Stockholm Convention
on Persistent Organic Pollutants (POPs)

National Implementation Plan of the Union of Comoros

Ministry of Agriculture, Fisheries and the Environment

Global Environment Facility

UNDP

UNITAR

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ABBREVIATIONS AND ACRONYMS

ACTIV	Association Comorienne des techniciens et infirmiers vétérinaires/ Comorian Association of Veterinaries
AFD	Agence française de développement/ French Development Agency
ASP	Africa Stockpiles Programme
BAT	Best available techniques
BEP	Best environmental practices
CADER	Centre d'appui au développement rural/ Support Centre for Rural Development
CAPAC	Centrale d'approvisionnement des professionnels agricoles des Comores/Supply Centre for Comorian Professionals of the Agriculture Sector
CEFADER	Centre fédéral d'appui au développement rural/ Federal Support Centre for Rural Development
CIRAD	Centre international de recherche pour le développement agricole/ International Research Centre for Agricultural Development
CICE	Comité interministériel consultatif pour l'environnement/ Interministerial Advisory Committee on the Environment
CIDD	Comité insulaire pour le développement durable / Island Committee for Sustainable Development
CNE	Commission nationale de l'environnement/ National Environment Commission
CNDD	Comité national pour le développement durable/ National Committee for Sustainable Development
CNDRS	Centre national de la recherche scientifique/ National Centre for Scientific Research
COMESA	Common Market for Eastern and Southern Africa
DGE	Direction générale de l'environnement/Environment Department
DDT	Dichlorodiphenyl Trichloroethane
DSCRP	Document de stratégie de croissance et de réduction de la pauvreté /Strategy Document for Growth and Poverty Reduction
EU	European Union
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GAD	Groupe d'action pour le développement/Action Group for Development
GIE	Groupe d'intérêt économique/ Economic Interest Group
GRET	Groupe de recherche et d'échange technologiques/Research and Technological Exchanges Centre
IOC	Indian Ocean Commission
INRAPE	Institut national de recherche pour l'agriculture, la pêche et l'environnement/ National Institute for Research in Agriculture, Fisheries and the Environment
MAPIAE	Ministère de l'agriculture, de la pêche et de l'environnement/ Ministry of Agriculture, Fisheries and the Environment
ME	Ministère de l'énergie/ Ministry of Energy
MS	Ministère de la santé / Ministry of Health
NEPAD	New Partnerships for Africa's Development
NGO	Nongovernmental organization

NIP	National Implementation Plan of the Stockholm Convention
NPA	Nouvelle politique agricole/ New Agricultural Policy
PAE	Plan d'action environnementale/ Environmental Plan of Action
PAFIA	Projet d'appui à la filière intrants agricoles/ Support Project for the Agricultural Inputs Sector
PANSAC	Projet d'appui à la nouvelle stratégie agricole des Comores/ Support Project for the New Agricultural Strategy of Comoros
PCBs	Polychlorinated biphenyls
PN	Profil national/ National Profile
PNAC	Pharmacie nationale autonome des Comores/ National Autonomous Pharmacy of Comoros
PNLP	Plan national de lutte contre le paludisme/ National Plan to Fight Malaria
POPs	Persistent organic pollutants
PRPV	Programme régional de protection des végétaux/ Regional Programme for Plant Protection
SNAC-FM	Syndicat national pour les agriculteurs des Comores - filière maraîchère/ National Trade Union for Comorian Farmers (food production)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNITAR	United Nations Institute for Training and Research
VUNA DJEMA	Organisation des agriculteurs mohéliens/ Organisation of Mohéli Farmers
WHO	World Health Organization
ZANA ZEMA	Nom du groupe d'intérêt économique (GIE) des détaillants des intrants agricoles à la Grande Comore/ Name of the Economic Interest Group of the Agriculture Input Retailers in Grande Comore
ZEP	Zone exclusive préférentielle/Preferential Exclusive Zone

PREFACE

Worldwide governments have become aware of the negative effects of chemicals on human health and the environment. This issue has led to numerous debates amongst experts and suggestions were made on how to achieve the sound management of dangerous chemical substances and sustainable development. The management of dangerous chemicals is now considered by all countries as a key issue for public health and nature conservation.

In this context, concerned with the risks and uncertainties related to the production, transport, storage, use, and disposal of dangerous chemical substances, in particular posed by Persistent Organic Pollutants (POPs), almost all governments of the world, including the Union of Comoros, adopted the Stockhom Convention on POPs during a meeting held on 22 and 23 May 2001 in Stockholm, Sweden. The Union of Comoros is one of the first countries to have signed the Convention on 22 May 2001. The adoption of the Convention by the National Assembly of Comoros in November 2006 and its ratification by the President in January 2007 show the commitment of the country to address the risks posed by chemicals and in particular POPs on human health and the environment. The country integrates this legal instrument, which aims to protect human health and the environment, into its national legislation.

In this perspective, the need for information and knowledge tools on negative impacts of chemicals and possible management instruments requires coordinated actions from the public and private sector, as well as from the civil society organisations. The National Implementation Plan (NIP) provides a framework to develop and implement priority policies and reforms related to the legal environment, capacity building activities, and investment programmes, in a systematic and participative way. The NIP describes priority actions to protect human health and natural resources from the negative effects of POPs.

The present document is the final version of the Union of Comoros's NIP, according to the Stockholm Convention on POPs. The document describes and sets priorities for capacity building activities to achieve sound management of chemicals and POPs in particular. The NIP is composed of three action plans: i) Environmentally sound management of polychlorinated biphenyls (PCBs), and related equipment, wastes, and contaminated sites; ii) Environmentally sound management of pesticides, in particular POPs pesticides including DDT; and iii) Environmentally sound management of dioxin and furan sources. Each of the three action plans has five programmes of priority actions, which makes 15 programmes as a whole. The development of the NIP allows the Union of Comoros to comply with the obligations under Article 7 of the Stockholm Convention and to contribute in a significant manner to the environmentally sound management of POPs.

Given the comparative advantages of the United Nations Development Programme (UNDP), in comparison with other implementing agencies, the Comorian government has chosen UNDP to assist the country in accessing the Global Environmental Facility (GEF) resources for the Enabling Activities Project on POPs and to provide guidance throughout the NIP development process. When endorsing the NIP, the government of Comoros would like to express again its genuine commitment to address pollutants and other nuisances and to act in line with the Millenium Development Goals (MDGs).

At this initial stage, the financial support received from GEF and UNDP mainly targeted the development of the Stockholm Convention National Implementation Plan and other technical documents. Given national gaps related to this field of expertise, the government of the Union of Comoros, liaising with UNDP, has requested the support of UNITAR to provide the expertise needed for the preparation of the technical documents.

The NIP is the result of a participative process which was held under the leadership of the General Secretary of the Ministry of Agriculture, Fisheries, and the Environment and which benefited from the

technical support of the UNDP office in Comoros and UNITAR, as a technical co-executing partner. This document was developed in collaboration with the representatives of relevant departments of the Ministries at the Union and Islands levels, with the involvement of the civil society and the University of Comoros. This document includes their substantive and appreciated inputs and we would like to send them our best encouragements. We would like also to thank the GEF for its financial support.

Following an approach shared by national stakeholders at all levels, this document is the result of a successful partnership between the Ministry of the Environment, UNITAR, and UNDP. Undeniably, the NIP is a valuable tool to address the challenges encountered by Comoros regarding the POPs issue and minimizing adverse effects on the human health and the environment.

We wish a long success to this NIP!

Ms. Sitti Kassim
Ministry of Agriculture, Fisheries and the Environment

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UNDP Resident Representative

EXECUTIVE SUMMARY

In the past fifty years, the production and use of chemicals has been accelerated. Through the development of medicines, these products have improved human living conditions and increased life expectancy. They have also allowed an increase in crops by eliminating some types of pests. However, several studies have shown without any ambiguity that several of these products are toxic for human health and the environment.

Among the chemicals considered as toxic and harmful, a group has been singled out as being particularly toxic and having long-term adverse effects on living organisms. These are known as Persistent Organic Pollutants (POPs). POPs resist degradation, accumulate in the fatty tissue of living organisms, and remain intact in the environment for long periods. This can lead to modifications of the normal physiognomy of these organisms and provoke pathologies such as cancer, mental deficiency, congenital malformations, sterility, diabetes, etc.

Because of their adverse effects on human health and the environment, hazardous chemicals, including POPs, are a factor of aggravation of poverty in developing countries and an obstacle to governments' efforts for sustainable development.

To respond to these concerns, in 2001 the international community adopted the Stockholm Convention on Persistent Organic Pollutants aimed at restricting and, where possible, ultimately eliminating the production and use of POPs and ensuring their environmentally sound disposal. The Convention immediately targets 12 particularly toxic POPs, and offers a mechanism for countries to add new chemicals with the same toxic characteristics and risks for health and the environment.

Comoros, aware of the risks of chemicals for human health and the environment, and POPs in particular, ratified the Stockholm Convention in January 2007. As a Party to the Convention, Comoros has benefited from the financial assistance of the Global Environment Facility (GEF). It has also received technical assistance from UNITAR and UNDP to undertake capacity building activities in the framework of UNDP project 000-43361 following a request made by the Ministry of Agriculture, Fisheries and the Environment. This project had two objectives: help Comoros to prepare its National Implementation Plan (NIP) for the Stockholm Convention, and strengthen national capacities for POPs management to maximize the country's commitment to implement the Convention.

The approved NIP document is the outcome of a long participative process involving all stakeholders in the public and private sphere, including NGOs and other community organizations.

In conformity with the World Bank and UNEP Chemicals Programme Guidance for developing a NIP for the Stockholm Convention, the NIP of Comoros has two main parts:

(i) the country profile, in particular information collected concerning POPs; and

(ii) the implementation strategy and action plans.

Country baseline

Comoros is an archipelago located southeast of Africa, east of Tanzania, and northwest of Madagascar. Comoros consists of four main islands covering an area of 2,236 square kilometres. The country became independent on 6 July 1975 but one of the islands, Maore (424 km²), has remained under French administration. The sovereignty of the Republic of Comoros therefore only covers three islands: Mwali (290 km²), Ndzuwani (374 km²), and Ngazidja (1148 km²).

The Archipelago of Comoros is made of volcanic islands. It has a tropical maritime climate.

In 2003, the total population was estimated to be 576,000 inhabitants, mainly living in rural areas (72%). However, there are significant differences from island to island.

According to the 2001 Constitution, the country is a Republic named the Union of Comoros. Each island has its own Constitution and a large autonomy.

The economy of Comoros is mainly based on agriculture. This sector represents 41% of Gross National Product (GNP), 80% of employment, and generates 90% of the State's income. In terms of performance, the Comorian economy has been on a continuous decline over the past years. In 1999, GNP decreased by 1.4% and the GNP per capita lost 4.1 %.

Country profile on POPs

The activities related to the management and monitoring of chemicals are not carried out by a single ministry. However, the country has created national and regional structures to act directly or indirectly in the area of the environment and questions related to chemicals. At the Union level, active ministries include: the Ministry of Agriculture, Fisheries and the Environment, the Ministries of Finances and Budget as well as Health. At the regional level, active ministries include: the Ministries of Agriculture, Environment, Health, and Finances of the autonomous islands.

In 2006, inventories were carried out for the first time on the three groups of POPs (pesticides, PCBs, and dioxins/furans). The following quantitative data was found:

POPs pesticides

No POPs pesticides have been found in the territory (namely: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, and toxaphene). Only DDT was used in the 1970s for mosquito treatment. No POPs pesticides stockpiles, including DDT, were found.

However, stockpiles of pesticides have been identified for a total value of 22 tonnes. These stocks are the remains of a Japanese donation that have not been sold on the local market. A current concern is how to undertake the environmentally sound disposal of these products without posing danger to the population.

Most stockpiles of pesticides do not meet the protection rules and are not monitored. Pesticides were found in farms without any safety precautions, leading to food contamination and intoxication cases.

Training of farmers on the use of pesticides and fertilisers is not systematic and remains insufficient. It must also be noted that there is little knowledge on environmentally friendly methods to fight pests.

PCBs

These compounds serve primarily as insulant and coolant fluids (dielectrics) in various industries. They are used in electric transformers among other applications. The use of PCBs has been prohibited

and progressively abandoned in electric equipment since the early 1980s with an increase of mineral oil use, which is considered to be less dangerous for human health and the environment.

