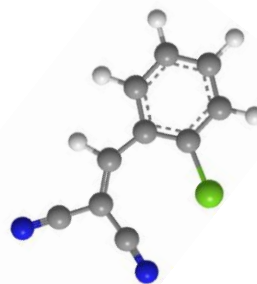
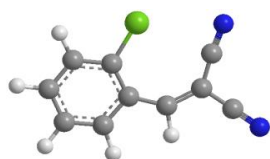




CABO VERDE'S NATIONAL IMPLEMENTATION PLAN

under the Stockholm Convention
on Persistent Organic Pollutants





Ministério da Agricultura
e Ambiente
Direção Nacional do Ambiente

República de Cabo Verde
Ministério da Agricultura e Ambiente
Direção Nacional do Ambiente

NATIONAL IMPLEMENTATION PLAN

Stockholm Convention on Persistent Organic Pollutants

Cabo Verde
December 2017

ACKNOWLEDGEMENTS

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The preparation of this document took place over many months. Numerous individuals took time to provide input, review various drafts and provide comments and suggestions. In particular, thanks are extended to the following people for their efforts: Florisvindo Furtado, Adilson Fragoso, Maria Rosa Soares, Helen Barbosa, Tania Cruz, Jorge Santos, Margarida Santos, Ana Veiga, Mario Dantas, Margarida Silva

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Finally, thanks are extended to the many others who participated in multistakeholder and jurisdictional consultations and/or provided their expertise to this project:

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University of Cabo Verde

National Institute of Statistics

General Direction of Customs

Cape Verdean Institute for Gender Equality and Equity

UNIDO – United Nations Industrial and Development Organization

National Association of Municipalities

Executive summary

This National Implementation Plan (NIP) was developed by the Ministry of Environment, Housing and Spatial Planning in cooperation with several national institutions and partners, the Government, industry associations and the civil society, with funding from the Global Environment Facility (GEF), and support from the United Nations Industrial Development Program (UNIDO).

The NIP is divided into 7 sections whose contents and main conclusions are described below:

Section 1 - Introduction: Presents the foundations and obligations of the Stockholm Convention, the characterization of the POPs listed in its annexes and also details the process of elaboration of the NIP, including its objectives and the actors involved.

Section 2 - Country Profile: this section presents information on geography, climate, population, economy, agriculture, industrial production, chemical industry, environment, vegetation, water resources and energy, with the objective of clarifying the national scenario and facilitate the understanding of the adopted strategies.

Section 3 - National institutional and legal framework for the management of chemical substances: presents the structure and evolution of the National environmental policy. It also presents a description of government institutions involved in environmental protection, health and chemical management, and their respective competences, highlights national legislation related to the management of chemical substances and POPs, as well as existing national programs and systems to monitor contaminants.

Section 4 - Status of POPs in Cabo Verde: Annex A and B of POPs: presents, in the light of the requirements of the Convention, the situation of the production, use and foreign trade of the POPs of Annexes A and B and as the measures adopted by the Country for the identification and final destination of the stocks and residues of these POPs.

The section initially addresses the POPs of group pesticides and other uses, gathering all the information obtained on importing these POPs into the available databases. It then

systematizes the legal status of POPs pesticides and also presents the results obtained in the National Inventory of POPs and Pesticides, used as pesticides and other related uses. From the results of the inventory, the priority actions for the Plan of Action were identified, namely: elimination of stocks and residues of Pesticides already inventoried; mobilization and engagement of the strategic partners in our subregion to carry out identification and final destination campaigns for obsolete POPs Pesticides stocks and technical training in environmental and agricultural services and preparation of guides to the collection and adequate final destination of stocks of POPs Pesticides. The section then goes on to address the industrial POPs, beginning with the PCBs, in which it also summarizes its import and application in Cabo Verde, and presents the results of the National Inventory of PCBs. The inventory aggregated information on about 80% of PCB's supposedly circulating in the country, which indicates that at least 20% of the volume of PCBs used, still need to be inventoried, labeled and managed in an environmentally sound manner.

In order to comply with the provisions of the Stockholm Convention in relation to PCBs, the country needs to create conditions for:

- 1) Strengthen legal, administrative and standardized procedures for the management of PCBs and their sound disposal;**
- 2) Management of oils identified as PCBs and equipment and wastes contaminated with PCBs, in partnership with the private sector, in order to minimize human and environmental exposure; and**
- 3) Storage and environmentally appropriate disposal of PCB waste through demonstration projects.**

The results of the National Inventory of New POPs for industrial use are the subject of discussion in which there was no information on past use of Hexabromobiphenyl (HBB) in Cabo Verde or on the existence of stocks or products containing that substance. Regarding Pentachlorobenzene (PeCB), there are no recent production/import and usage records.

In the inventory query regarding the PDDBE's, most of the answers indicate that the institutions did not use products containing c-Penta-BDE and Octa-BDE, or that do not use Deca-BDE. Some responses also indicate that these POPs may have been used in the past, or that Deca-BDE may still be in use.

From the list of possible uses of the PFOS, the only categories of use that were identified in the Country during the inventory preparation were found in firefighting foam. Finally, in relation to Hexabromocyclododecane (HBCD), the data was not collected simply because there is no record of its introduction in the country.

In essence, the action plan for these substances presents strategies for the proper management of products and waste that contain new POPs, as well as strategies for the reduction of its use, with the final objective of eliminating POPs that are still used in Cabo Verde.

The section also addresses the results of the National Inventory of Sources and Estimates of Unintentional POPs, which shows that Cabo Verde has all the emission sources present in the UNEP guide, Chemicals, Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases, and a potential emission of 32.5 g TEQ / year according to estimates made from the surveys and statistical data.

The largest share belongs to air emissions which is 31.12 TEQ / year of the total released in 2014. Additionally, the estimated water emissions was 1.41 g TEQ / year and emissions to soil and residue with 0.005 and 0.002 g TEQ / year, respectively.

The evolution of emissions of dioxins and furans was verified in the air compared to other media and were practically insignificant, with a tendency to decrease air emissions relative to land or waste. On the other hand, it is clear that the greatest means of dispersion of these compounds is by air, almost always exceeding 80%, except in rare occasions where it is not the main receiving medium such as the production of chemicals and consumer goods.

Section 5 - Socioeconomic Analysis and Gender - In this context, the Socioeconomic and Gender Analysis (SEAGA) allowed working with different social groups potentially affected by the presence of POPs through measures of environmental and

health protection, in a study on the way of life of stakeholders and their approach strategies to different practices.

Section 6 - Action Plans - Presents in detail the strategies and actions of the National Implementation Plan of Cabo Verde to meet the commitments of the Convention, based on the situation of the Country verified in the Inventories and the intervention priorities that were determined, planned activities, deadlines and those responsible for implementing the plan, which will be reviewed and updated every 5 years, evaluating their progress. The NIP contains the following Measures and Plans of Action:

- 1) Establishment of an institutional and administrative framework;**
- 2) Ensure a set of effective measures and policies that follow the constant changes;**
- 3) Develop a training and awareness plan;**
- 4) Plan of Action to improve analytical capacity;**
- 5) Plan of Action for dissemination of information, training and awareness;**
- 6) Plan of action to implement a Pollutant Release and Transfer Regime system, including POPs and**
- 7) Plan of action to encourage research, development and innovation on POPs.**

Abbreviation List

FAP-EP - Agro-Livestock Development - Public Company
AIA - Environmental Impact Assessment (EIA)
ARFA - Regulatory Agency for pharmaceutical and food products
ASA – Airports and Air Safety
BAT-BEP - Best Available Technology - Best Environment Practices
CDB - The Convention on Biological Diversity
CILSS - Permanent Interstate Committee for drought control in the Sahel
CL – Lethal Concentration
CRCV - Cabo Verde Constitution
CV – Cabo Verde
DECRP III - Third Strategic Growth and Poverty Reduction Document
DDT – Dichlorodiphenyltrichloroethane
DNA – National Environmental Directorate
DGADR – General Agriculture and Rural Development Directorate
DGP - General Fishing Directorate
DSA - Agriculture Directorate
DSAP - Agriculture and Livestock Directorate
EEZ - Exclusive Economic Zone
Electra - National company for the production of energy and water
Enacol - National Fuel Company
ENAPOR - National Company of Ports Administration
ENPA-DB - “National Strategy and Plan of Action on Biodiversity”
ENSA - National Strategy for Food Security
FAO - Food and Agriculture Organization of the United Nations
ISVAF - (Inquérito de Seguimento da Vulnerabilidade Alimentar das Famílias Rurais)
IMF - International Monetary Fund
GATS - General Agreement on Tariffs and Trade
GEF - Global Environment Fund
GDP - Gross Domestic Product
GNC - National Coordinating Group of the NIP Project
GOP - Great Plan Options

GOP / PND - Large Plan Options/ National Development Plan
GPS - Global Positioning System
ha - hectare
IDRF - Household Expenditure and Income Survey IEC - Information, Education and Communication
IMO - International Maritime Organization
INE - National Institute of Statistics
INIDA - National Institute of Agricultural Research and Development
IPPC - International Plant Protection Convention
LASAP - Laboratory of Soils, Water and Plants
m - meters
MAHOT - Ministry of Environment, Housing and Land Planning
mm - millimeters
NOSI- Operational Nucleus of the Information Society
GMOs - Genetically Modified Organisms
OIE - International Organization for Epizootics
WTO - World Trade Organization
WEEE - Waste Electro Electronic Equipment
NGOs - Non-Governmental Organizations
WFP - Municipal Environmental Plan
PAIS - Intersectoral Environmental Plan
PANA - National Action Plan for the Environment
PCBs - Polychlorobiphenyls / Polychlorinated Biphenyls
PCDD - Polychlorinated-p-dibenzodioxins
PCDF - Polychlorinated-p-dibenzofurans
PDBE's - Polybrominated Diphenyl Ethers
PFOS - Perfluorooctane Sulfonic Acid
PNIEG - The National Plan for Gender Equality and Equity (2005-2011)
PND - National Development Plan
PNI - National Implementation Plan
UNEP - United Nations Environment Program
POPs - Persistent Organic Pollutants
RGA - General Agricultural Census
SEAGA - Socio-economic and Gender Analysis

SPS - Sanitary and Phytosanitary Agreement

t - tons

TDI - Tolerable Daily Intake

TLV - Threshold limit value

TEQ - Toxicity equivalent

ZAE - Agroecological Zone

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PREFACE

On 23 May 2001, the Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in Stockholm, Sweden, to protect human health and the environment from the effects of persistent organic pollutants.

The Convention commits the signatory countries to take action to eliminate or reduce the production, use, export and import of POPs, to prevent the unintentional emission of these POPs into the environment, and to provide adequate disposal of their wastes and stocks.

The Convention entered into force on May 17, 2004, when 50 countries ratified it. Cabo Verde acceded to the Convention in 2005 (Decree-Law: 16/2005 of 19 December (B.O. - Series I, No 51) and ratified on 1 March 2006, becoming part of this global commitment.

As a signatory country, it recognizes its obligation, in accordance with Article 7 of the Convention, to develop a National Implementation Plan (NIP), indicating how it will meet the obligations established in the treaty, defining priorities and strategies for doing so.

This National Implementation Plan (NIP) was developed by the Ministry of Environment, Housing and Spatial Planning, in cooperation with various national institutions and partners, the Government, industry associations and civil society, with funding from the Global Environment Facility, and support from the United Nations Industrial Development Program (UNIDO).

The document presents the findings of an initial investigation into the status of the implementation of the Convention in Cabo Verde, the uses of these chemicals in the country, the management of its wastes and stocks, areas contaminated by POPs, and national installed capacity. It identifies the legislative and administrative measures already in place to protect human health and the environment from the effects of the

POPs, and identifies the gaps that need to be overcome. In the end, it offers an Action Plan so that the country can meet the obligations of the Stockholm Convention.

The progress of the implementation in the country should be evaluated continuously, revising the Plan whenever appropriate.

This NIP comprises the initial 12 POPs, nine new POPs added to the Annexes to the Convention in 2009, Endosulfan, listed in 2011 at COP 5, and exabromocyclododecane (HBCD), listed during COP 6 in 2013.

1. INTRODUCTION

1.1. Persistent Organic Pollutants and the Stockholm Convention.

Persistent Organic Pollutants (POPs) are organic substances that remain in the environment for a long time and bioaccumulate in living organisms, have high stability, toxicity, and low degradability (chemical, physical or biological). Studies point to the adverse effects of these substances on human health and the environment around the world, and the diseases may occur immediately or after years of exposure.

POPs can be transported through air, water and migratory species, beyond international borders, and deposited in terrestrial and aquatic ecosystems, which makes them the object of global concern.

Several cases of contamination in the world associated with exposure to these substances have highlighted the need to adopt an overall strategy for the elimination of these chemicals, which have been widely used in the control of insects, pesticides, in industrial inputs, as well as being produced unintentionally in combustion processes.

In order to address POPs issues and discuss actions to reduce and eliminate the release of these pollutants into the environment, the international community mobilized from 1995 onwards and, after a series of negotiations, of the Stockholm Convention on Persistent Organic Pollutants.

The Stockholm Convention on Persistent Organic Pollutants, which entered into force in 2004, establishes control measures for these substances, which have been used as pesticides for industrial purposes or released unintentionally in anthropogenic activities as by-products of chemical synthesis processes.

Cabo Verde acceded to the Stockholm Convention in 2005 (Decree-Law no. 16/2005 of December 19, BO No. 51, I Series) and its ratification in March 2006, the country demonstrates its commitment against dangerous products, preserving the human health and the environment.

This Convention requires the signatory countries to adopt measures to reduce or eliminate the use, production, import, export of POPs and their unintentional release; promote the use of best available techniques and appropriate environmental practices in processes and products to reduce emissions of POPs; and destined environmentally appropriate to the stocks and residues of those substances.

To this end, consideration is given to the principles of precaution, prevention and the polluter-pays principle, the integrated approach to substance life cycles, transparency of information on POPs risks, cooperation among countries, involvement of the public sector and the active participation of society.

The 23 POPs substances of the Stockholm Convention are listed in three separate annexes for each of the specific treatment they receive:

Annex A - Disposal: prohibited use and commitment to be disposed of within specified time limits; Annex B - restriction: some uses allowed as an acceptable purpose, if there is no viable substitute; and Annex C - unintentional production: products that can be generated via combustion processes or intermediates in industrial chemical reactions.

Table 1 - POPs listed in the Stockholm Convention

POP	Use	Annex
Aldrin	Pesticides	A
Chlordane	Pesticides	A
Chlordecane	Pesticides	A
Dieldrin	Pesticides	A
Endrin	Pesticides	A
Heptachloro	Pesticides	A
Hexabromobiphenyl (HBB)	Industrial	A

Hexabromodiphenyl ether (HexaBDE) and Heptabromodiphenyl ether (HeptaBDE), major components of commercial octabromodiphenyl ether (c-OctaBDE)	Industrial	A
Hexachlorobenzene (HCB)	Industrial Pesticides and not intentional production	A e C
Alfa Hexaclorociclohexano (Alfa HCH)	Pesticides and unintentional production	A
Beta Hexachlorocyclohexane (Beta HCH)	Pesticides and unintentional production	A
Lindane	Pesticides	A
Pentachlorobenzene	Industrial Pesticides and not intentional production	A e C
Tetrabromodiphenyl ether (TetraBDE) and Pentabromodiphenyl ether (PentaBDE), main components of commercial Pentabromodiphenyl ether (c-PentaBDE)	Industrial	A
Perfluorooctanoic Sulfonic Acid (PFOS), its salts and Perfluorooctano Sulphonyl Fluoride (PFOSF)	Industrial	B
DDT	Pesticides	B
Toxaphene	Pesticides	A
Dodecachlor (Mirex)	Pesticides	A
Polychlorinated biphenyls (PCBs)	Industrial and unintended production	A e C

Dioxins (PCDDs)	Unintentional production	C
Furanos (PCDFs)	Unintentional production	C
Endosulfan	Pesticides	A
Hexabromocyclododecane (HBCD)	Industrial	A

The Convention further requires Parties to prevent the development of new pesticides or new industrial chemicals that have the characteristics of persistent organic pollutants. There is an incentive for Parties to conduct research and develop better technologies and alternatives. In summary, the Convention's obligations entail:

1. Measures to reduce or eliminate the production, use, import and export of POPs;
2. Measures for the identification and appropriate final destination of stocks, products in use that contain or are contaminated by POPs;
3. Measures for the identification, management and final destination of wastes consisting of, containing or contaminated by POPs;
4. Measures to identify areas contaminated with POPs;
5. Measures for the progressive reduction of emissions and the elimination of sources of unintentionally produced POPs;
6. Measures to strengthen and create institutional capacities for the proper management of POPs;
7. Dissemination of information, public awareness and training;
8. Measures to strengthen national analytical capacity and POPs monitoring;
9. Measures to strengthen research, development and innovation in alternative solutions and technologies to the use / release of POPs.

The art. Article 7 of the Convention establishes the obligation for all Parties to draw up their National Implementation Plan for the Stockholm Convention and to forward it to the Conference of the Parties, informing them of the measures and strategies they will take to meet their commitments under the treaty, sustainable development. To assist developing countries in carrying out their national inventories and developing their POPs elimination and reduction action plans, the Stockholm Convention promotes technical assistance and GEF financial support. The country made use of GEF resources and UNIDO support, through an international cooperation project, to undertake all the steps necessary for the elaboration of this NIP.

1.2. **Elaboration of the National Implementation Plan.**

In Cabo Verde, the focal point for the Stockholm Convention is the Ministry of Environment (MAHOT). MAHOT also coordinates the national implementation of the Convention, with the participation of several institutions in the Country, within the scope of their respective competencies.

The development of the NIP had a preparatory phase, through the implementation of a GEF Project Development Facility - Block B (PDF-B), which aimed to gather preliminary information on POPs in the Country and to identify the needs for the development of NIP. Its main result was the proposal for a GEF project for the development of the NIP, whose initial seminar took place on November 30, 2015, in the city of Praia. At the beginning of the development of the NIP, the approach was restricted to the 12 POPs initially listed in the Convention, but with the inclusion of new substances in its annexes, there was a need to insert the substances - called New POPs in project, thus generating an updated NIP.

The process of elaboration of this NIP followed the guidelines of the Guidance for Developing the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (United, Unitar, Unep, 2012) and included the following phases:

Phase 1: Determination of coordination mechanisms and organization of processes;

Phase 2: Development of POPs inventories and analysis of infrastructure and national capacity;

Phase 3: Determination of priorities and objectives;

Phase 4: Formulation of the National Implementation Plan and the specific POPs Action Plans;

Phase 5: Validation of the NIP by the partners.

MAHOT, through the National Directorate of Environment, acted as executing agency of the project, coordinating the preparation of the Plan, using the expertise of its staff of technicians and hiring consultants.

As a way of making NIP development more objective, a National NIP Project Coordinating Group (CNG) was created. This Group was constituted in a consultation mechanism to follow the elaboration of the Plan, being composed by the representatives of DNA, health and industry sectors; and non-governmental representatives from the private sector.

CNG's mission was to articulate with partner sectors, promoting their inclusion in the process of developing the Plan and disseminating the results.

Throughout the process, several institutions and organizations of the Government, the public sector and NGOs collaborated with CNG, in a recognized effort of integration between the actors, in the elaboration of this National Plan. We highlight the participation of the delegations of the Ministry of Rural Development.

In addition to the BCMs, MAHOT held individualized meetings with specific sectors of industry and services, with this approach enabling cooperation and final adjustments in the definition of tangible actions and targets.

Meetings with civil society also allowed them to gather their views and positions, and facilitated the building of a democratic process.

In order to support the preparation of the NIP, the following studies and inventories were conducted, consolidating important information on the situation of POPs in the country:

- a) National Inventory of sources and estimation of emissions of Dioxins and Furans;
- b) National inventory of polychlorinated biphenyls (PCBs);
- c) National Inventory of Persistent Organic Pollutant (POPs) waste stocks used as pesticides and other uses;
- d) National inventory of areas contaminated with Persistent Organic Pollutants (POPs);

- e) National Inventory of New Persistent Organic Pollutants (POP's) for industrial use;
- f) Analysis and revision of the national legislation on Persistent Organic Pollutants (POPs).

A socio-economic study on the implementation of the Stockholm Convention is under development and will be completed by 2015 and therefore in time to support the implementation of this NIP throughout its implementation.

The studies and inventories were developed following the guidelines and methodologies contained in the Convention's guides. From each situation raised in the inventories, the actions and priorities of action were discussed, which comprised five Action Plans:

1. Action Plan for the management of stocks of Persistent Organic Pollutants (POPs) residues used as pesticides and other uses;
2. Action Plan for the management of polychlorinated biphenyls (PCBs);
3. Action Plan for the Management of New Persistent Organic Pollutants (POPs) for industrial use;
4. Action Plan for the management of areas contaminated with Persistent Organic Pollutants (POPs); and
5. Action Plan for the progressive reduction of emissions of Persistent Organic Pollutants from unintentional burning (POPs).

In addition to these Plans, measures were envisaged to:

1. Strengthen the country's institutional capacity and legislative framework for POPs management;
2. Dissemination of information, public awareness and education;
3. Expand national analytical capacity, POPs monitoring; and
4. Promote research, development and innovation.

Each Action Plan comprises the activities and strategies that should be put in place (or are already in place) for the fulfillment of the obligations of the Convention, with execution schedules and appointment of those responsible.

