrographical basins, together with loss of sequestration capacity fulfilled by forestall masses as well as consequently deterioration of life quality of rural population.

That is why, it is necessary a sustainable management of this precious mechanism of stabilization of the global climate. That is the reason why santomean government decided to include in its development programme, sustainable management of forestall masses as well as building capacity of country's sequestration.

I.1.2 The analysis of the problem

Apart from Structural Adjustment Programme, the over exploration of forestall masses is worsened by inadequate *institutional and regulating* framework. For example, forestall law elaborated in 1995, became only promulgated and published in 2001, but it has been not yet regulated up to the moment. Forestall Directorate while the State entity in charge to control and monitoring country's activities in this domain, lacks sufficient human and financial resources for the this purpose, situation as such facilitating the increase of informal activities.

In Addition, it is necessary to refer to lack of the policy of the renovation of species, namely, plantation of species of first quality indispensable for forestall economic potential maintenance.

Além do mais, é preciso acrescentar a falta de uma política de renovação das espécies, nomeadamente, a plantação de espécies de primeira qualidade indispensável à manutenção do potencial económico das florestas.

I.1.3 Hierarchy of the problem

The reduction of forestall masses of the country is no doubt , the result of :

- An irrational exploration (uncontrolled cut of trees for primary needs)
- Lack of a policy of revitalization for the sector (low level of planting and reforestation),
- And, certainly, reduction of humidity to soils , provoked be the decrease of and by the increasing of temperature registered in last three decades,

I.1.4 Aimed Objectives

9.1.4.1 Development Objectives.

The global programme for forestry sustainable management resides in the increase of sequestration capacity in the country regarding a envisioned revitalization of the sector.

9.1.4.2 Specific Objectives

- Ob1. Reduction of illegal cutting of trees of 1st quality
- Ob2. Elaboration of a well detailed plan for the exploration of shadow and secondary forestry
- Ob3. Planting of species of first quality in shadow and secondary forestry

I.1.5 Methodology

The implementation of this programme has to do with creation of framework institutional plan of activities. This framework plan will be in charge Forestall Directorate, in its quality of State entity, responsible for the management of national forestry policy. In this institutional framework, population covered, as active actors will have a role in this plan..

I.1.6 Analysis of alternative solutions (expected results)

The problem solution related to over forestry exploration has to do with reinforcement of fiscalization and control of forestall activities with objective to reduce considerably clandestine and illegal cutting of trees. This initiative must be supported by a detailed plan of forestry associated with intense reforestation activity.

Constant attention to social pressure over woody resources can be obtained through a creation of employment posts as a way to replace forestall exploration in favour of other worthwhile opportunities, what would make major productive labour force in the forestry to be away from there.

The introduction and production of alternative construction materials, wood deficient exploration, development of renovated energy and promotion of better cooking stove with combustible

I.1.7 Project strategy of intervention (activities)

Main activities of this programme are the following: :

- Elaboration of a detailed forestall inventory,
- Study of Forestall productivity. For the effect permanent specimens must be installed in different eco-climatic zones of productive training where the increase of the species studied will be measured.
- The follow up evolution of the forestall production in relation to climate changes previewed for the coming 100 years.
- Building capacities of forestall services,
- Planting of trees including siviculture.

- Elaboration of a detailed plan of exploration of shadow forestry. This task consists of establishment of a volume (in m3) of wood to be explored per year, for all the species type and for each type of the first quality.. In this plan, there must be determined also the harmonization of the exploration in national territory.

I.1.8 Indicators observable Objectively.

Indicators observable objectively of this programme o management of sustainable forestry are the following::

- A significant reduction of illegal cutting trees and its registration in lower proportion from forestall services.,
- A normalização da exploração das florestas de sombra e secundária, de acordo com os volumes estabelecidos pelo plano detalhado de exploração,
- Reforestation of secondary and shadow forestry (increase in number of plants introduced and brought in unit to the reforestation area),
- Knowledge of productivity of forestry and capital amount of existing trees to confirmed by presentation of the reports of these studies, considering that they must have credible results.

I.1.9 Risks

Risks that may come from related actions such as:

- Lack of application of alternative solutions, presented earlier, through a non realistic policy of the state and respective services,
- A hostility characterized by actors of development (target population) .

I.1.10 Logic Framework.

Development Objective: The global objective of the programme of sustainable management of the forestry is the increase of sequestration capacity of the country through a revitalization of the sector.

Table III : Strategy Logic Framework of forestry sustainable management.

Specific Objective	Activities	Expecting Results	Indicadores objectively	Means of verification	Risks	Coasts (\$US)	Source
Obj. 1 : Reduction of illegal cutting trees	A1.1: increase n° of effective forestall guards	Cases of illegal cuts reduced in 70%	Decrease of illegal cutting of trees	Statistic data Florestry Directorat	Hostility target population	20000	FAO, PIP, CE

Specific Objective	Activities	Expecting Results	Indicadores objectivly	Means of verification	Riscks	Coasts (\$US)	Source
	A1.2: Teams correct between forestal gaurds					100000	FAO, PIP, CE
Obj. 2: Elaboration of detailed plan of forestall exploration	A2.1: Establish volume to explore per year.	Exploração racionalizada das florestas de sombra e floresta secundária	Forestall exploration based in volumes established by the Detailed Plan of Exploration do Shadow. and . Second. For.	Evaluation of volumes established in Plan		50000	FAO, PIP GEF, CE
	A2.2: Harmonize exploration in national territory			Carta de exploração florestal		100000	FAO, PIP GEF, CE
Obj 3: Reforestation of species of 1ª quality	A3.1: Production of plants	Densification of ligneous coverage Increase of sequestration capacity of the country in more than 50%	Number of survival plants satisfactory to be introduced	Direct field work observation		400000	FFF, BAD, BM, GEF
	A3.2: efectuar campanhas de plantação			Indirect field Observati on		800000	FFF, BAD, BM, GEF
Obj 4: Study da produtividade das florestas	A4.1: installation permanent casier	Secure productivity knowledge of productive forestry	Registo da produtividade das florestas	Relatório do estudo		150000	GEF, BM CE, BAD FAO
	A4.2: Annual measurement of trees growth			Report of the study		500000	GEF, BM CE, BAD

Specific Objective	Activities	Expecting Results	Indicators objectively	Means of verification	Risks	Coasts (\$US)	Source
Obj. 5: Realization of a forestal inventory	A5.1: Install a intensive specimen network	Knowledge of real resources in explorable wood	Data about a real explorable volume available	Reports of the results of the inventory		150000	GEF, FAO, BM
	A5.2: Inventory with precise specimens	Knowledge of ligneous resources really explorable	Data about a real explorable volume available	Report of the results in the inventory		350000	GEF, FAO, BM

WFP: World Food Programme

PIP : Public Investment Programme

GEF : Global Environment Facility

EC : European Community

Fs.: Shadow Forestry

Fsec: Secondary Forestry

I.1.11 Institutional framing

The programme institutional framing will be the following:

- Project focal point: Forestry Directorate of Ministry of Agriculture, Rural Development and Fishery,
- The intervenient, project coordination member: Environment Cabinet of Ministry of Natural Resources and Environment; Interior Order Department of Ministry of Defence; Distrital Chambers; association of small and medium agro-sivilculture; all non government organizations whose activities are oriented to the project's objectives

I.1.12 Institutional framing and necessary means

Table IV : Necessary equipments of forestry sustainable management strategy

Specific objectives of Project Strategy	Activities	Equipments	Necessary means
Obj. 1 : Reduction of illegal cutting of trees	A1.1: Increase the number of effective forestall guards	(specify)	Humans (20 guards) Financial(specify)
	A1.2: Equip conveniently forestall guards	(specify)	20 motorcycles and defence means

Specific objectives of Project Strategy	Activities	Equipments	Necessary means
Obj. 2: Elaboration of detailed plan	A2.1: Establish the volume of wood to explore per year	2 Complete software material	Competent forestall technicians
	A2.2: Harmonize national territorial exploration	Geographic information system	Competent forestall Technicians
Obj. 3: Reforestation with species of 1 ^a quality	A3.1: Plants production	Todos os instrumentos de viveiro	
	A3.2: Organize planting campaign	Instruments need for planting	Specialized forestall workers (vehicles) 1 4x4 simple cabine 1 4x4 mixture
Obj. 4: Study of productivity of the forestall	A4.1: Install permanent specimens		1 vehicle 4x4
	A4.2: Annual of trees growth	Equipments of dendrology measure	Forestall Specialized workers
Obj. 5: Realization of forestall inventory	A5.1: Install an intense specimen network		Forestall specialized workers
	A5.2: Inventory precisely of the specimens	Measurement dendrologic Equipments	

I.1.13 Planning of the financing process

Table V : Planning of the strategy of the management of sustainable forestry

Project strategies Specific Objectives	Activities	Coasts	Financing sources
Obj. 1 : Reduction of illegal cutting of trees	A1.1: Increase the effective of forestall guards	20000	WFP, PIP, CE
	A1.2: Equip conveniently forestall guards	100000	WFP, PIP, CE
Obj. 2: Elaboration of detailed exploration plan	A2.1: Establish the volume of wood to be explored per year	50000	WFP, PIP GEF, EC
	A2.2: Harmonize national territory exploration	100000	WFP, PIP GEF, CE

Project strategies Specific Objectives	Activities	Coasts	Financing sources
Obj. 3: Reforestation with species of 1 ^a quality	A3.1: to produce plants	400000	FFF, BAD, BM, GEF
	A3.2: Foment planting activities	800000	FFF, BAD, BM, GEF GEF, BM CE, BAD FAO
Obj. 4: Forestry productive study	A4.1: Instal permanent specimens	150000	GEF, BM CE, BAD
	A4.2: Annual measurement of trees growth	500000	GEF, FAO, BM
Obj. 5: Realization of a forestall inventory	A5.1: Install an intense specimen network	150000	GEF, FAO, BM
	A5.2: Precise inventory of specimens	350000	FAO, PIP, CE

I.1.14 Conclusion.

The implementation of activities previewed in this project will bring important development to forestall sector in Sao Tome and Principe.

Forestry Directorate officially created in 1993 has never totally fulfilled its task. Through this project, several basis will be launched in order to improve the performance of this institution.

With improvement, management of forestall resources, water supply to population will be granted, as well as the possibility of exploration of a part of these products, as a form of contribution to country's economic development.

Apart from this, the sequestration of carbon allow the country to negotiate financing to bilateral cooperation and/or multilateral in terms of quotas of emission

X – OPTIONS AND MEASURES FOR ADAPTATION

Considering country's big vulnerability in relation to climate changes, a stress will be placed in adaptation option to probable modifications in the climate. The main inventoried actions to follow refers to adaptability to the society regarding main economic activities (agriculture, hydric resources and fishing), as well as coastal protection which represents the main vulnerabilities to climate changes

X.1 STRATEGY N°2 : DEVELOPMENT AND PROMOTION OF ENVIRONMENTAL ISSUES IN BASIS EDUCATION

I.1.1 Format and profile of the project

The country's ecosystems are very vulnerable to climate changes. Basic environmental education is the preventive action starting point susceptible to conjugate frankness provoked by fatal activities of man

Environmental education, particularly, youth education, represents an important triumph in conservation and adequate natural resources as well as prevention of natural calamities related with climate

The project is based on introduction of environmental culture in school curricula and it is framed in the preoccupation of the reform already started by the government and it covers primary and secondary level

I.1.2 Problem Analysis

The reports published by the Government demonstrate clearly a schooling decrease rate in the country. Rough schooling rate in secondary school has decreased during several years as it is demonstrated by below in statistics data::

- 1994/95: school year 74%,
- 1995/96 : school year 65%,
- 1996/97 : school year 56%
- 1997/98 : school year 58%
- 1998/99 : school year 52%

Several school age children have quit their classes to spend their time dedicating to informal business. This fact has contributed to an increase of illiteracy, with direct relation with antropic destruction of environment. A changing of behaviour has to do necessarily with population education and training from the lower level.