In Comoros, dielectrics contaminated by PCBs are used in power generation transformers: MAMWE in Grande Comore and Mohéli and EDA in Anjouan.

There are 324 transformers on the three islands (238 in Grande Comore, 73 in Anjouan, and 13 in Mohéli). Thirty-five percent of these (114 pieces) have been colorimetrically tested. The following extrapolations have been made:

Categories	**Percentage of total population**
Equipment containing PCB oil	**6**
PCB contaminated mineral oil (> 50 ppm)	**84**
Non-contaminated mineral oil (< 50 ppm)	**10**

Overview of the estimated results by extrapolation on the total population (2006)

There are a low number of transformers manufactured with PCBs (6%). This can be explained by the fact that 90% of the transformers were imported post-1990. However, the rate of contamination of mineral oil is high with 84% of the equipment being contaminated. This situation is probably due to maintenance practices that result in cross-contamination. As a result, the following quantities of PCBs oil, mineral oil contaminated by PCBs, and equipment contaminated by PCBs can be found in Comoros:

Classification	**Total weight (tonnes)**	**Total weight of the dielectric (tonnes)**	**Total weight empty (tonnes)**
PCB contaminated mineral oil	141	33	108
PCB oil	10	2	8
Non-contaminated mineral oil	17	4	13
Total	**168**	**39**	**129**

Quantities of dielectric fluid and PCBs contaminated equipment (2006)

Except for Mohéli, none of the transformers identified during the inventory had a leak. However, it was observed that some out-of-service equipment was stored outside without any particular precautionary measures. The resale of out-of-service (and potentially contaminated) transformers has also been identified as a potential concern. Additionally, the poor management of equipment at the end of its life-cycle inevitably leads to an increased contamination of the environment. The land or ecosystem contamination, however, was not analysed during the inventory.

The projected quantity of PCB-related waste for disposal is not sufficient to envisage local treatment solutions. All related products will likely need to be exported. Installations for the handling of PCBs will therefore be limited to the dismantling and temporary storage of wastes.

Dioxins and furans

The third group of chemical products, dioxins and furans, are chemical substances unintentionally produced as a result of incomplete combustion or chemical reactions. In Comoros, 83% of dioxin and furan releases are a consequence of open burning processes: mainly uncontrolled, open burning of

household waste. This situation is of particular concern since there are currently no sustainable waste management solutions in Comoros. The national contribution to the global release of dioxins and furans in 2006 was 24,196 g TEC/year.

Other elements of POPs management

The problems identified above are aggravated due to the absence of a specific and effective national legislation on import and sale of pesticides (active substances) and other chemicals with adverse effects on human health and the environment. Implementation texts may be adopted to implement the blueprint law on the environment and provide the country with a certification and control system (in particular for imports) for these chemicals and other hazardous substances.

The level of information and awareness on POPs is relatively low in Comoros. Persons in contact with these substances are not aware of the risks and adverse effects they can have on their health. The measures of control that will be taken should be accompanied by an information and awareness raising programme on POPs.

As there is no system in Comoros to monitor chemical products' contamination, it is impossible to accurately evaluate the risks for human health and the environment. National laboratories do not have the appropriate equipment and there is no information centre on toxicology (poison control centre).

The elements of the strategy and the action plans are based on the diagnosis of the current situation regarding POPs in Comoros. The objective of the NIP is to guarantee a better management of pesticides and POPs to protect human health and the environment against the adverse effects of these products. The emphasis has been put on the promotion of an integrated approach for the management of chemicals and hazardous wastes. This will allow the other international conventions on chemicals ratified by Comoros (the Vienna Convention for the Protection of the Ozone Layer and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal) to be taken into account in the activities of the NIP.

Three action plans have been developed for each specific group of chemicals. They are listed by order of implementation priority:

- Action plan 1: Environmentally sound management of PCBs, equipments, wastes, and contaminated sites

- Action plan 2: Environmentally sound management of pesticides, in particular POPs pesticides including DDT

- Action plan 3: Environmentally sound management of dioxin and furan sources

The level of priority of the actions to be undertaken is also indicated in each action plan. The implementation timeframe of the three action plans covers eight years (2008-2015). Each action plan contains measurable indicators to track implementation progress and indicate where future adjustments to the NIP might need to be made.

The implementation of the NIP will be coordinated by the National Focal Point for the Stockholm Convention and monitored by the current National Committee on follow-up and coordination (Steering Committee, Comité national de suivi et de coordination, Comité directeur). This Committee will be enlarged and merged with a larger committee, such as the National Committee for Sustainable Development (Comité national pour le développement durable, CNDD). A sub-committee on chemical safety will then be created to promote further national dialogue and serve as the framework for cooperation, implementation, and monitoring of the different international conventions and agreements related to chemicals.

The total implementation budget for the NIP is estimated to be 2,461,000 USD:

- 975,000 USD for PCBs;
- 645,000 USD for pesticides; and
- 841,000 USD for dioxins and furans.

The strategy for the mobilisation of financial and technical resources will consist of project development, fund raising at the national and international level, and giving a sense of responsibility to all stakeholders.

1. INTRODUCTION

POPs are organic (carbon-based) chemicals with common characteristics: high toxicity, persistence in the environment, accumulation in fatty tissue, and a tendency to disperse and travel long distances. These characteristics are a dangerous combination. POPs have the potential to cause serious problems such as dysfunction of immune systems, neuro-behavioural anomalies, and reproductive disorders. For example, several species have been decimated because of reproductive damages caused by POPs chemicals.

In 2001, the international community adopted the Stockholm Convention on POPs. The Convention entered into force on 17 May 2004 following the 50th ratification received by the Secretariat of the Convention. To date, 144 countries are Parties to the Convention.

In 2006, the Convention immediately targets 12 particularly toxic POPs, and offers a mechanism for countries to add new chemicals with the same toxic characteristics and risks for health and the environment.

Nine of the twelve POPs are pesticides: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, and toxaphene.

Two of the POPs are industrial chemicals: hexachlorobenzene (HCB), which has also been used as a pesticide and can be a by-product of pesticide manufacturing, and polychlorinated biphenyls (PCBs), a class of industrial chemicals used for a variety of industrial processes and purposes, including in electrical transformers and capacitors, as heat exchange fluids, as paint additives, in carbonless copy paper, and in plastics".

The Convention also deals with two by-products of unintentionally produced chemicals: polychlorinated dioxins and furans. These compounds have no commercial use. They result from combustion and from industrial processes (such as the production of pesticides, paper paste with chlorine, metallurgy industry, etc.).

The Union of Comoros, following approval by the Assembly of the Union and the Assemblies of the Islands, ratified the Stockholm Convention on Persistent Organic Pollutants on 20 January 2007. By this act, the country has expressed its agreement to fulfil the obligations under the Convention. The first formal act (Article 7) is the preparation of the NIP.

The Stockholm Convention aims at reducing or eliminating the releases resulting from intentional or unintentional production and use of POPs and reducing or eliminating releases from chemical stockpiles and wastes. The NIP responds to the objectives of the Convention to protect human health and the environment. To this end, each Party to the Convention has accepted a number of obligations such as to:

- Develop and endeavour to implement a NIP for its obligations under the Convention;
- Take the legal and administrative measures necessary to eliminate the production, use, import, and export of the chemicals listed in Annexes A and B for the purpose of environmentally sound disposal or for a use that is permitted;
- Take the measures outlined in Article 5 of the Convention to reduce the total releases derived from anthropogenic sources of the chemicals listed in Annex C;
- Develop appropriate strategies to (i) identify stockpiles consisting of or containing chemicals listed in Annexes A, B or C as well as contaminated sites, (ii) manage stockpiles in a safe, efficient, and environmentally sound manner;

- Exchange information relevant to the reduction or elimination of the production, use, and releases of POPs and alternatives to POPs, in particular information relating to their risks as well as to their economic and social costs;

- Develop and implement education, public awareness raising and training programmes on POPs as well as on their health and environmental effects and on their alternatives;

- Undertake research, development, monitoring, and cooperation activities pertaining to POPs and, where relevant, to their alternatives;

- Provide support and incentives in respect of those national activities that are intended to achieve the objectives of the Convention; and

- Report on the measures taken to implement the provisions of the Convention and on the effectiveness of such measures in meeting the objectives of the Convention.

The NIP, outlined in Article 7, aims to assist Parties to fulfil these obligations. The objective of the Comoros NIP is to provide an appropriate framework to allow the country to, inter alia:

- develop (i) priority strategies and policies, (ii) plan reforms to legislation, and (iii) design capacity building actions, as well as governmental investment programmes, related to POPs as addressed by the Convention; and

- take the appropriate measures for an efficient implementation of the activities related to these plans.

To this endeavour, the NIP is structured in two parts: (i) Comoros' profile concerning POPs and (ii) the strategy and specific action plans concerning the different categories of POPs. It also contains annexes with additional information for the implementation of the NIP's objectives.

The development of the NIP follows the methodology suggested by the UNEP and World Bank document, *Guidance for developing a NIP for the Stockholm Convention*, and is based on a participatory process. It is the result of a large consultation process with main stakeholders concerned with environmental issues.

The development of the NIP comprised five phases:

Phase 1: Establishment of coordination mechanism and project management structures

By initiative of the Ministry of Agriculture, Fisheries and the Environment, the Government of the Union signed an Order on 26 May 2005 creating the National Committee of Coordination and Implementation of the Stockholm Convention on Persistent Organic Pollutants (called the "Steering Committee"). It also defined its mandate and methods of work. This Committee is a multidisciplinary body entrusted with the mandate to:

- monitor the implementation of the project and provide advice on the activities to be taken;
- inform and raise public awareness on POPs;
- determine the management of POPs priorities and objectives;
- monitor and approve POPs inventories; and
- approve the NIP.

To support this Order, a national focal point for the Convention was appointed. The focal point coordinates the implementation of the NIP.

Consultation, coordination, and cooperation committees were also established on each island (by ministerial decree). These committees assist with raising awareness on the issue of POPs in Comoros among concerned parties on each island, consult them, and inform them about progress made.

The project was launched during a workshop with all stakeholders held in Anjouan in October 2005. Part of the workshop was devoted to a training session on the development of a National Profile for the management of chemicals, its importance in the preparation of the NIP, and to raise awareness on the impact of POPs on human health and the environment.

UNITAR gave invaluable support to the team throughout the project by providing resource persons and international experts as well as technical assistance (e.g. training for inventories, assistance with developing the action plans).

Phase 2: Establishment of inventories

Inventories were established to produce and centralise data on sources and quantities of POPs releases in Comoros. It is the first time that information on POPs has been made available in Comoros.

A training workshop on PCBs and dioxins/furans inventories was held in November 2005. The training workshop on pesticides inventory took place in April 2006. In August 2006, the Steering Committee approved the inventories reports.

Image 1: Pesticides Inventory Team

Phase 3: Priority assessment

This phase allowed the country to make a preliminary assessment of the priority issues related to POPs in Comoros. During a national workshop held on 20 November 2006 in Mohéli, PCBs were found to be the most problematic POPs chemical group in the Union due to the important quantities of dielectrics contaminated by PCBs and the risk of contamination of the population.

Phase 4: Formulation of the National Implementation Plan (NIP)

The formulation of the NIP was made between November 2006 and April 2007. Several action plans and implementation strategies were included in the document. The country participated in a training project on the methodology to formulate action plans.

Phase 5: NIP Endorsement and submission

In April and May 2007, several consultations were organized with stakeholders. The NIP endorsement workshop was held on 26 June 2007. Throughout the project, awareness raising campaigns and national actions on POPs and chemicals in general were conducted.

2. COUNTRY BASELINE

2.1. COUNTRY PROFILE

2.1.1. Geography and Population

Geography and physical and demographic background

Comoros is an archipelago located in the Indian Ocean, between the 11°20' and the 13°04' South latitude and the 43°11' and the 45°19' East longitude. Situated at the northern end of the Mozambique Channel, southeast of the African continent, the archipelago of Comoros is 300 km East of Mozambique and 320 km Northwest of Madagascar. It is made of four islands covering an area of 1148 km^2 for Ngazidja (Grande Comore), 424 km^2 for Ndzuwani (Anjouan), 290 km^2 for Mwali (Mohéli), and 374 km^2 for Maore (Mayotte). This document only refers to Grande Comore, Anjouan, and Mohéli, which are under the Union of Comoros sovereignty.