Consolidation of all the information gathered. This National Implementation Plan provides an overview of the management of POPs in Cabo Verde and, based on the situation found and the critical points identified, indicates the main challenges and priorities that should be considered for an effective implementation of the Stockholm Convention in the Country.

As part of the set of actions for the proper management of chemical substances, Cabo Verde, with the development of the National Plan of Implementation of the Stockholm Convention, aims to:

1. Comply with the obligations of the Stockholm Convention;
2. Reduce the risks to human health and the environment from persistent organic pollutants;
3. Contribute to the improvement of the management of chemical substances, broadly structuring governance on the subject;
4. Strengthen and expand the capacities of the country's institutions for the management of chemical substances and the control of pollution;
5. Increase the population's knowledge of the harmful effects and risks associated with the use of chemicals, so that it is also an active part of the management improvement process.

The NIP was agreed upon by national partners and actors through a large consultation and validation of inventories meeting and contains actions to be carried out by various government institutions in their different spheres and others by the private sector. This National Implementation Plan expresses the government's commitment to meeting the obligations specified in the Stockholm Convention and incorporating them into national strategies for improving the management of chemicals.

This NIP is a dynamic document which should be reviewed and updated periodically every 5 years and whenever necessary to reflect the decisions taken by the Conference of the Parties and the Government in the context of the improvement of their national environmental policies.

1.3. Objectives

General

Comply with the provisions of the Stockholm Convention on Persistent Organic Pollutants (POPs), adopting measures to reduce or eliminate emissions of POPs, thus protecting human health and the environment.

Specific

- ✓ Reduce the risks caused by POPs including new POPs to public health and the environment;
- ✓ Ensure the sustainable and rational management of Pesticides and POPs-contaminated sites;
- ✓ Decrease or eliminate emissions of Dioxins and Furans to the environment;
- ✓ Identify, manage and eliminate POPs - Chemicals (PCBs, PFO's and PDBE's etc ...)
- ✓ Ensure analytical capabilities of POPs, which should achieve national and international quality levels;
- ✓ Promote opportunities for public participation, training and information on POPs;
- ✓ Identify and promote research activities on POPs;
- ✓ Implement a system for recording emissions and transfer of contaminants, including POPs.

1.4. Beneficiaries

- ✓ The direct beneficiaries of the implementation of the NIP will be the national community by reducing the health risks from exposure to these chemicals, giving attention to women and indirectly the health system, while reducing expenditure on medical care and treatment. On the other hand, because POPs are bioaccumulative compounds in high-consumption foods, a decrease in release levels will directly benefit consumers' health;

- ✓ The reduction or elimination of POPs will benefit the country's different ecosystems by reducing their presence in water, air, soil, flora and fauna;
- ✓ The export sector corresponds to another beneficiary of the NIP. While reducing or eliminating POPs releases, the country is demonstrating its commitment to the environment and people, increasing confidence in national products, especially agricultural products, consolidating sales and reaching new and demanding foreign markets. Indirectly, other sectors such as tourism could benefit by increasing opportunities for investment in pollution-free areas.

2. SOCIAL AND ECONOMIC CONTEXT OF THE COUNTRY

2.1. Physical and demographic characteristics

Cabo Verde is an archipelagic state, consisting of 10 islands and 13 islets, located 570 kilometres (350 mi) west of the Cape Verde Peninsula in West Africa. The islands are of volcanic origin, relatively small sized, dispersed and are in an area of high meteorological aridity.

According to the IMO (2013), Cabo Verde has about 512,096 inhabitants, mainly concentrated in urban areas (65%) in a proportion of 49.8% men to 50.2% women. The island of Santiago is the most populous, with about (57%) of the total inhabitants, followed by São Vicente (15%) and Santo Antão (9%), within a surface of 4,033 km², resulting in an average population density of 127 hab / km² (2013).

The average life expectancy is 74 years (72 years for men and 76 years for women). Cabo Verde ranks 123rd among 187 countries on the Human Development Index and is within the medium human development category. With an average GDP per capita of approximately US \$ 3700, Cabo Verde left the list of Least Developed Countries of the United Nations in December 2007.

Real GDP growth per capita averaged 7.1% between 2005 and 2008, well above the average for Sub-Saharan Africa and for small island states (World Bank, 2014).

The primary sector that occupies a large part of the employed population (11% in 2010), especially the poorest, represents only about 9% of wealth formation in Cabo Verde.

The poorly developed industry contributes 8.7% of total Gross Value Added (GVA). Cabo Verde's economy is therefore based on the tertiary sector (70% of GVA and almost 53% of the employed population) with tourism being the fastest growing sector. Economic growth is, for the time being, based on public demand and, in recent years, with some direct foreign direct investment (FDI) contribution. Traditionally, remittances from immigrants have a significant influence on the economy and especially on family incomes.

2.2. Political and Administrative organization

The Republic of Cabo Verde is a sovereign, unitary and democratic country, governed by internal laws that safeguard respect for human rights, peace and justice. In addition to its legal system, the State of Cabo Verde is also bound by international conventions and treaties on human rights and the sovereignty of peoples.

The State of Cabo Verde is based on the principles of ideological freedom, political, social, cultural, religious and economic democracy, equality, justice and solidarity. Thus, it assumes itself as a state of law, democratic and secular.

The functioning of the State is governed by a republican and democratic model, which establishes as fundamental principles the unity of the State, the separation and interdependence of the sovereignty institutions, religious neutrality, independence of the courts, existence and autonomy of the local powers and decentralization of public administration.

Political power is exercised by the people through suffrage, referendum, and other constitutionally established forms. The President of the Republic is the supreme representative of the State and is elected by the people. The National Assembly is constituted based on the popular vote and it is the one that designates the Head of Government to be appointed by the President of the Republic.

Administratively, the country is divided into twenty-two municipalities, distributed as follows: May (1), Boavista (1), Brava (1), Sal (1), São Vicente (1), São Nicolau (2), Fogo (3), Santo Antão (3) and Santiago (9). The administration of each municipality is ensured by the City Council (executive body) and by the Municipal Assembly (deliberative body). These two municipal bodies are elected by their respective populations.

2.3. Economic Context

The Cabo Verde economy is fundamentally characterized by the existence of structural weaknesses, which are reflected in the enormous scarcity of natural resources, the great imbalance between the resources generated, the final consumption and the need to produce capital. The shortage of resources is offset by the flow of goods and services of external origin financed by international cooperation in the form of donations and loans and by the transfer of Cabo Verdean emigrants.

The main economic activities relate to the primary sector which still employs a significant part of the active labor force; the tertiary sector (trade in particular) is very dynamic and a major contributor to GDP formation.

Cabo Verde's main social development problem is the persistence of poverty, particularly among women, in a context of unbalanced spatial distribution, worsening in the urban environment, as a result of strong demographic pressure on available resources. Good governance, sound macroeconomic management, trade openness and greater integration into the global economy as well as the adoption of effective social development policies have sustained the development trajectory and in December 2007, Cabo Verde left the list of United Nations Countries Less Developed Countries for Developing Countries.

Per Capita growth in real gross domestic product (GDP) averaged 7.1% between 2005 and 2008, yet the global financial crisis did not leave Cabo Verde unharmed and in 2009 the country experienced a recession and had a modest recovery registering real growth of 4% in 2011. GDP growth was estimated at 0.5% for 2013 and 1% for 2014.

The trade sector is characterized by a strong dynamic of the private sector, formal and informal, in the purchase and resale of all types of goods, with special emphasis on food staples.

Agricultural production is highly unstable and deficient and the country produces only between 10 and 15 percent of the food it consumes, depending on commercial importation and food aid. The needs for heavy goods and equipment and oil products are 100% imported. Services, which account for about 90% of exports, are concentrated in more than 70% of tourism and air transport.

Table 2 - Characterization of the contribution of economic sectors to GDP - Data for 2015

Sectors	Contribution (%)
Agriculture, Silviculture, Livestock and Fisheries	8,5
Manufacturing, Energy and Construction	16,2
Services	75,3

Source: Growth and Poverty Reduction Strategy Paper

2.4. Data on the main sectors of economic activity

2.4.1. Industry

Emissions are largely associated with industrial activities. In Cabo Verde industrial activity is still incipient with 304 units of which 30 emit gases into the atmosphere. According to the IPCC 1996 Guidelines for National Greenhouse Gas Inventories workbook, industries located in Cabo Verde, with the exception of producers of soft drinks and beers, paint manufacturing and ship repair, contribute negligibly to the emission of gases.

2.4.2. Agriculture

The fact that Cabo Verde is located in the Sahelian region makes its agricultural potential weak due to water scarcity. Therefore, the lack of this resource results from a lack of rainfall and remains the main constraint on the development of irrigated agriculture. The type of irrigation practiced in general is by flooding despite a significant improvement in water management through the introduction of the drip irrigation system.

The origin of the water for irrigation is essentially of galleries and alluvial deposits, which arrive at plots by gravity. According to data from the Visão 2015 document used by PAGIRE, it is estimated that, at present, about 60,000 m³ / day is being used to irrigate about 1,600 hectares. Irrigated areas now occupy an area ranging from 1,500 to 2,000 ha, depending on the available resources. The area of potentially irrigable land varies between 2,500 and 3,000 hectares, mainly concentrated in the islands of Santo Antão and Santiago. The predominant culture is sugarcane, particularly in the islands of

Santo Antão and Santiago, occupying between 46 and 80% of irrigable areas, respectively. This culture is almost completely transformed into alcoholic beverages, however, in recent years horticulture has known a remarkable development mainly in Santiago and Santo Antão.

Table 3 - Soil potential and current needs estimate by island

Islands	Area (ha)				Current Needs (m3 / day)
	Irrigated		Irrigable Potential		
S. Antão	910	997	952	1357,1	36400
S. Vicente	56	49	250	250	2240
S. Nicolau	55	72,04	149	149	2200
Sal	2	2	4	4	80
Boavista	4,7	10	16	16	188
Maio	29	8,15	34,96	34,96	1160
S. Tiago	475	658	1209	1209	19000
Fogo	8	12,15	16	77,72	320
Brava	20	10,41	11,25	11,25	800
Total	1559,7	1821,38	2642,21	3109,03	62,388

Source: FAO / MA Visão Irrigation Master Plan, 2025

New agricultural techniques, coupled with new forms of product conservation and the dynamism of the commercial and consumer sector, have driven the emergence of entrepreneurial initiatives linked to agriculture.

2.4.3.Livestock

Similarly to agriculture, the national livestock production is not very significant, with farms predominantly family-owned and consisting mainly of goats, pigs, poultry (mainly chicken) and, on a small scale, cattle and sheep. Industrial exploitation is still insignificant and practically restricted to poultry farming. In rural areas, the sector represents about 25% of the population's income.

Livestock farming contributes about 14% to the product generated by the primary sector and about 2% to the national GDP. Despite this weak contribution, the importance of the livestock sector to the country is significant, considering that it satisfies an important portion of domestic demand for meat and eggs. The production of milk and its by-products remains insufficient for domestic consumption, thus justifying the increasing volume of imports of these products.

2.4.4.Fishery

The Exclusive Economic Zone of Cabo Verde, which encompasses the surrounding ocean, is 734.265 Km². Indeed, in the seas surrounding Cabo Verde there is no lack of richness and variety, although of relatively low density, there are a large number of marine species. The fishing activity was one of the first to be developed today knowing several traditional forms of fishing practiced by natives, and not only in this one of the few natural resources of the Country. The area between the islands of Sal, Boavista and Maio presents greater continental platform, concentrating a great part of the fishing resources of Cabo Verde.

Although it accounts for less than 3% (between 2 and 3%) of the Gross Domestic Product (INE, 2010), the Fishing sector is an important source of income, playing a decisive role in the population's food diet, contributing to the generation of wealth through exports.

According to the Food and Agriculture Organization (FAO-UN) the potentially available resources of the sector is in the order of 26 to 33.000 tons / year. A large part refers to tuna, a migratory species that represents an approximate potential of 25.000 tons of annual catch. Another important source of wealth is pelagic fish with a potential of 4.500 tonnes/year and demersal fishes with 3.500 tonnes/year, better known as deep-sea fish such as grouper, whiting, mullet and redfish.

2.4.5. Tourism

It is one of the sectors that has contributed the most to the economic development of the country, which justifies its classification as one of the strategic axes for the future. In recent years it has experienced a steep growth, with the number of tourists increasing from 13,286 in 2000 to 241,742 in 2006.

However, with the worsening of the global economic crisis, the number of guests in Cabo Verde declined by 17.4% and overnight stays decreased by 4.4% in the third quarter of 2014, compared to the same period last year (INE 2014).

In the face of a growing demand from the external market, the tourism sector has been pushing large projects, especially in the construction sector, which has been putting a heavy pressure on the environmental sector. This has triggered some debate and generated initiatives to find a balance between the needs of the market and the actual national capacities in terms of natural resources. It is in this context that multisectoral approaches emerge, linking tourism with the preservation of the environment, culture and social development.

2.4.6. Transportation

In the road transport sector, there has been a considerable increase in the number of vehicles in circulation. According to data from the General Directorate of Road Transport, 50,734 vehicles were circulating in Cabo Verde until December 2011, compared with 24,077 vehicles in 2001.

As a result of the growing dynamics of the automotive sector and the country's development strategy, the road infrastructure network has seen significant improvements in terms of both extension and quality. In this regard, it is important to highlight the use of asphalt in the coating of the main roads in the country. This innovation has had a direct effect on the importation of bituminous materials whose quantity went from 67,8t in 2000 to 2.868t in 2007, as well as in the inert exploitation.

Air transport is one of the areas of this sector with a strong expression in the Cabo Verdean economic fabric, due not only to its correlation with tourism but also to its role

in intensifying contacts between Cabo Verde residents and the diaspora. It should be noted that emigration represents one of Cabo Verde's strategic development axis, not only because of the weight emigrants have had in GDP, but also because of the investments made by emigrants. It should be noted that the Cabo Verdean diaspora has helped a great deal in the process of integrating the country into the global market.

An important parameter in the assessment of this area of transport is the traffic of aircraft at different airports in the country, including foreign aircraft.

In terms of infrastructure, the country has 4 airports with capacity for long-haul aircraft in the islands of Santiago (Praia), S. Vicente, Sal and Boa Vista, and 3 airports for domestic airplanes on the islands of Maio, Fogo and S. Nicolau.

The administration of the airports is carried out by ASA - Airports and Air Safety, a public limited company. This company assures the management of the cargo terminals and post office, the aeronautical infrastructures and air navigation.

In the field of maritime transport, it is important to emphasize the significance of this sector for the country's economy, since it is one of the main routes for external trade in goods. Currently, Cabo Verde has nine ports, one on each island. Two of the ports, Praia (Santiago) and Mindelo (São Vicente), are international, constituting the main ports of entry and exit of goods.

The activity of administration and economic exploitation of the ports is carried out by ENAPOR - National Company of Ports Administration, a public limited company of public capital. This institutional framework is under review, following the decision to privatize the port operations.

2.5. Energy

In the 90s, the country experienced significant investments in the energy sector, especially in rural electrification, these efforts were pursued by the subsequent governments. Thus, in a market that increased between 2000 and 2015 annual per capita consumption from 330 kWh to nearly 800 kWh, the rate of access to electricity was around 87% of the national population in 2013, benefiting from a coverage ranging from 99 to 100% in the islands of Sal, São Vicente, Boavista, Maio and Brava.

The energy consumed in Cabo Verde consists mainly of petroleum refined products (Liquefied Petroleum Gas (LPG), gasoline, oil, diesel, fuel oil and Jet A1), a secondary source. Only biomass, solar energy and wind energy, weighing about 15% of gross consumption, are considered primary energy. Therefore, the country is heavily

dependent on petroleum products and domestic demand has been large and growing. Equally strong is the demand for wood, firewood, coal and biomass. The latter forms of energy source are of national production.

Programs for the promotion of renewable resources have created a basis for the expansion of these sources and a better equilibrium in the energy balance. Several projects of renewable energy production were carried out aiming at increasing the capacity of renewable energy production. Cabo Verde today has more than 30 MW of renewable power installed. Currently the state, private companies and individuals install photovoltaic panels as well as windmills.

A number of players exist regarding the energy sector, within a commercial energy supply and demand system in the oil sector, dominated by the Shell/Vivo Energy (multinational Shell subsidiary) and Enacol (national) fuel companies. There is a large intervener which is the private company ELECTRA in addition to several other operators, including hotel units.

Cabo Verde seeks sustainable solutions in terms of energy use. In this sense, the government encourages companies to create e.g. alternatives for the recycling of waste oils to meet the energy demand. The non-commercial system is made up of the collection and use of firewood, charcoal and other materials.

2.6. Environmental Sector

Due to its geographic location and being archipelagic, Cabo Verde is subject to diverse influences that determine the behavior of environmental variables.

Being located in a region strongly influenced by the Sahara desert, the archipelago presents an arid climate with precipitations hardly distributed in space and time, being the average annual rainfall not exceeding 300 mm (millimeters) and exposed to the trade winds, the precipitation can be greater than 700 mm. These climatic factors have repercussions not only on agriculture, but also on water supply to populations and the demographic distribution, and are the basis of development imbalances between different regions of the country.

2.6.1. Soils

As the islands of volcanic origin, the soils present a varied composition, emphasizing basaltic forms, phonoliths, slag, tufts, andesites, trachytes and sedimentary rocks, mainly limestone.

In general, the soils are characterized by climatic factors and the topographic conditions of the regions. They are mostly skeletal and poor in organic matter. The islands of Sal, Boa Vista and Maio have areas of saline soil, and therefore have salt extraction units in these regions. These islands are still characterized by large stretches of dunes, as well as surface limestone areas of alluvial origin. In most of the islands there are soils rich in humus and favorable to the practice of agriculture.

Soil nature and relief are determining factors in the distribution of agricultural areas. Only 10% of the land is potentially arable. Of this share, about 95% has been used in rainfed agriculture and the remaining 5% in irrigated agriculture.

The effects of the great pressure of the population on the soil have as consequence its degradation by erosion. It is estimated that soil loss per year is around 7.8t / ha (hectares) under traditional agriculture (corn and beans). To aggravate the scenario, the soils are still subject to strong water and wind erosion, as well as intense exploitation for the construction sector. In this way, physical factors, of an essentially mechanical nature, are the main cause of soil degradation and one of the main environmental problems of concern to the country. Remediation measures include reforestation, the construction of terraces, dikes and other forms of physical protection. Thus, more than 32.2 million plant specimens have been planted and thousands of kilometers of anti-erosive infrastructure have been built in the last decades. In addition, legislative measures have been adopted to regulate the use and exploitation of soils.

2.6.2. Chemical Soil Contamination

Industries and the use of fertilizers and pesticides are the main responsables for chemical soil contamination. The most at risk regions are urban areas, the immediate vicinity of industrial facilities, intensive farming areas, ports, fuel storage facilities and car service stations (including repair shops). The main route of soil contamination in the non-agricultural regions is the dumping of waste without proper treatment. Contaminants

contained in these wastes include: plastic materials and tires, corrosive products, metals, heavy oils and detergents, among others.

2.6.3. Water

Water resources are one of the limiting factors to the country's economic growth due to its low availability. The decrease in rainfall has contributed to an accelerated reduction of the level of the water tables and the flow of springs, water wells and other water points. The water deficit has significantly limited the development of activities linked to agriculture and livestock farming, creating serious obstacles to water access by significant sections of the population, including the rural population. The same effect is felt in the industrial sector.

Considering the interconnection between poverty and quantity / quality of available water, measures have been taken to reduce the effects of water scarcity and to promote its rational use. Thus, educational actions and legislative measures were taken, such as the creation of Decree-Law no. 7/2004 of 23 February, which establishes the standards for the discharge of wastewater and Decree-Law 8/2004, of 23 February, which defines water quality criteria, standards and classification. Within this set of measures, it is also important to mention the adoption of seawater desalination systems for water consumption in the larger urban centers such as Praia, Mindelo and Sal.

2.6.4. Air

In Cabo Verde, air quality is determined mainly by atmospheric conditions derived from the winds coming from the Sahara region, in addition to the contribution of sea breeze. However, anthropogenic influences deserve attention given the diversity and intensity of activities potentially polluting the atmospheric environment, particularly in the field of road transport.

Natural pollution from dust from the Sahara has been increasing in intensity and duration in recent years. In the 1980s, this phenomenon was confined to the months of December and January, but during the 90s until the present there has been a gradual extension and worsening of the situation until the middle of March. maritime and air navigation, as well as problems in public health.

The main anthropogenic sources of air pollution in Cabo Verde appear to be fossil fuel combustion, predominantly in the transport sector, and the open air waste burning in

areas of high human concentration, especially in urban centers. However, activities related to the construction sector, namely the stone quarry crushing industry and the use of cement, can not be ignored.[1]

Petroleum based fuels are of particular importance in assessing air quality in Cabo Verde as well as in any country, given the rapid growth in the transport sector, particularly the car sector, and increasing energy demand driven by growth. Fossil fuels accounted for 65% and wood fuel emissions accounted for 35% of total atmospheric emissions. Wood fuel and biomass consumption accounted for 98% of methane emissions, while fossil fuels accounted for 67% of nitrogen oxides emissions.