The Programme "Education for All" proposed by the Government emphasizes basic education to all the children, namely girls and handicap children. The programme institutionalised gratis and of good quality primary school attendance as obligatory, for everyone as a way to allow young population to pursue their studies to the end of the school year. This Government policy associated to innovated proposals through the introduction of concepts about school environment curricula can help up to certain extent to minimize the negative impact of man over nature.

I.1.3 Hierarchy of problems (constrains trees)

1. The progressive increase of rough non schooling rate of school age children is the most case is the main cause of school quitting,
2. The increase of illiteracy rate provoked by this fact has to do with popular obscurantism,
3. Obscurantism as such found the as the basis for general population impoverishment,
4. Which provokes degradation of cultural values with a big impact in environment.

I.1.4 Aimed objectives (trees of objectives)

10.1.4.1 Objectives of development

The global objective of the project resides in the promotion of environmental issues in basic education and contributes for the preservation and environmental promotion in basic education in order to contribute for preservation, environmental protection and for instance country's harmonious development, through change of behaviour among general population, with support of youth sector group which reaches more than 50% of active labour force of the country.

10.1.4.2 Specific objectives

It refers in the project's framework the following objectives:

1. Changing of behaviour in general population in relation to environmental issues, particularly student group,
2. Decrease negative effects to the impact of climate changes in environment.

I.1.5 Methodology

The project must be implemented in phases, to the extent that we need to introduce environment culture in the school curricula. The process must be exercised without disturbing the existing programmes. One first approach of the issue can consist in integrating first coastal zones and those more populated which are the sectors more sensitive to environmental modifications.

I.1.6 Analysis of alternative solutions (Expected results)

The expected results for a programme of this sort are the following:

- A good knowledge of environmental cultural in youth population side;
- Changing of attitude in children and youth group in relation to environment;
- To put available in quality and in quantity of enough manuals for all the school covered by the project;
- Environmental sanitation;
- Be able to assemble a maximum number of expected trainees;
- Conscience raising in youth side about environmental issues (advocacy and environmental protection);
- Involvement of those decision makers and the introduction of study of obligatory environmental impact in all the projects of development..

I.1.7 Project intervention strategy (activities)

- Study the existing curricula in order to identify susceptible programmes to embrace environmental issues;
- Reorganization of classic programmes with objective to introduce harmoniously the knowledge of environmental issues;
- Production of illustrated booklets containing teaching unit steps about environmental culture;;
- Establish forum of advocacy and permanent animation about environmental issues;

- Training of trainees and animators in environmental domain;
- Creation of environmental culture among school students;
- Elaboration of didactic documents about environmental culture.

I.1.8 Observable objective indicators

The indicators to be framed as environmental issue among the population are the following::

- introduction in school curricula basic environmental education,
- pedagogical documents elaborated for this purpose,
- environmental sanitation

I.1.9 Risks

The obstacles to the programme can be the following:

- Refusal from those decision makers to introduce environmental programmes in basic education due to supplementary costs,
- Lack of financial and material resources,
- Insufficient pedagogical capacities.

I.1.10 Logic Table

Table VI : Logic Table of development strategy regarding environmental culture in the country

Project strategies	Activities	Expected results	Observable objective indicators	Means of verification	Risks	Costs (\$US)	Source
Objectives of development: Contribute for environmental sanitation and to a clean development of the country, through changing of behaviour among general population, particularly among youth sector.	Elaboration of programmes of environmental culture	Teaching of environmental cultural in basic education	90% of selected contents	Quizzes or applied evaluation exams	Weak assimilation of the contents	5.000	Ministry of Education and Culture, Ministry of Education and Culture, Ministry of Planning and Finance
	Training of the trainees and teachers in the domain of environment; Training of the trainees	Introduction of environmental culture among population Changing of attitude	100% of teachers trained ; number of students trained and the level of knowledge acquired in 95% of covered schools	Didactic realized works; Inter-school Inquiries and debates	Non acceptance from the side of decision makers to introduce new content under	5.000 e team of evaluation and evolution contents taught 20.000	Ministry of Education and Culture Ministry of Education and Culture

Project strategies	Activities	Expected results	Observable objective indicators	Means of verification	Risks	Costs (\$US)	Source
	Introduction to environmental module in classic programmes, such as biology, geography, Portuguese, social studies Production of illustrated booklet unit teaching step about environmental culture	of youth sector regarding environment,, Having booklets in quality and quantity enough to every school covered by the project	90% of produced manuals	Publication of manuals	pretext of high costs; Lack of financial materials		MEC; M.R.N Environmental sector
Specific objective							
	A1. Training to teachers of primary and secondary school	Having trained teachers capable to transmit environmental modules	100% of trained teachers	Inquiry	Lack of interest from teachers due to economic order or other	10.000	Ministry of Education and Culture; PNUD,I.N.E
Objective 1: changing of behaviour of general population and a particular youth generation about environmental issues	A1.2 training follow up	Obtain positive results	100% of professors	Visits to classes and debates		1.000	Ministry of Education and Culture

Project strategies	Activities	Expected results	Observable objective indicators	Means of verification	Risks	Costs (\$US)	Source
	A1.3 Contract trainees capable and sensitive to environmental problem Mobilize financial resources	Arrange maximum number of expected trainees	100% of trainees Quantity of financial resources	Public bid Concursos	Non	5.000	Ministry of Education and Culture
	A2.1 Advocacy of students about environmental issues.	youths capable to promote environmental culture to societies	80% of Jovens e crianças	Meetings to promote lectures	Non	1.000	Ministry of Education Culture and Youth
b.2 Diminishing of negative effects to the impact of climate changes in environment.	A2.2 Elaboration of commercial propaganda about the care to take to nature (fauna, flora, rivers, lakes and pluvial water) Circulação de mensagens através dos meios audiovisuais sobre a protecção do ambiente.	Having materials for advocacy in paper, materials and CD	Material quantities	Field collections of images, designs and pictures	Non	1.000	Ministry of Education, Radio and Television

Project strategies	Activities	Expected results	Observable objective indicators	Means of verification	Risks	Costs (\$US)	Source
	Elaboração de um jornal sobre o ambiente.						
	A3.1 Advocacy to politician decision makers about introduction of new contents in curricula	Support to decision makers to introduce new contents in the school curricula	90% of decision makers	Meeting and debates	Non	2.000	Ministry of Education and Culture
A3.3 Introduce environmental concepts to school curricula in primary and secondary schools .	A3.2 Evaluation of contents introduced	Changing of behaviour in students in relation to environment	80% of efficiency	Visits to works and meetings	Weak assimilation of the contents introduced	500	Ministry of Education and Culture
	A3.3 Study of the existing curricula with objective to identify welcoming programmes on environmental issues;	Having the idea of sanitation taught		Evaluation of contents programmes and other disciplines to be taught	Lack of harmony in new programmes	100	Ministry of Education and Culture

Project strategies	Activities	Expected results	Observable objective indicators	Means of verification	Risks	Costs (\$US)	Source

I.1.11 Institutional framing

The institutional framing of the project will be jointly supported by Ministry of Education and Culture, and Ministry of Natural Resources and Environment (Environment Cabinet)

I.1.12 Equipments and necessary resources

Table VII : Equipments and necessary resources to the development strategy of environmental culture in the country

Project strategies	Activities	Equipments	Necessary resources
Specific objectives			
Ob.1 Changing of population in general particularly in relation to environmental issues	A1.1 Training of the trainees and teachers in environmental domain;	Pedagogic materials.	Teaching personnel and basic animators. support pedagogic materials miscellaneous
	A1.2 Follow up and pedagogic framing improvement	Pedagogic Material	Teaching personnel basic animators Support pedagogic materials miscellaneous
	A1.3 Contract trainees capable and sensitive to environmental problems	Pedagogic materials	Human resources, paper, and other office consumable
Ob.2 Diminish negative impact of climate changes to environment	A2.1 Advocacy to students on environmental issues	Pedagogic Material	Human resources, paper and other office consumable
	A2.2 Elaboration of commercial	CD-ROM, retroprojector and	

Project strategies	Activities	Equipments	Necessary resources
	propaganda about attitude to have regarding nature (fauna, flora, hydric resources) water economy	computers	
	A3.1 Advocacy to politician decision makers about introduction to new content in school programmes		
Oj.3 Introduce environmental concepts in school curricula of primary and secondary schools	A3.2 Evaluate the contents introduced		Consumáveis de escritório teaching personnel pessoal docente
	A3.2 Study of curricula in order to identify welcoming programmes		Teaching personnel and office consumable

I.1.13 Financing plan

Table VIII : Plan of financing of development strategy of environmental culture in the country

Project strategy	Activities	Costs usd (\$US)	Source of financing
Specific objective			
Ob.1 Change the behaviour of general population and school student in particular, in relation to environmental issues	A1.1 Training of trainees and teachers in environmental domain	50.000	Santomean Government, World Bank,
	A1.2 Teachers follow up of the content taught	5.000	Santomean Government, World Bank UNICEF

Project strategy	Activities	Costs usd (\$US)	Source of financing
	A1.3 Look for competent trainees and sensitive to environmental problems	1.000	Santomean Government
	A2.1 Advocacy to students about environmental issues	1.000	Santomean government
Ob.2 2 Diminishing negative effects of the impact of climate changes on environment	A2.2 Elaboration of Commercial propaganda about the relation between nature and man (fauna, flora, hydric resources) and water economy	1.000	Santomean Government
	A2.3 Advocacy to politicians decision makers about the introduction of new contents in curricula	1.000	Santomean Government
	A3.1 Evaluation of contents introduced	1.000	Santomean Government
Oj.3 Introduce environmental concepts in basic school curricula (primary and secondary school)e	A3.2 Estudo dos programas existentes com o objectivo de identificar os programas sobre o ambiente	2.000	Governo sãotomense

I.1.14 Conclusion

This project is very important to the country to the extent that the environment can be maintained soundly by populations themselves.

X.2 – STRATEGY N°3: HYDRIC AND VECTORIAL DISEASES ALIVITION

I.2.1 Project format and profile (Justification)

The sanitary population level in S. Tome and Principe is very low and the most unfavourable stratification layer as well as people living in the interior of the country feel more affected with this situation. The panorama of morbidity and mortality is dominated by transmissible diseases, in connexion with deficient environmental condition and inadequate habits to local population, namely in respect to basic health care.

The country sanitary indicators reveal low level of health condition of this population, whose life expectancy still 63 years, mortality and infantile mortality reaches 54 cases per thousand offspring born in 2001.

Vector diseases occupy an important place according to national statistics and between main morbidity and mortality malaria takes first place, as high respiratory infections and high diarrheic diseases in children.

