CLIMATE-SMART AGRICULTURE IN CAPE VERDE:

CURRENT STATUS AND SUPPORT NEEDS TO BETTER INTEGRATE CSA INTO THE NAIP

June 2015

Executive Summary

Cape Verde is a set of 10 islands and like other small islands States, is confronted with many constraints mainly due to its origin, the geomorphologic, climatic conditions and anthropic pressure which confer to the environment a high degree of fragility, making it vulnerable to the occurrence of certain extreme natural phenomena, both of geophysical and climatic nature. Four main territories can be considered as priority areas for climate change purposes: Santo Antão, Santiago, Fogo islands and the vulnerable coastal areas of Sal, Boavista, Maio, Sao Nicolau, Brava, and Sao Vicente.

The islands of Santiago, Fogo and Santo Antao share very similar characteristics, due to their volcanic origin, orography, and the fact that they are exposed to the same pluviometric variability, therefore, their degree of exposure and sensibility to climate change ranges from moderate to high vulnerability, depending on the existence in the territory of water mobilization infrastructures, which will resolve one of the most limiting factors for practicing agriculture, enabling better condition for agriculture production, especially in the arid and semi-arid zones. The vulnerability of Coastal Areas of Sal, Boavista, Maio, S.Nicolau, Brava, S.Vicente is very high due to the risk of, rise in sea level; increase in coastal erosion; floods with great amplitude, increase in salinity of underground water; destruction of coastal infrastructures. Therefore, as adaptation measures are not being effectively implemented the resulting vulnerability of coastal areas is high.

With regards to the abovementioned islands, investments and policies have been focused on measures that take into account climate change such as the construction of infrastructures for collection, supplying and storing water and recharge of groundwater tables; the reinforcement of actions to fight desertification and protection of watersheds such as reforestation and other CSA techniques; Modernization and diffusion of localized irrigation systems; Integrated watershed management and the construction of water infrastructures (dams, underground dams, wells and the use of renewable energy in the water pumping; Introduction of new varieties and species that are adaptable to soil and climatic conditions and new production technologies and innovations. Even though investments and measures are being made, the need for additional investments remains, namely due to the exit of Cape Verde from the group of LDC and, the reduction of public aid making it more difficult for the country to mobilize funds to finance the gap for implementing all projects previewed in the agriculture strategic plan. The policies/measures requirements for the coastal areas are: Law regulation; Protection infrastructures for the coastal zones; Support for the increase of the use of renewable energies.

Concerning climate smart agriculture Cape Verde has several national programs, strategic plans and policies which carries out the main policies orientations for the sector as far as mitigation and adaptation are concerned: Cape Verde's NAPA identified three main adaptation objectives for the country: (i) Promoting integrated water resources management in order to guarantee water for the people, for food production, for ecosystems and for the tourism industry; (ii) Developing the adaptability of the agro-forestry-pastoral production systems in order to ensure and improve national food production; and (iii) Protecting and preventing degradation of the coastal zones, caused by climatic factors and by tourism.

The CAADP and ECOWAP/CAADP orientations were incorporated into the country's strategic development plans both at the macro and at the sector level, namely the Growth and Poverty Reduction Strategic Paper (DECRP-II) and the 2005-2015 Agriculture Development Strategy. The Cape Verde's NAIP includes 6 sub-programs pertaining to: (1) Water mobilization and watershed management, (2) Value chain development and market access promotion; (3) Reinforcement of natural resources management; (4) Research development and new technologies adoption; (5) Prevention and management of food crises and others natural disasters; and (6) Institutional reinforcement and program coordination.

The PAGIRH was implemented from 2009 through 2013. From then on and as result of reforms being introduced in the water sector, the plan has been substituted by the WASH project which

will focus on ensuring: integrated and improved management of the sector. These activities will fall under three tracks: (i) national institutional and regulatory reform, including capacity building, (ii) strengthening of the WASH utilities and (iii) infrastructure facility.

The Second National Environmental Plan for Action represents the master plan for environmental issues in Cape Verde, it is a national policy instrument in the field of environment from which all interventions or other more specific actions plans, including NAPA, are derived. Its time scale is 10 years 2004-2014.

Gender equality and youth promotion are identified as transverse themes to be mainstreamed across national strategies, policies and programs. Specific priorities actions have been taken to promote entrepreneurship and women's access to productive resources.

Regarding climate change, Cape Verde is focusing on agriculture adaptation issues despite the importance of mitigation. In this sense and even though Cape Verde has not elaborated its NAMA, some arrangements pertaining to mitigation, namely in the energy sector are being implemented.

In order to address such a complex and multidimensional problem it is necessary to strengthen coordination among climate and environmental related institutions, reinforce the human and institutional capacities of the different agencies. This would improve and promote climate change mainstreaming into highest planning levels, avoid contradictions, functional overlap and insure proper level of investments and financing.

Cape Verde is represented in the Intergovernmental Panel on Climate Change (IPCC). At the national level the decisions on climate change related issues are carried out by an Inter-ministerial Committee on Climate Change, comprising several governmental agencies, involved in climate change related policy, programs and plans implementation:

As far as NAIP is concerned, the program has already addressed several of the recommended actions aiming at reducing climate vulnerability through appropriate interventions given the agricultural sector constraints in Cape Verde. As far as the dam construction is concerned, Cape Verde requests from ECOWAS support to identifying potential financing sources and partners to ensure the rural infrastructure program continuity. Furthermore, support is requested for the interventions already in progress for the introduction of renewable energy in water pumping for irrigation from wells, to improve energy efficiency, reduce greenhouse gas emissions, and reduce operating costs of agriculture.