Some measures to control air pollution have been implemented, notably the ban on imports of leaded gasoline; the definition of the national air protection system (Decree Law no. 5/2003, of March 31); the establishment of requirements for the disposal of industrial solid urban waste, as well as its supervision (Decree Law no. 56/2015 of 17 October), in addition to other sectoral measures that have an indirect relation air quality.

3. NATIONAL POLICY FOR THE FOUNDATION OF THE PLAN

Cabo Verde has no policy addressing the specific issue of POPs. Nevertheless, there are national priorities in the context of larger development objectives, such as sustainable development, biodiversity conservation, agricultural development, food security, etc. under which a policy can be developed.

In this context, the plan structuring will be based on existing policies for the various sectors, particularly in the sectors of Environment, Public health, Agriculture and Fishing.

In this chapter, some national plans and policy instruments are presented that may be appropriate to enable this implementation.

3.1. National Plans and Strategies

3.1.1. The CRCV - Constitution of the Republic of Cabo Verde

The article 72 CRCV enshrines the Right to the Environment as a fundamental right, in which "everyone has the right to a healthy and ecologically balanced environment and the duty to defend and value it". And the same provision goes on: "In order to guarantee the right to the environment, it is incumbent on the public authorities:

- a) Develop and implement appropriate policies for territory planning, protection and preservation of the environment and promotion of the rational use of all natural resources, safeguarding their capacity for renewal and ecological stability;
- b) Promote environmental education, respect for environmental values, the fight against desertification and the effects of drought ".

Reflecting the importance of protecting and preserving the environment, Article 90 CRCV, which refers to the general principles of economic organization, states that *"the exploitation of the country's wealth and economic resources, whatever the ownership and the ways in which it is reviewed, is subordinate to the general interest, "adding that" economic activities must be carried out with a view to preserving the ecosystem, the sustainability of development and the balance of relations between man and the environment. "*

Also important is Article 7 CRCV that integrates in the public domain:

- (i) "Inland waters, archipelagic waters, the territorial sea, its beds and subsoil, as well as the rights of jurisdiction over the continental shelf and the exclusive economic zone, and all living and nonliving resources in such areas"; "... groundwater ...";
- (ii) "The beaches...";
- (iii) "... the coastline, defined in accordance with the law, which should receive special attention and protection".

On the other hand, "everyone has the right to enjoyment and cultural creation, as well as the duty to preserve, defend and enhance cultural heritage". In order to guarantee the right to culture, regarding to the environment, the CRCV is especially responsible for the State "to promote the safeguarding and enhancement of cultural, historical and architectural heritage" (article 78 CRCV).

In the field of the exercise of legislative power, the Constitution gave the environmental matter a special protection. Accordingly, pursuant to Article 176 CRCV, it is the exclusive responsibility of the National Assembly to make laws on the following matters:

- (i) Definition of public property;
- (ii) Planning system, land use planning, and the preparation and presentation of development Plans;
- (iii) Bases for the nature protection system;

3.1.2.PANA II - Second National Action Plan for the Environment.

PANA II is a comprehensive and multidisciplinary strategic document, prepared with the participation and involvement of all sectors, reflecting the strong interrelation of environmental issues in economic, social and political sectors and their direct and indirect implication in the fragile natural ecosystem of Cabo Verde as a Small Island State in Development. PANA II, with a 10-year horizon (2004-2014), provided the country with a strategy that promotes the rational use of natural resources and the sustainable management of economic activities.

More specifically, the PANA II objectives are:

- (i)** Defining the main policy guidelines for the sustainable management of the environment and natural resources;
- (ii)** Identify opportunities and establish environmental priorities;
- (iii)** Identify interventions that facilitate the effective and efficient use of natural resources;
- (iv)** Define the institutional framework and the necessary mechanisms for intersectoral coordination;
- (v)** Promote the integration of environmental concerns into socio-economic development planning; and
- (vi)** To promote the improvement of the living conditions of the population.

PANA II follows the strategic PANA (2002), which aimed to facilitate the integration of the main environmental concerns into the National Development Plan (NDP) (2001-2005).

In the context of the PANA (2002), Cape Verde's environmental policy in the long term expresses the need to raise awareness of the role of society in addressing the challenges of the environment for sustainable economic and social development, its role in future generations, and the need to determine the use of natural resources in a durable way.

The Ministry of Environment and Agriculture and Fisheries (at the time of the elaboration of this document) structured the PANA II into four branches, with close interactions in the whole process: nine PAIS - Environmental Intersectoral Plans- which include the concerns and plans of all ministries and agencies involved in environmental issues: Water Resources, Biodiversity, Agriculture, Forestry and Livestock, Land Use Planning, Health, Tourism, Energy, Industry and Commerce, Fisheries and Education;

twenty two PAM - Municipal Environmental Plans; seven Thematic Studies and one Institutional Analysis.

It should be noted that the PAIS - Biodiversity absorbed ENPA-DB - “National Strategy and Plan of Action on Biodiversity”, was elaborated in 1999, as a tool for the coordination, follow-up and evaluation of all actions in the field of conservation and sustainable use of biodiversity.

The PAIS - Biodiversity choose as vision "A country with a Biodiversity in harmony, viable in meeting the needs of sustainable economic and social development of the current and future generations", a vision that fits the objectives of the National Development Plan of the GOP - Major Plan Options - 2001-2006, as well as the Global Biodiversity Conservation Strategy and Agenda 21 on Sustainable Development.

3.1.3. Development Strategy and Plan of Action for the Agricultural Sector

With technical and financial assistance from the Food and Agriculture Organization of the United Nations, the Government has developed a long-term agricultural development strategy (2015 horizon) and a medium-term priority action plan (2008 horizon). The strategy for the next 10 years should make it possible to reorient and consolidate a new agriculture, capable of simultaneously ensuring: (i) sustainable management of natural resources, (ii) intensifying, diversifying and valuing agricultural and fishery production, and (iii) promotion of income-generating rural activities, including rural tourism.

Within the framework of the strategic axes defined by the Government in the GOP / PND - Major Plan Options / National Development Plan - on the contribution of the rural sector in the fight against poverty, food security and environmental enhancement, the overall objective for development shall aim to:

"A sustainable rural development, based on the integrated and participatory valorization of the specific natural resources of the ZAE - Agro Ecological Zones and in the reinforcement of local human capital, and socioeconomics, to optimize the productive capacities, aiming to improve the conditions of sustainable existence of the rural populations.

Strategies used to promote an integrated approach to development include: participatory and sustainable management of available natural resources and strengthening the

resilience of production systems to shocks; participation and accountability of populations; the integrated development of farming systems, adapted to the ecological conditions of the ZAE; the integrated exploitation of the resources available in the country's EEZ; the practice of adapted technological options in a participatory way in the local production systems, for the intensification, diversification and valorization of agricultural production, fishing and aquaculture activities; strengthening human and social capital; the improvement of socio-economic balance; the sustainable economic valuation of natural resources and production; strengthening physical resources to support sustainable resource management; the redefinition of the role and functions of the different rural development partners; and the implementation of a policy of access to land and socio-economic resources.

ENSA - National Food Security Strategy - 2015

The National Food Security Strategy - 2015 (ENSA) is an instrument that is inspired by the strategic guidelines of the Government GOP, to diminish poverty. The Government proposes as a mission to make the Cape Verdeans reach a level of economic income and quality of life that values human dignity. Thus, two important strategies in the GOP are: (i) integrating food security into growth strategies and policies, and (ii) integrating food security management into a strategy to fight poverty and reduce inequalities.

ENSA's objective, which falls within the Government's overall goal for food security, is to: "Ensure permanent access for the population to sufficient, healthy and nutritious food, without prejudice to other basic needs."

This objective has 6 specific objectives, namely: (i) Ensuring food availability and stability in supplying central and peripheral markets; (ii) Promote the sustainable development of the national agrifood system; (iii) pursue policies and strategies for poverty eradication; (iv) Improve crisis prevention and management arrangements; (v) Strengthen the institutional capacity of stakeholders and consolidate mechanisms for food security management; and (vi) Promote sanitary security and food and water quality, in order to protect public health and the consumer.

3.2. National legal instruments that can have some impact

To date, there is no specific approved legislation in Cabo Verde regarding this sector. However, there are several regulations covering different sectors, namely agriculture, health and the environment, which are somehow related to the issue. The existing

regulatory framework includes regulations on import of pesticides, plant quarantine and phytosanitary inspection, import and food safety, animal health, waste collection and disposal, environmental impact assessment and licensing of commercial activities. In this context, some existing instruments that could be adapted for the purpose are presented here.

3.2.1.Regulation on Phytosanitary Inspection and Plant Quarantine

This Regulation was approved by Legislative Decree No. 9/97 of May 8 and establishes the system of sanctions of the vegetal protection regime, being implemented by the MDR, through the DSAP Directorate of Agriculture and Livestock - of the DGADR - Directorate-General for Agriculture and Rural Development. This legal instrument regulates the importation and exportation of plants and plant products (eg seeds, fruits, plants, flowers, etc.), regardless of the purpose for which they are intended, in order to prevent the entry and spread of pests and diseases, in particularly those bodies that are subject to quarantine. The DGADR supervises this work through its phytosanitary inspectors. Importation of specimens and products of plant origin is subject to prior authorization by the DGADR. The existing phytosanitary inspection framework should be strengthened, trained and used as the basis for establishing a more comprehensive surveillance system.

3.2.2.Regulation on animal health

This regulation was approved through Decree-Law 63/89 of September 14 and establishes the bases of the legislation on animals and livestock, being implemented by the MDR through the DSAP of the DGADR.

The Regulation establishes conditions for the internal movement, import, export and transit of animals and animal products, in order to prevent the introduction and spread of animal diseases.

3.2.3.Basic law of the environment policy

This law, (Decree-Law 86 / IV / 1993 of June 26, is supervised by MAHOT through DNA - National Environmental Directorate.) It establishes a legal base for the management and sustainable use of the environment and its components (air, light, water, soil, subsoil, flora and fauna). This law contains provisions directly related to the

conservation of biological diversity through the prohibition of all activities that may adversely affect the conservation, reproduction, quality and quantity of biological resources, especially those under threat.

From the abovementioned analysis of the law and its adequacy with the Stockholm Convention, we have to say that, while establishing the major principles of environmental protection, it does not establish the precautionary principle, the pillar principle of the Convention. Opportunities open with Article 23 which stipulates that the government should legislate specifically on chemical products as well as establish standards, among others, regarding the biodegradation of detergents, conditioning and labeling of pesticides, solvents, paints, varnishes and toxic products.

Article 23° also establishes that the fight against pollution as a result of the use of compounds in the scope of the environmental protection is carried out through a systematic evaluation of the potential effects of chemical compounds on man and the environment, manufacturing control, commercialization, use and disposal of chemicals. Decree-Law n° 56/20015 establishes the general regime applicable to the prevention, production and management of waste and approves the legal regime for the licensing and concession of waste management operations.

The instrument defines the measures which, from the point of view of integrated product policy, are designed to prevent or reduce waste production, their harmful and adverse impacts from the production and management of said products. It also lays down the essential requirements for the composition of packaging, in particular the concentration levels of heavy metals in packages, and the principles and standards applicable to the management of packaging, in order to prevent the production of such waste, by reducing and reuse packaging waste.

The law also establishes the legal regime for the waste landfill, the general requirements to be met in the concession, construction, operation, closure and post - closure of landfills, including the specific technical characteristics for each class of landfill. It also lays down the rules applicable to waste management, operation of the waste information system, the rules governing animal carcass collection system, in particular those relating to operation and financing. It also deals with waste management administrative offenses.

Considering that the emission of dioxins and furans in Cabo Verde is mainly related to waste management activities, and that it shows to be deficient, it can be inferred that

with the effective application of this decree, the emission of these compounds will be solved, at least in part.

3.2.4.Regulation on Environmental Impact Assessment

This regulation was approved by Decree-Law no. 29/2006, repealing Legislative Decree 14/97. The authority of EIA - Environmental Impact Assessment - is the DGA, responsible for the area of the environment. The regulation establishes the legal framework of the EIA on public or private projects that are likely to have an effect on the environment. The EIA addresses the direct and indirect effects of the projects on the following factors: man, fauna and flora; the soil and the subsoil; water, air and light; the climate and the landscape; material goods, natural and cultural heritage; and the interaction of all these factors.

3.2.5.Law on crimes against public health

This law is supervised by ARFA - Regulatory Agency for Pharmaceutical and Food Products - and establishes mechanisms to combat infractions against public health. The law applies to pharmaceuticals, food and food derivatives, including natural or artificial, intended for human consumption, beverages and spices.

3.2.6.Other instruments

Existing instruments that could be adapted to include the NIP are, among others:

Decree-Law no. 50/2003 of November 24, which defines the legal regime of the commerce sector. According to the instrument, the sector is governed by three principles that would be of particular importance to the issue: promotion of consumer safety; safeguarding and protecting the environment; and respect for international agreements.

Decree-Law No. 51/2003 of November 24, which regulates the legal frame for foreign trade. It does not refer to biosafety measures but could be adapted in order to take advantage of the existing law.

Order No. 6/2001 of February 1, approving the regulation of phytosanitary standards applicable to the production and placing on the market of fishery products intended for human consumption;

Decree-Law No. 26/97 of March 24 that regulates the marketing and use of phytosanitary protection products. The importation of such products is subject to prior authorization by the DGASP;

Decree-Law No. 32/2003 of 1 September, 84/2005 of 19 December and 86/2005 of December 19, which define and establish and regulate the characteristics of the commercial importation, packaging, methods of analysis, labeling and control of rice, wheat, maize and sugar, respectively.

Decree-Law No 18/98 of 27 April, which defines the powers of the competent authority for the phytosanitary inspection and quality control of fishery products. This competence is attributed to DGP - General Directorate of Fisheries.

Decree-Law No. 108/89 of the Industrial Statute, defines that industrial projects must be previously declared to the Ministry of Economy and Competitiveness, except for small projects. The start-up of industrial projects is subject to the inspection of the Ministry of Economy and Competitiveness, to verify the safety, hygiene and health conditions and compliance with the required technical standards.

3.3. Relevant International agreements and Treaties

3.3.1.CDB - Convention on Biological Diversity

This Convention is under the auspices of the United Nations and aims to conserve and promote the sustainable use of biological diversity.

3.3.2.Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs), based on Principle 15 of the Rio Declaration on Environment and Sustainable Development, has as its primary objective the protection of human health and the environment against the harmful and deleterious effects of POPs. The above-mentioned Convention provides for sound international cooperation in controlling the use, consumption, production, marketing and release of twelve (12) chemicals that the international scientific community has chosen to be highly dangerous.

These are chemical substances which, having certain toxic properties, resist, in contrast to other pollutants, to degradation, which makes them particularly harmful to human health and the environment. POPs bioaccumulate in living organisms and propagate through air, water and migratory species, thus affecting terrestrial and aquatic

ecosystems. The problem is therefore cross-border, making action at international level indispensable.

Article 3 of the Stockholm Convention provides for the cessation of import and export of prohibited POPs. Chemicals classified as POPs may, however, still be imported under certain circumstances, namely:

- Viewing an environmentally sound disposal of existing POPs (waste disposal, etc).
- Substances whose production and use are authorized under a derogation.
- Regarding exportation, the following shall be authorized:
- Viewing an environmentally sound disposal of existing POPs (waste disposal, etc).
- For a Party to which the Convention grants a derogation with respect to the use of a substance.
- For a non-signatory State of the Convention.

In the latter case, the importing State shall provide an annual certification to the exporting Party specifying, among other issues, the intended use of the chemical and comprising a declaration by which the State concerned is primarily committed to protecting human health and the environment by reducing or by making an estimation of the waste, and to take measures relating to waste management, including those which ensure the irreversible disposal of the POPs.

The present Convention also aims to reduce and eliminate unintentional production and release of POPs, and to this end, the parties must draw up a national action plan. The latter is part of the main action plan implementing the Convention as provided for in Article 7 of the Stockholm Convention. The plan shall provide for an assessment of discharges, an assessment of the effectiveness of existing legislation and discharge management policies and the development of strategies to accomplish the objectives of the Convention.

It is important to encourage the development and use of altered or substitute materials, products and procedures to prevent the unintentional production of POPs. The Convention includes general directives on best available techniques and best environmental practices for the prevention or reduction of discharges. It also provides for measures to reduce or eliminate discharges containing POPs from waste.

The Convention allows for certain derogations from the elimination / limitation of the production or use of these substances and consequently the rules on imports and exports. The derogations which may be provided for are specific to each product considered to be POPs and, where appropriate, specified in the Annexes to the Convention.

In order to fulfill their obligations under the Convention, the Parties shall prepare a plan of action and transmit it to the Conference. In order to facilitate the exchange of information, each party shall designate a national correspondent. As POPs represent a cross-border problem, the parties are encouraged to cooperate at various levels to facilitate the design, implementation and updating of their implementation plans, including at regional or sub regional level. Cape Verde is starting the process of elaborating the Action Plan for the Implementation of the Stockholm Convention financed by the GEF - Global Environment Facility.

It is also important to monitor the development of POPs in relation to the environment and public health, as well as to encourage research and development.

The attempts of the Stockholm Convention, and the protection of the Environment are safeguarded in the Cape Verde legal system.

3.3.3.MARPOL 73/78 - International Convention for the Prevention of Pollution from Ships

This Convention was ratified by Decree-Law no. 25/8 of July 10. Its objective is to combat pollution from commercial exploitation of ships, including discharges of wash water and ballast into the sea and ports. For this Convention, amendments are being made to the extension of its scope and to the creation of contingency plans for oil pollution. The review will require the construction of ships with double hull and deck design of medium height, in order to mitigate the spills in case of accidents.

Certificates shall be issued by the competent national bodies of each Party in accordance with the regulations contained in the five Annexes to the Convention which shall cover, respectively, pollution prevention areas for oils, toxic liquid substances, packaged substances or containers and portable tanks , waste water from ships and ship-generated waste.

3.3.4.IMO - International Maritime Organization

It represents an intergovernmental organization that develops several actions related to the protection of marine fauna and flora, as well as the safeguarding of human life (Decree-Law no. 14 / V / 96 of June 26).

3.3.5. United Nations Convention on the Law of the Sea

It has been in force since 03 August 1987 and provides for the protection and preservation of the marine environment. It provides intervention mechanisms of coastal authorities and flag States. With Decree-Law No. 7/96 of December 10, Cabo Verde also acceded to the International Convention on Civil Liability for Oil Pollution Damage.

By Order No. 1-F / 91 of January 25, it was established a set of national rules to be observed by industrial companies that transport, store, handle, treat and evacuate toxic or dangerous products that could cause damage or present risks to workers, populations, the environment or the industrial facilities themselves and neighboring buildings.

It was also established that it is incumbent upon the Coast Guard to "Prevent, control and combat pollution of the marine environment, in collaboration with other authorities, and to patrol waters and airspace under national jurisdiction, including the Exclusive Economic Zone" (Decree-Law no. 14/97 of 1 July).

3.3.6. Basel Convention and Control of Transboundary Movements of Hazardous Wastes and Their Disposal

The country acceded to this Convention in 1995 and ratified it in 2002, but efforts have been made to develop the management tools for its implementation.

3.3.7. Municipal Posture Codes

The Municipalities in Cape Verde, within the limits of their attributions, are responsible for legislating through municipal regulations, one of which is the waste management. The said waste management is of the responsibility of the Municipal sanitation sector. The supervision is carried out with the support of the municipal guard.

3.3.8. The Law of Import, Commercialization and the use of phytosanitary products

Regarding the legal framework related to phytosanitary products, however, we highlight the regulation of imports, marketing and use of phytosanitary products (Decree-Law no. 26/97, of March 20) and the rules to be observed by industrial companies that transport,

store, handle, treat and dispose toxic or dangerous products. In the meantime, we believe that the scheme does not safeguard the objectives and targets advocated under the Stockholm Convention.

3.3.9. Common Rules for Member States of the CILSS - Inter-State Permanent Committee to Combat Drought in the Sahel, on Pesticide Approval

From the analysis of the Common Regulation (No. 8/34 / CM / 99), we must say that it is in line with and in conformity with the Stockholm Convention, since it reflects the major principles of environmental protection and public health. The regulation takes into account the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. In general, Articles 1, 3, 4, and 5 (CILSS, among others, regulate the rules to be observed, regarding the authorization, commercialization, use and control of active substances and formulations of pesticides in the member states). However, in our humble opinion, we believe that the Common Regulations do not safeguard the objectives and targets set out in the Stockholm Convention.

3.3.10. The Rotterdam Convention

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, is intended to give importing countries the power to decide which chemicals to enter and circulate in the country. The Convention deals with the problems of banned or strictly regulated chemical substances and pesticides in the producer countries and the whole problem of the export of these products to the developing countries. The Convention also safeguards the principle of the protection of the environment and human health. Five industrial chemicals and 24 pesticides were covered by this Convention. However it is hoped a few others will soon become part of this list.

3.3.11. The FAO Code of Conduct on the Distribution and Use of Pesticides

This Code of Conduct was adopted at the FAO Conference in 1985, and in 1990 it was modified due to the introduction of the Information System provisions and Prior Informed Consent. The Code establishes the joint responsibilities of all members of society: governments, industry, trade, national and international institutions and pesticide users in general, with the purpose of a joint collaboration to ensure that the

benefits resulting from the use of pesticides do not endanger the human health and environment. The Code should serve as a basis for the drafting of national laws on pesticide issues of any member country (for the authorization, marketing, use and control of active substances and pesticide formulations).