Data from Ministry of Health indicates that in 2002 the annual prevalence of main vector per each 1000 inhabitant presents as it follows:

Table IX :Prevalence rate of main diseases of vector origin

Type of disease	Rate ‰
Malaria	53,4
ERA	7,4
Diarrhoea	2,9

ERA: High respiratory infirmities

This fact is explained due to a very low sanitary coverage, particularly in children. During the decade of 1980, mobility and infantile mortality have diminished significantly due to efforts developed in the scope national campaign to eradicate malaria, mission known as “Mission for the Eradication of Malaria” (MEP)

Meanwhile, still there is no enough data to allow us to make a rigorous evaluation of this phenomenon in different regions of the country, to the extent that we could think about significant differences between urban zones and rural zones in the same time, taking in account that it could be possible that districts are marked by poverty incidence causing mortality to be higher..

I.2.2 Problem analysis

All the government reports indicate that malaria is the major public health problem in Sao Tome and Principe. This fact constitutes the main cause of morbidity and mortality in children under five years old. In 1998, 54% of hospital internment were provoked by malaria which is the cause of 4 cases in each 10 deaths.

Socio-economic costs resulting from diseases vector origins are very high, they are the causes of a high school and work absenteeism, with they have a negative impact on the levels of production and productivity. It has been long time that the costs became an overload on the process of children and youth education, as well as over population shopping power, with negative impact on GDP of the country.

Yet in decades of 80's, a vast campaign aiming malaria eradication took place through the process of pulverization with DDT applied in homes. This campaign made a sensitive morbidity reduction as well mortality due to malaria. Whose prevalence passed from 19,2% to 0,6%, in age group of children of 3 to 14. Meanwhile, this campaign was abandoned in 1983 by several reasons, due to lack of financial resources evoked by politician decision makers. Thus, new period of malaria epidemic continued and its implications last up to now.

I.2.3 Hierarchy of the problem (tree of constrains)

The main causes of country sanitary situation are the following:

- Weak technical capacity to fight the vector ;
- Insufficient human and financial resources;
- Weak level of participation of the population facing the struggle against the diseases of vector origin;
- Weak capacity of organization and management of national health system;
- Weak coordinating capacity of intervention in different sectors;
- High indicator of poverty and illiteracy.

I.2.4 Aimed objectives (tree of objectives)

10.2.4.1 Objectives of development

The programme of struggle against diseases of vector and hydric origin intends to contribute for development of the country through better sanitary conditions of the population, namely, malaria vector and diseases of hydric origin.

10.2.4.2 Specific objectives

This programme belongs to the Government Strategic Plan of Action aimed to role back malaria in medium and short term. In principle, these objectives must be reached before de year 2015, based in building capacities of medical personnel in terms of struggle against vectors. The programmes encompasses the following intermediate steps:

- Reduce to less than 2/3 mortality attributed to malaria, particularly that one prevalent in children under 5 years old;
- Reduce in 90% morbidity attributed to malaria among general population;
- Reduce in 90% diarrhoea incidence and other diseases of hydrologic origin;
- Promote, at national level, basic health care, supported by a good level of social hygiene.

I.2.5 Methodology

In methodological point of view, the project composes of two aspects:

A preventive aspect based in national sanitation programme through the building capacities of the services of public cleaning (collection of garbage and other urban and non urban solid wastes) and water treatment. This institutional capacity building must be supported by a good popular advocacy and training of population to environmental culture. In this sense, we reinforce preoccupation of strategy n°2 described above.

A direct aspect of struggle against vectors through intra and extra domicile pulverization campaign with chemical products, namely through the use of pesticide, with *bed net and improvement in cases treatment* at all levels. To accomplish that it is necessary to build the capacity of Endemic National Centre –ENC, the organism in charge to implement the aspect related to malaria, regarding the elaboration implementation the strategy.

In regard to diseases of hidrologic origin, it will be necessary to build the capacity National Centre of Sanitary Education – CNES, in order implement follow up and control activities of water quality, as well as building capacities of national NGO's in order to allow a more active participation in activities of advocacy.

I.2.6 Analysis of alternative solutions (expected results)

The expected results with programme are the following:

- Mortality attributed to malaria, namely in children under 5 years old, reduced to 100% (in time lapse of 2010) and 90% among general population,
- Mortality rate provoked by diseases of hydric origin to 90%,
- Creation of the system of treatment and control of water quality,
- Creation of system of wastes treatment and collection.

I.2.7 Strategy for project intervention (activities)

In order to reach the aimed objectives, we propose the following activities:

- Activity A : Collection and treatment of solid wastes
- Activity B : Control and follow up of Malaria
- Activity C : Control of water quality
- Activity D : Advocacy.

The Component A will be in charge of urban and non urban solid wastes through the creation of national mechanism of collection solid wastes, to control the follow up of diseases sources.

The Component B is the project central aspect, whose main objective consists of supporting building capacities to implement National Strategic Plan in order to **'Role Back Malaria'**

A Component C is in charge of control of the water quality through installation, to levels of water capture from Empresa EMAE, of Systems of chemical and Bacteriological control. This component must work directly connected with the Project Potable Water Supply to be distributed to entire population.

The Component D refers to the activities of advocacy and the support National Strategy of Information, Education, and Communication for Health, in the scope of on going activities under Government supervision.

I.2.8 Indicators objectively observable

- Decrease of infantile mortality rate in terms of children five years and pregnant women;
- Decrease in number and cases of morbidity due to malaria in general population;
- Hospital lethality rate due to malaria and other vector diseases, particularly those of hydrologic origin;
- Multiplication of posts of control and water treatment;
- Number of locations of wastes collections installed in cities, villages several locations 'luchans'.
- Sanitation system realized

I.2.9 Risks

- Mobilization financing difficulties in Project implementation;
- Insufficient qualified human resources to implement the Project;
- Lack of political will from politicians decisions makers regarding priorities to Project objectives;

I.2.10 Logic Table

Table X : Strategic logic table of the struggle against diseases of vector origin

Project Strategy	Activities	Expected Results	Indicators objectively observable	Verification Means	Risks	Costs (\$US)	Sources
Objective of development							
Specific Objective							
	A1.1 Pulverization with insecticide in mosquitoes' birth places (interior of homes, etc.).	Vector destruction (larva and eggs)	Numbers of bites per month	Infection rate	Population resistance; Lack of financing	363.000	Bilateral and Multilateral Cooperation
Ob.1.	A1.2 Intra-domiciliary Spatial Pulverization with insecticide.	Destruction of adult insect.	Number of bites per insects per day.	Infection rate.	Lack of products; Vector resistance to insecticide.	1.000.000	Bilateral and Multilateral Cooperation
Reduce in 2/3 mortality attributed to malaria, namely in children under 5 five years old;	A1.3 Vulgarisation of insecticide treated bed nets	Reduction of vector infection rate	Number of families using insecticide treated bed nets	Number of malaria cases per location	Incorrect usage and washing of bed nets	500.000	Bilateral and Multilateral Cooperation
	A2.1 Analysis and permanent (Systematic drop for	Control of number of infection per malaria . Decrease of resistance to	Número de casos de gosta espessa efectuado por dia	Mortality and morbidity rate in children under 5	Insuficiência de pessoal qualificado; Ruptura do stock dos reactivos	300.000	Cooperação Bilateral; Cooperação multilateral

Project Strategy	Activities	Expected Results	Indicators objectively observable	Verification Means	Risks	Costs (\$US)	Sources
	any alike malaria manifestation)	anti palúdicos		years old			
Ob.2 Reduce in 90% morbidity attributed to malaria at the level of general population;	A2.2 Cases treatment through the application of national protocol of malaria cases treatment. Qimioprof ilaxia for immune people	Control of number of cases of malaria infections	External consultation rate in all age groups; Hospital internment rate per malaria	Morbidity rate due to malaria in persons older than 5 years	Not enough qualified personnel; Rupture in the stocks of reagent	500.000	Bilateral and Multilateral Cooperation BAD; World Bank mechanism.
	A2.3 Supply in medication and kits to drop the level of local community.	Target population with easy access to medication Increase of number of the utilization of recommended medications	Number of cases of treatment of malaria done correctly.	Reduction of morbidity rate at local community level.	Rupture of the stock of medications	500.000	Bilateral and Multilateral Cooperation
	A.3.1 Creation of local	A system of control and water treatment	Number of system of control	Morbidity and mortality	Difficult in looking for financing;	500.000	BAD; World Bank;

Project Strategy	Activities	Expected Results	Indicators objectively observable	Verification Means	Risks	Costs (\$US)	Sources
	system of control and treatment of water quality.	at the rural community level for the unflavoured people.	and water treatment installed at the level of rural community.	rate provoked by contamination from diseases of hydric origin.	Acts of vandalism that can jeopardize the installed systems.		Bilateral Cooperation
Ob.3 Reduce in 90% the incidence of diarrhoea and other diseases of hydric origin.	A3.2 Installation of wastes collection and treatment networks .	A system of collection and treatment of wastes created at the level of all council districtal chambers.	Number of collection of the system of treatment solid wastes installed	Mobility and mortality provoked by diseases of hydric origin.	Difficult on the authorities side to install the system.	1.000.000	Bilateral and Multilateral cooperation BAD; World Environmental Fund.
	A4.2 Education for Health near counselling community	Target advocated population (children, pregnant women, rural population	Incidence rate of diseases of hydric origin at the local levels	Morbidity rate provoked by diseases of hydric origin	Poor population and then sensitive to messages Rejection from the population regarding the presence of agents in their homes	150.000	Bilateral and Multilateral Cooperation , World Bank and WHO
	A4.2 Education for Health near the counselling community.	Target advocated population (children and non schooling children, pregnant women and rural population).	Incidence rate of diseases of hydric origin at local level	Mortality and morbidity rate provoked by diseases of hydric origin	Poor population and then non sensitive to message transmitted . Rejection from population side of health agents in their homes	150.000	Bilateral and Multilateral Cooperation ;BAD; World Environment Fund; WHO

I.2.11 Institutional framing

From the institutional point of view, the Project will be under coordination of Ministry of Health. This Ministry through the Directorate of Primary Health Care will be in charge of Project's Components B and D, namely at the level National Endemic Centre and National Education Centre for Health.

According political administrative division of the country there are six districts in the island of Sao Tome. Principe island is an Autonomous Region whose level of responsibility correspond *up to certain* district Council Chambers. Thus, the Component A of the project will be charge of Municipalities (Local Government) who will have the responsibility to manage solid wastes at the level of each respective district.

The Component C will be in charge of Directorate of Natural Resources and Energy which is the organism at the national level, responsible for management of natural resources, including water. This Directorate of Natural Resources and Environment, will work in straight collaboration with EMAE (Enterprise of Water and Energy) with objective to furnish water in quantity and quality enough for the population.

The NGO's operating in the country must perform an important role in point of view of advocacy to the communities, and that is why, it is necessary to build enough the capacity of these NGO's mainly those operating strictly at local level.

I.2.12 Equipments and necessary means

Table XI : Equipments and necessary means to the strategy for the struggle against diseases of vector origin

Project Strategy	Activities	Equipments	Necessary means
Specific Objectives			
Ob.1 Reduce in 2/3 of mortality attributed to malaria, namely in children under 5 years.	A1.1 Pulverization with insecticide in berth mosquitoes place (interior of homes)	Equipments for pulverization, (150+30 pulverizators) vehículos 4 X 4 Insecticide (cypermetrina or permetrina).	Local trained personnel External Audit External financial resources.
	A1.2 Intradomiciliary Spatial pulverization with insecticide	Equipments for pulverization (150+30 pulverizators) vehículos 4 X 4 Insecticide (cypermetrina or permetrina).	National Experts nacionais External Audit External financial resources.
	A1.3 Vulgarisation of utilization of treated bed nets.	Treated bed nets	National cadres Local personnel External financial resources
	A2.1 Permanent analysis (Systematic drop for every similar manifestation to malaria).	Reagents Optic Microscope Oxygen machine	Training of local personnel (health agents and nurses) specialist doctors.