Other identified support needs concern support for research and development; actions towards capacity building, awareness raising and sensitization activities in order to improve the capacity of key stakeholders to plan and respond to climate change risk and to incorporate adaptation measures in the conceptualization and implementation of development frameworks (i.e. policies, strategies, programs, projects and initiatives). These actions should be extended to the population in general as the low awareness of the public in Cape Verde about climate change is a systemic capacity constraint towards adaptation. Information on climate and climate change is still not sufficiently disseminated. Support for youth and women's accesses to productive resources as gender and youth issues are groups being targeted in the country's global strategies.

1. The territories of agricultural climate change adaptation in Cape Verde

1.1 Presentation of the territories

Being a small island state, Cape Verde is confronted with many constraints mainly due to its origin, the geomorphologic (active volcano, reduced continental platform) and climatic (frequent droughts) conditions and anthropic pressure which confer to the environment a high degree of fragility, making it vulnerable to the occurrence of certain extreme natural phenomena, both of geophysical and climatic nature. The characteristics of the insular ecosystems, in particular fisheries, coral reefs and mangroves, are also increasingly threatened by the climate change, the natural disasters and an unplanned economic growth. These phenomena can have harmful consequences on certain economic sectors such as tourism and agriculture, as well as on food security and nutrition.

As a sahelian country, Cape Verde has registered climatic disturbances along the years which have engendered situations of droughts, desertification and food insecurity, especially among small vulnerable farmers. The insufficient pluviometry, associated to the over exploration of water resources, affects the agricultural sector, causing direct social and economic impacts.

According to the General Agriculture Census (RGA) 2004, the total agricultural arable area is approximately 45.000 ha, of which 40.000 ha are used for rain fed agriculture and 3.500 ha for irrigated agriculture. About 70.4 % of the arable land is constituted by parcels with an area inferior to 1 ha and more than half by parcels with an area inferior to 0.5 ha. Agricultural areas are to a great extent divided in small parcels with reduced unit areas. Still, according to the RGA, the number of agricultural parcels is approximately 85.000, of which 87% are explored under rain fed conditions, 12% under irrigated conditions and 1% under a mixed system (rainfed/irrigated).

Cape Verde is a set of 10 islands (see map 1 below), namely: Santo Antão, Santiago, Fogo, Sal, Boavista, Maio, São Nicolau, Brava, São Vicente and Santa Luzia. However, considering agricultural climate change adaptation, 4 main territories are to be considered:

1) ***The Santo Antão island:*** the most mountainous island, with quite good chemical fertility soil due to its volcanic-basaltic origin. The island has three climatic zones: arid, semi-arid, and sub-humid. Rainfalls occur during a short period of time, with little infiltration into the groundwater and mainly water runoffs into the sea, making water management critical in the island. For the 6.789 agricultural holdings of the island, the average size is 0,74ha for rainfed land and 0,37ha for irrigated land (RGA 2004). On rainfed land, the staple crop is maize usually grown in association with pigeon-pea and several types of annual beans. Some perennials such as apple tree and other fruit trees are cultivated. The most humid areas are suitable for sweet potato, cassava and common potato which are often grown in association with maize and vegetables. Rainfall amount and water retention capacity into the soil are the two factors severely limiting the agricultural rain-fed potential. On irrigated land, main crops are sugar cane (76% of the irrigated area and 71% of its production value) and banana. Cassava, common potato, yam, vegetables, citrus fruit and coffee are also cultivated on a smaller scale. At last, Santo Antão is the third island for livestock herding. Regarding food insecurity, 11,6% of the island population is suffering from severe form (highest rate among Cape Verde islands), and 14,7% from moderate one (second highest rate).

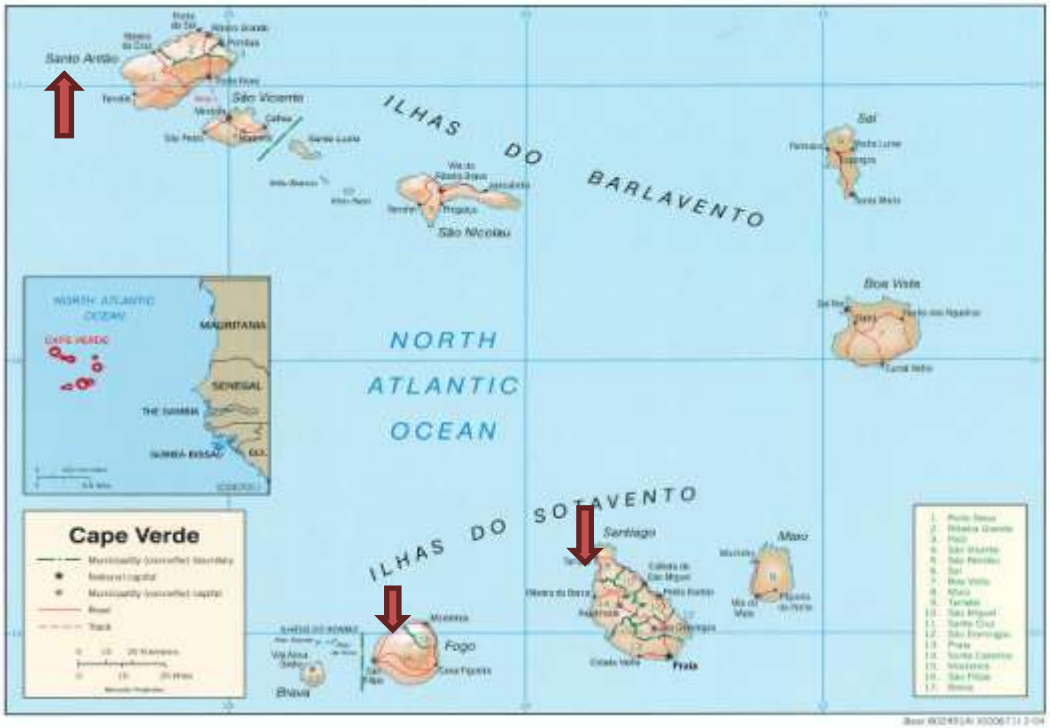
2) ***The Santiago island:*** mountainous, it is the largest and most populated island of Cape Verde, and its most important agricultural centre, alongside with livestock rearing which is a very important activity in Santiago. The wetter climate of the interior and the eastern coast contrasts with the dryer climate in the south and southwest. Precipitation is mainly in August and September, with an average of 321 mm/y. Irrigated land occupies about 677 ha, rainfed about