3.3.12. Cartagena Protocol on Biosafety

This Protocol is under the auspices of the CBD and aims to ensure an adequate level of protection in the field of transfer, handling and safe use of GMOs - genetically modified organisms - from modern biotechnology. Cape Verde is a member of the protocol, which was ratified in November 2005 and entered into force in January 2006.

INIDA - The National Institute for Agricultural Research and Development of Cape Verde is the focal point for this Protocol.

3.3.13. Codex alimentarius

This is a non-binding international code of conduct under the authority of the Codex Alimentarius Committee. The aim of the Codex Alimentarius is to develop technical standards, general principles, and recommend the code of conduct for food safety and related issues. Cape Verde joined the Codex Alimentarius in 1981 and, until very recently, the DGASP was its entry point. After the creation of the ARFA, this agency has become the focal point of the Codex.

3.3.14. Agreements within the WTO framework include: the SPS - Sanitary and Phytosanitary Agreement - and the IPPC - International Plant Protection Convention.

The SPS Agreement applies to every sanitary and phytosanitary measures which may, directly or indirectly, affect international trade. The political objective is to protect the life, or public, animal and plant health from risks arising from diseases, pests or contaminants within the territory. The country is in the process of preparing for ratification of the agreement.

The IPPC, for its part, is a treaty under the auspices of the FAO adopted in 1951 (amended in 1979 and revised in 1997). Cape Verde acceded to the Convention in 1980 and deposited its instrument of acceptance of the new text in 2004 (revision of the text in 1997). The objective of this treaty is to ensure a common and effective action to prevent the introduction and dissemination of pests and diseases of plants and plant

products. The IPPC allows parties to take phytosanitary measures to prevent the introduction and spread of pests and diseases based on their risk analysis. Standards and technical standards are considered consistent with the Sanitary and Phytosanitary Agreement under the GATS - General Agreement on Tariffs and Trade - the DGADR is the entry point for this Convention.

International standards for IPPC (plant health), OIE - International Organization for Epizootics (Animal Health and Zoonoses) and Codex Alimentarius should be consistent with the relevant GATS provisions.

4. SITUATION OF POPs IN CAPE VERDE: POPs OF ANNEXES A AND B

This topic presents, in accordance with the Convention, the situation of the production, uses and external trade of the POPs of Annexes A and B, as well as the measures adopted by the country for the identification and final destination of the stock and waste of these POPs.

Summary of obligations under the Convention:

Art. 3°. Production, uses and foreign trade:

Paragraph 1 The Parties shall:

a) Prohibit and / or adopt such legal and administrative measures as may be necessary to:

(i) to eliminate the production and use of Annex A substances;

(ii) to eliminate the import and export of Annex A substances, subject to the exceptions in paragraph 2;

b) to restrict the production and use of the chemicals listed in the Annex respecting acceptable purposes.

Paragraph 2 Imports and exports allowed only in the cases: (a) of specific exceptions in force and approved acceptable purposes; (b) environmentally sound disposal; and (c) to non-Party countries, fulfilling requirements.

Art. 6°. Stocks and waste: Paragraph 1. The Parties shall:

a) Develop and implement strategies to identify:

- stocks consisting of or containing the SOPs of Annexes A and B;

- Products in use;

- waste consisting of, containing or contaminated with the Annex A, B or C POPs;
- b) Manage inventories in a safe, efficient and environmentally sound manner;*
- c) Do not allow recovery, recycling, regeneration, direct use or alternative uses of POPs, except for the recycling of products containing c-OctaBDEs and c-PentaBDEs;*
- d) Do not transport the waste through international borders, without taking into account international rules.*

4.1. POPs of the Pesticides use group and other related uses

The management of pesticides in Cape Verde is a subject which, from an early stage, received particular attention from the national authorities. So much so that the first legal framework after national independence (1975) dates from 1980, e.g. Decree-Law No. 114/80 of December 31.

This instrument was in force until 1997 when it was replaced by Decree-Law No. 26/97 of May 20, and is still in force today. In both cases the Ministry of Agriculture had a decisive power over pesticides that should be used in Cape Verde.

Firstly, during the validity of Decree-Law No. 114/80 of December 31, because all importation and marketing were carried out exclusively by the State. These missions were entrusted to the Fomento Agro-Pecuário - Public Company (FAP - EP), a agriculture-livestock development company, created for this purpose.

Secondly, with the publication of Decree-Law no. 26/97 of 20 May, the responsibility for importing and marketing pesticides was transferred to the private sector, with the Ministry of Agriculture having the responsibility of establishing the positive list of pesticides, authorize importation and marketing, sensitize, assist and empower farmers on the judicious use of pesticides and the risks they pose to human health in particular and to the environment in general, etc.

Thus, by 1995, all imports of pesticides for agricultural use were guaranteed by the State. This situation changed with the appearance of specialized companies in the area of agriculture, being the most relevant: *Agro-Center and Agroproductos*.

At this moment all the importation and commercialization of pesticides are carried out by private firms duly authorized for this purpose, three of which are based in the city of

Praia, island of Santiago, with representations in other parts of the national territory and one based in the city of Mindelo in S. Vicente.

The State has still been and continues to be a major consumer of pesticides, if not the largest, since up to the present it is responsible annually for the activities of the phytosanitary campaigns against the main pests of pluvial crops, namely: pest grasshopper, green bug , the legionary caterpillar, the thousand-feet, etc.

During the invasion of the desert grasshopper, such as in 1989 and 2004, the State has received donations of pesticides in significant quantities.

Some pesticides today being on the list of POPs pesticides have been used in agriculture in Cape Verde in the past. DDT and Lindane can be cited as examples, the latter being still used in 1980 for grasshopper control.

The table below illustrates the main pesticides used in Cape Verde in 1980.

Table 4- Most used pesticides in 1980

Pesticides	Quantity
Lindane 3%	130 t
Undene 1%	35 t
Folithion 50 & Abrothion 50	8000 l
Perfektion L40	3000 l
DDT 75% WP (*)	7 t
* Fight against malaria vector	

This table shows that in 1980, the pesticide most commonly used to control locusts in Cape Verde was Lindane 3%, a pesticide that is now part of the updated list of POP pesticides.

In the Health sector, DDT was used for a much longer time in mosquito vector control of malaria. To hold that DDT is the only one of the current fifteen POPs pesticides which is part of Annex B to the Convention.

Unfortunately, we do not have accurate data on how many of the current POPs pesticides have been used and their locations. However, from the pesticide residue analysis carried out in 2012 on some products, found DDT residues in the form of DDD, op; DDE, pp, which effectively proves that in the past such pesticide was used in Cape Verde.

From the mid-1980s, the Ministry of Agriculture, with the support of international partners, carried out integrated fighting experiments against the main plagues in Cape Verdean agriculture, privileging, integrated crop protection instead of merely a chemical struggle.

This is how the first biological pesticides, based on the *Helicoverpa armigera* nuclear polyhedrosis virus and based on *Bacillus thuringiensis*, were tested and then included in the list of authorized pesticides in Cape Verde.

At that same time, several experiments of classic biological fight have taken place, many with positive results. As an example, pesticides on sugarcane cultivation in Cape Verde are not yet applied today because the natural enemy introduced at that time was the microhomatoptera of the family Eulophidae, *Pediobius furvus*, to control the sugarcane borer, *Sesamia nonagrioides*, was a success. Even today, the population of the sugarcane borer hardly reaches a population level that justifies additional measures of control. Several other examples of classical biological control exist in Cape Verde thanks to the work developed by the National Institute for Agricultural Research and Development (INIDA).

The situation has evolved quite a lot. Suffice to compare the pesticides most used in 1980 with the last lists of authorized pesticides in Cape Verde. Attached is the lists of 1997, 2009 and 2012, annexes i, ii and iii respectively.

For example, the list currently in force (as of February 2012), contains six biological pesticides (commercial formulations) including one for the control of grasshoppers, the country's most important crop plague and wild grasses; a natural pesticide based on *neem*; two growth deregulators and a selective, in addition to a set of other chemical pesticides but of equally low toxicity.

Currently, no POPs pesticide is part of the list of authorized pesticides in Cape Verde and, as a consequence, cannot be imported or used in the country. Not even DDT, a pesticide which is part of Annex B to the Convention and whose use under certain conditions is authorized by the World Health Organization (WHO), is no longer imported and used in Cape Verde by the Ministry of Health.

4.1.1. Inventory of POPs stocks and wastes from the Pesticides use group and other related uses

Obsolete pesticides are pesticides that cannot be used for legal or technical reasons. This may lead to a ban on the use if: the degraded physical and chemical form (automatically leads to the ineffectiveness of the product as a pesticide); the product's validity has expired; the product is no longer necessary; not identified (e.g. no label identification, including in foreign languages); not conforming to local regulations (.eg. wrong package) or that the formulation is inadequate (e.g. cannot be used with the available application equipment).

The inventory result showed that obsolete pesticides were stored in sixteen different locations, on nine islands in the country. The total quantity of these products was: Obsolete pesticides 57,08 tons; product-related debris including 10,7 ton containers and 12 ton of contaminated soils. Among the commercial names of obsolete products are the following: **Fenitrothion, Dipterex, DDVP, Agrotron, Perfektion, Volatile UM (300 ULV), Elcar**, among others.

Table 5- Type and quantities of obsolete pesticides and other materials collected by SAVA.

Type of pesticides	Weight (ton.)
Pesticides, liquid, flammable, toxic	3,197
Organochlorine, solid, toxic (lindane)	8,26
Pesticide, solid, toxic	21,55
Other Pesticides	23,65
Remains related to products	10,658

Contaminated soil	11,64
Total	78,955

A significant part of these pesticides have been in the country for a long time, some since the 1970s and 1980s.

According to the document, the approximately 10,000 kg of DDT that should have been stored in the Ministry of Health warehouses - within the capital city of Praia, mysteriously disappeared and therefore are not on the list of products withdrawn from Cape Verde.

For the preparation of the current inventory, a survey of the stocks in the different pesticide warehouses of the country was done: the central warehouse of the Ministry of Rural Development, thirteen local warehouses belonging to each delegation of the Ministry of Rural Development, a warehouse of the private company Agro Produtos, one in the Agro Center company and the warehouse center of the Ministry of Health.

The current inventory of obsolete pesticides is the sum of the stock that existed at the time of drawing up the inventory in 2007, and the pesticides seized in the last years at the points of entry due to the application of the existing legislation on pesticide management.

The current obsolete pesticide stock in the country is low and is in the range of seven hundred and seventy kilograms (770 Kg), six hundred and ninety-six kilograms (696 Kg) coming from the 2007 inventory and the remaining one hundred and seventy-eight kilograms (178 Kg) resulting from the different seizures in the last years at different points of entry (international ports and airports).

Annex IV illustrates obsolete pesticides and provides information on the location (island), the active substance and the quantity.

4.1.2.Key Challenges and Priorities for Action

Despite the small amount of POPs pesticides already eliminated, the challenge is to improve this information in other sectors, namely Health and Customs.

The following are the priority actions identified for the Plan of Action:

1. Mobilize resources to eliminate obsolete pesticides and avoid the creation of new stocks;
2. Technical training, and preparation of guidelines to help in the collection and final destination of POPs pesticide stocks;

4.2. Industrial POPs

4.2.1. Polychlorinated biphenyls (PCBs)

Summary of obligations under the Convention

Annex A, Part II

The Parties shall:

- a) Immediately stop the production of new PCBs;*
- b) Eliminate the use of PCBs in equipment until 2025, acting according to the following priorities:*

Make determined efforts to identify, label and remove from use, equipments containing greater than 10 % PCB and volumes greater than 5 liters;

Make determined efforts to identify, label and remove from use, equipments containing greater than 0.05 % PCB and volumes greater than 5 liters;

c) promote measures to reduce exposure and risk:

- 1. Only use PCBs in intact and leak-proof equipment, and only in areas where the risk of release into the environment can be minimized and quickly remedied;*
- 2. Do not use PCBs on equipment located in areas associated with the production or processing of food whether for human or animal consumption;*
- 3. When used in populated areas, including schools and hospitals, take all reasonable measures to protect against electrical failure, which may cause fires and regularly inspect the equipments for leaks;*

d) Do not export or import equipment with PCBs, except in cases of environmentally sound waste management;

e) Do not allow the recovery of liquids containing more than 0.005% of PCB's to be reused in other equipment, except for maintenance and repair operations;

f) Make efforts to achieve environmentally sound management of wastes containing more than 0.005% of PCBs by 2028;

g) Strive to identify other products containing more than 0.005% of PCBs, for an environmentally sound management;

h) To prepare, every 5 years, a progress report on the disposal of PCBs to the Conference of the Parties

4.2.1.1. National Production and application.

The consumption of PCBs in Cape Verde is due to the importation of equipment containing the substance and imports of formulated commercial oil, for various uses, and there are no record of PCB production in the country (PENTEADO, 2001).

For a long time, PCBs were mainly used in high-voltage transformers, as dielectric oil. The direct use of PCBs in civil construction was not identified in the country, and its greatest application is in the Energy sector. Other products containing PCBs, in smaller quantities, were never marketed in Cape Verde, such as aseptic soaps (mainly in hospitals), paints, pesticides and various hydraulic fluids.

4.2.1.2. Inventory of PCBs for the National Plan

In 2007, the first inventory of equipment, in operation or stored, containing mineral insulating oil contaminated by PCBs was carried out. It is estimated that about 90% of PCBs used in the country are found in the electricity sector.

According to the density tests performed, of 435 inventoried transformers, 7.21% contain PCBs or contaminated mineral oil. However, it should be noted that the methods used were not reliable and should therefore be improved in order to achieve more reliable results.

At the time, it is also necessary to highlight the impossibility of obtain information from the ELECTRA company, in the Municipalities of Praia and S. Domingos. The missing data would lead to more accurate results.

The following table describes their locations, identifying the county and island of origin of the material.

There are approximately 63 transformers containing contaminated oils. The Portuguese company EFACEC and France-Transfo being the main exporters. Both companies have banned the manufacture of PCB-containing transformers since 1987.

Table 6- Location of transformers in Cape Verde in 2007.

Islands	Municipality	Quantity (per municipality)	Total (per island)	
Santo Antão	Porto Novo	18	72	
	Ribeira	42		
	Grande Paul	12		
S. Vicente	S. Vicente	86	86	
S. Nicolau	Ribeira brava	19	26	
	Tarrafal	7		
Boavista	Boavista	13	13	
Sal	Sal	82	82	
Maio	Maio	10	10	
Santiago	Praia	7	89	
	R.G. Santiago			
	S. Domingos			
	Órgãos			
	São Salvador			
	S. Catarina			30
	S. Cruz			21
S. Miguel	11			
Tarrafal	20			
Fogo	S. Filipe	6	34	
	Mosteiros	28		
	S.Catarina			
Brava	Brava	23	23	
Total			435	

The current inventory of a total of 834 electrical transformers was made by the National Directorate for the Environment within the Ministry of Environment, Housing and Land Planning, in the framework of the Stockholm Convention with the collaboration of all the delegations of the Ministry of the Environment.

According to the ELECTRA data until today, about 900 transformers were imported and 834 transformers were inventoried, where 751 are in the electrical distribution

network, of these, 30 are in operation without labels, therefore we considered a total of 721 transformers. About 6.24% (45) of these transformers use mineral oil contaminated with PCB's.

Of the 834 transformers inventoried, 86 were from Santo Antão, 146 from S. Vicente, 32 from S. Nicolau, 19 from Boavista, 78 from Sal, 24 from Maio, 385 from Santiago, 41 from Fogo and 23 from Brava, according to table below.

Table 7- Transformers inventoried in Cape Verde in 2014

Islands	Municipality	Quantity (per municipality)	Total (per island)
Santo Antão	Porto Novo	25	86
	Ribeira	44	
	Grande Paul	17	
S. Vicente	S. Vicente	146	146
S. Nicolau	Ribeira brava	22	32
	Tarrafal	10	
Boavista	Boavista	19	19
Sal	Sal	78	78
Maio	Maio	24	24
Santiago	Praia	222	385
	R.G. Santiago	10	
	S. Domingos	09	
	Órgãos	03	
	São Salvador	09	
	S. Catarina	52	
	S. Cruz	33	
	S. Miguel	17	
	Tarrafal	30	

Fogo	S. Filipe Mosteiros S. Catarina	08 28 05	41
Brava	Brava	23	23
Total			834

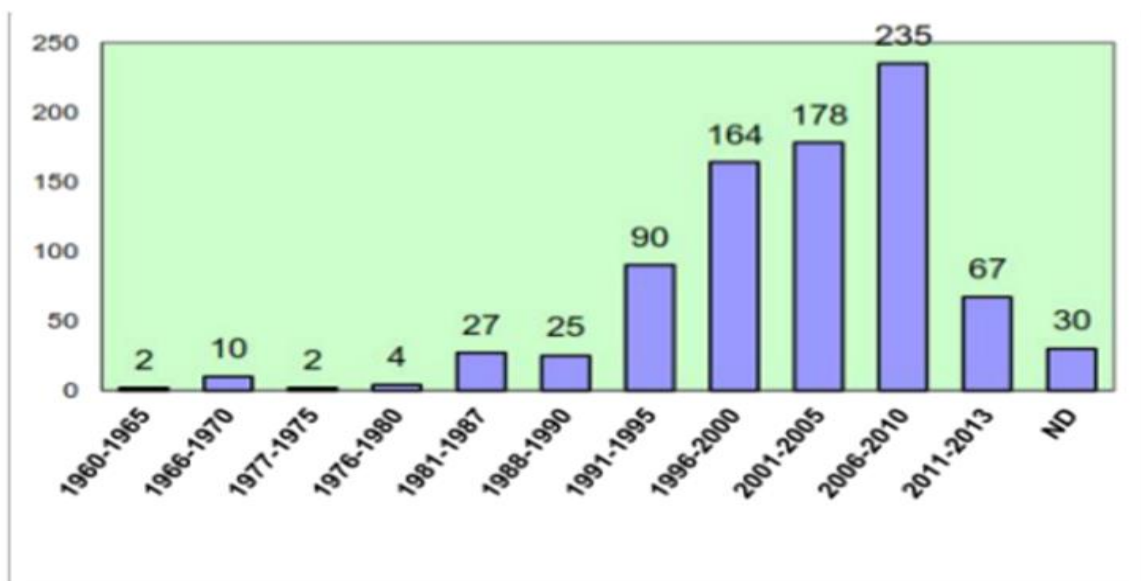


Figure 1. Distribution of the transformers by years of service.

According to the inventory results, there are 187 transformers in Cape Verde containing PCBs and/or oils contaminated by PCBs. The Portuguese company *EFACEC* and the French company *France-Transfo* are the main exporters of transformers. France prohibited the manufacture of PCB-containing transformers in 1987, therefore, we can conclude that all transformers from France manufactured before 1988 contained PCBs. *EFACEC* does not manufacture transformers containing PCBs since 1987, equally following what was stipulated by European legislation.

It is extremely important to note that according to data from the company *Electra SA*, practically all transformers in service today were manufactured in the 90s, reinforcing

that Cape Verde do not have large quantities of transformers that use dielectric oil containing or contaminated by PCBs.

Although all transformers were inventoried in Cape Verde, the creation of legal instruments making it mandatory to carry out inventories that include information on transformers still in use and out of use, as well as other equipments containing PCBs, would allow a better knowledge of the country's reality and consequently, ensure adequate compliance with the provisions of the Stockholm Convention.

4.2.1.3. **Key Challenges and Priorities for Action**

Since the Country has not started any project proposed in the previous NIP, and being an essential condition for compliance with the determinations of the Stockholm Convention in relation to PCBs, it is proposed the following:

1. Legal, administrative and standardized procedures strengthening of PCB management and elimination processes;
2. Management of oils identified as PCBs and equipment and waste contaminated with PCBs, in partnership with the private sector, in order to minimize human and environmental exposure;
3. Storage and environmentally adequate disposal of PCB waste through demonstration projects;

In order to discipline management and elimination of PCBs, legislation is currently being discussed that will discipline the management and controlled disposal of equipment, materials and fluids contaminated by PCBs as well as their waste, in the energy sector;

The proposed regulations determine the following:

- a) The obligatory registration of equipment, materials, fluids contaminated by PCB's and PCB waste, in order to prepare a complete inventory;
- b) The threshold limit value (TLV) for PCBs in equipment, waste and stocks, according to the Stockholm Convention (50 ppm as the maximum permissible limit), and technical recommendations for final disposal.
- c) The labeling of products and equipment;

- d) The Definition of Prohibitions (related to imports, oil reuse in specific concentrations), according to Part II of Annex A, final destination of PCB equipment out of use.
- e) The provision of technical criteria for storage, transportation, treatment, disposal and labeling of equipment and wastes contaminated with PCBs, aiming at not reusing contaminated equipment and eliminating cross-contamination during treatment;
- f) The elaboration of a management plan and/or contingency plan and elimination targets (as a schedule) of PCBs, especially in the energy generation and distribution sector;
- g) The establishment of technical criteria for emergency situations (leaks, local accidents and during transportation)
- h) A ban on the dilution of PCB oils for commercial purposes and/or final destination, requiring documented traceability of oil with suspected contamination in auctions of uncontaminated insulating oil;

4.3. **New POPs for industrial use**

Cabo Verde does not have legislation that establishes control over chemical substances for industrial use and, as a consequence of the absence of such legal control, the Government has no systematized information on the production, use, export and import of these substances, nor a National Inventory of chemical substances that are (or have been) in the national market.