Project Strategy	Activities	Equipments	Necessary means
Ob.2 Reduce in 90% to mortality attributed to malaria at the general population level	A2.2 Treatment of cases through the application national Protocol in manoeuvre of cases of malaria. Quimioprofilaxia to non immune people.	Anti malaria medications Reagents Other malaria medications	Specialist Doctors Technical cadres trained at superior level Pharmacy experts Local health agents
	A2.3 Supply with medication and kits to a drop a local community level.	Anti malaria medication Reagents Other malaria medications.	Pharmacy experts Local health agents Tchnical cadres trained at superior level Local health agents
Obj.3 Reduce in 90% the diarrhoea incidence and other diseases of hydric origin	A3.1 Creation of the system of control and treatment of water quality.	Equipments to analyse chemically and bacteriological reagents	External audit Specialized national cadres Financial resources
	A3.2 Install a network of collection and treatment of wastes	Containers vehicles for waste treatment .	Financial resources Specialized technical cadres.
	A3.3 Building institutional capacity of council chamber to visit with collection and treatment of wastes	Office equipments, computers, Xerox machines, biographical material, etc.	Fianancial resources Specilized technical cadres
	A4.1 Define a National Strategy to the activities of IEC	Office equipment, computers, Xerox machine, and their respective components.	National respective cadres Material resources Financial Resources.
Obj.4 Promote at national level primary health care, hygiene to population and healthy behaviour	A4.2 Education for Health near basic Community	Means of transportation (motorcycles, bicycles, pharmacy kits etc)	National specialized cadres Financial resources

I.2.13 The Plan of financing

Table XII : Plan of financing of the strategy of the struggle against diseases of hydric origin

Project strategy	Activities	Coasts (\$US)	Financing sources
Specific Objectives			
Ob.1 Reduce in 2/3 mortality attributed to malaria, namely in children under 5 years old.	A1.1 Pulverization with insecticide in berth mosquito places (interior of homes, etc)	363.000	Bilateral and Multilateral cooperation
	A1.2 Intra domiciliary spatial p with insecticide	1.000.000	Bilateral and Multilateral Cooperation
	A1.3 Vulgarisation of utilization of treated bed nets	500.000	Bilateral and Multilateral Cooperation
Ob.2 Reduce in 2/3 mortality attributed to malaria, namely in children under 5 years old.	A2.1 Permanent analysis (systematic thick drop to all similar malaria manifestations)	300.000	Bilateral and Multilateral Cooperation
	A2.2 Treatment of cases through rigorous application of national Protocol through rigorous utilization malaria cases. Quimioprofixe in non immune people	500.000	Bilateral and Multilateral Cooperation; BAD World Bank mechanism.
	A2.3 Supply in medications and kits for thick drop at the level of local community	500.000	Bilateral and Multilateral Cooperation; BAD; WHO.
Obj.3 Reduce in 90% to the incidence of diarrhoea and other diseases of hydric origin.	A3.1 Creation of local system for control and water treatment	500.000	BAD; World Bank; Bilateral Cooperation
	A3.2 Install a network system of control and treatment of solid wastes	1.000.000	Bilateral and Multilateral Cooperation ; BAD; World environmental Fund.
	A3.3 Building capacities of municipalities to collect and treat the wastes.	250.000	Bilateral and Multilateral Cooperation, BAD World Environmental Fund
Obj. 4. Promote at national level, primary health care, hygiene and healthy behaviour.	A4.1 Define a National Strategy for the activities of IEC	500.000	Bilateral and Multilateral Cooperation, BAD World Environmental Fund.
	A4.2 Education for Heath near the communities and counselling	150.000	Bilateral and Multilateral Cooperation, BAD World Health Environmental Programme, WHO
Total		5.563.000	

I.2.14 Conclusion

Health problem in Sao Tome and Principe constitutes, in reality, one of the major concerns for national authorities. The diseases of vector origin, namely malaria, weakens the population, specially youth people, to the extent to question the future of the country. That is why, in present situation, the country is already vulnerable. The situation can aggravates in the case of climate changes, considering country's vulnerable to climate variations.

This project is classified by the experts who made social vulnerability analysis of the country, be a primary necessity order for the development of the country. That is why, we hope that it could be object of the International Community

X.3 STRATEGY Nº 4 : CREATION OF A OBSERVATORY OF POVERTY ALLIVIATION

I.3.1 Problem analysis

According to the study made about “ Profile of Poverty in Sao Tome”. November 2000 to February 2001, 53,8% of the population of the country is touched by poverty, reaching especially women household (55,7%) and for men households (53%).

About 15,1% of santomean population is reached by extreme poverty. The family medium size grows up in reverse level to their revenues, being 6,43 people per family extremely poor and 3,78 per family considered non poor.

At the national level, about 56% of the population has total annual revenue *per capita* between 1 to 3 millions of inhabitants, inferior to 1 million dobras per year. We note that only 6,6% of the population lives in families of very low revenue, let's say, annual revenue *per capita* is inferior to one million dobras.

I.3.2 Aimed objectives (tree of objectives)

10.3.2.1 Objectives of development

Promote a framework follow up for evaluation and periodic up-to-dating of poverty level

10.3.2.2 Specific objective

- Conceive, elaborate and determine necessary indicators to follow up poverty.
- Make national inquiries to find and evaluate periodically the level of poverty.
- Pursue all priority activities in the scope of national strategy for poverty reduction.

I.3.3 Methodology

Being poverty a problem of transversal level it must concern to all the sectors of economic and social activity in general.

I.3.4 Expected results

- Elaboration of a data base about population life level
- Elaboration of poverty indicators
- Elaboration of a programme of economic growth;
- Elaboration of a programme of inflation reduction rate;

I.3.5 Strategies of project intervention (activities)

- Conception, elaboration and determination of necessary indicators to follow up poverty;
- Realization of national inquiries to know and evaluate periodically poverty in the country;
- Implementation of priority activities in national strategy framework for poverty alleviation;
- Pursue the evolution of the promotion of the private sector and diversification of production;
- Pursue the evolution of productive sectors and start social and economic promoting actions.

I.3.6 Observable objectively indicators

- GDP growth rate
- Human Development Index (HDI)
- Data base about the level of populations life

I.3.7 Risks

- Lack of political will
- Lack of resources for the implementation of strategy for poverty alleviation

I.3.8 Logic table

Table XIII : Logic table for the strategy for poverty alleviation

Project strategy	Activities	Expected results	Observable objectively Indicators	Means of verification	Risks	Costs (\$US)	Source
Development objective							
Specific objective							

Project strategy	Activities	Expected results	Observable objectively Indicators	Means of verification	Risks	Costs (\$US)	Source
Conceive, elaborate and determine necessary indicators to follow up poverty	Determination of indicators to measure poverty	Determined poverty indicators	Growth rate Human Development Index (HDI)	Reports of INE and Central Bank		3.000	INE, Central Bank
	Realization of sectorial consultation	All the sectors involved	N.º de sectorial consultation realized			5.000	
Realize national inquiries to know and evaluate periodically poverty in the country.	Elaboration of questionnaires	Elaborated questionnaires				9.000	
	Codification and tabulation	Codification and final tabulation				6.000	
	Realization of inquiry	Inquiry realized				500.000	
	Production of results	Results available	N.º de tables produced			15.000	
	Publication of the results	Data published	N.º of examples published	Reports of INE		10.000	INE
Follow up of all the priority activities in the national strategy framework for poverty alleviation.	Pursue realizations at financial level	Internal and external executed financing				20.000	
	Pursue realizations at sector level	Programmes and projects realized				20.000	

I.3.9 Institutional framing

- Ministry of Planning and Finance
- All Productive Sectors
- NGO's

I.3.10 Necessary means

Table XIV : Necessary means for the strategy of follow up of poverty alleviation

Poverty strategy	Activities	Equipments	Necessary means
Development Objective			
Specific objective			
Conceive, elaborate and determine necessary indicators to follow up poverty	Determination of indicators to measure poverty		Human resources
	Realization of sectorial consultations		Human resources and cars
Realize national inquiries to know and evaluate poverty in the country periodically.	Elaboração do questionário		Meios humanos
	Codification and tabulation		Human resources
	Realization of inquiries		Human resources and cars
	Production of results	Computers, printing machines and Xeroxes	Human resources
	Publicação dos resultados	Equipamento para a Edição	Meios humanos
Pursue all the priority activities in the national strategic framework of poverty alleviation	Seguimento das realizações ao nível do financiamento		Meios humanos e viaturas
	Pursue the realizations at the sector levels		Human resources and cars

I.3.11 Plan of financing

Table XV : Plan of financing of the strategy of follow up poverty alleviation

Poverty strategy	Activities	Costs	Financing sources
Development objectives			
Specific objectives			
Conceive , elaborate and determine necessary indicators to follow up poverty	Determination of indicators to measure poverty	3.000,00	World Bank
	Realization of sectoral consultation	5.000,00	World Bank
Realize national inquiries to know and evaluate periodically poverty in the country	Elaboration of questionnaire	9.000,00	World Bank
	Codification and tabulation	6.000,00	World Bank
	Realization of inquiries	500.000,00	World Bank
	Production of the results	15.000,00	World Bank
	Publication of the results	10.000,00	World Bank
Pursue every priority activity in the national strategic framework to reduce poverty	Pursue realizations at financing level	20.000,00	Public Treasure
	Pursue realizations at sector level	20.000,00	Public Treasure

X.4 STRATEGY N°5: REHABILITATION AND EXTENSION OF AGRO-CLIMATIC OBSERVATION NETWORK

I.4.1 Format and project profile

The economy of the country is based, among others, in agriculture, whose development passes through, not only, by adequate selection of planting moment, variety and agricultural practices, but also by pursuing agricultural campaign where the agro-meteorology occupies an important place. For this reason, this branch of activity, in its full uprising, must be developed in the country, through the following:

- Pursuing efforts towards building capacity of National Institute of Meteorology, whose stress must put on complete remediation of observatory network, with supply of complementary computer equipment and training of specialized personnel;
- Intensification of climatologically and agro-meteorological applications;
- Development of pilot zone, where in the field, farmers would be advised in ways how to orient their agricultural works, considering the period of time of water available, in order to reduce, in minimum the unfavourable parasites effects, the enemies of cultures (plants).

On the other hand, the aims to increase, in sustainable way, agricultural productions through the utilization of agro-climatic information. The availability of climatologically parameters would allow realization of studies leading to the implementation of development agricultural policies through integrated management of hydric resources and environment

I.4.2 Problem analysis

The national agro-meteorological networks comprises 27 agro meteorological stations and 40 pluviometer centres, that are facing a big deterioration in mid 1990's due to cuts in global financing budget. Actually, only two climatic stations and two agro-meteorological centres are in full performance

I.4.3 Hierarchy of the problem (trees of constrains)

- Practical inexistent meteorological network,
- Lack of qualified personnel in sufficient number to continue maintenance serves,
- Inability to finish necessary agro-climatic information of the country,
- Lack of climatic data base for the country.