20,155 ha, and pasture land about 20,665 ha. The major rainfed crops are a consociation of maize and diverse beans. Sweet potatoes, Irish potatoes, cassava and diverse vegetables are cultivated in high altitude and marginal areas (e.g. arid and semi-arid, steep, nutrient-poor and low water retention capacity areas). The island is concentrating Cape Verde livestock rearing (cattle: 68%, goats: 40%, pigs: 64% and chicken: 50%). The production system remains traditional with low productivity. Food insecurity in its moderate form (12% of the island population) and severe form (7,8%) is above the national average.

3) ***The Fogo island:*** home of a volcano (2839 meters, highest mountain in the country), it is the second most important production site for rainfed agriculture after Santiago. Due to its volcanic-basaltic origin, the soil chemical fertility is generally quite good. The 5735 agricultural holdings are covering 7018 ha of arable land. Agriculture production includes food crops (corn, beans, cassava and a diversity of fruits) and cash crops such as grapes and coffee. Fogo island has the most diversified agriculture production in the country, and is the second most important island for livestock herding (cattle: 14%, goats: 18%, pigs: 12%, and chickens: 18%). The island is facing a difficult socio-economic context (low level of revenue, high unemployment rate, rural exodus and emigration). Fogo has the highest rate of moderate food insecurity (16,3%), while 1,4% suffers from the severe form and 13,7% are at risk of food insecurity.

4) ***The vulnerable coastal areas of Sal, Boavista, Maio, Sao Nicolau, Brava, and Sao Vicente:*** Cape Verde coastal extension (965km approximately) is gathering about 80% of the population and most infrastructures (e.g. hotels, airports, ports, roads, beaches, piers). It is thus facing degradation of the coastal zone, increase of sanitation problems (due to inexistence of water treatment stations, efficient solid residues and water supply management systems), destruction of beaches and beds of the ribeiras (due to sand and inputs extraction increase for civil construction market supply), water and soils salinization, etc. Boavista, Sal and Maio island are facing additional climate vulnerability due to low and flat morphologic conditions and geographic localization.

Map 1: Cape Verde territories regarding agricultural climate change adaptation



1.2 Analysis of the vulnerability of the territories to climate change

Santiago, Fogo and Santo Antao share some similar characteristics, due to their volcanic origin, orography, and the fact that they are exposed to the same rainfall variability, therefore, they were considered in the same column and analyzed as one territory in the table below.

Territories	Degree of exposure to CC	Degree of sensitivity to CC impacts	Adaptive capacity	Resulting vulnerability
Santo Antão, Santiago, Fogo	**High:** - Rainfall decrease **;** - Atmospheric humidity decrease; -Increase of temperature; -Increase of the frequency of torrential rains**;** -Occurrence of flooding **;** -Increase of ETP**;** -Frequent droughts **;** -Increase of insolation**;** -Increase of aerosols	**High:** -Insufficient precipitations that do not guarantee good production; -Reduced agricultural productivity and increased food insecurity -Increased water stress and scarcity -Short rainy season concentrated in a reduced period .Occurrence of episodes of drought during the rainy season; -Flood risks -Very steep slopes; -Human pressure and poor management of the sparse water and soils resources; -Inadequate agricultural practices -Salinization of agricultural fields in coastal zones; -Poor regenerating capacity of herbaceous plant species Increased water stress and scarcity -Adverse impacts on livelihoods linked to greater poverty and (e.g. rural-urban) migration -Degradation of land and ecosystems, and loss of biodiversity; desertification -Increased risk of coastal flooding and accelerated erosion -Degradation of soil and water in coastal areas via saline intrusion -Adverse impacts on health, changes in pests and diseases -Reduced tourism potential and revenue -Greater stress on financial resources and adverse impacts on economy	**Low:** -Limited supply of drought resistant crops, and of new production technologies. -Limited access to credit and micro-finances services. -Absence of micro insurance services	**Moderate to high vulnerability:** - Moderate vulnerability for the Santiago Santo Antão and Fogo zones benefitted from water mobilization infrastructures, (dams, reservoirs, etc.) - High vulnerability of the arid and semi-arid zones due to limited alternatives for income and livelihoods mostly for women as they cultivate mainly marginal lands Employment
Vulnerable Coastal Areas of Sal, Boavista, Maio,	**Very high:** -The rise of sea level (sea level rise could increase as much as 0.5-1.4m by 2100); increase of coastal erosion; floods of great amplitude, alterations of the amplitude of tides	**Very high:** -strong winds provoke dust storms and increase coastal erosion; -Intense rainfall are at the origin of coastal flooding in the low lying areas with accompanying loss of infrastructure, human lives and animals; -Extreme temperatures -Waves and high tides, which contributes to the degradation.	**Medium:** -Degradation of the coastal zone due to the intense activity of construction of hotels and other facilities; -Increase of	**High vulnerability:** - as the existent legislation is not sufficiently reinforced - due to high