This lack of regulated control had a direct impact on the elaboration of the National Inventories of the new POPs for industrial use, and the information about these substances was not affected.

Existing information on these substances is fragmented, being scattered in various information systems and registries, of the Public Power and the private sector, but they are often found to be nonexistent or unavailable.

Thus, in the absence of a source of information that could provide consolidated official data on the situation of the production, use, import and export of new industrial POPs, MAHOT conducted an indicative inventory of these substances and of products to support the development of the NIP of the Stockholm Convention.

With regards to the legal situation of these new industrial POPs, there is no legislation establishing specific prohibitions or restrictions for each of them, nor limits of concentration on products.

Normative intervention should be carried out with the first purpose of determining obligations to facilitate the obtaining of information on the situation of the new industrial POPs in the country, and also establishing prohibitive and restrictive measures that are pertinent, in accordance with the provisions of the Convention of Stockholm. It can also guide the environmental licensing process of the Best Available Techniques and Best Environmental Practices (BAT / BEP) activities that should be adopted by sectors that use POPs or recycle POPs-containing equipment.

4.3.1. Inventories of new industrial POPs

Preliminary inventories were developed based on theoretical studies, sending questionnaires and telephone contacts to answer questions, that is, methods that did not require visits or activities to collect and analyze data.

As there was little information on the situation of the new POPs in Cape Verde, the work was carried out using the indicative method, with some elements of the qualitative method, since the surveys were carried out with the use of questionnaires.

This activity aimed to obtain an overview of the current and previous use of the new POPs of industrial use in processes and products, and the waste/recycling flows.

4.3.2. Summary of Inventories of New Industrial POPs

4.3.2.1. Polybrominated Diphenyl Ethers (PBDEs)

POPs-PBDEs are members of a large class of bromine-containing chemicals used as flame retardants. These compounds are often added to plastics, upholstery fabrics, foams, computers, televisions, furniture, carpets and cushions.

The main sectors that use, or have used PBDEs in the past, are as follows:

- 1)** Organobromine compound industry;
- 2)** Electro-electronic industry;
- 3)** Transport industry;
- 4)** Locksmithing;

- 5) Textile and carpet industry;
- 6) Construction industry; and
- 7) Recycling industry.

Historically, three types of commercial products containing PBDE blends have been used in consumer products: c-Penta-BDE, c-Octa-BDE, and c-Deca-BDE. Each type of PBDE has different properties and uses. Manufacturers of the most toxic PDBE's - Penta-BDE and Octa-BDE - stopped producing voluntarily at the end of 2004. Consequently, Deca-BDE is the only PBDE flame retardant currently manufactured.

These substances are not produced in Cape Verde and it was not possible to verify whether these POPs were imported as a substance in itself.

In the consultation conducted for the POP-PDBE's inventory, most of the answers indicate that the institutions did not use products containing c-Penta-BDE and Octa-BDE, or do not use Deca-BDE. Another party reported not being sure whether to use or have already used PDBE's in products produced by them or imported. Some responses also indicated that these POPs may have been used in the past, or that DecaBDE may still be in use.

However, Inventory data indicate that these products are present in electro-electronic equipment and in imported vehicles, and there is no recycling products containing PDBE's.

a. Electronics industry

The electronics industry has indicated that it may have made use of these substances in the past. The electro-electronic waste recycling sector is of great importance for the production of the inventory, but since Cape Verde still do not recycle electro-electronic equipment, it was not possible to obtain more information to carry out the inventory.

Since no information was available that could be used in the inventory, the draft Guideline for the Elaboration of the Inventory of Polybrominated Diphenyl Ethers listed in the Stockholm Convention on Persistent Organic Pollutants, developed by Unitar for the Stockholm Convention, was used.

This document presents methodologies for the development of the inventory, through national and international statistics, for the main categories that have used POP-PDBE in the past, namely, electro-electronic equipment, waste electrical and electronic equipment and transportation.

Thus, the preliminary inventory of POP-PDBE's was carried out by means of estimates of the quantities of these substances in electro-electronic equipment and vehicles. Other uses of POP-PDBE's, such as furniture, mattresses, textiles, building materials, were considered to be of lesser relevance due to the limited use of POP's-PDBE's in most of these applications and the difficulty of obtaining information for diffuse uses.

Table 8 - Generation of WEEE by category and number of inhabitants

Category	EEE Import (Kg)	WEEE Production (Kg)	Number of WEEE per inhabitant
Computer Monitors with CRT	4.829	4.829	0.008
TV with TRC	181.295	181.295	0.34
Total	186.124	186.295	0.348

$$\text{MPBDE (computers monitors)} = 0,008\text{kg/inhab} \times 538.535\text{inhab.} \times 25\text{kg} \times 0,3 \times 0,0025$$

$$\begin{aligned} \text{MPBDE(TV)} &= 0,34 \text{ kg/inhab.} \times 538.535 \text{ inhab.} \times 25 \text{ kg} \times 0,3 \times 0,00087 \\ &= \mathbf{1.194,74\text{kg c-OctaDBE}} \end{aligned}$$

$$\mathbf{\text{Total c- OctaDBE} = 80.780 \text{ kg} + 1194,74 \text{ kg} = 1275,52 \text{ kg}}$$

The amount of hexaDBE and heptaDBE can be calculated as a function of the amount of OctaDBE, estimating the heptaDBE homolog in 43% and 11% as hexaDBE;

$$\mathbf{\text{Total heptaDBE} = 1275,52 \text{ Kg}(0,43) = 548,47\text{kg}}$$

$$\mathbf{\text{Total hexaDBE} = 1275,52 \text{ Kg}(0,11) = 140,31\text{kg}}$$

The estimated amount of c-OctaBDE in electro-electronic equipment was approximately 1.3 tons, being 140.31 kg of HexaBDE and 548.47 of HeptaBDE.

Although the POPs-PDBE's were not produced in Cape Verde, the main challenge for their elimination is the identification of existing stocks and of imported products containing POPs - PDBE's, as well as the elimination of equipment at the end of its life span.

b. Transport sector

Another important sector, with respect to products containing PDBE's, is the transport sector. A large proportion of the use of c-PentaBDE occurred in this sector, and was mainly used in the treatment of polyurethane flexible foams (automotive seats, headboards, car roofs, acoustic management systems etc.) and a minor use was in the post-coating of textiles used in car seats (Table 9). The c-OctaBDE was also used in plastic parts of the vehicles (flyers, panels, door, etc.) (United; Unitar; Unep, 2012a).

Cars and other vehicles (trucks and buses) are the bulk of the transport sector, accounting for the largest volume of POP's-PDBE's. The focus and methodology for the inventory, therefore, were centered on these vehicles.

The amount of c-PentaBDE in vehicles in use was 419.32 kg. Thus, the number of POP's-PDBE's in vehicles that reached the end of their life span were not estimated since most of these vehicles were sent to a final destination abroad (scrap).

Table 9 - Estimates of c-PentaBDE, by category in the transport sector

Type / year	vehicle in circulation 2010	POP-PDBE By category (Kg)	F Regional	Estimate of c-PentaDBE (Kg)
Buses	225	1	0,05	11,25
Hiace	2020	0,16	0,05	16,16
Trucks	1141	0,16	0,05	9,13
Others	5043	0,16	0,05	40,34

Motorcycles	5099	0,16	0,05	44,79
Automobiles	37206	0,16	0,05	297,65
Total of c-PentaDBE 2010	50.734	-----	-----	419,32

c. Other uses

Other uses of POP's -PDBE's, such as furniture, mattresses, textiles, building materials, are considered to be of lesser relevance to most countries because of the limited use of POP's-PDBE's in most of these applications.

However, these substances were used in countries that had flammability standards for specific uses. Very few countries had such standards, e.g. the United States and the United Kingdom (UNIDO, UNITAR, UNEP, 2012a).

Thus, a small amount of furniture could have been imported from the United States during the period in which the POP's-PDBE's were used, that is, until 2005, however, this quantity is not significant and, due to the time of use, part of these furniture has already disappeared.

Today, the only way these products can enter Cape Verde would be by importing used products containing these flame retardants from countries with flammability standards.

In this sense, since these are diffuse and unrepresentative uses, obtaining data for an inventory of POPs-PDBEs for these products in countries such as Cape Verde, which do not have flammability standards, and the import of products containing foam of second hand Polyurethane is almost zero, should not be a priority.

Recycling of waste from these sectors will be a priority in the Action Plan, since recycled items may contain new POPs. It was observed that this activity is still limited in the country and needs technological investment.

d. Measures to ensure that the final destination and recycling of POP-PDBE-containing products are carried out in an environmentally appropriate manner

Actions related to the recycling of waste electrical and electronic equipment:

- a) encourage the creation of companies to enhance business in the recycling line of waste electrical equipment;

- b) In order to effectively reduce or eliminate BDPs, it is recommended to include Waste Electrical and Electronic Equipment (WEEE) in existing waste legislation.
- c) Financial support to future plastic recyclers for the acquisition of screening tests for the detection of POP's-PDBE's and equipment that reduce emissions of these substances and reduce occupational exposure; and,
- d) Prohibition or reduction of imports of electronic electrical equipment manufactured before 2005 in collaboration with the General Directorate of Customs;

Actions related to PDBE's in motor vehicles:

- a) Prohibit the entry into the national territory of Electrical and Electronic equipment with 10 years or more.

Trade, import and export:

- a) Creation of a Working Group to develop strategies for the control of POPs import operations in general.

4.3.2.2. **PFOS, its Salts and PFOSF**

PFOS and its related substances have been produced for more than 50 years and continue to be produced in several countries. Its physical properties, which repel both fat and water, make the PFOS and related substances used in various products. Currently, the intentional use of PFOS is extensive and includes: electrical and electronic components, fire fighting foam, digital cards, hydraulic and textile fluids and food packaging.

PFOS, its salts and PFOSF are generally used in the treatment of surfaces and are common in non-stick products, stain resistant fabrics and clothing for all types of weather. Due to their surfactant properties, they have historically been used in a wide variety of applications, including typically fire-fighting foams, surfaces with oil/water resistance, water, grease or soil. (UNIDO, UNEP, 2012b)

There are alternatives available to PFOS for some applications. However, this is not always the case in developing countries, where existing alternatives may not yet be available. (UNEP, 2010 a)

In addition, some applications such as digital cards, used in semiconductors or aviation hydraulic fluids are considered as acceptable purposes, because in those cases, technically feasible alternatives to replace PFOS are not yet available. (UNEP, 2010a)

In order to carry out the preliminary inventory of PFOS in Cabo Verde, consultations were carried out by sending questionnaires to all associations and institutions identified, according to the categories that could use these substances in their processes or equipment. From the list of possible uses of PFOS, the only category of use identified in the country during the inventory was *Fire extinguishers*.

a. Known uses of PFOS in Cape Verde

Fire extinguishers

Fluorinated surfactant foams are used to extinguish fires involving combustible liquids and are normally used to extinguish fires caused by flammable liquids such as petroleum, gasoline, other insoluble hydrocarbons and insoluble flammable liquids such as alcohols, acetone, etc. They are especially used in plants and installations where large amounts of flammable liquids are stored. (UNEP, 2012)

During the process of collecting information it was evident that two types of fire fighting foam are used nationally: Aqueous Film Forming (AFFF) used for aviation fires, and fuel spills (ASA and ENACOL) and Flourprotein (FP70) is a fire foam concentrate suitable for extinguishing hydrocarbon fires. (used by VIVO ENERGY)

Table 10 - Main facilities that have fire foam

Installations	Foam type (name and brand)	Storage conditions	Annual amount consumed	Aprox. Quantity in Stock
ASA (Praia)	AFFF 6% Super SKUM	Fiber tank 1 Ton Containers Waterproof area	50 liters per training (2 times year)	7 Ton
ASA (Sal)	AFFF 6% TOWALEX	Fiber tank 10.000L Waterproof area	1 Ton Actual fire training (1 per year)	10 Ton

ASA (Boavista)	AFFF 6% TOWALEX	Fiber tank 6000 L Containers 1ton	60 Liters Real Fire Training (1 per year)	8 Ton
ASA (S. Vicente)	AFFF 6%	200L Plastic Drum	Training 2 X Year 200 Liters Exercise 2 Ton	7,6 Ton
Vivo Energy	FP70 ANGUS FIRE	Good - area with basin and retention Plastic drums	180 Liters per year Average of 20 liters per delegation	6 Ton
ENACOL	AFFF 3% SABO Spanish	Good - area with waterproofing 200L Plastic drums	1000 l in 2013 and 2014 for training and system testing fire combat	2 Ton
ENAPOR	AFFF 3% SABO FOAM	Good	20 liters per year (training)	2500 Ton
Total amount of fire foam			4,530 Ton	2540,6 Ton

Estimated PFOS and related substances in fire foam used:

The calculation of the amount of PFOs, the percentage of PFOs present in different types of flame retardant foam and the amount of fire foam consumed annually and stocks using the following formula (UNEP, 2012) was derived from the following formula:

Equation 1. Estimated PFO's in foams against fire. $T = L \cdot X$

T = total amount of PFO's in fire foam consumed in one year or stock.

L = Percentage of PFOs in fire extinguishing with foam (1,5%)

X = domestic consumption or fire-fighting foam stocks in tonnes per year

Average Annual Consumption $T = 0.015 (4.530 \text{ t}) = 0.06795 \text{ Ton PFO's}$

T-Stock in 2014 = 0.015 (2540.6 t) = 38,109Ton PFO's

As fire-fighting foams were the only positive identification until the moment when PFOS / PFOSF were proven to be used nationally, it will be considered as a priority for the action plan. In addition, some categories of suspected use of PFOS in production processes, or the presence of PFOS and its related substances in products, should be further investigated in the future for inventory enhancement.

b. Main identified challenges and priorities for action

- 1) Adopt and implement an adequate legislative framework for the fulfillment of obligations related to the prohibition and/or use of industrial POPs in Cape Verde;
- 2) for PFOS, its salts and PFOSF:
 - a) Improve information on other possible uses of PFOS, prioritizing the categories that were identified as suspicious in the inventory and then categories where there is the greatest risk of human exposure;
 - b) Conduct studies to identify and test substitutes for PFOS foams;
 - c) Promote measures to reduce the risk of exposure to PFOS for uses identified under BAT / BEP;
 - d) Ensure that PFOS waste, its salts and PFOSF are managed in a sound environmental manner;

c. Measures for the identification and environmentally sound management of products containing POPs

- a) Establishment of a Working Group to evaluate existing classification and labeling systems and develop an appropriate system to improve the exchange of information on POPs-containing products through supply chains;
- b) Creation of a Discussion Group to include the issue related to the production and consumption of POPs-containing products in the Plan of Action for Sustainable Production and Consumption.

4.4. **Annex C POPs: unintentional emission**

Annex C of the Stockholm Convention lists Dibenzo-p-Dioxins Polychlorinated and Dibenzofurans (PCDD / PCDF), Hexachlorobenzene (HCB), Polychlorinated Biphenyls (PCBs) and, more recently, Pentachlorobenzene (PeCB) as POP's formed unintentionally, and released from thermal processes involving organic matter and Chlorine as a result of incomplete combustion or chemical reactions. These substances and congeners form the group of Dioxins and Furans.

Summary of Convention requirements

Article 5

Each Party shall, as a minimum, adopt measures to:

- a) reduce total unintentional POPs emissions and, where feasible, their ultimate disposal;
- b) replace or modify materials, products and production processes;
- c) introduce best available techniques and best environmental practices (BAT / BEP) for new and old sources; and,
- d) Prepare a Plan of Action.

The Plan of Action should include the following elements:

- (i) Assessment of current and projected emissions, including the development and maintenance of inventories of sources and emission estimates, taking into account the categories of sources in Annex C;
- (ii) assessing the effectiveness of laws and policies relating to the management of such emissions;
- (iii) Strategies to fulfill the obligations of the Convention, taking into account the assessments mentioned in items (i) and (ii);
- (iv) Measures to promote education, training and awareness of these strategies; and,
- (v) Schedule for implementation. Concerning the introduction of BAT / BEP:
 - 1) For new identified industrial sources with comparatively high potential of formation and emission of such POPs in the environment, with a special initial focus for the source categories identified in Part II of Annex C, the Parties shall also:
 - a) promote and require the use of BATs as soon as possible but no later than 4 years after the Convention has been in force; and,
 - b) promote the use of BEPs.

2) for existing sources, Part II and Part III of Annex C: promote the use of BAT / BEP.

4.4.1. National Inventory of Unintentional POPs

Cape Verde has no history of Dioxins and Furans measurements. Due to the lack of data collected by a continuous monitoring of emissions of these unintentional POPs, a National Inventory of Dioxins and Furans was carried out during 2015.

For the preparation of the Inventory, the Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases, from Unep Chemicals, was used as a guide.

Although the inventory is of 2015, the year 2014 was adopted as reference year, considering that it was necessary to have a full year since 2015 was still half way.

In order to carry out the inventory, data and information available on the websites of several institutions were used, as well as public and private entities consulted, natural and legal persons.

It is important to mention that, due to the absence, in many cases, of feedback on conditions of sources, capacity (activity), production, raw materials and others, there was a need to adopt information and statistical data of diverse origins, many of them with good reliability. In several cases, there were estimated values and conditions for class subdivision into a same subcategory.

The results presented in the inventory are approximations, since there is not yet real information and measurements on unintentional production, however, this does not reduce the relevance of the document nor its reliability. The elaborated Inventory serves as a reference base, and the validity of its results lies in its purpose of providing a first overview of the national situation, which makes it possible to guide the debate around the formulation of programmatic actions around the subject. Therefore, it should be seen as an open and dynamic platform for the collective construction of knowledge about the country's unintentional emissions.

Therefore, the National Dioxins and Furans Emissions Inventory developed in 2015 is an important basis for the development of emission reduction strategies for these substances and indicates the priority sources for the Action Plan.

4.4.2. Summary of results

The inventory presents the update of sources and estimate emissions and/or releases of Persistent Organic Pollutants produced unintentionally based on the Toolkit of UNEP and has the main objective of updating the National Implementation Plan in order to help decision making regarding their minimization and elimination.

The interest in conducting studies of the adverse effects of hazardous products on human health and the environment has started since the 1950s, highlighting almost immediately the problems of acute intoxication, also reported both in post-war recovery countries and the least developed.

Dioxins and furans are widely dispersed in the environment. They are very persistent compounds that remain strongly adsorbed to air, soil and sediment particles. These are emitted into the atmosphere from fixed sources such as industrial activities and diffuse sources such as the use and application of chlorine-containing products.

The document was prepared following the inventory format proposed by the UNEP (United Nations Environment Program) in its Toolkit 2005 document. The categories, sub-categories and classes in the toolkit 2013 were checked. The Ministry of Environment, Housing and Spatial Planning, Municipalities, environmental associations and companies contributed with information and data. Data collection on the ground was done by a total of 14 MDR technicians distributed through the islands, who received the update training for this purpose, under the direct supervision of the national coordinator of the project.

This training took place from 24 to 26 February 2015 and the first workshop to launch the project to update the national implementation plan for persistent organic pollutants of the Stockholm Convention and training on inventories of new POPs was held respectively.

This document shows an updated scenario of the release of dioxins and furans in Cape Verde during 2014. The information was obtained from answers to the query made by employees and stakeholders, but mainly from general statistics data and information from various sources that could be considered of good or acceptable reliability for the intended purpose.

The inventory made on all nine inhabited islands and the analysis of the results of the activities was done through data collected on each island. Considering the insular nature of the country, there were some difficulties, such as the number of field surveyors to respond to the established schedules, as well as the number of sectors involved in the

activities. Transportation was also one of the limitations both for the accomplishment of the work itself, but also for the recovering of the applied questionnaires, in a timely manner.

The inventory shows a release potential of 32,5 g TEQ / year according to the estimates made from the surveys and national statistical data.

The results of this National Inventory of Dioxins and Furans Emissions Update in Cape Verde were calculated in some categories based on estimates and with the support of the first national inventory carried out in 2005, due to the lack of scientific data.

Table 11- Detailed distribution of emissions by source group

Font category	Emission in mg TEQ / year				
	Air	Water	Soils	Products	Residue
1.c.2 – Hospital waste	34				0,23
2.c.1 – Cast iron and steel					
2.1.1 – Open sky cable burning					
3.e.3 – Domestic cooking and heating					
3.a.4 – Fuel oil	10				
3.b.1 – Mixture of biomass	6				-
3.b.4 - Bagasse	2				2
3.d.2 – biomass cookers	135				ND
3.e.6 – LPG Natural Gas	1				
4.c.1. Bricks	0,02			0,001	0,002
4.e.1. Ceramics	0,08				-
4.f.1 Asphalt mix	0,02				

5.a.2. 4-stroke engines	1				
5.b.2. 2-stroke engines	2,5				
5.c.1. Diesel Engines	6				
5.d.1. Heavy oils	113				
6.a.1 – agricultural waste	15		5		
6.a.4 – Forest fires	2		0,3		
6.b.1 – Dumpsters fire	30390	1013			
6.b.2 – Accidental fires in homes and factories	400	400			
6.b.4 – accidental fires in vehicles	5	1			
7.g.2 – Textile industry					
8.c.2 – Clean fuel, no afterburner	0,3				0,95
8.d.2 – Normal fabrics					0,17
8.e.2 – Cigarettes (items per million)	0,012				0,012
9.b.3 – Household inputs with sludge removal	0,00				Not determined
9.c.2 – Urban and peri-urban waste areas	0,1				-
9.c.3 – Remote environments	0,03				-
Total (g TEQ/year)	31,12	1,41	0,005	0	0,002
Total emission (g TEQ / year)	32,5				

4.4.3. Emission reduction strategy and application of BAT / BEP

The reduction strategy was developed considering the information and data obtained in the Inventory, the situation of the sources in Cape Verde and the national conditions for compliance with the BAT / BEP. The definition of BAT / BEP for national conditions should be the object of activity of the Action Plan, analyzed in a way that international applicability suits national conditions, taking into account the size of existing companies. It should be emphasized that there is a need to create our own national emissions data, so that this issue can be analyzed on a solid basis.