I.4.4 Aimed objective (tree of the objective)

10.4.4.1 Objectives for development

The objectives for development at long term will be according to climatic parameters and the construction in order to contribute to increase agricultural production and reach self-sufficiently

- To decision makers about climate conditions and notice about measures to take in view to improve climate effects (rain) or to limit the negative impacts (drought);
- To general users, and in rural areas in particular, spread of meteorological and agro-meteorological information indispensable for good agricultural performance.

10.4.4.2 Specific objective

1. Building capacity of agro-climatic observation networks:
 - a) Rehabilitation of 13 climatologically stations,
 - b) Rehabilitation of 12 agro-meteorological stations
 - c) Rehabilitation of 40 pluviometric posts.
2. Building capacity of human resources of NMI, through training in climatologically and agro-meteorological information
3. Reinforce the system to deal with computer data
4. Creation of trust data base that can be used for agricultural research, and to control hydric resources, as well as environment.

I.4.5 Methodology

The present project represents an effort to build institutional capacity of National Meteorology Services, whose operating activities, at climatologically and agro-meteorological level must continue to be reinforced during the project life time.

I.4.6 Analysis of alternative solutions (expected results)

1. Confection and diffusion of:

- Annual and monthly climatologically bulletin,
- Agro-meteorological bulletins per decades.
- And treatment of agro-climatic data.

2. Establishment of relation between the date of sowing and revenue to several species of variety of cultures,

3. Establishment of calendar for periodical cultures,

4. Improvement of follow up methods to agricultural campaign,

6. Improved agricultural production through utilization of information and agro-metrological advices in pilot zones:

- Extension of pilot project to North Northeast zones (located in altitude), North (Basin) and West sector.
- Multiplication of the pilot projects in homogeneous agro-climatologically zones. Centre-East, Centre-South, Southeast, Extreme south and Principe island.

7. Establishing agro-meteorological vigil during the rain season,

8. Furnishing during the rain season advices that allow farmer to reduce losses of cultures due to drought, insects and diseases of plants,

9. Establishing of trust data base of agro-climatic parameters

I.4.7 Strategy of Project intervention (activities)

In global option development framework selected by Democratic Republic of Sao Tome and Principe, the intended strategy aims to reinforce and improve what has been done regarding agro-meteorological issues at the level agro services from the existing NMI infra-structures being necessary data base to follow environment.

The project comprises four following phases, namely:

Phase 1. Rehabilitation national meteorological network and installation of necessary equipments

Phase 2. Training of technicians in agro meteorological, climatologic and computer domain;

Phase 3. Training pluridisciplinary working group (GTP) and vulgarisation agents

Phase 4. Gathering of information and organization of data base for elaboration and spread up of informative bulletin

It comprises yet the following aspects:

- Establishment of a pluridisciplinary working group (GTP) for the follow up excellence agricultural activities during agricultural period and composed of representatives of the following services::
 - National Meteorology Institute –agriculture
 - Agro Vulgarisation –agronomic research
 - Vegetal protection –agricultural development
 - Radio and printed information
- Training of technicians in agro-meteorology, climatologic and, meteorology in general sense..
- Training of vulgarisation agents and those framed to specific posts for better performance.
- Agro-meteorological information with objective to give possible exact advices to agriculture..
- Methods of evaluation of agricultural production and field follow up of agricultural campaign in order to communicate information

In general, for each step, there will be an evaluation of mid trajectory and also at the end to verify if the planning programme has been respected

I.4.8 Observable objectively indicators.

The existence of several rehabilitated agro-climatic stations and posts, together with several technicians participating in specific field actions as well as several meteorological (criminologists and agro-meteorologists and computer) prepared to study the data to help build frequent issue of bulletins, percentages and computer data, etc.

I.4.9 Risks

Risk of sabotage of installations by populations for whatever reasons

I.4.10 Logic Table

Table XVI : Logic table of strategy of rehabilitation and extension of agro-climatic observation

Project strategy	Activities	Expected results	Observable objectively Indicators	Means of verification	Risks	Costs (USD)	Sources
Development objective							
Specific objective							
	A1.1 – Acquisition and installation of equipments in stations of observation created and rehabilitated	Observation network fully rehabilitated	12 meteorological stations, 15 climatologic pluviometric posts installed	Verify the list of rehabilitated stations	Vandalism	196.000	UNDP, GEF, bilateral and multilateral partners
Ob.1 Reinforce agro climactic observation station network	A1.2 – Training of the observers	12 Observers trained	Meteorology services with observers	Available information in NMI		11.000	UNDP, GEF, bilateral and multilateral partners
	A1.3 – Organization of a quick and trust collection of data in posts	In each decade agro-climatic information gathered	Monthly letter of elaborated agro-climatic parameters	Check point of data charts			
	A2.1 – Acquisition of complementary computer equipment	Meteorology Service equipped with computer machines	4 operational working computer system installed	Verify near the INM			
Ob.2 – Reinforce the system to deal with computer data	A2.2 – Continuation of the installation of logician of control and file system	A agro-meteorological and climatologic data centre created	Data base dealt in computer	Percentage of data base dealt in computer			
	A2.3 – Training of a personnel using the computer (3 months) and of	2 two trained technicians	Personnel using the computer and meteorologist installed	Quantity of technicians trained			

Project strategy	Activities	Expected results	Observable objectively Indicators	Means of verification	Risks	Costs (USD)	Sources
	a climatologist (6 months)						
	A3.1 Creation of pluridisciplinary working group	A competent pluridisciplinary working group in follow up agricultural activities during agricultural period	Um GTP installed	Number of intervenient GTP			
Oj.3 Application of climatologic and meteorological information in production and monitoring the environment	A3.2 Supply of agro-climatic information in view to advise more adequate the farmers and different decision makers	Farmers, decision makers and other intervenient dully informed about agro-climatic situation in the country	The existence of informative bulletins	NMI Inspection			

I.4.11 Institutional framing

The project will be simultaneously in charge of the following::

- Ministry of Natural Resources and Environment
- Ministry of Agriculture, Fishery, and Rural Development.
- Directorate of National Meteorological whose Director assumes the coordination, while assisted by a pluridisciplinary working group made of representatives of all technical services involved. The project will be implemented by national government structures.

I.4.12 Equipments and necessary means

Table XVII : Equipments and necessary means for the strategy of rehabilitation and extension in agro-climatic observation networks

Project Strategy	Activities	Equipments	Necessary means
Specific Objectives	A1.1 Acquisition and installation of equipments in stations of observation to be either created or rehabilitated	12 agro-metereological stations, 15 climatological e 40 pluviometric posts pluviométricos instalados	Transportation and team of specialized technicians
	Ob.1 A1.2 Training of the observers		Didactic materials
Ob.2	A1.3 Organization of collection of quick and trust stations data	Stations consumable material (graphics)	Transportation and gasoline
	A2.1 Acquisition of supplementary computer material	4 operational working computers	Infra-structure available to install
	A2.2 Continue to install a logician of control and the file system		Install computers
Oj.3	A2.3 Training of computer user (3 months and of climatologist (6 months)		
	A3.1 Creation of pluridisiplinary working group		
	A3.2 Supply of agro-climatic information aim to give more adequate advices to farmers and decision makers		Radio, Newspapers, and bulletins, community agents

I.4.13 Plan of financing

Table XVIII : Plan of financing of the strategy of rehabilitation and extension of agro-climatic observation network

Project Strategy	Activities	Costs (\$US)	Financing Sources
Specific Objective			
Ob.1	A1.1 Acquisition and installation of equipments in stations of observation to be created or rehabilitated	196.000,00	
	A1.2 Training of the observers	60.000,00	
	A1.3 Organization of quick and trust collection of data in the stations		
Ob.2	A2.1 Acquisition of supplementary computer equipment	12.000,00	
	A2.2 Continue to install logician of control and file system		
	A2.3 Training of a computer user (3 months) and of climatologist (6 months)	11.000,00	
Oj.3	A3.1 Creation of a pluridisciplinary working group		
	A3.2 Supply of agro-climatic information with objective to give adequate advice to farmers and different decision makers		

I.4.14 Conclusion

The project must lead to obtain trustful data base in order to allow decision makers to take decisions related with agricultural practices, and management of hydric resources, and environment, etc

X.5 STRATEGY N° 6: IMPROVEMENT OF KNOWLEDGE TO BETTER CONTROL HIDRIC RESOURCES

I.5.1 Project format and profile

The project has the objective to better improve the knowledge of hydric resources of the country in order to allow better utilization for national development. The project has also the objective to adopt measures to face problems related with climate changes

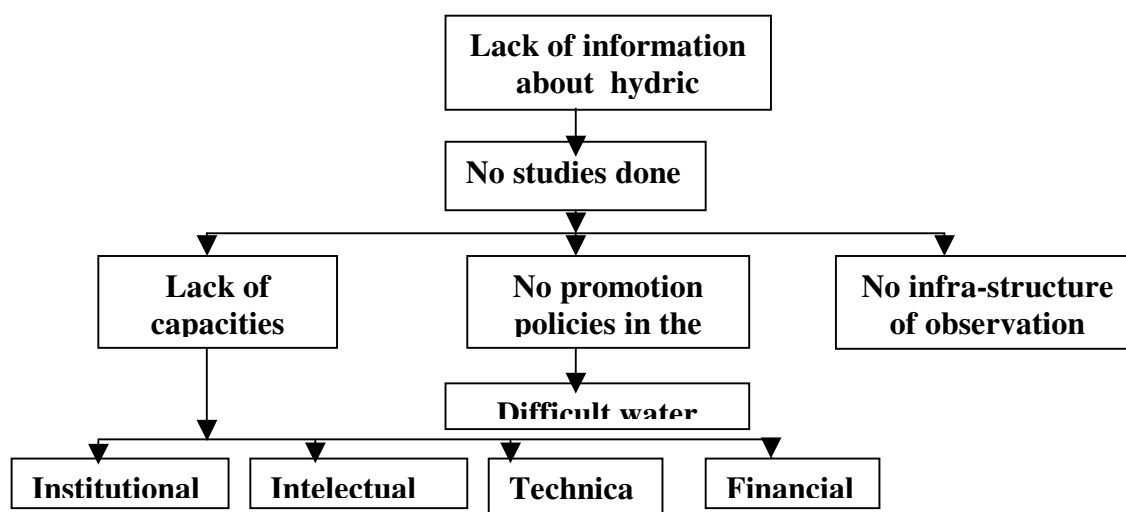
I.5.2 Problem analysis

Hydric resources are almost unknown in the country, either by point of view of basins of area or underneath. Being created 1973, the santomean hydrometric system functioned in a very sporadic way until 1988. It was composed of 13 stations of observations, whose 12 of them existed in Sao Tome and only one in Principe island, From 1988 to 1991, observations continued to be done normally before 1992, particularly by budget.

Regarding underneath hydric resources that aliment superficial basins, no study has been done for this purpose in the country.

This fact raises a long term development problem, namely in relation to issues related to vulnerability of these so sensitive resources to climate. It raises thus the problem of necessity to realize a study about them, in order to define strategies for its rational utilization.

I.5.3 Hierarchy of the problem (tree of constrains)



10.5.3.1 Aimed objectives

- Building hydrological and hydro geological capacities
- Studies about underneath and superficial hydric resources
- Instauration of water rational policy
- Instauration of adapted and adequate infra-structure for study and rational exploration of hydric resources
- Studies of evolution of hydrologic stocks related to climate
- Building capacity of institutional hydraulic services
- Reinforcement of training of personnel
- Review and training of hydrologic and hydro geology technicians

10.5.3.2 Objective of development

Creation of hydrologic and hydro geologic data base

10.5.3.3 Objectivos específicos

Obj. 1 Reforço das capacidades nacionais

Activities

- Creation of adequate institutional framing.
- Training of national cadres.
- Training of technicians.
- Building financial capacity.