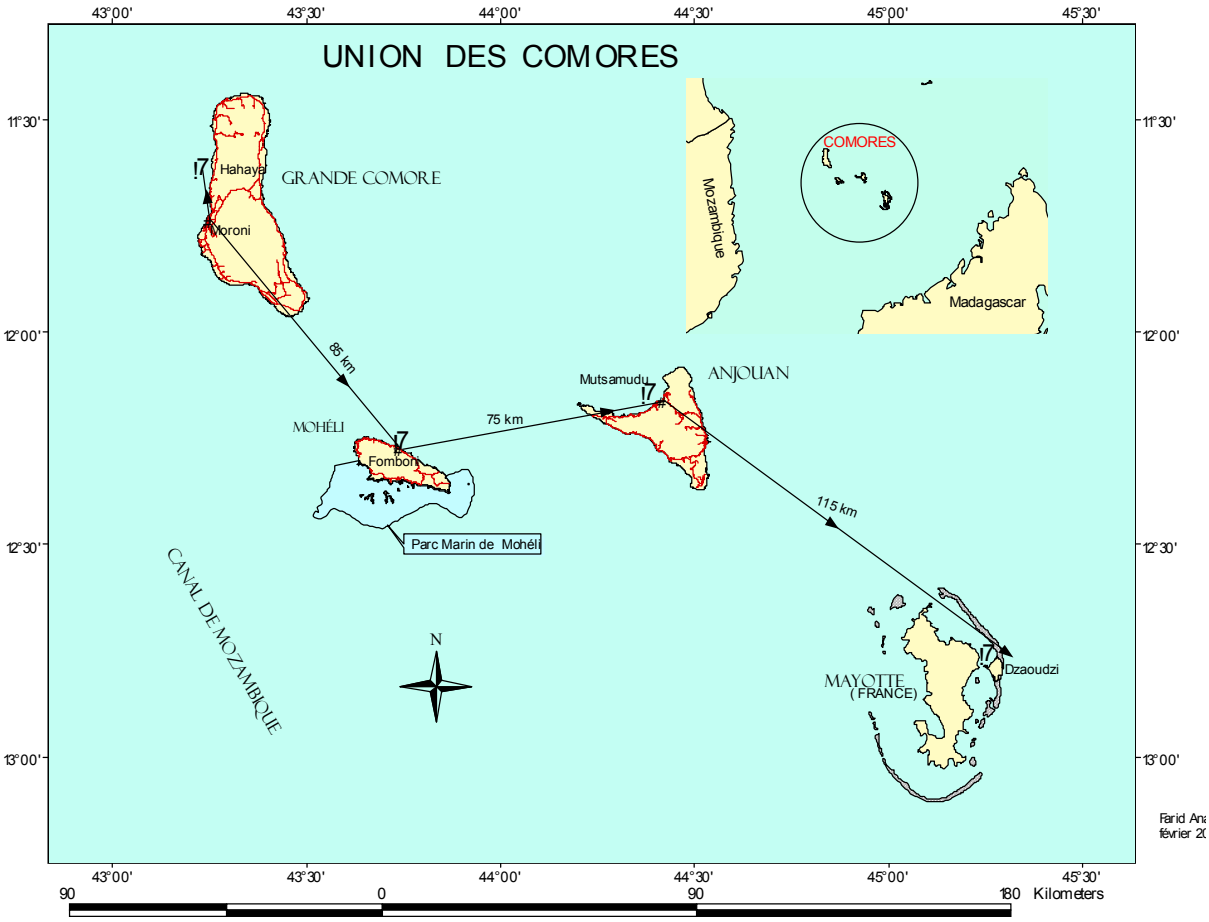

Image 2: Map of the Union of Comoros

- The soil is of volcanic origin and is generally highly fertile.

- The tropical maritime climate includes great local contrasts. There are microclimates resulting from the influence of steep slopes on climate conditions, which are characterised by significant levels of precipitation. This tropical climate is characterized by a hot and humid season from November to April with heavy rainfalls and violent winds called Kashkazi—sometimes also by typhoons—and a

fresh and dry season from May to October, characterized by monsoon winds North to North-West called Kusi, with temperatures between 24 and 27° C.

- In 2004, the population was estimated to be 800,000. Grande Comore and Anjouan are the most inhabited islands, with approximately 94% of the total population (based on UNDP Human Development Report, 2005). The population is characterized by:
  - ***Rapid increase:*** The average rate of increase for the period 2004-2015 for the three islands is expected to be around 2.5% (UNDP Human Development Report, 2005).
  - ***High density:*** The average density of population in 2003 stands at 309.3 habitants per km2 with considerable local disparities between islands or on the islands. Density is 123.3 inhabitants per km2 in Mohéli, 258.2 inhabitants per km2 in Grande Comore and 574.8 inhabitants per km2 in Anjouan (Source: 2003 National Census).
  - ***Large population of youth:*** Based on the 2003 census, half the population is under 20 years old. This is a challenge for the country in terms of education, health, nutrition, employment, leisure, etc.
  - ***Uneven distribution:*** The average distribution of population between rural and urban areas has not changed significantly between 1991 and 2003—28% (urban) and 72% (rural)—with great island disparities: Grande Comore 24% and 76%, Anjouan 30% and 70%, and Mohéli 54% and 46% respectively.

2.1.2. Political situation

The Comorian Republic has had sovereignty over three of the islands—Grande Comore, Anjouan, and Mohéli—since 1975. The island of Mayotte has remained under French administration. Since 1997, the political situation has been unstable with a series of crises that have led to the establishment of a new institutional framework. The first was the Anjouan separatist crisis, followed by an institutional crisis and a conflict of responsibilities.

According to the 2001 Constitution, the country is a Republic named the Union of Comoros. Each island has its own Constitution and a large autonomy.

At the Union level, the President of the Union holds the executive power (assisted by two Vice Presidents from the two other islands and a government nominated by the President). The President and the two Vice-Presidents are together elected for four years by universal suffrage (winner-take-all election) and on the basis of rotation between the islands. The Assembly of the Union holds the legislative power.

At the island level, the President of the island (assisted by a government nominated by him) is elected for five years by universal suffrage (single member constituency system, two-round system). The Assembly of the island holds the legislative power. Its members are elected by universal suffrage.

The Constitution of the Union of Comoros divides the exclusive responsibilities of the Union and those of the autonomous islands. Religion, nationality, currency, foreign affairs, national defence, and the national symbols are the exclusive responsibility of the Union. There are also areas of shared responsibilities, where both the Union and island Assemblies can intervene. The areas of shared responsibilities are: interior security, education, health, water and energy, postal and telecommunication service, transportation, navigation and meteorology, environment, agriculture, fisheries, craft, tourism, and legislation.

However, there is lack of clarity in the division of responsibilities that leaves room for interpretation and can lead to conflicts between the authorities of the Union and those of the islands.

2.1.3. Economic situation

The economy of Comoros is mainly based on agriculture, which represents between 40 and 44 % of GNP (370 million USD in 2005), with an income per capita estimated at 465 USD (2005). This places Comoros among the Least Developed Countries. Local agriculture and water products do not meet the needs of the local population. The country is not self sufficient in basic food products and has to import almost all of its rice (which is currently the country's primary food staple), sugar, wheat flour, salt, etc. Imports of these products are very high making Comoros dependent on foreign supply.

In terms of performance, the Comoros economy has been continuously declining. GNP growth was -0.4% during the period 1989-1999. GNP per capita decreased by -2.9% during the same period. In 1999, GNP decreased by 1.4% and GNP per capita by 4.1%. The ratio between public debt and GNP has gone from 0.88 in 1989 to 1.09 in 1999.

Economic sectors overview

The **primary sector** (between 40-44% of gross domestic product, GDP) is dominated by agriculture, animal husbandry, and fishing. It employs 80% of the working population, and represents 90% of State's revenues and all of the country's exports. Agricultural production for domestic consumption contributes 47% of the sector's added value. Fishing contributes 21%, agriculture production for export contributes 13%, forestry 11%, and animal husbandry 8%. This sector grows 1.5-2% per year. Comorian agriculture is essentially small-scaled and composed of gardens with banana trees, other fruit trees, vegetables for domestic consumption and sometimes for markets. It is characterized by a high breaking up of lands, progressively increasing under demographic pressure. Traditional food producing activities are insufficient to meet the needs of internal demand and significant quantities of cereals (e.g. rice, wheat flower) are annually imported to compensate. Imported rice is sold at more competitive prices than local products, which discourages local production. In the context of a restriction of available land, the development of food production for domestic consumption and for markets requires an intensification of these cultures, resulting in the use of a lot of input, in particular pesticides and fertilisers. If these products are not used in a sound manner, they could lead to health and environment problems.

The **secondary sector** is very limited (between 8 and 12% of GDP). The manufacturing industry (3.7%) remains rudimentary despite the advantage of belonging to the Franc Zone and other Economic Zones (ZEP/COMESA/COI), and the proximity of East and Southern Africa. The sector has certain handicaps, such as a limited local market, lack of industrial infrastructure, high cost of transportation, lack of skilled workforce, and lack of a plan to boost the economy. The sector has grown 2.3% during the last decade.

The **tertiary sector** (between 46 and 52% of GDP) mainly relies on the sale of imported goods and public administration. The contribution of public administration to the GDP is between 12 and 20% with a tendency to decrease following commitments made in the framework of the Structural Adjustment Programme (Programme d'Ajustement Structurel, PAS).

Unemployment is mostly urban and affects a young and educated population. The unemployment rate is about 14% for uneducated men and 12% for uneducated women between 20-24 years old, and 31% for men and 38% for women of the same age that have completed primary or secondary school. Unemployment is almost double for people under 25 years old than for those above 30 years old.

2.1.4. Environmental overview

Due to its recent volcanic nature, size, and insularity, Comoros has a rich and diverse landscape and contains a rich array of biodiversity, both marine and terrestrial (fauna and flora).

At the international level, Comoros is one of the 20 islands or archipelagos characterized by their endemic diversity. The country has a great endemic plant diversity making it a high-priority area for the conservation of biodiversity.

The environment is fragile and highly threatened by human activities directly linked to the environmental specificities of the islands (e.g. steep slopes subjected to erosion), as well as the social and economic situation of the population.

The diagnosis on the state of the environment in Comoros indicates that environmental problems are caused by:

- a rapid increase of the population and demographic pressure (with differences between the islands and regions);
- high poverty;
- insufficient economic growth and a decrease of agricultural production; and
- land instability discouraging long-term investment and macroeconomic distortion at the expense of natural resources.

All together this translates into a generalised deterioration of resources and in particular:

* Forest deterioration and reduced natural vegetation

Forest destruction occurs rapidly (about 50 ha per year) due to extensive agricultural production over large areas, and rapid increase in population growth, which is linked to poverty. Forest destruction leaves bare soil, which results in an increase of streams and rivers drying up and soil runoff that suffocates coral reefs and disrupts the equilibrium of the marine ecosystems.

* Coastal erosion

Coastal erosion occurs mainly due to the extraction of coastal products: sea sand, and pebbles from coasts and river beds.

* Deterioration of coral reefs

Coral reef deterioration takes place due to increasing pressure on reefs (e.g. fishing with dynamite, uncontrolled anchoring of ships, treading at low tide, wastes dumping and soil runoff). The situation is further aggravated by the phenomenon of climate-related coral bleaching (caused by a sudden change in temperature).

* Pressure on demersals

Pressure is exerted on resources of the reef zone through the use of traditional boats with low productivity. This results in all fishing concentrating on the most fragile coastal resources.

* Loss of biological diversity

Biodiversity is threatened by direct pressure on species or destruction of their habitats (e.g. caused by deforestation, reef deterioration). Coastal marine species are captured by accident or intentionally. Requests for the export of certain fauna species (e.g. sea cucumbers, reptiles, mollusk, aquarium fish) lead to new or increased business opportunities and activities with regard to fauna and flora in Comoros.

* Pollution from waste and major pollution risks

Pollution from waste is mainly concentrated in the big cities on the coast. This waste is increasingly diversified and significant in quantity. The use of mostly imported, non-biodegradable products (e.g. plastic, glass, metal) has been identified. The lack of a drainage and waste management system means that used water and liquid waste flow into the sea. Major risks of pollution are also particularly concentrated in Comoros' open sea on the large oil tankers' routes. Illegal waste dumping can lead to the development of carriers of infectious diseases and vermin, and can increase the risk of contamination of the water table and coral degradation.