S.Nicolau, Brava, S.Vicente	and increase of salinity of underground waters; - Destruction of coastal infrastructures; Economic losses; Losses for the tourism sector; Losses of livelihoods for the population living in these areas. (80% of the population)	.	sanitation problems due to inexistence of water treatment stations and efficient solid residues and water supply management systems; -Destruction of beaches and beds of the ribeiras due to the increase of extraction of sand and other inputs for supplying the civil construction market; -Degradation of soil and water via saline introduction	population concentration on coastal areas as much as 80% of the population - due to limited alternatives and job opportunities

1.3. Current status / diagnosis of climate change adaptation in these territories

Territories	Progress observed	Difficulties encountered	Needs for support at the local level
Santo Antão, Santiago, Fogo	- Construction of infrastructures for collection, supply and storage of water and recharge of groundwater tables; - Strengthen the actions of fight against desertification and protection of watersheds, through reforestation and other CSA techniques, especially on marginal and altitude areas; - Pasture land recuperation and introduction of new grazing varieties and forest species valorization - Modernize and diffusion of localized irrigation systems; - Integrated watershed management and the construction of water infrastructures (dams, underground dams , wells and the use of renewable energy in the water pumping) were measures carried out under agriculture policy - Training of farmers and small stakeholders on themes like	- The exit of Cape Verde from the group of LDCs, the reduction of public aid as well as the high level of debt constitute a risk since decisions will likely be made in detriment of the so called "non productive" projects - Farmers low level of education and organization ; - Lack of technical	- Funds to finance the gap for the projects under the water mobilization program and those aimed at valorization of water resources and agro, forest and livestock production ; -Introduction of new technologies to reinforce agriculture and livestock production ; - Reinforcement of institutional capacity to implement research &development projects ; - Develop themes and projects of research & development focused on irrigated and rainfed cultures tolerant to drought and pests and disease resistant as previewed in PEDA, NAIP, PAGIRH and NAPA - Strengthening the technical, material and organizational capacity;

	sustainable management of natural resources, agriculture and livestock production; - Introduction of new varieties and species that are adaptable to soil & climatic conditions; - Introduction of new technologies and innovations aimed at enhance yield performance (hydroponics, greenhouses artificial insemination) - Development of agroforestry systems by the integrated management of livestock, forest and agriculture practices	framework ; - Weak natural resources (soil, water) management capacity - Weak management skills for the exploitation unities and infrastructures (dams, wells, reservoirs, etc.)	- Promoting a wider diffusion of information on climate change; - Sensitizing the civil society for the necessity of a rational and sustainable management of natural resources; - Promoting/reinforcing pro-environment organizations of the civil society
Vulnerable Coastal Areas of Sal, Boavista, Maio, S.Nicolau, Brava, S.Vicente	- Existing legal framework for coastal areas management ; - National management and development programs being at implementation stage - Implementation of some projects in the protected areas ;	- Weak implementation, fiscal and law reinforcement ; No legal acts being issued; - Natural barriers being destroyed ;	- Law regulation ; -Rehabilitate and/or construct infrastructures for protection of coastal zones; - Diversify activities and measures of reconversion of populations that live off the exploration of coastal resources; - Continue the actions of preservation and management of protected areas; - Support implementation of initiatives of use of renewable energies (solar and wind) in particular at the rural community level; - Modernize the network of climate and maritime monitoring stations

2. CSA in the context of national sectorial programmes (NAIP, NAPA and upcoming NPA, IWRM-AP)

2.1 Current status / diagnosis of the adaptation component of national sectorial programmes

The National Adaptation Programme of Action (NAPA)

Cape Verde ratified the United Nations Framework Convention on Climate Change (UNFCCC) on March 29th, 1995, which entered into force on June 22nd, 1995. As a Contracting Party to the Convention, Cape Verde committed itself on this date to formulate a National Communication to the Conference of the Parties (COP). In 2000, Cape Verde presented its Initial National Communication (CNI) as well as its National Strategy and Plan of Action on Climate Change. For elaboration of these instruments, different studies in several sectors were carried out such as inventories of the Greenhouse Gas Emissions (GGE), analysis of vulnerability, adaptation and mitigation.

As stated by the Intergovernmental Panel on Climate Change (IPCC), Cape Verde has dual vulnerability to climate change, both as a Small Island Developing State, (SIDS) and as an arid country in the Sahel region. This vulnerability condition probed the country to address climate change issues with the support of its technical and financial partners.

In 2005, the Government of Cape Verde received, through UNDP/GEF, funding for formulation of its NAPA, aiming at identifying adaptation priority options according to the urgent and immediate necessities and concerns of the most vulnerable populations face to the negative effects of climate variability and change. The NAPA elaboration process was done with different partners, in order to analyze the conditions of adaptability in accordance with the intervention strategies in a perspective of sustainable development and poverty reduction.

Cape Verde's NAPA identified three main adaptation objectives for the country: (i) Promoting integrated water resources management in order to guarantee water for the people, for food production, for ecosystems and for the tourism industry; (ii) Developing the adaptability of the agro-silvo-pastoral production systems in order to ensure and improve national food production; and (iii) Protecting and preventing degradation of the coastal zones, caused by climatic factors and by tourism.

Based on the NAPA identified priorities, the ACDI funds and the UNDP support, the Project *"Building adaptation and resilience to climate change in the water sector in Cape Verde"* was undertaken to enhance resilience to climate change by mainstreaming adaptation concerns into water and agriculture development.

- *Building Adaptive Capacity and Resilience to Climate Change in the Water Sector in Cape Verde*

This project addresses the NAPA priorities and lays the foundation for the sustainable use and management of water resources under climate change. The project has 4 main components: (i) Technical Feasibility of Adaptation Options; (ii) Project Scoping, Institutional arrangements for implementation phase, Definition of a Monitoring and Evaluation Plan; (iii) Consultations with key stakeholders; (iv) Develop a financial plan and co-funding scheme. The project was implemented from June 2010 to March 2014 with a budget of 3.000.000USD.