Training and the country's infrastructure for the monitoring of these substances were analyzed, and some deficiencies were detected while measures were also proposed for their improvement. It was found that current legislation should be complemented and/or updated to meet the proposed measures.

In this context, the main line of strategy consists of:

1. Consider different conditions for existing sources and new sources, these being with more emphasis on BAT / BEP;
2. Consider national conditions when analyzing BAT / BEP measures;
3. Emphasis on air emissions, since it is considered that the reduction in this environment will be more effective in minimizing emissions than acting on waste and water;
4. Take into account the national deficiency at present in terms of laboratory infrastructure and the costs of sample collection and analysis for the establishment of monitoring frequency, as well as consider indirect monitoring possibilities that may indicate compliance or non-compliance in the reduction measures that may be established.

In this way, the strategy focuses on:

- The sources that contributed most to air emissions, are: fires and burning of waste in the open air (accidental or not); waste incineration of health products; The total emission calculated for this source category is 30390 mg TEQ / year for air emissions and 1013 mg TEQ / year for emissions of PCDD / PCDF to the soil.

The air emissions of PCDD / PCDF generated by hospital waste are 34 (mgTEQ / year) and residue 0.23 (mgTEQ / year)

The following are the strategies for the two sources that contributed most to the air release, fires and burning of outdoor waste, accidental or non-accidental

The reliability of the quantities (source activity) used for the Inventory is relatively low, as well as the low reliability of the emission factors in this category, which leads to an estimate of low reliability. The fire data collection method needs to be standardized and environmentally important information could also be included, which would facilitate and give in turn greater reliability to statistics on future inventories.

This source is directly associated with the existence of several dumps that, according to a survey carried out in 2012 by DNA - National Environmental Directorate, are distributed by the 22 municipalities. This reality is evident both in rural areas, where the collection is deficient, as well as urban, being common the practices of burning, burying or throwing waste on the slopes and streams.

In general, burning of waste or other outdoor materials should be eliminated. National legislation prohibits this practice, indicating as an appropriate method the disposal of solid waste in landfills.

The production of guidance material on best environmental practices for the burning of waste and other materials, especially in rural areas, is recommended. In this way, a training program would be appropriate in this sector.

Expected reduction in fire emissions and burning of outdoor waste, accidental or non-accidental: the effectiveness of these measures is also difficult to quantify because it depends on several factors and occurs accidentally. In many cases what can be done is to establish a goal of reduction, and work towards achieving it. Thus, the proposal is to achieve a minimum 30% emission reduction in relation to the base year 2014, to be achieved by the final date of implementation of this Action Plan. This reduction would correspond to an emission cut of 9.75% g-TEQ in the period of the Plan of Action.

4.4.4. Summary of strategy to reduce / eliminate PCDD / PCDF emissions

The update of the 2005 inventory, based on current assumptions and new information, allowed for an analysis on the evolution of emissions, which resulted in an increase of approximately 13% in per capita, and 23% in PCDD / PCDF emissions, respectively. Surveillance of other important sources and special care in relation to solid waste is also essential, but they have not entered the priority set for reductions, since they need a

follow-up program with periodic measurements that can better characterize their emissions for use in the next inventory.

The strategy adopted to reduce or, where possible, eliminate the emission of PCDD / PCDF, basically consists of the following points:

- a) Acting on sources detected by the National Inventory of Sources and Estimation of Dioxin and Furan Emissions, base year 2014, according to their significance and growth potential in relation to air and water emissions;
- b) Use of best environmental practices (BEP) and/or best available technologies (BAT), as defined by the Convention, adapted to national conditions, with requirements as per part, relevance of source (whether existing or new), and setting limits to the presence of PCDD / PCDF in gaseous and liquid effluents;
- c) adequate waste management;
- d) Monitoring of PCDD / PCDF in gaseous and liquid effluents and in the environment;
- e) Awareness actions in general (institutional, entrepreneurs, population in general) and encouraging the joint participation of the various institutions and/or bodies that can assist in PCDD / PCDF reduction/elimination actions, or generate information to improve quantification of national PCDD / PCDF emissions;
- f) Improvement infrastructure and national capacity, both governmental and private, for the monitoring of PCDD / PCDF;
- g) The adoption of the strategies of the Plan of Action to reduce the emission of dioxins and furans and contribute to the reduction of other unintentional POPs.

4.5. Contaminated areas

Summary of Convention requirements

Article 6, paragraph 1, item "e":

Each Party shall endeavor to develop appropriate strategies to identify sites contaminated with the chemicals listed in Annexes A, B or C; and in the case of remedying such sites, this should be done in an environmentally sound manner.

Currently there is no legislation that determines the identification of the contaminated areas of the country and a methodology of work to determine these areas. For this reason, Cape Verde does not yet have an official survey on areas contaminated with

POPs, with coverage throughout the country. However, areas of greater risk were identified, namely adjacent areas of industrial facilities and agricultural fields, with the use of fertilizers and pesticides, as the main routes of soil contamination.

There are other risk zones in urban areas such as ports and airports, dumps, fuel storage facilities and car service stations (including repair shops).

Contaminants contained in these wastes include plastic materials and tires, corrosive products, metals, heavy oils and detergents, among others.

It must be determined that all environmental agencies prepare timely reports with information on the contaminated areas identified, and send to the environmental authority that will centralize it in a single information database on contaminated areas throughout the country.

In order to carry out the survey, the government's environmental agencies were consulted and information was retrieved from published documents and other sources in order to obtain information from areas contaminated with Persistent Organic Pollutants (POPs) listed in the Stockholm Convention.

4.5.1. Main challenges and priorities for action

For the Plan of Action, the following priorities are highlighted:

- 1)** Develop a program to identify contaminated areas;
- 2)** Promote training and guidance of environmental entities for the management of areas contaminated by POPs;
- 3)** Develop guides and reference documents for the management of contaminated areas;
- 4)** Support the implementation of demonstration projects for the remediation of contaminated area by PCBs and DDT.

4.6. Measures to improve the legislative framework and national institutional capacity to comply with the Stockholm Convention.

At present, there is no clear and specific legislation on the proper management of POPs. Since the 1980s there has been legislation on pesticides in general for POPs and non POPs containing products, which regulates the import and use of pesticides.

At the moment the country is working on a bill exclusively for dealing with POPs, the aim is to improve management and ensuring the best final destination given to POPs.

4.7. Technologies available for final destination of POPs and remediation of POPs contaminated areas

In Cape Verde, there is no survey on the technologies available and the national capacity to give the appropriate final destination to all POPs of the Convention.

There are incinerators, but only for hospital purposes and are not available for PCB's and other dangerous POPs.

It was further verified that new technologies of plasma pyrolysis, hydrogen reduction and pressure oxidation are capable of eliminating or significantly reducing the involuntary emission problems of Dioxins and Furans in the treatment of PCB waste. None of them, however, is available in Cape Verde for treatment of PCBs or other wastes.

There should be discussed a strategy to encourage the implementation of modern technologies with environmental benefits to Cape Verde. In the country there is no incentive to the development of alternative technologies to the use/emission of POPs. Likewise, there is no systematic survey on available remediation techniques for POPs contaminated area, which should also be the object of study in the NIP implementation phase.

4.8. Information, Training and Awareness

Article 10 of the Convention addresses the information, awareness and education of the public by requiring signatory countries to undertake activities to promote and facilitate public access to information, participation of society in the implementation of the Convention and training of staff, in compliance with the obligations of the Convention.

The right to information is consolidated in the Constitution of the Republic and in the National Environment Policy which defines as one of its objectives, the dissemination of environmental data and information as well as the creation of public awareness about the need to preserve the environmental quality and the ecological balance.

Environmental education is an essential and permanent component of national education, aiming to develop an integrated understanding of the environment in its multiple and complex relationships, to ensure the democratization of environmental information; and to stimulate and strengthen a critical awareness of environmental and social issues; and to encourage individual and collective participation, permanent and responsible, in preserving the balance of the environment, understanding the defense of environmental quality as an inseparable value of the exercise of citizenship.

However, the current knowledge of the Cape Verdean population about POPs is still incipient, and social participation in the management of chemicals is timid.

It should be noted that the rural extension workers (from the Ministry of Agriculture) are actively and efficiently working with farmers, but the coverage is not sufficient for the total number of farmers on all the islands.

Even within the environment agencies, there is a need for better knowledge about POPs and the management of chemical substances in general.

The inventory process and the NIP itself have greatly contributed to the increase of the knowledge about POPs among the technicians of the environmental agencies involved, and allowed to disseminate the Stockholm Convention principles among the private and public companies involved in the use and production of POPs.

5. SOCIO-ECONOMIC AND GENDER ANALYSIS OF POP'S IN CAPE VERDE

5.1. Scope

5.1.1. Socio-economics

The Cape Verdean economy is fundamentally characterized by the existence of structural weaknesses, manifested in the enormous scarcity of natural resources, and the great imbalance in the distribution of wealth.

The characteristics of the Cape Verdean economy, with the uneven distribution of resources (soil, productive land and water) and incomes, weakened by the instability of the Cape Verdean productive fabric, contribute to considerable poverty, which is structural in nature. Productive structure cannot generate jobs to absorb the available labor force, limited in terms of professional qualification.

The average life expectancy is 74 years (72 years for men, 76 years for women).

Cape Verde ranks 123rd among 187 countries on the Human Development Index and is in the middle human development category. With a GDP per capita of 6 311 (2011 PPP \$), Cape Verde left the list of Least Developed Countries of the United Nations in December 2007.

The history of the Poverty Profile prepared by the National Statistical Institute (INE) based on data from the Household Expenditure and Income Survey (IDRF 2001/2002) revealed that:

- In 2002, about 95,000 households lived in Cape Verde, of which 27,000 were poor (28%) and 13,000 very poor (14%);
- In 2007 the national poverty survey showed a significant improvement with 26.6% of the population living on less than US \$ 1.25 per day;
- The 2010 Census revealed that poverty continues to decline and about 25% of the population is now considered poor (DECRP III)

Agriculture plays an important role in rural areas, despite the low contribution for GDP, more than 80% of households living in rural areas are involved in activities in this sector.

Despite this, the contribution of the sector to wealth creation is weak, only 15.7% of household income comes from direct exploitation of agriculture, livestock and fisheries, according to data from the *Monitoring Survey on Food Vulnerability in Rural Families* (ISVAF 2005). It should be pointed out that a large percentage of the country's farms are family owned, and livestock farming and irrigation agriculture either alone or in combination are considered to be dominant activities on farms considered to be unfamiliar.

Of the nine inhabited islands, Santiago, Santo Antão and Fogo are the three main agricultural islands, that own, 55%, 15% and 13% of the agricultural holdings, respectively, making up the total of 83% of the country's arable land surface. Thus, the primary sector has a strategic relevance in the measures for sustainable growth and development of the rural environment.

These data show that of the total arable land in the country, 91% are dry land and 8% are destined for irrigation and the remaining 1% is irrigated in association with irrigated land.

The RGA reports that there are around 44,506 farms in Cape Verde, of which 44,450 (99.8%) are family farms and 56 are non-family farms. Of the total non-family farms, the majority (23) belong to the State / Municipality. It should also be pointed out that the activities of livestock and irrigated agriculture, either alone or in combination, are considered to be dominant activities on farms considered to be non-familiar

Cape Verde's main social development problem is the persistence of poverty, particularly among women, in a context of unbalanced territorial distribution, aggravated in the urban environment, as a result of strong demographic pressure on

available resources. The primary sector still employs a significant part of the active labor force. Poverty tends to be higher rated in women and female-headed households than in rural male-headed households.

The tertiary sector (trade in particular) is dynamic and a major contributor to GDP. The shortage of resources is compensated by the flow of goods and services of external origin, financed by international cooperation. The poorly developed industry contributes 8.7% of total Gross Value Added (GVA). Cape Verde's economy is based on the tertiary sector (70% of GVA and almost 53% of the employed population), tourism being the fastest growing sector.

The design of the third Strategic Growth and Poverty Reduction Document (DECRP III) has taken on the critical challenge for the new period from 2012 to 2016 and becomes crucial as a strategic tool to translate the economic transformation agenda and the Government Program for the VIII legislature (2011 to 2016) on concrete actions that promote sustained economic growth, development and substantial reduction of poverty and inequalities. For the period of the DECRP III, the Government Program sets as a goal - to achieve a robust growth of the GDP, within a balanced environment of the economy and control of the inflation. Supported by a dynamic economy and strong growth of the primary sector, the Government will work, in partnership with the private sector, to continue to decrease unemployment by creating jobs.

The new reform agenda should respond to the challenge of securing higher rates of growth and greater economic diversification. Four areas of priority reforms are identified:

1. Maintaining macroeconomic stability and reforming public finance management;
2. Flexibilize the labor market and promote an increase in productivity;
3. Improving the quality and relevance of education and training as a means of combating unemployment;
4. Improving the quality of infrastructure and services.

The strategy, contemplated in the DECRP III, materialize the investment in the primary sector in a significant way (construction of 17 dams) and port infrastructures (a modern port on each island). In this context, the government programs have aimed at prioritizing expenditure in the education, especially in the technical-vocational training in order to leverage the human resources of the primary sector in the short term, as well as in pre-school education, in the sense of promoting the improvement of human capital

in the long term. School social action will also remain one of the vectors to promote equity in access to education regardless of the student's socioeconomic stratum.

The tertiary sector will therefore maintain its importance as a source of wealth for the Cape Verdean economy, however, the primary sector should contribute more significantly to the generation of new jobs, reduction of poverty and unequal income distribution.

5.1.2. Gender

In the development process, the importance of introducing the Gender dimension in the definition, implementation and evaluation of public policies as well as in the study of social relations between men and women in the development process in Cape Verde, it is crucial, by governmental organizations and civil society.

The role of women in the development process, and especially in rural areas, is of extreme importance because of its multiple characteristics - reproduction (giving birth and caring for young children), generational reproduction (caring for older children) and daily housework to support those who perform productive tasks.

Second, there is the agricultural productive work, which covers production for domestic consumption and non-agricultural activities that generate income.

Finally, there is the so-called community work, activities and events performed collectively and socially. Consequently, women play a key role in economic development and the reduction of poverty at various levels.

At a macro level, they are important as a resource for the (paid and unpaid) workforce; in addition to their tasks in the family, they contribute significantly to freeing the men's workforce for other activities.

At the household level, they generate products and services for the market and for domestic use, emphasizing their quantitative and qualitative contribution to income.

Finally, at an intergenerational level, as caregivers and educators of the young, they are responsible for the food, health and socialization / education of the new generations and an important agent of change.

The last Government programs (2001-2005 and 2006-20011), as well as the Sectoral programs, have introduced the Gender dimension in the Planning process, in the definition of macroeconomic and social policies, and in the setting up of the institutional framework of definition, implementation and evaluation of gender policies, driven by the recommendations of international conferences organized by the United

Nations in the last decade of the last century, namely the Beijing Conference, translated into actions such as:

- Attention to Social Security and pensions, where the minimum social pension to new classes of pensioners and the extension of the INPS system to new categories of workers such as independent professionals and domestic servants, was extended;
- Comprehensive health insurance, expansion of the minimum social pension which provided the poorest sectors with a social safety net and conditions for a better quality of life;
- The theoretical and socio-political evolution, which allowed the use of domestic employment and informal activities to be considered as productive economic activities in the preparation of the Population Census of 2000, and that, adopting a gender perspective, the concept of Reproductive Health was included, allowing the extension of this type of health services to men;
- The Penal Code (in 2004) defined domestic violence and was considered a semi-public crime, punishable by sentences ranging from 1 to 4 years in prison, and the Inter Institutional Network for Assistance to Victims of Domestic Violence and the Offices to Support Victims of Domestic Violence entered into operation;
- The National Plan for Gender Equality and Equity (2005-2011) - PNIEG and the National Statistics Institute (INE) included in the Demographic Survey on Sexual and Reproductive Health, issues that allowed us to unveil and characterize the situation of domestic violence in the country;
- The Labor Code regulated domestic employment and the maternity leave regime in the public sector was extended to the private sector.

The development and implementation of a Platform for Action, based on the PNIEG, aimed at promoting a comprehensive policy of social development, combating poverty, strengthening cohesion and solidarity and achieving the Millennium Development Goals, in particular the objective 3 which aims to "promote gender equality and empower women".

The multisectoral approach to the strategies, objectives and actions defined by PNIEG and its decentralized and articulated implementation among the various government departments is aimed at ensuring the effectiveness of policies to promote gender equity. Its overall objective is to "democratize the system of power relations, promoting equal opportunities at all levels and qualitative changes in behavior and attitudes". As a

framework document, it provides references to sectoral policies. Nevertheless, gender mainstreaming in national planning and budgeting instruments is not yet visible.

Meanwhile, in the process of development, despite these advances, difficulties were encountered in mainstreaming the gender approach in national and sectoral planning and budgeting exercises, we found that there are a number of key problems related to inequality in gender relations.

5.1.3. Socioeconomic and Gender Analysis in the Context of POPs

Socio-economic and Gender Analysis (SEAGA) in the context of Persistent Organic Pollutants allows to work with different social groups potentially affected by these substances, or by environmental protection and health measures. In this sense, it is necessary to carry out potential risk studies, which includes the concerned parties analysis, subsistence analysis, lifestyle analysis, and others. to facilitate an assessment of the main risks to the population, especially the poorest, most vulnerable groups and women (taking into account human health, the environment and the extent of the threat they pose in any situation). In this way the SEAGA allows to:

→ Obtain information on citizens perceptions, concerns and priorities, which will facilitate cost-effective options of mitigation actions and the prioritization of measures and the monitoring of the NIP, with special sensitivity to gender issues;

→ Understand (and anticipate) impacts on different groups;

The role of each gender leads to specific activities, e.g. by promoting changes in consumption habits; Successfully plan relocation of communities (living near contaminated sites); Support adaptation (e.g. by training) of unemployed populations that halted polluting production processes (eg dioxin and furan producers);

→ Promotion of gender in the management of chemicals and hazardous waste at national and regional level.

For the SEAGA, were used questionnaire data applied to focal groups (FG) of farmers, alcoholic beverages producers and families; there being two FGs in Santo Antão (R^a Grande and Porto Novo), São Vicente, Boa Vista, Sal, Fogo, Brava, Maio and four on the Island of Santiago, in a sample universe of about 250 individuals. Several individual meetings with different actors and institutions directly or indirectly involved in the management of waste chemicals were also carried out using survey files as a socio-

economic and gender assessment tool to ensure results for the most vulnerable groups of stakeholders. - The Inquiry Sheets (one for farmers and families and one for the institutions) had questions about the way of life of the populations and the main activities developed, but also issues covering vulnerabilities and social behaviors and gender differentiation.

Information and statistical data from different origins (of good reliability) have also been adopted (due to the absence of, in many cases, feedback from institutions, data reliability, living conditions, production and use of raw materials and others).

Important aspects such as the insularity of the country, scarce means of transport to areas of difficult access and small number of inquirers on the ground to provide timely responses, as well as the number of sectors involved in the activities in question were some of the limitations both in the determination of sampling size and the recovery of the questionnaires applied.

Specifically for this work, the differences between men and women in the political and socioeconomic area in question were taken into account, such as:

- Participation (male/female composition of target/population groups, the representation of women in decision-making positions);
- Resources (distribution of key resources such as time, space, information and financial, political and economic power, education and training, employment and careers, new technologies, health services, housing, means of transport, and leisure activities);
- Norms and values that influence the attribution of roles, division of labor according to gender, attitudes and behaviors of men and women, and the inequalities attributed to male or female characteristics;
- Rights associated with direct or indirect discrimination, human rights (including non-sexual violence) and access to justice in the legal, political or socio-economic environment.

A simple socio-economic and gender assessment will always be of value to the country, contributing to the greatest success in implementing measures to reduce dangerous effects without causing social or other harm to the most vulnerable populations or the economy, and where increased participation of women is likely to improve the effectiveness and sustainability of POPs management projects and environmental policies.