Obj. 2 Instauration of water policy.

Activities

- Definition of water code
- Definition of rational management policy for hydric resources

Obj. 3 : instauration of infra-structures fro management of hydric resources.

Activities

- Installation and construction of hydrologic stations.
- Installation and construction of peizometric stations

I.5.4 Methodology

- Selection of main rivers
- Installation of hydrologic posts
- Selection, treatment and publication of data
- Training of cadres and technicians in water techniques

I.5.5 Analysis of the alternative solutions (expected results)

- A bank of data base.
- Cadres trained.
- A water code.
- A policy of management of hydrologic resources.
- Hydrometric and piezometric stations.
- New financing sources

I.5.6 Strategy for project intervention (Activities)

- Creation of infra-structure of follow up resources.
- Improvement of institutional framework.
- Training of technical cadres.
- Research of new financing.

I.5.7 Observable objectively indicators

- Hydrologic stations
- Piezometric stations
- Bank of data base
- Trained cadres

I.5.8 Risks

- Destruction of technical equipments
- Disturbance provoked by floods

I.5.9 Logic table

Table XIX : Logic table of strategy to improve their knowledge regarding the objective to control hydric resources

Project strategy	Activities	Expected results	Observable objectively indicators	Verification means	Risks	Costs	Sources
Development objective							
Specific Objective							
Ob.1 Building national capacities	A1.1 Creation of institutional framing	Trained cadres	Trained c.adres				DRNE
	A1.2 Training cadres	Cadres trained	Cadres trained				
	A1.3 Building financial capacity	New financing					
Ob.2 2 Instauration of water policy	A2.1 Elaboration of water code	Water code.					
	A2.2 Policy of management of water resource	Policy of management of hydric resources					
Obj.3 Adapted infra-structures adaptadas	A3.1 Installation and construction of hydrologic stations	Hydrometric stations	Hydrometric stations				
	A3.2 Installation and construction of piezometric stations	Piezometric stations	Piezometric stations				

I.5.10 Institutional framing

National hydraulic services is installed in the same Ministry of National Meteorology Institute, in the responsibility of Directorate of Natural Resources and Energy –DRNE which is responsible Enterprise of Water and Electricity “EMAE” –public enterprise responsible for production, transport and distribution of water and electricity. This situation must be used to maintain good coordination of actions in order to limit dispersion of efforts in the context of today’s economic recession.

According to Decree that creates DRNE, it is understood that it is an organism entitled to “promote studies and prepare inventory of natural resources and energetic of the country as well as prepare studies of general planning of supply in hydric resources and managements

I.5.11 Equipments and necessary means

Table XX : Equipments and necessary means of strategy to improve knowledge in view to control hydric resources

Project strategy	Activities	Equipments	Necessary means
Specific Objectives			
Obj.1 Building national capacities	A1.1 Training of institutional cadres	Computers Office consumable materials	Trainees
	A1.Training intelectual cadres	Computer and office material	Trainees
	A1.3 Building financial capacities		Financiers
Obj.2 Instauration of water policy	A2.1) Código da água		Capable personnel
	A2.2 Policy of management of hydric resources		Capable personnel
Obj.3 Adapted infra-structures	A3.1 Installation and construction of Hydrological stations	PCD Météosat, spair parts 4x4 vehicles Connection vehicles	Trained personnel
	A3.2 Installation and construction of piezometric stations		Qualified personnel

I.5.12 Plan of financing

Table XXI : Plan of financing of the strategy of improvement of knowledge to better control of hydric resources

Project strategies	Activities	Costs (\$US)	Financing sources
Specific objectives			
Obj.1 Improvement of hydrologic stations network	A1.1 Training of cadres		UNDP
	A1.2 Training of cadres		UNDP
	A1.3 Building financial capacity		UNDP
Obj.2	A2.1) Water code		National budget
	A2.2 2 Management policy of hydric resources		National Budget
	A2.3 ??????????????????????		
Obj.3	A3.1 Installation and construction of hydrologic stations		UNDP
	A3.2 Installation and construction of piezometric stations		UNDP

I.5.13 Conclusion

The implementation of this project is indispensable for the execution of economic development programme, which is the tribute of the resources available to hydric resources. Considering the practical unknown availability of resources strongly vulnerable to climate changes, its study must be in the first plan regarding the need to develop the country in long term period.

X.6 STRATEGY N° 7: REINFORCEMENT AND DIVERSIFICATION OF AGRICULTURAL PRODUCTION

I.6.1 Format and project profile

The following issues justify reason for a profound action in agricultural sector, considered very vulnerable to climate changes. They refer namely to.:

- Lower cocoa price from USD 1300 down to less than USD 700 per tone since 1998.
- Refusal from small farmers in selling their product at lower price.
- Lack of investment to cocoa sector and cut down in productivity

This procedure has its impact in commercial balance of the country

I.6.2 Problem Analysis (tree of constrains)

The main agricultural constrain is low production in general sense.

This cut down has to do with many factors, such as: :

- Lack of coherent agricultural policy
- Lack of political will
- Absence of private initiative
- Aging of cocoa and coffee plantations
- Inflation of prices of cocoa and coffee
- Not enough land to distributed due to it tiny size of country and it volcanic subs tract.
- Carácter muito acidentado do relevo.

I.6.3 Objectives

10.6.3.1 Objectives of development

Project global objective has to do with increase of agricultural plantations

10.6.3.2 Specific Objectives

- Development of vulgarisation services
- Development of private initiative
- Development of political will
- Renewal and installation of cocoa and coffee plantations and other cultures (food crops, industrial, agriculture,)

I.6.4 Methodology

- Experimentation and tests of adaptation of variety of products
- Development of more agro techniques
- Land protection against erosion and lixiviation.

I.6.5 Expected results

- Cattle and agricultural promotion in rural area,
- Fito sanitary and environmental sanitary improvement
- Improvement of commercial balance of the country,
- Reduction in import of alimentary goods and increase in exports of industrial goods
- Reorganization training system, of management and agricultural production..

I.6.6 Activities

Supporting development programme medium farmers and family agricultural farmers

- Coordination of different operative actions and programme of agricultural sector.
- Training of cadres and framing of the entrepreneurs medium farmers and small farmers in their respective levels.
- Creation agricultural network bank to foster agricultural credit
- Recuperation and construction of new rural roads.
- Support to specialists in the field of research for development and vulgarisation, mainly to medium and small farmers.
- Turn professional of different agricultural production.

I.6.7 Observable objectively indicators

- Increase of cattle and agricultural production
- Increase in quantity of associations of farmers
- Improvement of commercial balance of the country
- Increase of agricultural replanting areas
- Increase of rural roads
- Increase in quantity of supply of raw materials and distributed vegetable materials
- Multiplications of the structures of agricultural bank to foster credit
- Increase in number of beneficiaries of supporting programmes
- Increase in revenues of small farmers and entrepreneurs medium farmers

I.6.8 Risks

Extreme climatic factors (mainly temperature and pluvial conditions)

Attack to plagues and diseases of plants

Erosion and lixiviation of soil

Flood.

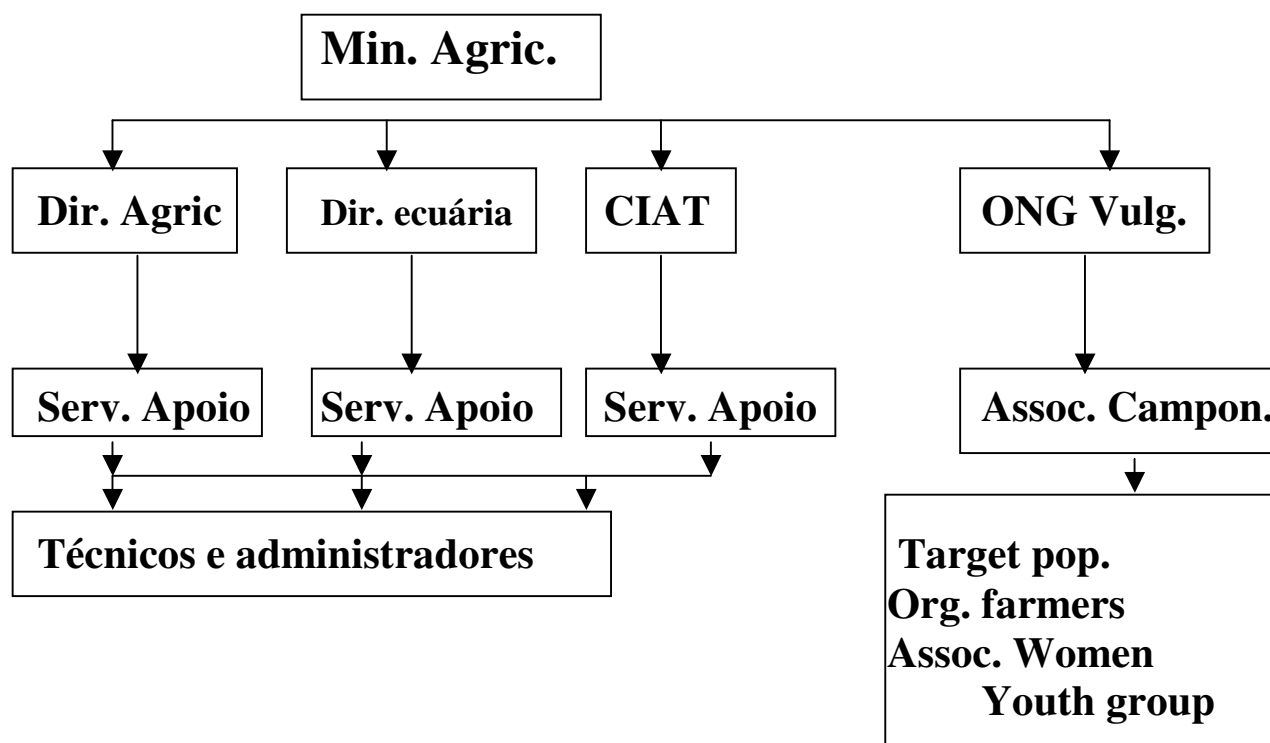
I.6.9 Logic Table

Table XXII : Logic table of strategy to reinforce and diversify agricultural productions

Project strategies	Activities	Expected results	Observable objectively Indicators	Verifications means	Risks	Costs	Sources
Development objectives	Increase of agricultural production						
Objetivos específicos							
Ob.1 Develop service of agricultural vulgarisation	Training of cadres Acquisition of agricultural supplies Follow up of farmers	Trained cadres Acquired supply raw material Improvement of commercial balance Farmers framing in their levels	Number of trained cadres Volume of cattle and agricultural production Quantity of supply raw materials and vegetable materials	Inquiries	Extreme Climatic factors Predators and diseases attacks Erosion and soil lixiviation	1.200.000	FAO WB BAD FIDA
Ob.2 Private initiative of Development	Distribution of land - Buying of lands - Buying of animals - Construction of infra-structures	Medium and small farms (plantations)	Number of small and medium farmers (plantations) Number of effectives animals Replanting agricultural area	Inquiries	Extreme climatic factors plagues diseases and soil lixiviation	600.000	FAO BM BAD FIDA
Obj.3 Call the attention of Political decision makers	- Advocacy of political diligent - Field visits - Seminars	Advocated diligents - Support to reseacher in development	Cut down in import of alimentary good and increase in export industrial cultures	Inquiries	Lack of political stability	50.000	FAO BM BAD FIDA

I.6.10 Institutional framing

The institutional framing of this program will be more or less similar to the following:



I.6.11 Equipment and necessary means

Necessary equipments for agricultural sector, are the following:

- Tractors
- Vehicles
- Agricultural machines
- Agricultural materials
- Computer materials
- Material for irrigation
- Electrogeny groups
- Supply raw materials
- Seeds
- Vegetable materials
- Material for construction
- Office consumable materials

X.7 STRATEGY N 8: IMPROVEMENT OF CONDITIONS OF NATIONAL FISHERY AND THE ESTABLISHMENT OF A COASTAL VIGILANCE

I.7.1 Project format and profile

There is no available information about Sao Tome and Principe coastal zone. The Directorate of Naval Services and Ports (Port Authority) does not have the possibility to proceed vigilance and adequate coast management. Thus, fluctuations of the sea level are unknown, in a such a way that it becomes difficult to make projection of future evolution. In the costal vulnerability studies done, the reference basis was at global level, due to lack of information at the national level.