An assessment of the main project results and impacts has been carried out in 2014, and concluded in a better integration of climate change issues into development related policies and strategies. Especially, a review of the Poverty Strategy Reduction Paper (PRSP, the main national planning instrument) was carried out and key adaptation measures for Cape Verde were highlighted.

As a result of the project, adaptation to climate change practices in the management of water resources were demonstrated and applied in selected watershed basins. The aim was to incorporate these practices into some pilot sites in order to demonstrate how adaptation investments at the local level can improve resilience.

The lessons learned and best practices implemented in the pilot sites were then largely disseminated towards other communities and decision makers. As a result, climate change issues are being taken into consideration in the planning processes.

Another project output was the "Analysis of the Critical Infrastructures Vulnerabilities to Climate Change" study, aiming at analyzing the climate change related risks on critical infrastructures and assessing their degradation level and the maintenance needs, especially for agriculture related infrastructures such as dams and reservoirs. The study was carried out on three islands. It needs to be extended to the other islands, and to incorporate social economic data to assess critical infrastructures' impacts on the local communities.

In the framework of the NAPA follow up, additional resources were procured to include food security concerns regarding changes in water availability. This second phase of the project will be implemented over a three years period, for a total budget of 1.980.000 USD.

As a result of the NAPA process, Cape Verde has made great progresses in developing programs that support climate change adaptation and mitigation. However, major challenges are remaining related to climate change issues, due to a combination of factors, namely the reduction of public aid, the high rate of indebtedness of the country, and the decrease in financial resources for climate change programs. In the meantime, extreme events frequency has increased in Cape Verde, involving a wide range of impacts including greater damages to crops, goods and people. This situation is pushing Cape Verde to find new financial sources for its agriculture development and climate change adaptation agenda.

The National Agricultural Investments Program (NAIP)

The CAADP and ECOWAP/CAADP orientations were incorporated into the country's strategic development plans both at the macro and at the sector level, namely the Growth and Poverty Reduction Strategic Paper (DECRP-II) and the 2005-2015 Agriculture Development Strategy. The country development is focusing on building a dynamic and innovative economy with prosperity shared by, and made inclusive to all. One of the ways set out to achieve this objective is the development of a so-called "new agriculture". In this context, the Government intends to intensify its efforts towards modernizing agriculture, mobilizing more water through the construction of new irrigation and water retention infrastructures, expanding the use of drip irrigation and other innovative production systems (e.g. hydroponics and greenhouses), diversifying and expanding horticultural and fruit productions, and promoting productivity, quality control, post-harvest processing and agribusiness initiatives. The overall policy aim is to reduce rural poverty levels by increasing and maximizing employment opportunities in the rural areas, and supporting the establishment of a stronger economic basis to sustain current rural livelihood systems, with a focus on agriculture, livestock and fisheries.

The Cape Verde NAIP includes 6 sub-programs pertaining to: (1) Water mobilization and watershed management, (2) Value chain development and market access promotion; (3) Reinforcement of natural resources management; (4) Research development and new technologies adoption; (5) Prevention and management of food crises and others natural disasters; and (6) Institutional reinforcement and program coordination. Sub-programs 1, 2 and 4 are described hereinafter, since they are those dealing with priority areas of intervention for the agricultural sector in Cape Verde.

- *SUB-PROGRAMS 1 - Water mobilization and watershed management*

Water mobilization and the rational management of the water resources for agriculture is a priority established in the NAIP's scope of action aiming at land use reconversion from rain fed to irrigated land, by promoting the construction of water retention and conservation infrastructures, the introduction of micro-irrigation technology, and the use of renewable energy sources for water pumping such as solar or wind.

The elaboration of the NAIP took into consideration the strategic orientations of the water sector national program (PAGIRH, see below), specifically pertaining to the rational use of water for agriculture. The NAIP enabled the construction of 6 dams in the islands of Santiago and São Nicolau. This plan has since been reviewed to increase the number of dams to 17 and extend such interventions to other islands. Regarding groundwater mobilization, the NAIP considers the construction of 73 water wells distributed among all the islands, as well as 6 water reservoirs, 13 water pump systems and 6 water desalinization plants in the islands of Fogo, Santiago and São Vicente. Watershed management was programmed in several islands with integrated interventions pertaining to water and soil conservation, agriculture and livestock production. The total NAIP's estimated budget is 250 million USD, from which the sub-program water mobilization and watershed management absorbs 147,9 million USD (61%). This sub-program is currently being implemented over a 6 years period (2010-2016), through funding from the State budget, and loans from a Portuguese bank, BADEA (Arab Bank for Economic Development in Africa) and AfDB (African Development Bank).

The major constraint this sub-program is facing is related to further resources mobilization, in a very difficult global economic context. Since the country has been graduated from low to medium income level country, it is no longer eligible for concessional loans. The progressive decrease of the public aid and the high debt rate of the country make it always more difficult to mobilize additional funds to finance the country's development agenda. Another constraint is related to the lack of technical capacities at national scale for program formulation and projects implementation monitoring.

- *SUB-PROGRAMS 2 - Value chain development and market access promotion*

The purpose of this sub-program is (i) to set up an integrated system of agricultural support services to enable smallholder family farming engaging in profitable, market-oriented production in selected commodity value chains, in order to supply targeted markets; and (ii) to provide local farmers and livestock herders with the minimum "tools" to produce high quality and value products, and support them in establishing links to identified markets.