5.1.4. Conclusions from the SEAGA survey and Proposed Actions

In this work five axes of analysis were considered and the results are:

AXIS 1 - Identification of Economic and Productive Activities Remunerated and not remunerated;

AXIS 2 and 3 - Access to Education, Goods and Services. Uses and Control of Resources in the Agricultural Sector and its Relationship with POPs.

a) The Agricultural sector was the most important, as an economic activity. High inequality in access to goods between men and women in agricultural areas:

- In the control of power and resources,
- In the division of family tasks,
- In access to education and goods,
- Men control the possession of productive assets and have greater access to education, more income and a better economic level, compared to women, who are the majority in unpaid activities (from 25 to 59 years) and have income levels and economic factors that generate rural poverty;
- Women overwork occurs because they are engaged in taking part in agricultural, domestic and community activities, especially female heads of household, leaving them with no means and time to participate in other activities of the community and making access to essential services difficult, such as schooling;
- Women have less access to resources (land, house, consumables) and consequently less participation in decision-making (even those who are heads of families). Their contribution to rural development remains scarcely visible in statistics and most policies for the sector continue their marginalization, hindering the development of their full potential. There aren't enough strategies to minimize the risks of women and offspring exposure to POPs. Nonetheless, they are one of the most effective vehicles for the eradication of poverty.
- In the context of POPs in this sector, the above factors end up favoring women in rural areas, by less POPs exposure, less control, less access to the purchase and use of products that may contain POPs - such as the acquisition, handling and use of pesticides, which are mainly performed by men.

Access to resources, products and services in many cases depends on gender, e.g. women lack control of resources and therefore have limited access to them. The effect of gender stereotypes on the assumptions/expectations made by policies and programs

condition the participation of women, since most farmers are men, most agricultural services are organized according to their preferences. The multiple and simultaneous roles of women being the cause of conflict and tensions, e.g. the burden of domestic and reproductive labor work are often obstacles to their participation in activities such as the application of pesticides.

Equipments that may contain POPs as PCBs are most of the times handled only male workers (handling, storage, etc.). As an example, in the company Electra, practically every transformer in service was manufactured in the 90s, reinforcing the idea that Cape Verde do not have large quantities of transformers using dielectric oil containing or contaminated with PCBs) ;

Axes 4 and 5 - Uses, Handling and Exposure to Products that may contain POP's. Comfort level and behavior related to new POPs.

- b)** Regarding the use of pesticides, the results demonstrate that the current situation remains unchanged (without the use of POPs products), since the last general agricultural survey (AGR) of 2004 show that of the total family farms of irrigated land in the country, 37.6% of farm managers declared the use of pesticides. According to this survey, 60% in Santiago, Maio and Brava and 40% in Fogo and São Vicente still use pesticides.[6]

- A large part of the farmers reported using pesticides (handled predominantly by men) in crops and especially vegetables.

Some of them refer to those in the POPs group (such as DDT) acquired by other channels than the existing commercial ones. Most consider the use of pesticides to be indispensable, even though they are aware of the health and environmental risks of their handling, since its elimination would lead to a drastic reduction in production affected by pests. However, it is necessary to analyze the composition of the products that they call DDT.

- c)** In the Production of distilled beverages, women are exposed due to the burning of residues (dioxin and furan producers), but the exposure of men and boys to these POPs is still greater;
- d)** Regarding the new POP's, industrial chemicals PCBs and PBDs (given their characteristic and widespread composition in electronic and electrical products widely in use in residences and offices), as well as the level of ignorance of the population, makes the exposure and risks still present for both sexes and with

greater vulnerability in women who handle most domestic electrical equipment -

The country's institutions and population in general still lack:

- Better storage and final destination of electro-electronics (EEE),
- Elaboration of EEE recycling projects and final disposal in environmentally appropriate conditions;
- Technicians responsible for handling and storing products containing POP's;
- PFOs (National Fire Fighting Foam) Aqueous Film Forming Foam (AFFF) used for fires, aviation and surface spills developed in the 1960s (used by ASA and ENACOL) and Flourprotein (FP70) foam concentrate (used by VIVO ENERGY), also mostly handled by men and their storage sites are restricted to these private companies;
- Within Governmental Institutions, the type of equipment containing most POPs in use are personal computers and printers. Most of the obsolete equipment is stored, which requires the attention of decision makers and people responsible for the security of these products, remarking the poor knowledge of families and institutions about the environmental risks and the consequences of these pollutants on human health. They are unaware of technologies related to the recycling of EEE parts, the principle of responsibility of importers for parts and the costs of recycling or disposal are not quantified;

There remain limited opportunities for formal employment for women in non-agricultural sectors in rural areas, strong dependence on subsistence agriculture and artisanal fishing in the rural population;

Although Cape Verde has adopted the main international instruments on gender-related rights, has incorporated them into the national legislative framework and implemented through various sectoral plans, this formal guarantee does not ensure full compliance with these rights for women;

In spite of the advances and the recommendations in the Plans and in the DECRP III, there are difficulties in mainstreaming the gender approach in sectoral planning and budgeting, we find that there are a number of key problems regarding inequality in gender relations, such as inequality of opportunities for women and women head of poor families.

5.1.5.Key Challenges and Priorities for Action

- a)** Elaboration of Strategies with specific measures with an approach that minimizes the vulnerabilities of women in relation to POPs:
 - More equitable distribution of family responsibilities structured with a gender approach;
 - Access and control of production assets, creating more equal and harmonious opportunities and relations in the family and in society;
 - Creating actual conditions for women to have more opportunities of education and employment;
 - Establish financial mechanisms / incentives that enable female heads of households to participate more actively in the agricultural sector in the same way as men, and to participate in decision-making of the economic life and the country.
- b)** The creation of alternative income-generating activities, which would provide greater access to employment and hence an improvement in family income and living conditions, and the empowerment of girls and women in rural and peri-urban areas;
- c)** Increased supervision and training of the Institutions to legislate and control the management and use of Pesticides and other POPs;
- d)** Reinforce awareness-raising measures for farmers and rural families;
- e)** Increase the level of education of farmers through adult education programs focusing on female heads of households;
- f)** Train and inform sellers, economic agents and consumers about POPs;
- g)** Preparation and dissemination of manuals for the use of POPs;
- h)** Reinforce and increase adequate storage infrastructure;
- i)** Strengthening policies - EEE recycling programs and disposal of chemicals;
- j)** Strengthen/empower human and financial resources in the institutions involved in the management of POPs.

6. ACTION PLANS

The implementation of the Action Plan is fundamental to the sustainable management of POPs. The analysis of the reference situation in Cabo Verde upon which the first NIP - National Implementation Plan was prepared in 2007 indicated that the actions proposed in this plan were not implemented. This situation contributes to the fact that planned and not executed actions should have been reviewed under this plan. Thus, this section details the strategies and actions of the National Implementation Plan, to meet the commitments of the Convention, based on the inventories made in the country and the intervention priorities that were determined.

The NIP contains the following measures and action plans:

6.1. Establishment of an institutional and administrative framework

→ Objectives

Support to the implementation of the Plan through the establishment of an Administrative System.

Table 12 - Actions to be taken to establish an Institutional and Administrative Framework

Activities	Indicator	Period of implementation
Create and assemble an administrative structure	Built and functional structure	
Establish a high-level body for situation management and advise government on related issues (including training, research priorities and possibilities, international links, public and ethical issues)	Established and functional inter-institutional committee	

Establish a list of national experts who could be consulted when required (to form advisory committees)	Committees created and experts identified	
Facilitate the exchange of information	Established information network	

6.2. Ensure a set of effective measures and policies that accompany the constant changes.

- **Objective**

Adoption of legislative and policy measures to ensure adequate protection against POPs, taking into account the risks to the environment and public health.

Table 13 - Adoption of legislative and policy measures to ensure adequate protection

Activities	Indicator	Period of implementation
Finalization and approval of legislation	Legislation approved by the National Assembly	
Ensure that existing inspection elements and control systems enforce the law	Effective and feasible system based on good cooperation and collaboration	Continuous
Review and periodically update regulations and policies considering emerging issues in this area	Revised Regulations	Continuous

6.3. Development of a training plan

This is a complementary activity of extreme importance for the effectiveness of the implementation of the Plan, having been proposed in the previous plan but not having been implemented. It is intended with this action, to create a national consciousness about the POPs. To ensure the effectiveness of the elimination program, key Community actors will be given concrete information on the problem associated with

the use of these products to understand the needs of the correct disposal of these substances. For this, it is intended:

- To conduct workshops aimed at companies and institutions;
- To create information and education mechanisms for the community, based on inventories results;
- That training will be given to public organizations.

C1. Result

Public and private sector personnel trained to support the activities of the action plan and to have an informed and sensitized public about the implications, uses and risks associated with PCBs.

C2. Indicator

National workshops aimed at different sectors of the population.

6.4. Analytical capacity

6.4.1. Background

Due to the lack of specialized financial and technical resources, it is proposed to evaluate aspects such as: equipment available, technical personnel, experience, among others.

Article 11 of the Stockholm Convention states that harmonized methodologies for the inventory of emissions sources and analytical techniques for measuring such emissions should be developed.

The measures proposed in the different action plans inserted in the NIP will require supported monitoring of data that can corroborate or verify the effectiveness of the measures proposed.

6.4.2. Objective

Overall objective

- Have analytical capacity of POPs, appropriate to the needs of the country, that meet national and international quality levels and support the implementation of the Stockholm Convention.

Specific objectives

- To train national technicians in the identification, collection and packaging of samples.

6.4.3. Beneficiaries

The main beneficiary will be the society in general, since there will be, at the national level, the tools for identification and quantification of POPs. This information will be fundamental to take measures of prevention and control, thus improving the quality of life of the population.

The industrial sector will be able to know the magnitude of the possible environmental impacts generated by the productive processes at more accessible costs and to elaborate the corresponding reduction or elimination plans. Other beneficiaries will be exporters who can count on laboratories to certify their production, increasing confidence in national products.

The attainment of this objective will also broaden the horizons of the national scientific community, encouraging them to develop study areas that have not yet been explored in the country.

And finally, by having objective and comparable analytical results, it will enable the state to have information on the degree of compliance with the Stockholm Convention, in relation to the protection of human health and the environment, facilitating the generation of information necessary to make it available to the national and international community.

6.4.4. Activities and Results

In order to achieve the objectives proposed, the following actions will be developed in the medium term:

- Validation / homologation of analytical methods - the National Institute for Agricultural Research and Development (INIDA) will be asked to validate / approve the following analytical methods to comply with the requirements of Phase I of the PNI, which serve as the basis for the accreditation process.
 - Methods of chemical analysis of PCBs in dielectric oils and soils;

- Methods of chemical analysis of POPs pesticides in soils, food, water and biota;
- Laboratories - Improve LASAP - Laboratory of Soils, Water and Plants - of INIDA; support in the creation of laboratories that carry out analysis of POPs in different environmental matrices, being necessary the accreditation of these laboratories, as well as the methodologies used in the analysis of POPs, following the international norms already regulated.

6.5. Information, Training and Awareness

6.5.1. Background

Considering that Information, Training and Awareness activities constitute one of the bases for the successful implementation of the NIP, a set of actions is proposed, including those that had been proposed in the previous NIP that were not implemented. Each party should therefore promote and facilitate:

- Raising awareness of policy makers and adopting decisions related to POPs;
- Communication to the public of all non-confidential information available on POPs;
- The development and implementation of training and public awareness programs, especially for women, children and the less educated, on the harmful effects of POPs as well as their effects on health and the environment, with particular emphasis on alternatives;
- The participation of the public in the treatment of POPs issues in relation to their effects on health and the environment, in the elaboration of adequate responses.
- The training of technical, scientific, educational and administrative staff;
- The elaboration of education and training programs at national and international levels;
- Public access to updated information
- Encourage industry and professional users to make information available, use the means of dissemination and establish information centers, etc .;

The implementation of the proposed actions with public participation in the development and implementation of the NIP of the Stockholm Convention allows public organizations and those affected by the Plan to inform themselves on the scale of

the potential impacts of the project and to express their opinions to the Competent Authority.

6.5.2. Objectives

Overall Objective

- Promote opportunities for public participation, training and information on the NIP of POPs, among the different actors involved.

Specific Objectives

- Raise awareness among stakeholders about the use and effects of POPs on health and the environment and the benefits of their reduction and / or elimination.
- Provide information on the NIP to strengthen the competences regarding the technical management and the impact of the actions.
- Collect public opinions and opinions from sectors interested in the subject that may be of value to the construction of actions in the medium and long term.
- Carry out awareness / education activities for those directly related to the Plan, in the use, effects and alternatives of elimination of POPs.
- Public access to up-to-date information on the status of POPs in the country, as well as the exchange of information among the actors involved.
- Encourage public and stakeholder participation in the process of developing standards related to the use, storage and disposal of POPs.

6.5.3. Activities and Results

Diffusion, Training and Information of the PNI.

During the execution of the GEF / UNEP Project "Development of the National Implementation Plan for the Management of POPs in Cape Verde", capacity building was carried out to develop the different inventories and their corresponding action plans, as well as the diffusion process and public consultation of the NIP.

In the next phase, a global process of dissemination, training and information will be carried out, considering that the technical training and dissemination actions related to the implementation of the Action Plans will be carried out regarding Pesticides, Dioxins and Furans and PCBs.

In this context, a National Disclosure Campaign will be implemented and will contribute to the dissemination of the Plan and its coverage to all stakeholders, including the general public.

A Training Program will also be developed for groups directly involved in the Plan, companies, temporary workers, professionals, etc. highlighting the incorporation of knowledge about POPs, thus promoting conducts regarding the use and elimination of POPs. To this end, the target audience will be identified and the expected changes of conduct and their effects will be established with the aim of designing the necessary training and training strategies.

In order to keep the public permanently informed about the evolution of the Plan and the state of the POPs in the country, the most efficient ways of delivering information to the public and to interest groups will be identified.

Table 14- Possible Activities of Disclosure, Training and Information to be developed

Phases	Activities	Intermediate Products
1	PNI dissemination campaign - making the contents of the NIP public	Preparation of graphic material; dissemination by means of communication, press, radio and television
2	Training and education - development of training programs and educational material on POPs	Development of a national capacity building program (characteristics, use and elimination of POPs); preparation of educational material
3	Information - to keep the public informed with up-to-date information on the status of POPs and advances in the NIP	Through a web page, leaflets and mass media keep up-to-date information of POPs states

6.5.4. Coordination

For the development of the different stages, it will be essential to establish coordination mechanisms with the other components of the Plan, especially with the training and dissemination actions to be carried out in the implementation of the Plans of Action for Pesticides, Dioxins and Furans and PCBs.

6.6. Emission registration, pollutant transfer and information exchange system

6.6.1. Background

Articles IX and X of the Stockholm Convention require countries to facilitate the exchange and promotion of public information, knowledge and training. Article X explicitly recognizes the value of emissions and transfer records to compile and disseminate the estimated quantities of POPs products that are issued or eliminated. For this reason, it is necessary to focus efforts to elaborate the main characteristics of the system and to determine the scope of these systems.

Similar to other countries, the country may develop a catalog system or database of potentially harmful emissions and transfers of chemicals, including information on the nature and quantities of such emissions and transfers. This system may comprise three essential elements:

- Structured database;
- Mechanism for exchange of information for delivery and publication of data;
- Diffusion mechanism to convert data into public information;

This system should include data from point sources such as industrial sites, and may include data from diffuse sources such as agricultural operations or transport activities, being considered air emissions in water and soil as well as waste transported for treatment and final disposition.

6.6.2. Objectives

General objective

- Implement a Pollutant Release and Transfer Regime system, including POPs to fulfill the obligations of registration, exchange and public knowledge established in the Stockholm Convention.

Specific objectives

- Develop the normative aspects that allow the implementation and management of the system;

- Consolidate the databases and develop a mechanism that allows the exchange of information between the main national and international actors;
- Develop a procedure for the dissemination and publication of the information contained in the system;

6.6.3. Beneficiaries

The system will provide the country with a set of basic information on polluting substances, answering questions such as: emissions generating sites or transfers of substances of environmental importance; which substances are being emitted or transferred and in what quantities; which sectors are generating the different substances of interest, among other aspects.

The generation of the system will allow the homologation of different sectoral databases, with which it will be possible to generate comparable information. On the other hand, its implementation will necessarily imply the balance of the infrastructure to be created and a standardization of emission estimation methodologies, with which it will be possible to support the processes of normative generation, establishment of emission baselines, prevention and decontamination, determination of latent or saturated areas, and verification of compliance with environmental norms. In the same sense, the generation of integrated emissions data will improve the understanding of registered environmental quality. This will allow the generation of appropriate indicators to inform national progress in both international and local protocols. It is important to highlight that there is currently a need for the establishment of a single data entry (centralized registration).

Finally, the existence of the system available to the public will strengthen the participation process and the right to knowledge on the part of the community, a fact of world relevance now and carried out by the Stockholm Convention.

6.6.4. Activities and Results

The activities that will be developed to achieve the specific objectives are:

- Develop normative aspects that allow the implementation and management of the system;

- Development of institutional protocols for the transfer / exchange of information;
- Elaboration of a guide of procedures for the public services with competence for the system;
- Creation of a legal body to require fixed emission sources of atmospheric pollutants to declare their main operating conditions;
- Study for the formation of a single register central;
- Institutionalization of emissions registration and transfer of pollutants, including POPs.

6.6.4.1. **Indicator**

- Number of agreements signed / number of institutions providing information;
- Guide to procedures for public services with competence for the system;
- Approved and enforced legal body;
- Study result document for single information receipt location;
- Preliminary Draft Law;
- Preliminary Draft Law developed and development of institutional protocols for the transfer / exchange of information.

6.6.5.Consolidation of databases and develop a mechanism that allows the exchange of information between the main national and international actors.

6.6.5.1. **Activities and results**

- Approval of sectoral databases included in the national pollutant release and transfer register;
- Single information receipt system design;
- National standardization of emission estimation methods;
- Establishment and Implementation of the Emission Register and Pollutant Transfer System;
- Creation of a system of monitoring and compliance with standards.

6.6.5.2. **Indicator**

- Total number of information fields coded in the register / total number of fields of information that can be coded;
- Number of sectoral legal bodies involving basic information for the integrated single information receipt system;
- Total number of categories of sources of interest for the system with official methodology for each specific substance selected for the category;
- Number of sectoral systems and defined sources of interest;
- Total number of categories of standardized sources included in the system with their respective compliance indicator for each standardized substance of the specific category;

6.6.6. **Develop a procedure for the dissemination and publication of information contained in the system (NOSI)**

6.6.6.1. **Activities and results**

- Implementation of mechanisms and dissemination of information to actors involved at national level;
- Development and implementation of information exchange mechanisms under the Stockholm Convention.

6.6.6.2. **Indicator**

- Total number of visitors, of satisfactorily answered queries, of publications, of sectors participating in the training developed, and results of the application of user surveys of the system;
- Total number of information obligations of the Stockholm Convention and number of annual system publications, including the POPs chemicals section.

6.7. **Research**

6.7.1. **Background**

Under the GEF / UNEP Project "Development of a National Implementation Plan for POPs management in Cape Verde", studies were carried out to identify the national

conditions related to POPs. The main lines of the research were oriented to the realization of national inventories on the state of the three chemical groups that form the POPs: the pesticides, PCBs and Dioxins and Furans, with emphasis on the sources of contamination. Other studies have contributed to complementing the diagnosis of the effects of POPs on health, laboratory analytical capacity to approach the quantification of POPs in different environments, development of methodology to carry out a national registry of contaminated sites, management of chemical substances and analysis of current legislation on POPs.

The results showed limitations and gaps, especially those related to the POPs/environment/health trinomial. It is important to emphasize this point as the full understanding is needed to develop scientifically based management mechanisms in accordance with the requirements of the Stockholm Convention.

The ban on imports carried out at the beginning of the millennium, with the withdrawal of the POPs, led to their significant reduction and is currently at levels below the internationally established maximum limits. Regarding PCBs, however, the diagnoses are in their first stages, but the results suggest a presence almost non-existent in relation to human exposure. For unintentionally issued Dioxins and Furans, sectoral work has been done with the improvement of the national solid waste management system, which has a significant impact on the emissions of these substances. However, a number of measures have been taken to improve industrial technologies and to ban the burning of waste.

International scientific background and the lack of national information require a review and guidance of diagnostic and research activities on POPs by different sectors and institutions.

It is also necessary to set up a monitoring and surveillance mechanism for POPs pesticides in different areas and to set up research plans for PCBs and Dioxins and Furans, It is necessary to orient the proposals towards:

- Determination of concentrations of POPs in environments and humans;
- Establishment of coordinated and integrated multi-sectoral and multi-institutional monitoring and surveillance programs under the premise of common objectives to sectors and institutions and specific objectives according to particular interests;

- Promotion of collaborative projects to carry out studies on human exposure and diseases by exposure to POPs, especially for PCBs and Dioxins and Furans, with emphasis on maternal-fetal exposure and associated neoplasms;
- Promotion of research project in environmental epidemiology, in close collaboration with environmental monitoring projects;
- Quantitative and qualitative consolidation of the development and sufficiency of the improved or established laboratories;

The need for priority treatment in the areas of research and development within NIPs is supported by Article XI of the Stockholm Convention, which states that Parties, within their capacities, shall encourage and / or carry out research activities at national and international levels, development, surveillance and cooperation relating to POPs and, where appropriate, related to alternatives and potential POPs, including the following:

- Sources and emissions in the environment;
- Presence, levels and trends in people and the environment;
- Transport, final destination and transformation into the environment;
- Effects on human health and the environment;
- Socio-economic and cultural effects;
- Reduction and / or elimination of emissions;
- Harmonized methodologies for conducting inventories of emission sources and analytical techniques for quantification of emissions.

It should also be noted that the different paragraphs of Article XI (2) state that national and international efforts to strengthen national capacity for scientific and technical research will be supported, and that research will be undertaken to mitigate the effects of POPs and that the results of the investigations will be accessible to the public in a timely and regular manner.