Image 3: Open air waste site, Moroni

It should be noted, however, that the size and nature of the environmental deterioration is still reasonably modest and has not impacted Comoros' potential to support a dynamic economy. Development of public awareness and environmental protection organisations within civil society and professional groups can be a major asset to addressing environmental challenges.

2.2 INSTITUTIONAL, POLICY AND REGULATORY FRAMEWORK

2.2.1. Environmental policy, sustainable development strategy, and general legislative framework

2.2.1.1. Policy framework

In 1993, Comoros developed and adopted a National Environmental Policy (Politique Nationale de l'Environment, PNE-decree n° 93-214) on the basis of the Diagnosis of the State of the Environment in Comoros. The National Environmental Policy aims at integrating the environmental dimension into social and economic development policy.

It has the following objectives:

- Guarantee sustainable management of resources by:

  (i) supporting the sound management of natural resources and the development of alternative resources;
  (ii) safeguarding and protecting biological diversity and the areas of environmental and cultural interest;
  (iii) developing or updating knowledge on the environment;
  (iv) promoting economically and environmentally viable agriculture;
  (v) promoting forest conservation and reforestation; and
  (vi) establishing appropriate management of maritime and coastal areas.

- Define or strengthen sector policies, in particular on town and country planning, land system regulation, management of water resources, and sanitation and waste management.

The Environmental Plan of Action (PAE) designed to implement this policy contains programmes based on the following priority strategic axes:

- Promote knowledge of national heritage through:

- *Preparing maps:* No recent maps are available to facilitate identification of the different national ecosystems, or to determine related characteristics and in particular the nature and level of their deterioration.

- *Studying land ecosystems:* To fill existing gaps in the knowledge of Comorian fauna, flora, and potential wooding. These gaps are one of the major obstacles to defining a complete forest policy.

- *Studying coastal marine ecosystems:* A prerequisite for any project centred on the coastal zone. This programme should be integrated into a larger programme on the management of sea resources. It will result in the preparation of management plans ensuring the continued existence of biodiversity.

- *Studying water resources:* A better knowledge of surface and groundwater is necessary to cover the needs of the population.

- *Studying cultural heritage:* Restoration and valorisation of cultural heritage. The programme will include the systematic census of sites and their rehabilitation.

- Develop efficient services, central and decentralised institutions, and appropriate legislation through:

  - *Improving legislative and regulatory framework:* The laws on the environment and the protection of cultural heritage will serve as the basis for this framework.

  - *Reinforcing and developing operational structures:* This involves defining the mandate and working methods of the environmental services.

- Train experts and raise public awareness on environmental problems through:

  - *Systematisation of environmental training.*

  - *Training on impact studies:* This involves environmental impact assessments of projects, and adoption of measures and appropriate means to limit the potential adverse effects on nature.

  - *Including environmental topics in school curriculum:* This includes training programmes and providing a choice of subjects related to the local and global environment.

  - *Strengthening communication and awareness raising on environment issues:* This includes organising regional seminars with key stakeholders in the field (e.g. NGOs).

- Coordinate the sound management of national heritage through:

  - *Protecting and valorisation of biodiversity:* This includes the National Park of Mohéli (already in place) and establishing the National Park of Karthala, Coelacanth Park, and other threatened sites.

  - *Protecting and valorisation of cultural heritage*

- Seek alternative solutions through:

  - *Conducting a programme to limit the pressure on wood resources.*

- Combating pollution through:

- *Sorting and treatment of domestic waste.*

- *Increasing access to basic sanitation.*

The implementation of this policy and in particular of the PAE is based on a participatory approach aimed at sharing efforts with all stakeholders including local and regional communities, NGOs and associations, teachers, media, private sector, and civil society. The objective is to progressively transfer to the communities the responsibility to manage the environment. The Ministry of Agriculture, Fisheries and the Environment is responsible for the implementation of the Environmental Plan of Action (PAE), which includes the National Environmental Policy (PNE) and the strategy of implementation of this policy.

The Interministerial Advisory Committee on the Environment (Comité interministériel consultatif pour l'environnement, CICE) replaced the National Environment Commission (Commission nationale de l'environnement, CNE) in 2003 (Decree N° 93-148). It supervises the activities to prepare the Environmental Plan of Action (PAE) and National Environmental Policy (PNE). The CICE has since been replaced by the National Committee on Sustainable Development (Comité national pour le développement durable, CNDD). Its role of coordination is now undertaken by the General Planning Commissioner (Commissariat général du plan). This committee will include public institutions and civil society members. It will have coordinating role for Environmental Plan of Action (PAE) implementation actions. At the regional level, the Islands Committees for Sustainable Development (Comités insulaires pour le développement durable, CIDD) are entrusted with defining and implementing a regional development policy and strategy, with due consideration for the national policy.

In 2005, the country prepared the Strategic Document for Growth and Poverty Reduction (Document stratégique pour la croissance et la réduction de la pauvreté, DSCRP), which presents the views of the population on development priorities for the country in the coming years. It takes into account the current social and economic situation and the macroeconomic long-term perspectives, as well as the results of quantitative and qualitative studies on the living conditions of Comorian households, poverty, and inequalities. It also includes an assessment of performances, assets, and constraints of the main social and economic sectors in Comoros. Based on this exhaustive diagnosis, seven strategic axes and 35 priority programmes have been identified. Several discussion and validation workshops have confirmed the pertinence and the priority of these programmes for the development of the country. The governments of the Union and the autonomous islands of Comoros wish to support, within available means, these priority programmes and implement the institutional reforms needed to increase economic growth and combat poverty. The governments are committed to fulfilling the Millennium Development Goals (MDGs).

2.2.1.2. Legislative framework for chemicals and toxic wastes management

The following section introduces the legislation and application decrees concerning the management of chemicals and toxic wastes and the management of pesticides for agriculture and sanitary purposes.

A. Legislative framework

Constitution of the Union

The legislative basis of the environmental policy can be found in the Constitution of the Union. The Preamble of the Constitution declares the "right to a healthy environment and the duty for all to safeguard this environment".

Environment

The implementation of the PNE is envisaged through the adoption of the blueprint law n°94-018 of 22 June 1994, and amended by law n°95-007/AF of 19 June 1995, regulating all activities concerning the sustainable management and conservation of resources of land, coastal, and marine biological diversity. This law covers all territorial and marine areas and species as well as the atmosphere, impact assessments, and protected areas. Its promulgation abrogates sparse legislative texts that had become obsolete.

Several articles of the blueprint law n°94-18/AF concern the management of chemicals and hazardous wastes. This general framework, which recommends the adoption of application decrees, concerns several elements, in particular:

** Harmful chemicals*

In Article 66, the law targets substances or combinations of substances, naturally produced or resulting from industrial production that, when used or released in nature and due to their toxic, radioactive or corrosive characteristics, can be a danger for human health, soil, ground water, fauna, flora, and environment conservation.

In Article 67, the law foresees the adoption, in the Ministries Council of a:

- List of harmful chemicals for which import, export, transportation, production, sale, and distribution, are prohibited, even free of charge; and

- List of harmful chemicals for which import, export, transportation, production, sale, and distribution, even free of charge, are subject to prior authorisation of the Ministry of the Environment, as well as rules concerning their transportation, commercialisation, and packaging.

The producer or importer has to provide information to the Ministry of the Environment on the composition, volume, and known adverse effects of the substances destined for commercialisation or large scale use.

** Hazardous wastes*

In Article 63, the law stipulates that the management of hazardous wastes, in particular wastes resulting from industrial exploitation, agriculture, or craft are under the responsibility of the owner. The authorization of these activities, when planned, is subject to the existence of efficient and working means for disposal or neutralisation of such wastes.

In Article 64, the law stipulates that on all national territory, including waters under Comorian jurisdiction, import, export, and transfer of hazardous wastes can only be authorized if the conditions of transportation and final disposal are without risks to the environment, whatever the country of destination.

Based on Article 64, hazardous wastes include: (i) radioactive waste, (ii) waste from the normal use of ships, and (iii) waste listed in the categories set by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

The blueprint law above recommends the adoption of application decrees for its implementation.

Plant protection

An organic law (decree n°06-220/PR) on plant protection was adopted on 2 December 2006. This law is not specifically within the legal framework of environmental protection. The Ministry of Agriculture is in charge of preparing the application decrees.

The law has been developed following a technical and legal consultation made by the Research and Technological Exchanges Group (Groupe de recherche et d'échanges technologiques, GRET) with members of the Project to Support the Agriculture Input Sector (Projet d'Appui à la Filière Intrants Agricoles, PAFIA) in 2000. This law has 47 articles divided into 6 chapters.

The objective of the law is to set the rules related to phytosanitary protection in Comoros, monitor imports and exports of phytosanitary products, and monitor the use and distribution of phytochemistry products (including pesticides) to fight against plant pests and diseases.

It has the following objectives:

- protect the territory against pests that could affect cultivated plants;
- use methods to combat pests that have a minimal impact on human health and the environment (in particular when pesticides are used); and
- promote the quality of consumer goods.

Plant protection is the responsibility of the Ministry of the Union in charge of Agriculture. The law also foresees the establishment of an advisory organ, "The National Advisory Council for Plant Protection".

Section IV of the law "Control of phytochemistry products" is particularly relevant for the management of chemicals for agricultural use, including POPs pesticides. The law establishes an accreditation system for all phytochemistry products within the territory. Products cannot be imported, produced, packaged, or used if they have not been previously accredited by the Ministry of the Union in charge of Agriculture. The Ministry of Agriculture keeps a public register of phytochemistry products. Accreditations are delivered by decree.

Institutions that import, produce, sell, package, or provide services using such products must be approved by the Ministry. These institutions are requested to keep a register of the movements of all their products.

The text also includes plans to create a plant protection service on each island, in charge *inter alia* of phytosanitary monitoring and protection. Part of its mandate will also be to advise producers on appropriate treatments.

Public health

The use of chemicals for public health purposes is regulated by decree n°95-124/PR. This decree promulgates the law related to the public health code and social action for the welfare of the population and the annex related to the deontology code. It stipulates:

In Article 70, the ministries in charge of public health, agriculture, and the environment jointly determine the rules concerning the import, distribution, use, and accreditation of pesticides in conformity with international rules on the use of pesticides to fight pests. They decide on a publicly-available list of pesticides that are accredited for health use.

In Article 71, the import of phytosanitary products is subject to a previous authorisation from the Ministry of Public Health. The samples of imported products must be submitted to a test by the Ministry of Health's Hygiene, Sanitation, and Disease Vector Control Department.

B. Regulatory framework

To date, only two implementation texts of the law on the environment have been adopted:

- decree n°01-052 on environment impact assessments, provides the rules for requiring and undertaking environmental impact assessments. It also sets the modalities for review of impact assessments by the administration and public information; and

- decree n°01-053 of 19 April 2001 creates the Marine Park in Mohéli.

The list of toxic chemicals for which the import, export, transportation, production, and sale will be prohibited or subject to prior authorisation (included in the law) has not been established in the different ministries (i.e. ministries of agriculture, environment, health, and equipment).

Draft ministerial orders on plant protection are also suggested, in particular concerning:

- Conditions for granting professional licenses required for the import, production, and packaging of phytochemistry products; authorization required to put products on the market; and authorization required to use hazardous phytochemistry products; and

- Conditions of labelling, packaging, and drafting of the technical instruction booklet of the phytochemistry products accredited or of those that have received temporary authorization to be sold on the market.

C. Conclusion

The blueprint law on the environment does not cover all of the issues included in the Stockholm Convention. For example, there is no specific legislation in Comoros on the import, use, and production of POPs. No legislation or decree has been adopted to implement the existing provisions on monitoring of the production and/or use of POPs and risk assessments. As most texts have not yet been adopted, even the existing articles of the blueprint law on chemicals and hazardous waste are not appropriately implemented.

The Constitution of the Union of Comoros divides the responsibilities of the Union and those of the autonomous islands. There are exclusive responsibilities and shared responsibilities for which both the Assembly of the Union and the Assemblies of the islands can intervene. The lack of clarity on these shared responsibilities can lead to conflicts of interpretation and conflict situations between the islands and Union governments.

The central structure of the Union and those of the autonomous islands are very complex, which results in a lengthy process for presenting and adopting new laws. In order to be applicable on the Union's territory, all laws must be approved by the three islands and incorporated in their legislative systems.