In this context, the intention is to intensify efforts towards productivity increase, to set up an integrated system of agricultural support services (research and development, promotion of innovative production systems, expansion of drip irrigation, adapted rural extension services, etc.) to induce smallholder family farming to engage in profitable, market-oriented production in selected commodity value chains to supply targeted markets. The cost of the sub-program is 57,1 million USD, representing 23% of the NAIP's total cost. The activities are to be carried out within the NAIP 2010-2016 timeframe. The main constraints so far are related to the mobilization of financial resources, the challenges of organizing the farmers, the needed mental shift from subsistence to market oriented agriculture, the market integration of smallholders and the improvement of commercial channels in a context of an islands-based fragmented territory. The major constraint remains however the mindset change needed for the private sector to fully embrace its responsibilities and invest through this sub-program in the agri-business sector.

- *SUB-PROGRAM 4 - Research Development and new technologies adoption*

The research priorities in the agriculture sector include pests and diseases control; introduction of high performance varieties adapted to the soil & climate conditions; micro-irrigation; hydroponic systems. The research strategic plan, currently being elaborated, will set the stage for a more specialized technology-based agriculture with emphasis on extension services. For the formulation of this plan, the country benefits from the FAO technical assistance. The scheduled timeframe should be 2014-2021. The research strategic plan will be associated with an associated 2014-2017 operational plan, to be elaborated. As far as research development is concerned, Cape Verde is seeking to integrate the West Africa Agriculture Productivity Promotion (WAAPP) financed by the World Bank. The objective of the WAAPP is to accelerate new technology and innovations adoption in the agro value chain. Dispositions have already been taken in that sense (e.g. meetings between the Minister of Rural Development, the Minister of Finances, and the CORAF/WECARD managing the WAAPP; country's financial contribution to the project previewed for the 2015-2017 budgets).

The Integrated Water Management Resources Plan (PAGIRH)

Until recent years, the National Water Resources Management Institute (INGRH) has been responsible for water resources & climate change related subjects. INGRH was in charge of the elaboration and implementation of the 2009-2013PAGIRH, representing the medium term water management plan (PAGIRH).

Meanwhile, in 2012, Cape Verde was considered under the MCC support, with a second MCA compact focusing on two projects: Water, Sanitation and Hygiene (WASH) and Land Management for Investment (LMI). Ever since, Cape Verde has engaged in a wide reform of the water and sanitation sector, with the extinction of the INGRH and the creation of two new water and sanitation bodies.

On July 30th, 2013, parliament passed a bill for the establishment of the National Water and Sanitation Council (CNAS: *Conselho Nacional de Água e Saneamento*) and the set up of the National Water and Sanitation Agency (ANAS: *Agência Nacional de Água e Saneamento*). This agency will be responsible for the management of the water and sanitation sectors, including water for agriculture as well as for human consumption, and the implementation of the WASH project. The WASH project and its strategic policy orientation for the water sector is built taking into consideration the PAGIRH development options for the water sector, and incorporating the new demands for a more holistic approach to water resources management, and for enhancing the water sector institutional framework.

The WASH project will focus on ensuring: integrated and improved management of the WASH sector, improved technical capacity of WASH sector employees, increased linkage between services and water availability, improved service standards, a more efficient operation of WASH utilities, and increased access to water and sanitation infrastructures at the local level. These activities will fall under three tracks: (i) national institutional and regulatory reform, including capacity building, (ii) strengthening of the WASH utilities and (iii) infrastructure facility. Regarding the issues of watershed management and CSA, the WASH project should be responsible for the CSA dimension related to water management improvement and resilience, while the whole CSA dimension related to practical techniques will be dealt with by the governmental agriculture and environment agencies, with the necessary articulation across sectors. As the reform is at present, an on-going process, the inter-sectorial coordination is something to be built and incorporated into the institutional framework; the acknowledgment of this need has been accepted by all the stakeholders involved.

The Second National Environmental Action Plan (PANA II)

The Second National Environmental Action Plan represents the master plan for environmental issues in Cape Verde, it is a national policy instrument in the field of environment from which all interventions or other more specific actions plans, including NAPA, are derived. It covers a 10 year period 2004-2014. Its general objective is to provide the country with a strategy that promotes a rational use of natural resources and a sustainable management of economic activities. PANA II intends to respond to Cape-Verde's topographic and agro-ecological diversity, which is reflected in the different environmental concerns and opportunities in each municipality. The document (i) defines the main political orientations for environmental and natural resources management; (ii) identifies environmental opportunities, development priorities and interventions that facilitate an effective and efficient use of natural resources; (iii) defines the institutional setting and the necessary intersectorial co-ordination mechanisms; (iv) promotes the integration of the environmental concerns into socio-economic development planning; and (v) promotes the improvement of the population's living and livelihood conditions.

The environmental sector is multidimensional and transversal. To ensure a harmonization between sectorial plans, avoid duplications and the risk of omitting essential strategic options, nine Intersectorial Environmental Plans (PAIS) were prepared. This process emphasized a participatory and decentralized elaboration of the environment plan as to ensure an in-depth analysis of the interrelationship between problems and the sectors responsible for its solution. The plans deal with the following environmental themes: Environment and sustainable management of water resources; Environment and public health; Environment and biodiversity; Environment and land use planning, ports and infrastructure; Environment and education, training, information and awareness rising; Environment and Tourism Development; Environment and Agriculture, Forestry and Livestock husbandry Environment and Fisheries; Environment and Industry, Energy and Trade. In the same perspective each municipality elaborated an environmental strategic plan, based upon its specific strategies and local development vision.

Cross cutting themes: Gender equality & Youth promotion

Gender equality and youth promotion are identified as transverse themes to be mainstreamed across national policies and programs including in the NAIP. Specific gender priorities are also identified, such as women's greater development in entrepreneurship, promotion of business opportunities for women in innovative fields, strengthening their access to productive resources, including land tenure and improved access to credit and employment opportunities in rural areas. With the increase in water availability, and as more irrigated land is being created, the resources distribution is made taking into account gender equity, benefiting women. Dispositions are also taken to encourage women's participation in capacity building and training programs, such as best practices for food production, hydroponics, disease and pests control. At last, the Ministry of Rural Development has created entrepreneurship prizes to encourage innovative projects in agri-business. One prize will distinguish a woman-led project, while another will distinguish a youngster-led project. Other gender approaches are being taken to ensure full participation and integration of women in agriculture modernization.