The initial research proposal may have the following purposes:

- Determine scientific elements that support NBP management;
- Implement and improve national laboratory capabilities for monitoring / surveillance and research purposes, both in the environment and in humans;
- Identify the national conditions that influence the occurrence of hazardous levels of human exposure to POPs, indicating human, environmental and institutional risk factors;

- Identify the main adverse effects caused by POPs on local health, according to reality, environment and human, national;
- Demonstrate the cause-effect relationship between exposure to POPs and selected adverse effects to the local population;
- To contribute with sustained information for the elaboration of normative proposals that focus on the national legislation and that meet the requirements of the Stockholm Convention;
- To assess the adverse economic impact of POPs contamination on different environmental aspects related to productivity, health services and human health;
- Incorporation of the evaluation of economic parameters in some previous proposals;

6.7.2.Objective

Identify and promote POP research activities

6.7.3.Activities and Results

In order to achieve the above objective, the following actions will be developed in the medium term:

- Identification of capacities and research needs related to POPs in the country - with the purpose of knowing the human and infrastructure capacities at present and establishing the lines and the research projects to be developed, sources of financing, publications and forums;
- Technical workshops on Research Activities - based on the results obtained: a) invite the national scientific community to identify and define lines of research that can be used to meet the requirements of the Stockholm Convention, propose coordination mechanisms for the elaboration of the national agenda about POPs, and discussing likely sources of funding.

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8. ATTACHMENTS

Annex I: List of Pesticides authorized in 2007

Triclorfon	Dipterex SP 80	560 - 630	Cebola - 10g 20 g / 10 L 200g/10kg de farelo+500g de açúcar	Pulverização Confeção de isco	Mosca de abóbora; Agrotis	Abóbora, melão, melancia, pepino Tomate; Batata comum e outras	7 - 10 dias	1/ Tratar sempre no fim da tarde; 2/ Contra Agrotis, utilizar na preparação de isco
Imidaclopride	Confidor SL (17,7 % ou 200g/l)	450	5 ml / 10L	Pulverização	Afídeos, minadora de folhas	Todas	Citrinos - 15 dias Melão e Pepino - 3 dias Batata - 21 dias	Não aplicar durante a floração dos limoeiros
Buprofezine	Applaud 40 SC (400 g/l)	2198	13 g / 10 L	Pulverização	Homopteras (Cochinilhas cicadelas);	Melão, pepino, pimento, tomate, malagueta, Fruteiras Plantas ornamentais e florais	3 dias	Aplicar na altura do aparecimento dos primeiros estados larvares
Propoxur	Uden WP 75%; Uden DP 2%	90 - 128	15g/10L 200g / 10 Kg de farelo 5-7kg / 90kg de farelo	1/ Pulverização/ 2/ Povilhação; Confeção de isco	Milpés Tartarugas; Gafanhoto	Todas (exceto hortícolas)	15 dias	Produtos utilizados em campanha agrícola
Pyrimicarbe	Pirimor C WG 50%	147	5g/10L		Afídeos	Cereais, batata comum, pepino, abóbora, morango, melão, pimentão e tomate	15 dias cereais, 7 dias morango, batata comum, pepino, abóbora, melão, pimentão e tomate	
Carbaryl	Sevin DP 5%	850	5 - 7 Kg / 100kg de farelo	Povilhação/ Confeção de isco	Gafanhotos;	Culturas de sequeiro	7 dias	Povilhação, confeção de isco
<i>Metarhizium anisopliae</i> var. <i>acridum</i> (produto biológico)	Green Muscle P ou L - Formulação OF		50g / ha (Junta 700 ml petróleo +250 ml óleo Diesel)	Pulverização	Gafanhotos	Todas as culturas		

2. FUNGICIDAS



MINISTÉRIO DE AGRICULTURA E PISCAS
DIRECÇÃO GERAL DE AGRICULTURA, SILVICULTURA E PECUÁRIA

LISTA DE PRODUTOS FITOSSANITÁRIOS AUTORIZADOS EM CABO VERDE (versão actualizada em Outubro 2005)

1. INSECTICIDAS

Matéria activa	Nome comercial / Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose / 10L água	Modo aplicação	Pragas	Culturas	Intervalo de segurança (dias)	Observação
<i>Bacillus thuringiensis</i> vars <i>kurstaki</i> / <i> aizawai</i> (biológico)	Thuricide (i) Dipel (ii) Bactura (ii) Xentari (ii) Turex	Inofensivo para homem e abelhas	10 g / 10 L	Pulverização	Lagarta (lepidoptera)	Tomate, repolho, batata comum, couve, etc.	3 dias	
Deltamethrine	Decis EC (25 g/L)	66,7-138,7	3 - 5ml / 10L	Pulverização	Trips, traça (batatas) e Lepidoptera	Todas	Bataeira, Macieira, Alface - 7 dias Couve, Feijoleiro, Tomateiro, Morangoiro - 2 dias	
Fenitrothion	Sumithion EC 50 Folithion EC 50	250 - 500	10 - 15 ml / 10L	Pulverização Pulverização	Trips, Cochonilhas, Tartaruga, Gafanhotos	Cebola, alho, fruteiras e outras culturas de sequeiro	15 - 21 dias	Contra Trips, aplicar até 21 dias antes da colheita
Fenthion	Lebaycid EC 50	190-315	10-13ml / 10L	Pulverização	Mosca de abóbora, mosca mediterrânea Trips, Afídeos	Abóbora, melancia, melão, pepino, Cebola	21 dias	Aplicar logo no início de formação de frutos; não tratar 21 dias antes da colheita
Acephate	Orthene SP 75%	545	Beterraba e Batata - 7,5 g/10 L Couve e Repolho - 5g/ 10 L Tomate - 10g /10 L	Pulverização	Afídeos, lagarta e Trips	Cebola; batata; tomate, couve, repolho e beterraba	21 dias	

3. ACARICIDAS

Matéria activa	Nome comercial /Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose / 10L água	Modo de aplicação	Pragas	Culturas	Intervalo de segurança (dia)	Observação
Chinomethionate	Moresstan WP 25 %	3.000	3g/10L	Pulverização	Ácaros	Tomate pimentão cenoura pepino e abóbora	3 dias	
Enxofre	Plantisoufre WP 80% Microlux, Enxofre Bayer Ultra D		20 - 4 g / 10L	Pulverização	Ácaros	Tomate, pimentão, batata comum	3 dias	
Oleo mineral	Oleo mineral Biomite L		160ml / 10 L 20-25ml / 10L	Pulverização	Ácaros	Tomate, pimentão, batata comum		
Hexythiazox	Cesar, Centurion P 10%	>5.000	5 g / 10L	Pulverização	Ácaros vermelhos	Todas	3 dias	
Dicofol	Kelthane EC (480 g / l)		3 - 6 g / 10 L	Pulverização	Ácaros	Abóbora, melancia, pepino e tomate	4 dias	

Matéria activa	Nome comercial /Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose	Modo de aplicação	Pragas	Culturas	Intervalo de segurança (dia)	Observação
Deltamethrine	K-Othrine DP	66,7-138,7	1 Kg / ton de batata	Povilhação	Traças (batata)	Batata comum (sementes)	7 dias	
Fenthion	Lebacycid EC 50%	190-315	10 - 13 ml 10L	Pulverização	Tratamento dos ramos das batateiras			
Fenitrothion	Sumthion EC 50 Folthion	250 - 500)EC 50	15ml / 10L	Pulverização	Gorgulho da batata doce, Cochinhilhas da mandioca,	Batata doce, Mandioca	10 - 15 dias	Contra gorgulho de batata doce, utilizar na desinfeção de ramos antes da plantação; Desinfecção estacas da mandioca contra cochinhilhas

5. INSECTICIDAS para protecção de géneros alimentícios armazenados

Matéria activa	Nome comercial /Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose	Modo de aplicação	Pragas	Culturas	Intervalo de segurança (dia)	Observação
Chlorpyrifos-methyl	Reidan 50 EC	2140	15ml / 10L	Pulverização	Insectos de produtos de stock	Cereais e feijões		
Phosphore d'aluminium	Phostoxin TB 37 % (Comprimido) Ceiphos (560 gr/Kg)		20g/ton	Fumigação	Insectos de produtos de stock (gorgulhos) Desinfeção de armazém, silos	Cereais e feijões		1/ Fumigante aplicável apenas por equipas especializadas, para desinfeção de locais de armazenamento e transportes. 2/ só é autorizada a importação às firmas especializadas e o tratamento é supervisionado pela PV

6. DIVERSOS

Matéria activa	Nome comercial /Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose	Modo de aplicação	Pragas	Culturas	Intervalo de segurança (dia)	Observação
MOLUSCICIDA :								
Metocarbe	Mesuro anti-lesma RB 4% (isco)	87 - 135	3 g / 10m ²	Distribuição normal (misturar com areia ou terra para melhor distribuição) Pulverização (aplicação dirigida ao solo)	Lesmas e caracóis	Todas		Pode ser misturado com areia para melhor distribuição. Deve-se formar uma barreira de 1 metro de largura a volta da cultura Não aplicar este produto junto dos outros produtos comestíveis a 3 semanas da colheita. Não aplicar durante a floração dado o perigo para as abelhas
	Mesuro WP 50%		10g / 10L					

RATICIDAS :								
Brodifacume	0,26 - 0,4	Racumin Forte (isico com 0,005%)	Ratos: 5-15 g de isico por posto de engodo, intervalo de 2 a 5 m Ratazanas: 20 a 30 g de isico por posto de engodo, intervalo de 5 - 10 m	Distribuir isico em locais frequentados pelos ratos	Ratos	Locais infestados com ratos		Utilizar tal como e ou na preparaçao isico.
Bromadiolona	1-5	Rafix (Isico com 0,005%)	25 - 50 g / iscos (ratos domestico; rato do campo) 100 a 200 g / iscos (ratazanas)	Distribuir isico em locais frequentados pelos ratos em cada 5 - 6 m	Todo os tipos de ratos	Locais infestados com ratos		
		Ramortal PF (Isico com 0,005%)	25 - 50 g / iscos (ratos domestico; rato do campo) 100 a 200 g / iscos (ratazanas)					

Materia activa	Nome comercial /Tipo de formulação	Toxicidade DL50 oral (mg/Kg)	Dose	Modo de aplicaçao	Doençaa	Culturas	Intervalo de segurança (dias)	Observaçao
Chinomethionate	Morestan WP 25 %	3.000	3g/10L	Pulverizaçao	Oidio	Tomate pimentao cenoura pepino e abobora	3 dias	Fazer no maximo tres tratamentos
Triadimefon	Bayleton ANWP com 70%(P/P) de Propinebe e 2% de (P/P) de Triadimefao	568	2,5 - 3 Kg/ ha	Pulverizaçao	Oidio, ferrugem	Todaa	15 dias 3 dias: melao 7 dias: uva	
Dichlofluande	Euparene WP 50%	500 - 2500	20g / 10 L	Pulverizaçao	Alternaria, Oidium, Phytophthora, Stemfilium Peronospora	Tomate, pepino, alface uva, morango fruteiras	3 dias : Tomate, Pepino 7 dias: morango 7 dias : alface 21 dias : uva	Tratamento preventivo
Triforine	Fungix EC	>16.000	15 ml / 10 L	Pulverizaçao	Oidium	Todaa	3 dias todas; 15 dias cenoura	
Mancozebe	Manzate WP 80% Mancozan WP 80 % Dithane WG 75%	>8.000	20 - 25 g / 10 L	Pulverizaçao	Alternaria Phytophthora	Todaa	3 dias: pepino, melao, 7dias: batata pimento e feijao 15: morango, alface; cenoura, alho, cebola, 21 dias: couve, repolho, brocolos	Excelente açao preventiva e largo espectro contra doençaa criptogamicas importantes
			20 - 25 g / 10 L	Pulverizaçao				
			20 - 25 g / 10 L	Povilhaçao				
Procymidone	Sumislex P50	6.800	15 ml / 10 L	Pulverizaçao	Alternaria	Brocolos, cenoura, couve-flor, repolho	3 dia: pepino, abobora, repolho,melao,tomate Pimentao, beterraba, couve 21dia: alho,cebola 7 dia: morango 17 dia: cenoura, videira	
Fosetyl-Al (fosetil de aluminio)	Aliette (flash) WG 80%	5.800	20 - 25 g / 10 L	Pulverizaçao	Phytophthora Pythium	Cucurbitaceas, alface, tomate, Batata comum Morango, uva, macieira, citrinos (gomose)	7 dias: cucurbitaceas, alface 21dias: uva, 30 dias :morango 3 dias: macieira 14 dias: citrinos	
Enxofre	Plantisoufre WP 80 Microlux Enxofre Bayer Ultra D 80%,%		50g/10L	Pulverizaçao	Oidio	Todaa		
			50g/10L					
			20 - 40g / 10L					

Annex II - List of pesticides authorized in 2009



DIRECÇÃO GERAL DE AGRICULTURA, SILVICULTURA E PECUÁRIA
LISTA DE PRODUTOS FITOSSANITÁRIOS AUTORIZADOS - FEVEREIRO DE 2012



1. INSECTICIDAS

Nº de ord.	Nome comercial (incluindo tipo de formulação)	Matéria activa	Toxicidade DL50 oral (mg/kg)	Dose /10 L água	Modo aplicação	Pragas/doenças	Culturas	Intervalo de segurança (dias)	Observação	Homologação CSP
1	Thuricide (G)	<i>Bacillus thuringiensis</i>	Inofensivo para Homem e abelhas	10 g/ 10 L	Pulverização	Lagartas (Lepidópteros)	Tomate, repolho, batata comum, couve, etc.	3 dias		Não
2	Dipel (K)	<i>Bacillus thuringiensis</i>	Inofensivo para Homem e abelhas	10 g/ 10 L	Pulverização	Lagartas (Lepidópteros)	Tomate, repolho, batata comum, couve, etc.	4 dias		Não
3	Bactura (K) Xentari (a) Turax	<i>Bacillus thuringiensis</i>	Inofensivo para Homem e abelhas	10 g/ 10 L	Pulverização	Lagartas (Lepidópteros)	Tomate, repolho, batata comum, couve, etc.	5 dias		Não
4	Baok	<i>Bacillus thuringiensis</i>	5000	10 g/ 10 L	Pulverização	Lagartas (Lepidópteros)	Couve, repolho, tomate, pimento e todas as hortícolas	3 dias		Sim
5	Baok WG	<i>Bacillus thuringiensis</i>	5000	10 g/ 10 L	Pulverização	Lagartas (Lepidópteros)	Culturas hortícolas	3 dias		Sim
6	Green Muscle	<i>Metarhizium anisopliae</i> var. <i>oviformis</i>	Inofensivo para Homem e abelhas	50 g/ha	Pulverização	Gafanhotos	Todas as culturas	3 dias		Sim
7	Suneem 1% EC	Azadirachtine (10 g/l)	> 2000	1 l/ha	Pulverização	Lagartas e tripses	Todas as culturas	3 dias		Sim
8	Dimilin OF 6	Diflubenzuron	4640	500 g/ha	Pulverização	Gafanhotos (estádio larvar)	Todas as culturas	4 dias		Sim
9	Dimilin WP 25	Diflubenzuron	4640	500 g/ha	Pulverização	Larvas de insectos	Todas as culturas	4 dias		Sim
10	Pirreor G WG 50%	Pyrimicarb	147	5g/10L	Pulverização	Alfêcos	Cereais, batata comum, pepino, abóbora, morango, melão, pimentão e tomate	15 dias cereais, 7 dias morango, batata comum, pepino, abóbora, melão, pimentão e tomate		Não

Lista de pesticidas autorizados - Fevereiro de 2012

Página 1

ANNEX III - list of Pesticides authorized in 2012 (see folder)

Annex IV - current stocks of obsolete pesticides in Cape Verde

Islands	Active substance	Number of packages	Amount	Obs.
Boavista	a.s. without identification	1		Stock Since 2007
	Chlorporpham	1 with 2 tablets (8)	200g	
	Malathion	12	160g	
Brava	a.s. without identification	1	11	
	Chemomethionate	67	30g	
	Triadimefon	2	0,471	
Fogo	a.s. without identification	4	2kg;1kg;250g;3dl	
	Hyaluronic acid sodium salt, silver sulfadiazine	1	25g	
	Amitraz	1	1L	
	Amprolium	1	1kg	
	Myrtle Antiancyanosidic	1	20 sachets	
	Atenolol chlorthalidone	1	21 tablets	

	Bisodic Cefodizime	1	1 ampoule
	Cefpodoxin	1	8 tablets
	Ceftibuten	1 with 2 tablets	6 tablets
	Difficult to read	1	31
	Dinocape	1	100g
	Diosmina	1	20 tablets
	Enalapril maleate	1	8 tablets
	Enalapril maleate hydrochlorothiazide	1	8 tablets
	Fenithrothion	47 empty packs	50l;500ml
	Fexofenadine hydrochloride	2	40 tablets
	Finasteride	1	15 tablets
	Fluconazole	1 with 3 capsules	10 capsules
	Flurithromycin	1 with 6 capsules	12 capsules
	Fluticasone propionate	1 bottle	1 bottle
	Phospholipid cyanocobalamin	1	3 ampoule
	Fosfolipidi-ipotalamici	1	5 ampoule
	Fosinopril sodium hydrochlorothiazide	1 with 4 tablets	14 tablets

Iosartan Hydrochlorothiazid e	1	14 tablets
Irbesartan	1	28 tablets
Irbesartan hydrochlorothiazide	1	28 tablets
Isartan potassium	1	28 tablets
Isosorbide-5- mononitrate	10	30 tablets
Lisinopril	1	3 tablets
Mometasone furoate	1	1 bottle
Mycrobutanil	1	11
Piperazine citrate	4	1kg
Piroxicam- β - cyclodextrin	4	20 sachets
Poly (vinyl-2- pyrrolidon) -iod- komplex	1	11
Quinapril	1	14 tablets
Rifamycin 200	1	8 tablets
Salmeterolo xinafoate	1	1 ampoule
Sodium alginate / sodium bicarbonate	1	200 ml
β -methyldigossine	1	40 tablets
Terazosin	1	10 tablets

	Terazosin hydrochloride	4	10 tablets
	Tizanidine hydrochloride	1	15 tablets
	Triadimefon	4	1 kg;250g
	Zea mays (epaline 100dm) centella asiatica aesculus hippocastamum (escina) hamamelis virginiana, zinc oxide	1	40ml
S.Antão	a.s. without identification	12	200 l ; 25kg
S.Nicola u			
	Carbaryl	17	25g
	Propoxur	2	100g;25kg
S.Vicente			
	a.s. without identification	2	1 ampoule;1 bottle;10kg,10;100g;1090g;16kg;160g;2kg;2500g;27kg;3 bottles;3kg;300g;4kg;41;454g;10kg;5l;1kg;60kg;65kg;650g;700g ;7200g;8kg
	Glyphosphate acid	2	1 l
	Bitertanol	1	37,5 ml
	Buprofezine	20	50 g

Santiago	Carbaryl	4	25 kg; 25kg
	Chlorpyriphos 240 ulv	1	200 l
	Fenithrothion	80	150ml; 500ml
	Fenthion	4	100 ml; 20ml; 30ml; 50ml
	Aluminum foil	73	1440 g
	Procymidone	4	300g
	Propoxur	1	50 g
	Tebuconazole	46	80 ml
	a.s. without identification	4	0,2 l; 400l; 75kg; 10kg
	Bacillus thuringiensis	3	0,4 kg
	Buprofezin	130	0,05 kg
	Carbaryl	20	0,1kg; 0,15kg
	Carbendazime	2	0
	DDT	1	0,75 kg
	Deltamethrin	5	0,03l; 0,03l; 0,06l; 0,18l; 1,5l
	Dichlofluanid	25	0,2 kg
Sulfur	2	0,1kg; 2,4kg	

Fenithrothion	10	1 l	stock resulting from seizure of the years 2009, 2010, 2011, 2014 and 2015
Fenthion	3	0,2 l; 0,25l; 2l	
Formetanate	1	1kg	
Foxime	3	0,1kg	
Hexitiazox	1	0,05 kg	
Hydrocarbons, phenetrotio	1	25 l	
Imidacloprid	2	0,1 l	
Mancozebe	2	0,5 kg	
Methylenochloid	2	25kg; 35kg; 100kg	
Metiocarb	108	0,3kg	
Summer oil	12	1 l	
Procymidone	5	1 l	
Propinebe, triadimetão	2	0,035 kg; 0,25kg	
Sol id toxic	4	100 kg	
Triadimefon, propinebe	32	0,5 kg	
Trichlorfon	3	0,4kg	
Not identified		3,8 l	
Chlorpyrifos		15 l	
Chlorpyrifos		5 l	

Not identified (Dicloagro 50 EC)		8,11	
Metamidofós		43,6	
Abamectin		15	
Propiconazole	2	0,11	
Dimethoate		5,5	
Imidacloprid		13,15	
Not identified (Tomega)		0,5	
Indoxarbe		2	

Unidentified (Califan Super)		3,5
Unidentified (Delta Cal)		0,25
Detametrin		5 kg
Detametrin		27,5 l
Bacillus thuringiensis		9,8 kg
Pirimicarbe		5 kg
Diflubenzuron		6 kg
Spinosade		0,52
Aluminum phosphide		1 kg
DDT		7 kg