The other weakness of this legislation is in its application due to the lack of skilled personnel, lack of equipment to control POPs entering the country, and lack of technical equipment to eliminate the products that are confiscated.

2.2.2. Roles and responsibilities of public institutions and civil society

2.2.2.1. Government institutions

National level

The national institutions responsible for the management and use of natural resources and the environment have been restructured several times in recent years in order to achieve the most suitable structure with regard to the different domains of the ministerial departments (i.e. agriculture, forest, fisheries, and environment). These are now accommodated under the Ministry of Agriculture, Fisheries and the Environment, which includes the Environment Department (Direction générale de l'environnement).

Currently, activities concerning the management and monitoring of chemicals are not within a single ministry. However, Comoros has established national and regional structures that are responsible, directly or indirectly, for environmental management.

Ministry of Agriculture, Fisheries and the Environment has a central role in and a general responsibility for the environment.

The Ministry of the Union in charge of the Environment:

- defines the policy on agriculture, animal husbandry, fisheries, forests, natural resources, farming research, rural legislation, rural development and equipment, and packaging of farming products and related areas (e.g. training, assistance/advice, conservation, and marketing of farming products);
- defines the rules for protection and the sound management of natural resources (including water resources) and monitors their implementation in collaboration with the Islands and Union ministries concerned;
- ensures application of the rules through quality control of farming products, water resources products, and food products;
- defines the state policy on town and country planning, sanitation, and environment; and
- follows the implementation of international conventions related to its areas of responsibility.

The National Environment, Forests and Agriculture Strategies Department (Direction nationale de l'environnement, des forêts et des stratégies agricoles, DNEFSA) (Decree N°03-080/PR and Order N°03-35/MPIPTTI/CVAB) and the National Research Institute on Agriculture, Fisheries and the Environment (INRAPE, see below) are technical departments of the Ministry.

The mandate of the DNEFSA is the following:

- sound and sustainable management of natural resources;
- coordination, follow-up, and evaluation of the activities linked to the environment and forest sector, including activities to implement international conventions;
- ensure better coordination of the activities of the focal points for each international convention;
- suggest relevant measures to fight pollution and mobilise funding; and
- develop and implement the communication and public awareness strategy on environment and forest issues.

Ministry of Finances and Budget

Through the Customs Department (Direction générale des douanes), the Ministry implements public order prohibitions on the import of chemicals as defined by the responsible national authorities.

Ministry of National Education

The mission of the Ministry is to prepare, implement, and monitor state policy in terms of higher education and research. It covers all education activities, training, and research in higher education as well as scientific and technical research. It trains public administration managers and promotes scientific and technical research in several areas.

To this end, the Ministry works with:

- Comoros University, in particular the Sciences and Techniques Faculty (Department of Earth and Environment Studies) and the Technology Graduate Institute (Ecotourism Department); and

- the National Centre for Scientific Research and Documentation (Centre national de documentation et de recherche scientifique, CNDRS). CNDRS carries out research projects related to the development of agriculture, fisheries, and the environment, and develops projects that ensure coordination of scientific and technological research projects.

Ministry of Health

The Ministry prepares, implements, and monitors the national policy on public and private health. It recommends—together with the other Union and Islands ministerial departments—strategies and programmes related to this policy to the government. The Ministry includes bodies and structures under its supervision such as the National Laboratory of the Reference Hospital El Maarouf, and the National Autonomous Chemistry of Comoros (Pharmacie Nationale Autonome des Comores, PNAC).

National Committee for Sustainable Development

The Interministerial Advisory Committee on the Environment (Comité interministériel consultatif pour l'environnement, CICE) was recently changed to the National Committee for Sustainable Development (CNDD). It serves as the liaison between all concerned departments. Unfortunately, the country is subject to chronically political instability with a crisis that has lasted since 1997. The Committee does not have the necessary human and financial resources to undertake the Environmental Plan of Action, and develop the necessary technical and scientific capacities.

Other governmental institutions

The following institutions also play an important role:

- The Assemblies (national assembly and islands assembly) have the legislative power and authorize the Comoros' ratification of international conventions;

- The Constitutional Court judges the constitutionality of laws and regulates the functioning of the institutions and state activities; and

- The Supreme Court provides advice on all draft laws submitted to the Union assembly and sanctions the violation of the Republic's laws and decrees.

Regional level (autonomous islands)

At the regional level, the autonomous islands ministries in charge of agriculture, environment, health, and finances are responsible, in their respective domains, for the effective implementation of national policies, taking in account the specificities of the policy and strategies of the island concerned.

These ministries have several services and departments that are concerned with chemicals management.

At the local level and in the framework of decentralisation, townships also have an important role. They perform state functions, have a legal personality, financial autonomy, and their own heritage and resources. They will be among the key actors for implementation of the NIP.

2.2.2.2. Scientific research entities at regional level (autonomous islands)

The following scientific research entities are present in Comoros:

Information Centre and Assistance in Decision Making (Centre d'information et d'assistance dans la prise de decisions, CIAD)

The Centre is one of the main actors for the cultural and natural heritage inventory of Comoros. It has the following mandate:

- respond to the needs of different national programmes;
- develop modern tools to establish action schemes based on programme needs;
- provide more visibility and better management of their results; and
- provide best conditions to develop the scientific potential needed to strengthen sustainable development.

The Centre administers:

- a geographic and environmental information system (SIG/E);
- a document information system;
- a metadatabse; and
- Information Exchange Centres (CHM-BCH).

The department ensures all steps of an information process: collection, archiving, analysis, update, and dissemination.

National Documentation and Scientific Research Centre (Centre national de documentation et de recherche scientifique, CNDRS)

The objective of the Centre is to protect, study, and preserve the cultural and natural heritage of the Comoros Archipelago. Its areas of activities concern the national archives, including:

- museum and library (in the premises of the CNDRS);
- National Herbarium (in Mvouni);
- Observatory of Karthala; and
- research in anthropology, archaeology, history, and linguistic.

The CNDRS serves as a place to meet, conduct research, train national researchers, invite foreign researchers, and disseminate information on national culture. Permanent staff includes research assistants in the fields of biology, plant taxonomy, ornithology. There are also about ten researchers in the area of humanities. The establishment of a specialised group on natural sciences is planned. As few researchers are part of public administration; the CNDRS works mainly with associate researchers who constitute a network located in the Comoros as well as abroad. Researchers contribute to a scientific journal edited by the CNDRS, and participate in conferences organised at the Centre and in missions that take place under the framework of institutional collaboration of the CNDRS.

National Institute for Research in Agriculture, Fisheries and the Environment (Institut national de recherche pour l'agriculture, la pêche et l'environnemen, INRAPE)

Established in 1994 (law n°95-09/AF, decree n°95-106), INRAPE is a public scientific and technical institute under the authority of the Ministry of Agriculture, Fisheries and the Environment. The institute has administrative and management autonomy. It has the following mandate:

- prepare and implement relevant research programmes (regarding agriculture, water resources, and environment) to provide technical and methodological references;

- consolidate, analyse, and publish findings and experiences, promote exchanges between national and international researchers, develop training programmes on rural development, fisheries, and the environment for technical and managerial staff; and

- promote methods and techniques that increase agriculture and fisheries productivity, preserve the environment, and increase conservation.

INRAPE is the Comorian counterpart of the Regional Programme for Plant Protection (PRPV), financed by the European Development Fund (EDF), 2003-2008, and implemented by the Indian Ocean Commission (IOC). IOC members include Comoros, Madagascar, Mauritius, Reunion Island, and Seychelles. PRPV promotes and facilitates scientific and technical cooperation between the states of the region for phytosanitary and plant protection. Its objectives include:

- establishing "a network for plant protection in the Indian Ocean";
- regional harmonization of phytosanitary legislation;
- quality control of plants and phytochemistry products;
- applying research to phytochemistry products and alternative methods to fight pests; and
- Providing support, advice, and training for producers and other actors of the horticultural protection sector.

In the framework of regional cooperation, IOC implements other regional or national environmental programmes funded by the European Union[1], such as:

- management of coastal and marine resources of the IOC countries (5 years); and
- establishment of a regional network of protected areas (5 years).

Considering Comoros' gaps in the assessment of POPs contamination of human health and the environment, these two organizations will help with:

- providing appropriate equipment and strengthening the infrastructure to analyse POPs;
- mobilising staff with relevant skills and expertise; and
- providing documentation and reference material.

2.2.2.3. Civil society entities

Besides the institutional framework, other concerned actors need to be mentioned when dealing with the environment and POPs, such as:

- The National Trade Union of Comorian Farmers (Syndicat National des Agriculteurs Comoriens, CNAC) is mainly comprised of food-producing farmers. It serves as the main body to represent farmers and their professional interests. It is the main consumer of agriculture inputs;

[1] Source: *Commissariat général au plan,* synthesis of current projects by sector, December 2006

- The Central Buying Service for Agriculture Professionals in Comoros (La centrale d'achat des professionnels agricoles des Comores, CAPAC) is the main importer and vendor of agriculture inputs (e.g. nutrients, pesticides, food crops);

- The Comorian Association of Veterinaries (L'association Comorienne des techniciens et infirmiers veterinaries, ACTIV) works mainly in the area of animal husbandry (e.g. animal care, import of veterinary products); and

- The Trade Unions of Fishermen on each island combat the use of chemicals regarding fishing.

Comoros has a dynamic associations and NGOs movement that has launched initiatives in the area of environmental protection and management. These associations and NGOs are strategic key actors for the implementation of the National Environmental Plan (PAE). They include: the NGO Ulanga (national level), Association for development and the environment (Association d'intervention pour le développement et l'environnement, AIDE, Grande Comore), and Action Comoros and Action for Sustainable Development and the Environment (Action Comores et Action pour le développement durable et l'environnement) (Anjouan).

In different areas, these actors are involved with awareness raising and public information generation and dissemination. They reach a large audience and explain the potential risks of uncontrolled use of chemicals.

2.2.3. Comoros' relevant international commitments and obligations

Regarding the management of chemicals, and in particular in the implementation of the NIP, Comoros must take into account the obligations of, and international commitments made under, the conventions to which the country is a Party. Conventions related to chemicals to which Comoros is a Party include:

Vienna Convention for the Protection of the Ozone Layer (date of ratification: 31/10/94)[and the **Montreal Protocol on Substances that Deplete the Ozone Layer**, which aim at protecting human health and the environment from the adverse effects of the ozone layer modifications.

Activities undertaken include:

- Development of a country programme and action plan, and fundraising for their implementation;
- Establishment of a control mechanism for imports of substances that deplete the ozone layer;
- Development of a public awareness campaign for all stakeholders concerned by the ozone layer;
- Granting of equipment to salvage and detect ozone depleting substances (ODS) for refrigerator technicians and customs officers of the three islands;
- Information and knowledge exchanges between refrigerator technicians and customs officers of the three islands;
- Establishment of a new labelling system for ODS in the customs services in Moroni; and
- Regular monitoring of ODS consumption.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (date of ratification: 31/10/94), which aims at defining state obligations with regards to:

- Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes;
- Reducing to a minimum the production and toxicity of hazardous waste and ensuring their environmentally sound management (in particular through recovery and elimination operations) as close as possible from the place of production; and
- Helping developing countries to ensure an environmentally sound management of hazardous waste and other wastes.

Activities undertaken include:

- Very few national activities have been undertaken in this area. In article 64 of the law on the environment (n°94-28/AF), the definition of hazardous waste has integrated some of the characteristics included in the Basel Convention; and
- A national inventory on waste management was organized in June 2004 with the Basel Convention Regional Centre for French speaking countries in Africa.

The Basel and Stockholm Conventions both address dangerous products and outline obligations, which are similar in nature, in particular concerning: (i) environmentally sound management of products and (ii) measures to reduce or eliminate these products. Although few activities have been carried out under the framework of the Basel Convention, measures for effective chemicals management, including POPs and hazardous waste management, should be made on the basis of both Conventions where relevant.

The United Nations Framework Convention on Climate Change (date of entry into force: 29/01/95), which aims at stabilizing the atmospheric concentration of greenhouse gases to avoid any dangerous change in Earth's climate.

Activities undertaken include:

- Preparation of the initial national communication; and
- Preparation and approval (in 2006) of the second phase document of the initial national communication.