From the exploration point of view of the halieutic resources, the problem is raised regarding efficient management of fishing products. That is why, Fishing continues to be made in traditional way, without any modern equipment

For this reason National Observatory to Coast could favour to obtain a more profound knowledge of costal zone, through building institutional capacities of fishery services. On the other hand, the contribution to fishery to national economy would be reinforced due to this building capacity.

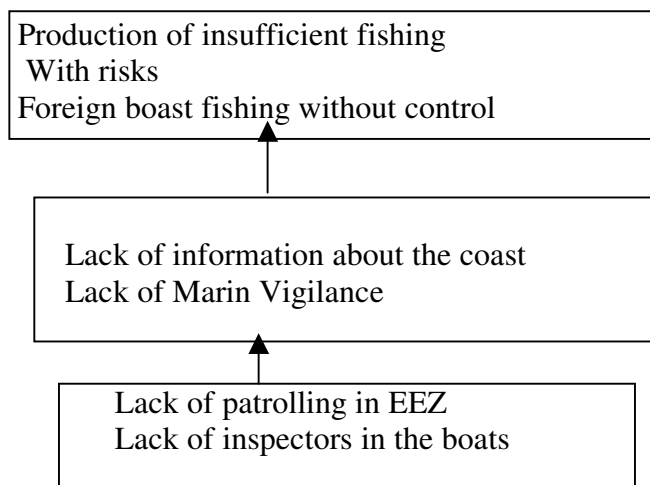
I.7.2 Problem Analysis

The halieutic production is very little, due to lack of technologies and due to traditional character of the sector. The insufficient maritime control is a source of losses of revenue due to incapability of services to control efficiently the fishing captures from fishing boats holding fishing contracts.

For this reason, it is urgent in the framework of installation of a National Observatory, so that measures can be taken in order to mitigated the situation..

Halieutic production continue to be low, due to lack of technologies and character

I.7.3 Hierarchy of the problem (tree of constrains)



I.7.4 Aimed objectives

10.7.4.1 Objective of development

Improvement of condition of fishing and vigilance of the coast

10.7.4.2 Specific objectives

- Installation of National Observatory of the coast
- Introduction of new fishing techniques aiming improvement in fishing revenue
- Vigilance in the coast

I.7.5 Methodology

- Advocacy of fishermen from the necessity to improve fishing revenues.
- Introduction of new techniques already used in other world coasts with better success
- Training of fishermen to new technologies of fishing
- Acquisition of boats of big size to patrol de coast
- Building national marine coasts.
- Coastal vigilance per satellite

I.7.6 Expected results

1. Increase of fishing revenue
2. Introduction of new fishing techniques
3. Creation of bank of data base

I.7.7 Activities

1. Training of specialized cadres in climate data collection per satellite
2. Acquisition of appropriated fishing equipment
3. Looking for new techniques about fishing.
4. Advocacy and training of fishermen to new fishing techniques
5. Acquisition speedy boats to proceed coast vigilance.

I.7.8 Observable objectively indicators

1. Availability of bank data base about cost .
2. Increase of contribution of fishing to GDP
3. Increase of percentage of proteins in population food diet
- 4.

I.7.9 Risks

1. Fishermen hostilities to introduction of new fishing techniques
2. Frequency of storms

I.7.10 Logic table

Table XXIII : Logic table of improvement of national fishing conditions and establishment of a coastal vigilance

Project strategy	Activities	Expected results	Observable objective indicators	Verification means	Risks	Coasts	Sources
Development objective: Improvement of national fishing conditions and establishment of a coastal vigilance							
	A1.1 : Training of specialized cadres in collection of climate data	Trained cadres	Fornecimento regular de dados	Broadcasting of climate previsions in radio and on TV	Frequent storms	To be determined	UNESCO FAO
Ob1. Installation of Observation of National coast	A1.2 : Acquisition of adequate equipment	Acquired equipment	Utilização por técnicos	Existing of table data	Frequent storm	To be determined	GEF UE
	A1.3: Pursuing the movements of boats of fishes	Located fishes	Number of fish captured by boats	Inquiries	Frequencies of storms	To be determined	FAO UE
	A2.1: Campaign of advocacy to train fishermen	Advocated fishermen	Improvement in protein diet	Diminishing in rachitic	Fishermen refusal to introduction of new fishing techniques	To be determined	UNESCO STP
Ob.2: Introduction to new fishing	A2.2: Looking for new fishing techniques	Discovery of new techniques	Increase of fish captures	Improvement of fishermen lives	Fishermen refusal to introduction	To be determined	FAO BM UE

Project strategy	Activities	Expected results	Observable objectives indicators	Verification means	Risks	Coasts	Sources
Oj.3: Vigilance of the coast	techniques				ion of new fishing techniques		
	A3.1: Acquisition of speed boats and other vigilance equipments to coast	Acquired equipment	Major vigilance	Diminishing of coastal infraction	Frequent storm	A determinar	BM PNUD UA
	A3.2 Introducing inspector on the board of foreign boats	Inspectors performing	Cadrs nominated byDP	Improvement of Agreement of EU	Frequent storms	To be determined	UE BAD

I.7.11 Institutional framing

The institutional framing comprises the following:

1. Directorate of Fishery of Ministry of Agriculture, Rural Development, that will be in charge of introduction of new fishing techniques to improve annual revenues as well as control of foreign boats
2. The Institute of National Meteorology will be responsible for collection of data about coast and in national maritime domain through Management of tide-gauge installed in the coast,
3. Port Authority will be in charge of vigilance through regular operations of speedy patrolling boats,
4. Fishermen that must participate in the advocacy campaign. Must learn new capturing techniques,
5. International institutions such GEF, FAO, etc. that must contribute for the success of the actions

I.7.12 Equipments and necessary means

Table XXIV : Equipments and necessary means for the strategy of better conditions of national fishing and establishment of a coast vigilance

Project Strategy	Activities	Equipments	Necessary means
Ob.1 Installation of a Observatory of national coast	A1.1 Training of cadres for improvement of a collection of climate data	Computer equipment	Quadro adequado para as sessões de formação e seguimento
	A1.2 Aquisição de equipamentos apropriados	Equipamento específico de medida a determinar pelos especialistas do sector	Transportes
	A1. Vigilance and pursuing of bank of fishes	Computer material	Human resources
Ob.2 Introduction of new fishing techniques	A2.1 Campaign of advocacy and training of fishermen	Megaphones	Human resources
	A2.2 Looking for new fishing techniques		Sounding Bibliographic research Field working voyages
	A3.1 Acquisition of speed boats and other equipment of vigilance to coast	Boats Other vehicles	Human resources
Oj.3 Vigilance to coast	A3.2 Introducing inspector on foreign boats	Boats	Human resources

I.7.13 Planinf of financing

Table XXV : Planning of financing of the strategy for improvement of conditions of national fishery and establishment of vigilance to coast

Project Satregy	Activity	Coasts	Sources of financing
Ob.1 Introduction of an Observatory to the national coast	A1.1 Training of cadres and gathering of climate data	To be determined	UNESCO FAO
	A1.2 Acquisition of an appropriated equipment	To be determined	GEF UE
	A1.3 Acompanhamento do movimento dos bancos de peixes	To be determined	FAO UE
	A2.1 Campanha de sensibilização e formação de pescadores		UNESCO STP
Ob.2 Introduction to new fishing techniques	A2.2 Looking for new fishing techniques	To be determined	FAO BM UE
Oj.3 Vigilance to the coast	A3.1 Acquisition of speed boats and other equipments to the coast	To be determined	BM PNUD UA
	A3.2 Introducing fishing inspector in foreign boats	To be determined	UE BAD

I.7.14 Conclusion

The installation of a national Observatory in the coast it , now an indispensable measure considering the economic importance of the coastal zone to PIB to the country. This measure allows better management and valorisation to the sector of tourism and fishery, since there will be available all necessary data to foster development.

The modernization of national fishing system, the efficient control of foreign fishing in national waters, the exact location of bank of fishes, are together disposition which allow the sector to reach expected development objectives at long term, namely in the expectation of climate changes

X.8 STRATEGY Nº 9 LOOKING FOR ALTERNATIVE SOLUTIONS TO THE PROCESS OF COASTAL EROSION AND MARITIME INVASION

I.8.1 Format and Project profile

The present project proposes to initiate researches of inerts to replace beach sands in submarine zones in order to protect the coast against the extraction of beach sands and inerts for construction, becoming more fragile and more vulnerable to the adverse effects of future climate changes.

I.8.2 Problem analysis

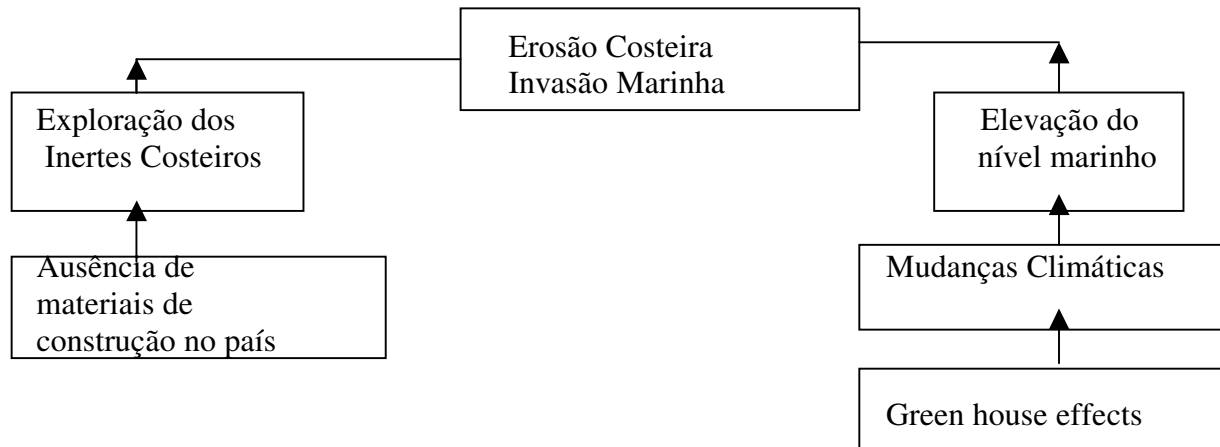
Sao tome and Principe is a country made of two tiny volcanic islands, expects up to certain extent to its sustainable development, with coastal resources. Fishing and tourism constitute the main socio-economic activities of the country, and they are at the moment, strongly endangered by coast erosion.