2.2 Current status / diagnosis of the mitigation component of national sectorial programs

Cape Verde was the first country in the group of African Portuguese Speaking countries to ratify the Framework Convention on Climate Change, as a non-Annex I party. Since then it

has created its Designated National Authority and has a Clean Development Mechanism (CDM) certified by the Executive Secretary of UNFCCC CDM.

Regarding climate change, Cape Verde is focusing on agriculture adaptation issues although it is aware that mitigation is equally important. In this sense and even though Cape Verde has not elaborated its NAMA, some dispositions concerning the energy sector are being implemented, namely the use of renewable energy for water pumping which will reduce GHG emissions. Therefore, the country's priority is climate adaptation but the different ongoing programs seek to increase and replace fossil fuels (having high carbon content per unit of energy produced) with lower or near zero carbon content sources. These alternative energies aim at mitigating climate change and reaching the UNFCCC final objective.

3. Inter-institutional dialogue and inter-sectorial coherence for CSA

3.1 Related issues and needs regarding CSA

In order to address such a complex and multidimensional problem, one of the key issues raised in the NAPA was the need to strengthen coordination among climate related institutions. The NAPA highlighted the need for the establishment of a Climate Change Committee, which would include relevant public and private representatives. However, interagency coordination across the key programs of NAPA, NAIP and PAGIRH has not been effective.

In order to guarantee a proper level of coordination and coherence across programs, it is important to build the strategic human and institutional capacities of the different agencies. The aim of such activities is to enhance climate change awareness and to ensure institutional articulation and cooperation among all stakeholders. Currently, there are constraints related to capacity building of institutions and actors at both central and local levels. Capacity building should lead to relations strengthening, tools development and the establishment of communications channels between governmental decision makers, the private sector, NGOs and local communities. Reinforcing such mechanisms for an effective institutional articulation is also a necessity that would make much more efficient the programs and projects implementation, would improve and promote climate change mainstreaming into highest planning levels, and would avoid contradictions and functional overlap.

3.2 Related existing mechanisms for CSA: description, progress and bottlenecks

Cape Verde is represented in the Intergovernmental Panel on Climate Change (IPCC) which is an international body of experts for the assessment of climate change. At the national level the mechanism for the coordination of climate change issues is the *Specialized Ministerial Council on the Environment*, which includes all the ministries intervening on climate change issues. The decisions of the council are carried out by an *Inter-ministerial Committee on Climate Change*, established by Resolution No. 16/2009. It is the Designated National Authority to coordinate government actions under the UNFCCC, the Kyoto Protocol and its subsidiary instruments. The Inter-ministerial Committee on Climate Change comprises the following governmental agencies, involved in climate change related policy, programs and plans implementation:

- Ministry of Environment, Housing and Territorial Management/DGA: General Directorate for the Environment is responsible for the implementation of The National Environment Action Plan (PANA II) , which is the government umbrella Programme for reform and transformation in the natural resources management sectors;

- Ministry of Rural Development (MDR/DGPOG): The General office for Planning, Management and Budget, within the Ministry, is the NAIP focal point and thus responsible for implementing the NAIP, translating its programs and actions into the national planning system;
- National Meteorology and Geophysics Institute (INMG): INMG is the focal point for the NAPA;
- and the General Directorates for Industry and Energy; for Infrastructure; of Transport; of Foreign affairs.

Other institutions that are not integrated in the Inter-ministerial Committee, but that have been called upon for specific environment issues, are:

- The National Water and Sanitation Agency and the National Water and Sanitation Council, which will substitute INGRH following the water sector reform, and will be responsible for the water sector policy coordination and management;
- The municipalities, through the Environment Technical Municipal Teams (ETMA). They have been developing activities integrated within the National Environment Action Plan (PANA II). As policy formulation partners, they have also given a valuable contribution in the preparatory phase of the NAPA preparation process;
- The local NGOs, organized as members of the Platform of the NGOs. Some of them[1] have been deeply involved in activities related to protection of the environment.

In terms of progresses, there have been gains regarding political awareness on climate change issues, and steps have been passed towards the identification of relevant climate change related institutions, the establishment of priorities for integrating the climate change risks and opportunities, the implementation of adaptation projects, the growing information availability on these issues towards the population, the improvement of the legislation framework, and the recognition of the environment as a transversal issue.

Although some progresses have been made, some bottlenecks still exist regarding inter-institutional dialogue and inter-sectorial coherence for CSA. The main constraints are:

(i) Environment and climate change matters are still concentrated at the governmental level and they need to benefit from the effective inclusion and integration of non-State stakeholders such as NGOs and the civil society;

(ii) The institutional and legislation frameworks need to be revised and redefined in order to avoid functions overlap and improve institutional coordination. As a matter of fact, there is currently a limited coordination at the regional and county levels, and the level of coordination is not sufficient to ensure that all stakeholders are adequately informed and participate meaningfully in project implementation across the different sectors and programs;

(iii) In terms of legislation and despite the great number of environment related legislations, there is a lack of articulation among the different legal instruments. Besides, some existing laws are not enforced, making it difficult to implement and strengthened;

[1] Namely: the Associação para a Protecção do Ambiente e Desenvolvimento (ADAD), the Women of Cape Verde Organization das Mulheres de Cabo Verde (OMCV), the Associação de Apoio à Auto-Promoção da Mulher no Desenvolvimento (MORABI), the Associação dos Amantes da Natureza, the Centro de Energia e Ambiente (CEA), the Associação Garça Vermelha, the Associação de Santo Antão para o Desenvolvimento Sustentável (ADU), the Atelier Mar.