Other agreements relevant for Comoros' chemicals management

- Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa;
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade;
- Strategic Approach to International Chemicals Management (SAICM), adopted at the International Conference on Chemicals Management in February 2006;
- FAO International Code of Conduct on the Distribution and Use of Pesticides; and
- Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Other Conventions to which Comoros is a Party

Convention on Biological Diversity (date of ratification: 29/09/94), which aims at the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources by promoting access to genetic resources, transfer of technologies, and adequate funding.

Activities undertaken:

- Development of a national strategy and action plan in the area of biological diversity;
- Integration of the conservation of biological diversity and sustainable development in national decision making processes; and
- Establishment of a centre of exchange on the Convention on Biological Diversity.

Convention to Combat Desertification (date of entry into force: 02/07/1998), which aims at combating desertification and its economic, social, and environmental consequences in a number of countries in all regions of the world.

Activities undertaken:

- Development of a national strategy (national action plan) for sustainable land management.

Other agreements guiding Comoros in environmental management

- The action plan for the 21st century (Action 21), adopted by the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, in 1992;

- UN Millennium Development Goals and in particular objective 7, which aims at ensuring environmental sustainability; and

- The environmental action plan of NEPAD (The New Partnership for Africa's Development), which aims at improving environment conditions in Africa, contributing to economic growth and eradication of poverty, developing Africa's capabilities to implement international agreements, and confronting environmental challenges in Africa in the global context of NEPAD implementation.

2.3. ASSESSMENT OF THE POPs ISSUE IN THE COUNTRY

The management of chemicals and POPs in Comoros is particularly difficult because of the insularity of the country and the narrowness of the treatment solutions available for hazardous substances. Special attention is also required due to the fragility of the ecosystems that could be contaminated.

2.3.1. Assessment with respect to POPs pesticides

In the preparation of the NIP, an inventory of pesticides, in particular POPs pesticides, was carried out during a four-month period (April-August 2006) on the three islands of the Union of Comoros.

It must be noted that Comoros does not produce or export pesticides. Comoros is therefore strictly a pesticides importing country.

The main finding of the inventory was that POPs pesticides are not present in the national territory. Only DDT had been used in the past, for disease vector control, however, today other methods (e.g. impregnated mosquito nets) and products are used (see below paragraph 2.3.3). The results presented therefore only concern non-POPs pesticides. The information presented below will help with planning the actions required to prevent any future introduction of POPs pesticides.

In Comoros, pesticides are mainly used to control agricultural pests. They have been largely used since 1980 and the level of use varies between the islands.

Image 4: Obsolete pesticides stockpiles in Séréhini

Since 2000, the system of distribution of agriculture inputs is managed by a professional organization (CAPAC), a farmers' trade union (SNAC FM), and related salesmen and retailers (Zana Zéma). Prior to 2000, the inputs sector, in particular regarding pesticides, was managed by the Ministry of Agriculture. During that time, the Ministry distributed products at favourable prices as agriculture inputs were often received by donation (e.g. from the Japanese government). The system was inefficient, however, because the donations often had no relation to the needs of the farmers.

The current lack of implementation texts on the management of harmful chemicals (Articles 66 and 67 of the blueprint law n°94-018

concerning the environment), plant protection (n°06-010), and use of pesticides for sanitary purposes (n°95-124), means that the import of pesticides in Comoros is still uncontrolled.

During the inventory, a significant quantity of outdated products *(*~22 tonnes) from a Japanese donation (KR II) was found in the Federal support centre for rural development (Centre fédéral d'appui au développement rural, CEFADER)/Support centre for rural development (Centre d'appui au développement rural, CADER) stores in Séréhini.

The list of stored products and their quantity is indicated below.

Product	Active substance	Producer	Quantity stored (kg)
Grande Comore (Séréhini)			
Baycid	Fenthion 5%	BAYER	8.664
Amidocid	Isophenfos 5%	BAYER	4.044
Suncid	Propoxur 1%	BAYER	3.600
Dursban 10 G	Chlorpyriphos-ethyl 10%	DOW ELANCO	5.520
Benfuracarbe	Benfuracarbe 5%		192
Total Grande Comore			22.020
Mohéli (CEFADER Store)			
Ridomil NZ	Metalaxyl + Mancozeb, 7.5% + 56%	Ciba-Geigy SA, Switzerland	5
Labilite	Maneb + Thiophanate-methyl 40%	Nippon Soda Caltd	68
Baycid	Fenthion 5%	N° lot ZACT 491	56
Total Mohéli			129
Total Comoros			**22.149 kg**

Table 1: Quantities of obsolete pesticides stockpiles in Comoros (2006)

Concerning the conditions of storage and sale, the main findings of the inventory are the following:

- In Grande Comore, of the 20 pesticide storage and sale units found, only three are permanent (made with bricks): Séréhini, CAPAC, and Ali Adam in Mdé. The rest are made of converted containers with shelves to store pesticides and seeds; fertilisers are left on the ground. These stores are in the villages next to houses. Some rusty containers have water inside, leading to a deterioration of the products by humidity. The biggest stockpile of obsolete pesticides found during the inventory is in Grande Comore (Séréhini).

Image 5: Séréhini store

- In Mohéli, five pesticide storage and sale units have been identified: two permanent and the remainder made of containers. The results of the evaluation in Mohéli have confirmed that there are no POPs pesticides on this island. Low quantities of phytosanitary products such as Decis (Deltametrin) Dithan m45 (Mancozeb) Rogodial, Dursban granule10G, anti slugs, and obsolete products has been found in the CEFADER store.

- In Anjouan, four pesticide storage and sale units have been identified: one permanent and the remainder made of containers. At the island level, no POPs pesticides have been found and the inventory has not revealed the presence of obsolete pesticides.

Quality control of the pesticides stockpiles has not been undertaken until now. While some stocks appear to be usable based on their physical condition, the date of production and date of delivery of

certain products indicate that these are in fact likely to be obsolete. It is urgent that the quality of these products is identified and, that following this, a disposal solution is found.

Image 6: Pesticides Store (CAPAC)

According to the studies made, an estimated 3,300 kg of chemicals are used every year in Comoros (based on 2000-2005 data). In the same period, only 1,300 kg of chemicals have been imported. One of the explanations for the discrepancy between the quantity of imported pesticides and their sale is the use of old stockpiles of pesticides belonging to the State.

The sale and import of pesticides in Comoros can be summarised as follows:

Period	Area of use	Annual quantity (kg or L)	Source or user	Remarks
Import of pesticides				
1987 – 1994	Agriculture	~ 13,000	KR II (donation) [see Annex 3 of the Inventory report on pesticides]	Estimate assumes KRII was at the time the only source of supply of pesticides
2001 – 2005	Agriculture	~ 1,300	CAPAC (purchaser) [see Annex 5 of the Inventory report on pesticides]	Estimation assumes only CAPAC imports agriculture pesticides in Comoros
2000 – 2003	Public health	~ 300 L and/or 50,000 tablets for the impregnation of mosquito nets	National Programme to fight malaria [see annex 9 of the Inventory report on pesticides]	
Sale of pesticides				
1987 – 1994	Agriculture	~ 4,300	KR II (donation) [see Annex 4 of the Inventory report on pesticides]	Estimate assumes KRII was at the time the only source of supply of pesticides
2000 – 2005	Agriculture	~ 2,600	Salesmen Zana Zema (Grande Comore) [see Annex 6 of the Inventory report on pesticides]	
		~ 400	Salesmen (Anjouan) [see Annex 7 of the Inventory report on pesticides]	
		~ 300	Salesmen Vunadjama (Mohéli) [see Annex 8 of the Inventory report on pesticides]	
Total		**~ 3300**		
2000 – 2005	Public health	300 L and/or 50,000 tablets	Health Department [see Annex 9 of the Inventory report on pesticides]	

Table 2: Quantities of pesticides imported and sold in Comoros from 1997 to 2005 (2006)

Based on a survey carried out on the use of pesticides by farmers, the management of pesticides for market agriculture production needs to be considerably strengthened. Research and information on alternative methods to pesticide use are insufficient, and pesticides salesmen have a great influence on the management of pesticides. The lack of appropriate labels (for example, because products sold to farmers are repackaged by warehouse staff), lack of training for the appropriate and safe use of pesticides, and lack of protection-related material also deserve particular attention. Current methods of storage and disposal pose a great risk to the health of farmers and their families.

2.3.2. Assessment with respect to DDT

During the colonial period, DDT indoor spraying campaigns were carried out in Mayotte by the hygiene services of Madagascar (in 1954). These operations were extended to Anjouan in 1956 and Grande Comore in 1957. In 1972, the DDT spraying was conducted at three-month intervals in houses in Moroni and in six villages in Anjouan. That same year, another insecticide was tested in Mayotte: Fenitrothion ($2g/m^3$). In addition, a larvicide (temephos) was tested in Grande Comore.

Following independence (1975), during the 1980s, the National Plan to Fight Malaria (Plan national de lutte contre le paludisme, PNLP) was established. Among the strategies utilised was the large-scale use of impregnated mosquito nets and targeted domestic insecticide spraying.

For insecticide spraying tests, the PNLP used malathion ($1.7g/m^2$) in Anjouan and Mohéli in 1991-1992. Sporadic tests to fight larvae with temephos were also carried out in Grande Comore and Anjouan in 1989-1999.

The ministries of public health, agriculture, and the environment jointly decide the rules for the import, distribution, use, and accreditation of pesticides in conformity with international prescriptions on the use of pesticides for disease vector control (decree n°95-124). However, no list of accredited pesticides for sanitary use was found at the time of the project.

The main method to fight malaria in Comoros remains the programme of impregnated mosquito nets. Established in 1993, this programme aims at providing the population with mosquito nets impregnated with insecticide at reasonable price. The insecticide used for impregnation is a pyrethrinoid: Deltamethrin (300mL/year average) provided by WHO and UNICEF (project health II) to support the national plan to fight malaria.

Numerous campaigns are being carried out to raise the awareness of the population on the need to reimpregnate mosquito nets. Information meetings on the reimpregnation technique are often organized by PNLP. As a consequence, the Comorian population, in particular the rural population, is becoming increasingly aware of the importance of reimpregnation in the fight against malaria and gaining familiarity with the technique. Many individuals reimpregnate their nets at home. Following the introduction of Kao.tab (pesticides tabs), theses efforts have been greatly facilitated as only one dose is needed for impregnation.

According to WHO, the rate of mosquito net impregnation in 2002 in Comoros was 36%. In Mohéli, the rate was 51% thanks to community workers promoting this activity. The rate in Grande Comore was the lowest at 20%, while in Anjouan it was 37%. In those islands, impregnation and reimpregnation operations are carried out by the health authorities at the district level. In recent years, there has been an increase in the promotion of, and awareness-raising campaigns on, reimpregnation techniques, in particular in Grande Comore.

Numerous chemists regularly order Kao.tab to resale to the general population. During our survey, PNLP technicians explained that they turned to chemists for Kao.tab when PNLP stocks were empty and they had requests from individuals to impregnate their mosquito nets. This is a sign of the increased awareness of the population concerning this campaign.

Malaria remains the main cause of death in Comoros and one of the country's major economic problems because it generates a high level of absenteeism. Any policy to eradicate poverty has to integrate the fight against malaria. Even though impregnated mosquito nets have proved to be efficient, many find the method to be too moderate and would like to eradicate malaria through large-scale domestic spraying of insecticide. The country could be tempted to request authorisation to import and use DDT. Unfortunately, such a demand could be justified. If Comoros decides to import DDT for disease vector control, the country will need a management plan for these products.

2.3.3. Assessment with respect to PCBs

The PCB assessment was carried out in 2006 across the national territory. The inventory on PCBs focused on finding PCBs in closed circuits and closed systems (i.e. transformers as no capacitors are present in Comoros). The focus of the inventory was based on the knowledge that in most developing countries the main source of PCBs is transformers and capacitors.

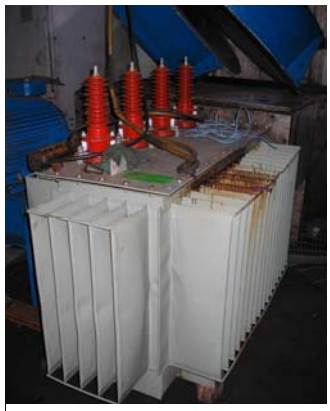

Image 7: MAMWE's decommissioned tranformers located in Moroni

The commercial production of PCBs started in the 1930s, but they were never industrially produced in Comoros. They have, however, been imported for use in the area of power generation and as components of the dielectric coolants in transformers.