This coastal erosion is, according to vulnerability studies of the sector, from antropic activities namely the extraction construction material in littoral. This represents then, a danger that scuds fishing infra-structures and many beaches and touristic places which is the proudness of the country. Actually the famous beach like Diogo Nunes, Pomba (in Sao Tome island), Évora and Boi (in Principe island) are found particularly endangered to vanish in near future, due antropic erosions

Pursuing this dynamic process of erosion to the coastal line, we must add probable effects of climate changes that provoked the elevation of sea level, which will contribute, up to certain extent to aggravate economic losses at coastal level. According to projection made in the scope of coastal vulnerability studies to climate changes, the maritime invasion to the coast will be in order of 600 to 650 meters in horizon of the year 2100. Such fact would cost a lot of uncalculated damage to commercial, industrial activities as well as social habitat concentrated on the coastal level.

For this reason it is necessary, to find right now (before climate changes take place), alternative solutions to the activity of extraction of inerts in general in the coast and particularly light sand, in order to guarantee coastal protections. The alternative solutions are of various order. We can preview the following:

I.8.3 Hierarchy of the problem (tree of constrains)



I.8.4 Aimed objectives

10.8.4.1 Development objectives

To stop antropic erosion and mitigate to make it less vulnerable to climate changes

10.8.4.2 Specific Objectives

- To stop exploration of inerts in coastal zones
- Find alternative material to sands in on shore domain

I.8.5 Methodology

- Submarine researches on inerts
- Exploration of replacement material to actual of construction ones
- Commercialisation of construction materials

I.8.6 Expected results

- Construction materials encountered
- Protected coastal zone

I.8.7 Activities

- Looking for replacing construction materials
- Coastal protection.

I.8.8 Observable objectively indicators

Sites of substitution materials

Area of protected coast

I.8.9 Risks

1. Manifest insensitive to national authorities
2. Resistance to economic agents to civil construction sector in looking for alternative to inerts
3. Teutonic accidents in continental platform

I.8.10 Logic Table

Table XXVI : Logic table to the strategy in looking for alternative solutions to the process of coastal erosion and marine invasion

Project strategy	Activities	Expected results	Observable objectively indicators	Means of verification	Risks	Costs	Sources
Objective of development	Reduction of coastal erosion and marine invasion						
Ob.1 Stop the exploration of inerts in coastal zone	A1.1 : Research in alternative to construction materials	Alternative materials encountered	Number of infra-structure built	Scuds	Insensitive from authorities Resistance to economic agents Volcanic eruption	To be determined	Financiers Private enterprises
	A1.2 : Coastal protection	Protected coast	Portion of coastal area protected	Quantity of sand protected	Idem	To be determined	GEF PIP (STP)
	A1.3: Population moving looking for new form of housing	Population moved and in new houses	Percentage of population affected	Quantification of affected population	Idem	To be determined	GEF STP Cooperação bilateral
	A2.1: Realização de buscas	Buscas efectuadas	Final report presented	Signature of contracts with exploring enterprises	Idem	A determinar	BM/FMI BAD

Project strategy	Activities	Expected results	Observable objectively indicators	Means of verification	Risks	Costs	Sources
Ob.2: Make submarine research on inerts	A2.2: Exploration of replacing inerts	Infra-estruturas built	Number of infra-structures built	Inquiries			Private enterprises
	A2.3: Commercialization of inerts	Revenues increased	% PIB	Verification and balance of GDP budget			Private Enterprises

I.8.11 – Institutional framing

The programme takes right now in consideration Government preoccupation, that it will be under supervision of a national team composed of technicians from Directorate of Natural Resources, Energy, Directorate of Industry, Directorate of Obras públicas and Urbanism, and Directorate of Public Investment. This team must be composed right away and it will have the task to advocate authorities and economic agents about the foundations of such programme. This team must yet, elaborate a note of duties for supporting programme with a consultant. Economic agents in charge to advocate the public must also integrate the team.

I.8.12 – Equipments and financial means

Table XXVII : Equipments and necessary means to the strategy of looking for alternative solutions to the process of costal erosion and maritime evasion

Project Strategy	Activities	Equipments	Necessary means
Ob.1 Stop exploration of inerts in coastal zones	A1.1 Research on alternative construction materials	Equipment Computer, other feasible machines maps	Places Office materials Human resources
	A1.2 Protection of the coast	Vehicles	Rocks Ciment Iron
	A1.3 Population move to other places looking for housing		Socio-economic study Emergency fund
Ob.2 Make submarine researches on inerts	A2.1 Realization of research	Computers	Human resources Geologic studies
	A2.2 Exploration of substitute inerts	Vehicles	Office
	A2.3 Commercialization of inerts	Vehicles	Selling posts

I.8.13 - Plan of financing

Table XXVIII : Plan of financing of the strategy of the research to the alternative solutions to the process of coastal erosion and marine evasion

Project strategy	Activities	Costs (to study)	Financing sources
Ob.1 Stop exploration of inerts in the coastal zones	A1.1 Research of replacing construction materials		Financiers Private enterprises
	A1.2 Protection of the coast		GEF PIP (STP)
	A1.3 Poppulation move to places looking for housing		GEF STP Bilateral cooperation
	A2.1 Realização das buscas		BM/FMI BAD
Ob.2 Make submarine researches on inerts	A2.2 Exploration on replacing inerts		Empresas privadas
	A2.3 Commercialization of inerts		Private enterprises

I.8.14 - Conclusion

After the realization of the research, the construction sector and of obras públicas, national authorities and Directorate of Natural Resources and Energy, will have information available about submarine inerts, what will allow the exploration of replacing alternative material to sand beaches. This measure will have sole objective to diminish the pressure exercised over coastal zones, namely on the beaches due to exploration of sand to construction

XI - DEFINITION OF INSTITUTIONAL FRAMING OF IMPLEMENTATION

The follow up and the implementation of these strategies need the implementation activities of Committee "Climate Changes" according to the recommendation of 1992 Rio de Janeiro Conference, particularly in the application of Agenda 21 and Conference parts to United Nations Framework Convention about Climate Changes.

Regarding that intense planetary heat is a result of continues carbon gas in the atmosphere associated with other gases of green house effects, the consequences will be the following:

- Melting up of polar glaciers
- A modification on precipitation regime
- Na elevation of the sea level having as consequence disappearance of some regions and population move
- Salinity of waters
- Diminishing of agricultural population in sequence diminishing of hydric resources and soil degradation
- Appearance of certain infectious and parasite diseases , etc.

All these aspects will have impact in economic, social and political point of view, as it has been proved by vulnerability studies done in the country

That is why the country defined priority actions in the scope of struggle of negative effects to climate changes, namely:

- Struggle against degradation of forestry, land, and conservation of biodiversity,
- Integrated management of hydric resources
- Management of coastal and marine means ,
- Management of wastes and pollution in safeguard of environment,
- Energetic effective promotion of new and renewable energies, as well as rational utilization of traditional energies

XI.1 FUNDAMENTAL BASES TO THE NATIONAL COMMITTEE OF CLIMATE CHANGES

The proposal of creation of a National Committee on Climate Changes responds to the necessity to dot the country, with an integrate organism, of coordination, evaluation, and follow up, by identifying priority activities. This organism in charge to coordinate activities related to Climate Changes, must, dot the country of institutional and legal framework that regulates organization and financing.

The team in its working session of July 29 to August 29 2004, the group of experts defined big lines of this institutional and legal framework

XI.2 OBJECTIVE OF NATIONAL COMMITTEE ON CLIMATE CHANGE

National Committee on Climate Changes is an organism of training, advocacy, exchange point of view, management, and follow up of different identified activities in framework of implementing measures of reduction of adverse effects to climate changes.

XI.3 COMPOSITION OF THE COMMITTEE

National committee on Climate Changes will be composed by main organs of the State government, private sector, NGO's, representative of civil society, and any other individual susceptible to help define, animate, pursue, and implement activities related to climate changes and attenuate its effects at national level. The Committee can for instance, add other necessary competences to foster research. The list, not a long one, must represent centre core of this committee:

- Presidency of Republic
- Parliament
- Prime Minister
- Ministry of Foreign Affairs and Cooperation
- Ministry of Defence and Interior Order
- Ministry of Planning and Finance
- Ministério da sobras Públicas, Infra-estruturas e Ordenamento do Território

- Ministry of Education and Culture
- Ministry of Natural Resources and Environment

- Ministry of Health
- Ministry of Agriculture, fishery, and Rural Development
- Ministry of Commerce, Industry and Tourism
- Chamber of Commerce, Agriculture and Industry
- National Federation of NGO's (FONG)
- Federation of Farmers
- Women Organization
- Youth Associations
- Network of Journalist to Environment
- Associations of local government

- Enterprises of private sector and para-public
- Study Cabinets
- Union of professionals,
- University and other research institutions
- Etc.

XI.4 DOMAINS OF COMPETENCE

National Committee on Climate Changes must intervene in all domain of the activities related to the United Nations Framework Convention about Climate Changes including its additional legal instruments. The domain related to these activities are, among others, the following:

- Application of national and international on going texts related to climate changes
- Transference of adapted technology
- Education, advocacy and public information
- Integrated management of hydric resources
- Building of institutional, financial and technical capacities
- Reserve of biodiversity
- Sequestration of carbon and struggle against desertification and land degradation,
- Management of marine and coastal , means as well as conservation of humid zones
- Management of wastes and pollution
- Promotion of new and renewable energies
- Effective energetic promotion in industry, transport, communications
- etc..

XI.5 ORGAND OF THE COMMITTEE

National Committee on Climate Changes is governed by a Cabinet, General Assembly and by Specialized Scientific Commissions.

I.5.1 Cabinet

National Committee on Climate Changes is Cabinet management directed by a President, Vice-President and Secretary.

Minster responsible for Environment nominate The President and the Vice-President, under the proposal General Assembly for a specific period (at least two years).

The President: the President must work to fulfil al the structures member of the Committee (preferable private sector, NGO's or acting other groups of the civil society).

Vice-Presidency: Vice-Presidency deals with administration process.

Secretariat : The secretariat will be in charge of Directorate of Environment , the Focal Point of United Nations Framework Conventions about Climate Changes and the Focal Point of Kyoto Protocol..

I.5.2 General Assembly

The General Assembly is the deliberate instance of the Committee. The meeting of the General Assembly regularly, while considered necessary, to call the President to examine issues related with follow up, implementation of strategies, preparation of international meetings about climate changes (namely Conference of Parties), restitution of different on going activities.

Everyone member can contact the President for the realization of a meeting about issues related to the Committee's competence.

The decisions coming out the General Assembly are taken by consensus. The Directorate of Environment is responsible for the implementation of regular dispositions of the Committee, considering different national and international structures in reference.

I.5.3 Scientific Specialized Committees.

National Scientific Committee, whose secretariats are assured by Directorate of Environment and it must create scientific committees that will be assured the Directorate itself. These sub-committees must conduct researches in the domain of identified priority actions identified in this strategy of implementation of United Nations Framework Convention about Climate Changes and defined options in National Communication in the country

In view to conduct researches, the Secretariat of National Committee on Climate Changes may proceed the creation of a data base about all the scientific activities and financing required and obtained in the scope of the implementation of the objectives of the Convention and their legal instruments. They organize workshops for training and information, they may publish periodic reports and the maintain the data base for the exchange of information and advocacy