(iv) Limited budget for environmental monitoring and the articulation between technical and scientific resources due to a lack of an integrated strategy of human and financial resources;
(v) Insufficient information and public broadcasting on climate change issues.
(vi) Lack of an established agriculture program of work that covers adaptation and mitigation components.
(vii) Insufficient investment in research, technology and information dissemination to facilitate the adaptation and application of climate smart agriculture.

4. Support needs and requests addressed to ECOWAS

4.1 To mainstream CSA in the NAIP

Water mobilization and watershed management

As far as NAIP is concerned the defined programs already address several of the recommended actions aiming at reducing climate vulnerability through appropriate interventions given the agricultural sector constraints in Cape Verde. Under the NAIP's water mobilization and watershed management program, the construction of 6 dams is scheduled, of which four have been concluded and two others are in progress.

Meanwhile the Governmental Program for the VIII Legislative period (2011-2016) and the PRSP III established a new goal for the construction of 17 dams and the mobilization of 57,000,000m3 of water to irrigate 5,000 ha of land. The financial resources for the construction of 8 dams out of 17 have already been mobilized, and efforts are being carried out to mobilize additional funds for the construction of the remaining 9.

Regarding the watershed management studies, the realization of 5 watershed management studies was scheduled. Three are in the process of being funded by BADEA (Ribeira de Calhau in Boavista, S. João Baptista in Santiago, and Ribeira Grande in Santo Antão). An additional support is requested to ECOWAS under this program, to fund the studies related to the other 2 watershed basin (Ribeira das Patas and Bacias Hidrográficas on S. Vicente).

As far as the dams construction is concerned, Cape Verde requests from ECOWAS support in identifying potential financing sources and partners to ensure the rural infrastructure program continuity. Also support is requested for the interventions already in progress for the introduction of renewable energy in water pumping for irrigation from wells, to improve energy efficiency, reduce greenhouse gas emissions, and reduce operating costs of agriculture.

Support for research & development

The main programs identified in the NAIP are focusing on increasing production and productivity through water mobilization, value chain development, linkage to markets and technology adoption. In this sense, the NAIP *Research development and new technologies adoption* program is intended to support and enable agriculture modernization through: the introduction of new varieties; crop and animal improvement for yield performance; better adapted, enhanced irrigation systems, hydroponics and greenhouses cultures. As recommended in the NAIP, a request to integrate the CORAF/WECARD productivity program (WAAPP) has been formulated and it is scheduled that Cape Verde will soon be included in the said program. The support need addressed to ECOWAS under the applied research program is to reinforce the interventions to include research themes and topics such as: crop and animal improvement for tolerance to biotic and abiotic stresses; drought tolerant crop varieties for irrigated and rain fed production systems; efficiency improvement of agricultural water use in the crops and livestock sectors; reinforcement of the research

institutional framework and the research to policy linkage. All of these actions were defined as priorities under several strategic plans such as: PEDA, PNIA, PAGIRH and PANA.

Actions towards Capacity Building, Awareness Raising and Sensitization

Climate change risks analysis and dissemination in Cape Verde is still incipient and poorly quantified at a significant scale, both spatially and temporally. Furthermore, it is not made widely available for enabling the shift away from the 'reactive & ad hoc' climate change response paradigm towards a more 'anticipatory & deliberative' one. In this sense, Cape Verde requests support to reinforce capacity building measures orientated for the climate monitoring and early warning systems in themes like: gathering and providing climate relevant data; research in climate change and adaptation in the priority sectors; experience sharing.

Support is also requested in order to improve the capacity of key stakeholders to plan and respond to climate change risk and to incorporate adaptation measures in the conceptualization and implementation of development frameworks (i.e. policies, strategies, programs, projects and initiatives). These actions should be extended to the population in general as the low awareness of the public in Cape Verde about climate change is a systemic capacity constraint towards adaptation. Information on climate and climate change is still not sufficiently disseminated.

Support for women and youth access to productive resources

Gender and youth issues should be promoted and closely monitored. In this regard, disaggregated data by sex related to climate change should be incorporated in the analysis, to assess the climate change impacts on the livelihoods of females' small stakeholders. Women's participation should be promoted and should play an important role in all activities, including access to productive resources, technical and financial support. As they are in majority involved in the illegal extraction of sand and commercialization of agricultural and fisheries products, support is being requested for a project that will develop income generating activities as alternatives for people living from illegal extraction of sand from beaches, and reinforce organizational abilities and technical support for commercialization of agricultural products and improve access to markets.

4.2 To strengthen inter-institutional dialogue and inter-sectorial coherence on CSA

Adequate preparation to climate change will require strong institutions, well equipped in terms of technical and scientific capacities in order to monitor its impacts on ecosystems, communities and on population's livelihoods. It will also require close institutional collaboration between governmental agencies, private sector, NGOs, Universities, and technical and financial partners. In Cape Verde the need arises to revise and redefine the climate change institutional framework and to clarify the articulation mechanisms in order to maximize this collaborative effort. The existing institutional arrangements should be adapted in order to ensure public policy monitoring and evaluation; support the implementation of strategies, programs or projects well adapted to climate change and promote action programs, including best practice and technologies in climate-smart agriculture, through the creation of a consultative body that would provide qualified assistance on this matter. Lastly, information and best practices, improved water management practical techniques, agro-forestry improved grazing, innovative sustainable land management practices, etc, need to be shared more among all stakeholders, as to enhance agricultural productivity and contributing to mitigation and adaptation goals.