All transformers belong to the National Electric Company (production and distribution). Production comes from three power stations in each of the three islands: Ma-Mwé, in Grande Comore and Mohéli, and EDA in Anjouan. Unfortunately, no register for this equipment has been found (in the national company).

UNEP's methodology was used for the inventory. The inventory was established following PCB indicators (i) at the time of manufacturing and (ii) at the time of the inventory.

Indicators of the presence of PCBs at the time of manufacturing are provided on the equipments' identification plates, such as:

- year of manufacturing (e.g. the manufacture of PCB containing equipment ended in 1985 in the European Union);
- commercial name of the dielectric fluid; and
- ratio of the dielectric weight over the total weight.

Indicators of the presence of PCBs at the time of the inventory include:

- density test to differentiate between PCB oils and mineral oils; and
- chlorine test (i.e. below or above 50 ppm).

When there are no indicators (e.g. no plates or untested), the equipment is considered to contain PCBs until a negative test can be obtained.

Density tests made at the time of the inventory, however, cannot be taken into consideration because they show inconsistencies for the transformers manufactured in France after 1985. On the basis of the tests, these are shown to contain PCB oil which is not possible based on European Union regulations.

The inventory results are as follows:

- Total machines: 324
- Inspected machines: 324
- Machines tested by density and colorimetrically: 114 (35% of the population)

Category	Criteria	Percentage
PCBs oil containing equipment	Ratio weight > 0.29	6
PCB contaminated mineral oil equipment (> 50 ppm)	Chlorine test on mineral oil	84
Non-contaminated mineral oil equipment (< 50 ppm)	Chlorine test on mineral oil	10

Table 3: Summary of the estimated results by extrapolation on the total population (2006)

These temporary results will only be validated when all equipment has been tested. For the time being, they provide an evaluation of the rate of contamination.

By extrapolation, the following quantities of dielectric fluids and equipment are determined to be present:

Classification	Total weight (tonnes)	Total weight of the dielectric (tonnes)	Total weight empty (tonnes)
PCB contaminated mineral oil	141	33	108
PCB oil	10	2	8
Non-contaminated mineral oil	17	4	13
Total	**168**	**39**	**129**

Table 4: Quantities of PCBs dielectric fluids and equipment (2006)

The inventory also provides data on the equipment in use:

Status	Grand Comore	%	Anjouan	%	Mohéli	%	Total	%
Out of service	23	7.1	3	0.93	1	0.31	**27**	**8.3**
In use	215	66.36	70	21.60	12	3.70	**297**	**91.7**
Total	**238**	**73.46**	**73**	**22.53**	**13**	**4.01**	**324**	**100**

Table 5: Status of equipment by island (2006)

A great majority of transformers are in use (92%) with only a small percentage out-of-service (8%). The low percentage of transformers out-of-service shows that decommissioned transformers are not stored pending disposal, but rather resold for metal recycling, in particular for the copper and oil.

The age of the equipment has also been studied:

Age	Grand Comore	%	Anjouan	%	Mohéli	%	Total
More than 30 years	22	7.70	5	1.75	3	1.04	**30**
Less than 30 years	187	65.38	61	21.33	8	2.80	**256**
Total	**209**	**73.08**	**66**	**23.08**	**11**	**3.84**	**286**

Table 6: Age of equipment by island (2006)

Analysis and conclusions

The quantity of transformers present in Comoros that were produced with PCBs is low. This can be explained by the fact that 90% of the transformers have been imported after 1990. The rate of contamination of mineral oil, however, is considerably high. This situation is probably due to the maintenance practices that result in cross-contamination (such as topping-up with contaminated oil, filtering, and using second-hand transformers). Importantly, this preliminary inventory will be strengthened during the operational phase of the NIP according to the modalities defined below in the action plan.

While none of the transformers identified during the inventory had a leak (except in Mohéli), it was observed that some out-of-service equipment was stored outside without any particular precautionary measures. Additionally, the poor management of equipment at the end of its life-cycle is also a concern as it inevitably leads to an increased contamination of the environment. Soil or ecosystem contamination, however, was not analysed during the inventory.

Image 8: Open storage of transformers, MAMWE's electrical facility in Moroni

The estimated quantity of PCB-related waste for disposal is not sufficient to envisage local treatment solutions. All related products will likely need to be exported. Installations for the handling of PCBs will therefore be limited to the dismantling and temporary storage of wastes.

The actions to be implemented are as follows:

- develop a PCBs regulation or decree for immediate application;
- plan to control all equipment in use with the following tools: an information database, density tests, systematic marking, and chlorine tests if needed;
- ensure environmentally sound management of PCB containing equipment in use;
- stop as a priority the resale of transformers and oil containing PCBs;
- implement PCBs controls on all stocks of mineral oil in barrels;
- implement PCBs controls on all oils of transformers and second-hand transformers;
- establish a platform for oil change, dismantling, and storage for PCBs and contaminated mineral oils;
- train a team for adequate oil change, dismantling, and storage for all equipment to be transported between islands; and

- undertake a feasibility study to identify disposal options.

2.3.4. Assessment with respect to dioxins and furans

The inventory of dioxins and furans in Comoros was carried out in 2006 following the methodology of UNEP's Toolkit. The results of the inventory are the following:

There are 6 categories of emission sources on the 10 mentioned in the Toolkit: waste incineration (1), ferrous and non-ferrous metal production (2), heat and power generation (3), transportation (5), open burning processes (6) miscellaneous (8). The categories « production of mineral products » and « production and use of chemicals and consumer goods» have not been found in Comoros. The category « disposal » has not been quantified.

The results of the inventory are:

N°	Source categories	Annual releases (g TEQ /year)					
Main sources		Air	Water	Land	Products	Residues	TOTAL
1	Waste Incineration	0.5471	NA	NA	NA	0.003575	0.550675
2	Ferrous and Non-Ferrous Metal Production	0.0361535	5.4E-05	NA	NA	0.089164	0.125371021
3	Heat and Power Generation	0.185035	NA	NA	NA	4.500075	4.68511
5	Transportation	0.018866	NA	NA	NA	NA	0.018866
6	Open Burning Processes	15.653696	ND	0.04511	NA	3.117099	18.8155848
8	Miscellaneous	0.0006174	NA	NA	NA	NA	0.0006174
10	Hot Spots						
	TOTAL	16.44146762	5.357E-05	0.04479	0	7.709913	24.19622419

Table 7: Releases of PCDD/PCDF (2006)

NA: non-applicable
ND: non-determined

According to the analysis on the estimated releases of dioxins and furans, it can be noted that:

- The total value of releases of dioxins and furans in Comoros is 24.19622419g TEQ/year.

- Open burning processes is the most significant source category in Comoros, amounting to more than 77% of the total release of dioxins and furans, and 90% of the total release to air. Within this

source category, open domestic burning represents 87% of the total release, followed by forest and biomass burning.

- Heat and power generation is the second largest source category in Comoros, accounting for 19% of total releases. Releases occur in air and residues. Releases to air and to residues mainly come from virgin wood ovens that produce 97% of the releases to air and 99% of the releases to residues.

The following source categories represent less releases:

- Waste incineration represents about 2% of the total release of dioxins and furans and comprises releases to air and residues. It must be noted that the biggest share comes from medical waste incineration.

- Ferrous and non-ferrous metal production contributes 0.5% to the total releases of dioxins and furans at national level (in the form of releases to air, water, residues). Releases to water mainly come from the production of coal under the subcategory of coke production.

- Transportation accounts for 0.08% of total releases. All subcategories release dioxins and furans to air. It must be noted that power stations use gas oil.

- Miscellaneous subcategories include food-smoking workshops and tobacco, resulting in releases to air, with more than 99% of the releases due to the food-smoking workshops.

- Identification of hot spots, storage sites for out-of-service transformers and PCBs oils (in order to avoid contamination), and open air waste sites have been also identified.

The inventory of dioxins and furans has brought to light several practices that are not listed in the UNEP Toolkit. These are: burning tires in waste sites and during political demonstrations, burning cables and other subcategories of open burning processes. Categorising these practices has been difficult and needs to be better taken into account.

Image 9: Open burning of waste, Moroni

The inventory helps to determine the level of urgency of the measures to be taken, based on the threats and damages of the sources and the exposure of populations to dioxins and furans. The sound management of waste is a highly important issue for Comoros due to its limited surface and limited technology on waste management. The Stockholm Convention particularly targets waste incineration activities. The Convention states that Parties shall, generally speaking, promote the use of best available techniques (BAT) and best environmental practices (BEP) for existing sources; and for new sources in the categories listed in Part II of Annex C, shall promote and require the use of BAT as soon as practicable and no later that four years after the entry into force of the Convention for the Party concerned (2010 for Comoros). For the identified categories, Parties shall promote the use of BAT. The relatively low quantity of waste, in particular hazardous waste, does not suggest national solutions for their treatment. This waste will instead need to be exported.

Based on this, measures should be taken to reduce risks by diminishing the releases using BAT and BEP, and studies that enable better risk assessments should be developed.

The urgent measures to be adopted are to:

- develop a assessment of the exposure of the population to dioxins and furans through food, the highest source of exposure; and
- use alternative technologies to the open burning of waste which is the main factor of dioxins and furans releases (e.g. sorting, recycling, composting).

2.3.5. Information on the state of knowledge on stockpiles, contaminated sites, and wastes

2.3.5.1. Quantities of obsolete stocks

Inventories carried out in May 2006 collected the following information:

There were **22.149 tonnes** of pesticide obsolete stocks in Comoros in **2006.**

Unused (and probably unusable) pesticides were found in Serehini, in the Centre of Grande Comore. This brick store built in the 1980s contains around 22 tonnes of pesticides (mainly insecticides), donated to Comoros by Japan. Once the products are received, they are temporarily stored in the central unit of CEFADER. They are then taken to the rural development support centres (CADER) to be placed at the disposal of producers and donated or sold. Most these products were delivered between 1987 and 1994.

Moreover, in the store based in the Ministry of Agriculture of Mohéli, 129 kg of out of date products donated by Japan have been registered. In Anjouan, no store containing obsolete pesticides or stocks has been found.

Storage conditions do not always ensure the prevention of soil contamination. For instance, in Grande Comore, besides three brick stores (Séréhini, central buying service, and Ali Adam M'dé store), the rest (17 stores) are made of containers and are located in the villages and close to houses. Shelves are used for storing pesticides and grain. The fertilisers and tools are placed on the ground. Some rusty containers have water inside leading to the destruction of products by humidity.

Image 10: PCB oil storage at Moroni power station

It is urgent to take into consideration these stores in a potential decontamination programme. The lack of protective equipment for salesmen must also be noted.

Concerning stocks of PCB contaminated oil, four 200-litre metal barrels are stored in a closed container in a MAMWE power station in Moroni. That is, 800 kg of PCB contaminated oil (level of contamination undetermined). In the container the barrels are subject to corrosion because of humidity and marine air.

There is no centre for the disposal or recycling of pesticides or PCB oil.

2.3.5.2. Contaminated sites

Sites contaminated by pesticides, PCBs, dioxins, and furans are found on all islands (see table below).

Products	Contaminated sites	Owner
Dioxins and furans	Illegal waste sites and official waste sites for domestic and hospital waste Large cities where the air is particularly polluted Illegal incineration sites of biomedical waste (6 zones)	Townships
	Soil of car repair shops	Garages
	Location of workshops using aluminium (9 sites in Grande Comore, 6 in Anjouan and 1 in Mohéli) PVC cables burning sites	Craftsmen
Agricultural pesticides	Shops selling or storing pesticides	Members of Zana Zema
PCBs	Power stations storing out of order equipment and transformers with leaks	MAMWE/EDA

Table 8: Contaminated sites (2006)

Nationally, the population and the administration have little or no knowledge about unintentionally produced POPs and their impact on health and the environment. There are no specific services producing statistics on the releases linked to dioxins and furans. As a consequence it is very difficult to assess the releases and risks.

2.3.6. Summary of future production, use, and future releases of POPs

The inventory carried out in May 2006 found that POPs pesticides (including DDT) are not used in Comoros. However, the permeability of the borders, and due to the fact that the national legislation does not require any control of dangerous and hazardous substances, makes it necessary to be vigilant on the import of these products. Comoros will have to implement as soon as possible legislation and a control system of these substances (accreditation and control at port customs).

In this context, no exemptions for the chemicals listed in Annexes A and B of the Convention will be registered with the Secretariat.

However, for PCBs, particular attention should be paid to the implementation of a monitoring system of transformers during their life cycle to obtain a total elimination of the use of PCBs in equipment by 2025 and the sound management of PCBs waste by 2028.

Concerning unintentionally produced and released POPs by anthropogenic sources, the country will need to undertake various reduction measures. The inefficient long-term management of waste, in particular, must be improved in order to limit dioxins and furans releases in Comoros. Furthermore, along with an increase of the population, there is a tendency to an increase in releases. Comoros will need to promote, and in some cases require: (i) reduction or elimination of releases; (ii) use of substitute or modified materials, products and processes, and (iii) use of BAT and BEP.

2.3.7. Existing programmes for monitoring releases and environmental and human health impacts

There is no specific program in Comoros to monitor the releases and the impact of POPs on the environment and human health. Managing POPs is a new concept in Comoros.

The main gaps, constraints, and concerns to control the impact of POPs on the environment and human health are as follows:

- lack of programme in this area;
- lack of appropriate training, research and development, and analysis of POPs, in particular in secondary school and university curriculum;
- lack of vocational training programmes on POPs monitoring, research and development, and analysis;
- lack of appropriate and skilled human resources; and
- lack of appropriate equipment for the sound management of POPs.

Despite this, sporadic actions have been conducted by specialised institutions to study the quality of plants and measure the impact of chemicals, in particular the quality of phytochemistry products. For example, the Regional Programme for Plant Protection (IOC countries), started in 2003 and will end in 2008. It has received funding from the European Development Fund (EDF) and the Reunion Island. In Comoros the programme is implemented by the Ministries of Agriculture and the Environment (Union and islands), in particular by INRAPE.

The quality control of plants, however, is limited to detecting bacteria and not chemicals. The two plants examined are tomato and potato. The analyses are made at CIRAD in the Reunion Island.

In order to preserve the environment and protect consumers' health, analyses are under way to control the quality of pesticides and their residues on the fruits and vegetables sold.

Four hundred pesticides samples from IOC countries will be analysed at the pesticides control laboratory of the SPV MADAGASCAR, which has been designated as a reference laboratory for the region. The aim is to verify that the commercialised products are in conformity with their accreditation. The first results have shown that products are not always in conformity and an awareness raising process has been undertaken by PRPV for producers.

Comoros has in particular been concerned with non-chemicals alternatives to combat the coconut tree aleyrods within the programme of plant protection. This programme aims at determining the infestation degree and offers a natural method to fight pest (parasites of aleyrods).

Comoros' gaps in the control of POPs contamination risks for human health and the environment will probably require a regional approach, as has been practiced under the PRPV. At national level, the gaps are:

- lack of appropriate equipment and infrastructure for POPs analysis;
- lack of personnel with appropriate skills and expertise; and
- lack of reference documentation and information.

2.3.8. Current level of information, awareness, and education among target groups

Target groups concerned by POPs in Comoros comprise farmers, chemicals salesmen, technical personnel of power stations, buyers of transformers, and populations close to sources of releases of dioxins/furans and places of storage of PCB contaminated equipment and obsolete pesticides.

Surveys carried out on target groups show that the persons that are in contact with POPs or pesticides are not aware of the risks of these substances.

Individuals in contact with PCBs (e.g. technicians working in power stations) are not sufficiently informed on the existence of these substances, their toxicity, and the long-term adverse effects on health and the environment. For example, MAWME technicians did not know PCBs are a probable human carcinogen. Knowledge on PCBs is higher among decision makers and managers but the lack of technical means prevents the development of an adequate management and disposal plan, which may include, for example, providing protective equipment and prohibiting the resale of equipment at the end of their life cycle or of potentially contaminated oil.

Awareness raising on risks and dangers of PCBs will first target the personnel of power stations (the main holders of transformers in Comoros) and then will be extended to the electric equipment recyclers, ministry decision makers (e.g. ministries of energy, environment, and health), and more generally to civil society (i.e. NGOs).

Concerning pesticides, several actors are involved in the use, distribution, and management of these substances. Pesticides salesmen are often former officials responsible for information sharing and training at the time when farming inputs depended on the Ministry of Agriculture. However, according to the inventories, agricultural inputs salesmen are currently mostly simple vendors that have not received any training concerning the use of these products and cannot advise the users on the protective measures required for these chemicals. Based on the inventory results, in 85% of the cases, the pesticide salesmen provide advice or information on the use of pesticides. In only 10% of the cases, farming advisors provide this information.

The use of pesticides by small farmers is a problem. Seventy percent of farmers mention that the packaging of pesticides is not labelled. Half of the farmers cannot read labels (when they do exist). Protective clothing is only used by some farmers. In 60% of the cases, pesticides are stored in the house. Empty packaging (in 85% of the cases) is either discarded outside the home, in the field, or in regular household waste. This data on the use of pesticides gives some indication of the potential dangers for the health of the farmers and their families.

The awareness raising plan on the risks and dangers of pesticides and POPs in particular will target salesmen, retailers, and small farmers. It will aim at reinforcing their knowledge on the dangers of POPs and inform them on relevant practices for the safer use, storage, and management of POPs. Special information on the biological control of pests in Comoros will also be developed. Customs officers will also be part of the target groups as guarantors of the accreditation system that should be implemented. Lastly, the ministerial departments concerned (e.g. agriculture, health) and other decision makers will need to be informed about the risks.

Dioxins and furans are probably the less known group of POPs in Comoros. The first target group regarding awareness raising on unintentionally produced POPs will be the political decision makers because there is no legislation in Comoros on, and no long-term alternative to, the open burning of waste. Raising awareness of politicians on public health risks could lead to a study on the dioxins contamination of ecosystems, food, and maternal milk for instance. Public awareness actions will also be needed to effectively address open burning of waste practices as well as to improve other relevant practices (e.g. heating).

To summarise, from the interviews with target groups, POPs are almost unknown, regardless of the education level. Training and information needs are therefore important to address as those interviewed lack knowledge on POPs and POPs containing products and especially regarding their dangers and environmental sound disposal conditions. This justifies the launching of an information and awareness raising campaign in all ministerial departments and other relevant services, not only for the identified key target groups but also for the public at large.

It must be noted that certain awareness raising measures have already been taken for political decision makers at national and local level to serve as actors for change. For instance:

- organisation of thematic workshops on POPs with public administration decision makers, electric company representatives, NGOs, etc.; and
- the National Coordinator of the project has made interventions in the media (e.g. radio, television) to raise awareness on POPs dangers to health and the environment and the necessity to take precautions when using or storing these substances, while waiting for their ultimate destruction.

To complete these actions, as seen above, information, public awareness raising, and education programmes on POPs should be undertaken.

Information and communication are one of the tools to facilitate these interventions. Adequate means should be chosen to raise awareness and mobilise the target populations (rural and urban) on the importance of their health and environment. Any action should respond to the triptych information-education-communication (IEC). The attention will focus on programmes linked to the environment, health, and agriculture. In this context, certain measures and approaches should be adopted, in particular:

- make information accessible and available for all stakeholders in an suitable form;
- provide support to the decentralisation of public, private, and associated information dissemination structures, and to the media, in particular local media and written press;
- use the communities' communication means and networks;
- include suitable information on environmental protection including risks linked to chemicals and POPs in school curriculum; and
- use audio-visual aids.

It must be noted that civil society actors are not yet involved in implementation actions concerning POPs.

2.3.9. Overview of technical infrastructure for POPs assessment

The laboratories in the country are as follows:

- physiopathology and entomology laboratory (INRAPE);
- pharmaceutical laboratory (PNAC);
- medical laboratory (El Maarouf);
- laboratory to control the quality of spices (GIE);
- public works laboratory (physio-chemical analysis);
- private medical laboratory (Dr Lava);
- laboratory of the University of Comoros (chemistry and biochemistry); and
- chemistry laboratory of the High School of Moroni.

Comoros has a limited amount of the technical infrastructure required for the sound management of POPs. Even though laboratories have complete sets of equipment, the amount of trained technicians is not enough to make them profitable and effective. Nevertheless, the existing laboratories are not equipped to undertake all measures and analysis required for the appropriate management of POPs. One of the laboratories could be equipped to carry out these analyses. It is also possible to develop a

partnership with other laboratories of the Indian Ocean region, such as the Regional Programme for Plant Protection (programme régional de protection des végétaux, PRPV). Importantly, the implementation of the NIP provides an opportunity to strengthen the technical infrastructure of laboratories. It can also help to implement other conventions on toxic substances (e.g. Basel Convention) in partnership with other laboratories in the region such as those of IOC.

Based on what has been outlined above, Comoros has great technical needs to meet its international obligations under the conventions on chemicals. This is due in particular to its insularity that increases the constraints and costs.

2.3.10. Identification of impacted populations or environments, and assessment of threats to human health and environmental quality

Qualitative and quantitative information on impacted populations or environments and the assessment of threats to human health and the environment are not available. Cases are not documented due to a lack of techniques and human resources to make a diagnosis and provide the necessary treatment.

During the inventories made for the NIP, no data on exposure of the population or environment was collected. Based on certain results of the inventories (e.g. for PCBs) and of the insularity of the country, contamination by POPs is not to be neglected. A series of studies on contamination is needed in Comoros.

The implementation of the NIP will need to strengthen the technical infrastructure to collect, produce, and disseminate information concerning threats to public health and the environment (e.g. through the development of a toxicology information centre).

2.3.11 Assessment system and listing of new chemicals

Assessment and listing of new chemicals does not yet exist in Comoros. An accreditation system for the phytochemistry products (including pesticides) should soon be in place following the promulgation in December 2006 of law n°06-220/PR on plant protection.

Under this law, products cannot be imported, produced, packaged, or used if they have not previously been accredited by the Ministry of Agriculture of the Union. The Ministry of Agriculture holds a register of phytochemistry products. Accreditations are given by decree.

Institutions that import, produce, sale, package, or provide services using such products are subject to the Ministry's authorisation. They must keep a register of the movements of all their products.

The text also includes plans to create a plant protection service in each island. This service will be in charge of phytosanitary monitoring and protection and will provide advice on appropriate treatments.

The blueprint law on the environment also includes plans for a control system (classification) for toxic chemical substances in general.

This law includes plans for a:

- list of harmful chemicals for which import, export, transportation, production, sale, and distribution (including free of charge) is prohibited; and
- list of harmful chemicals for which import, export, transportation, production, sale, and distribution (including free of charge) are subject to prior authorisation of the Ministry of Environment and rules concerning their transportation, commercialisation, and packaging.

The producer or importer must keep the Ministry of Environment informed about the composition, volume, and known adverse effects of the substances that will be used on a large scale. There is no available list yet of the products prohibited or subject to prior authorisation.

3. NATIONAL STRATEGY AND ACTION PLANS

3.1. DECLARATION OF INTENT OF THE COMORIAN GOVERNMENT

In the framework of the Strategy Document on Growth and Poverty Reduction (Document de stratégie de croissance et de réduction de la pauvreté, DSCRP), Comoros has given environmental problems a priority and has integrated environmental issues into social and economic activities. The Ministries of the Environment (at Union and islands level) have been created in this context. The other ministries such as health and finances collaborate regarding the management of chemicals on the basis of legal texts.

Besides the ratification of international conventions on chemicals management, Comoros has:

- a National Environmental Policy (Politique nationale de l'environnement (PNE - decree n°93-214) established on the basis of a diagnosis on the State of the Environment in Comoros. The main principle of this policy is the integration of the environmental dimension in the economic and social development of the country, focused on the sound use of natural resources and the protection of biological diversity in the environment and/or cultural interest zones;

- a blueprint law n°94-018 of 22/6/94, modified by law n°95-007 of 19/6/95, which regulates all activities concerning sustainable management and conservation of resources and biological diversity of territorial, coastal, and marine environments (including chemicals and hazardous waste management). To date, the law has two application texts: (i) on impact studies (decree n°01-052) and (ii) on the establishment of the marine park of Mohéli (decree n°01-053).

- a law on plant protection (law n°06-010/AU) adopted on 2 December 2006. This law contains articles on the control of the distribution and use of phytosanitary products (in particular pesticides) in the fight against pests; and

- a law concerning the code on public health (decree n°95-124/PR) that stipulates that the ministries in charge of public health, agriculture, and the environment jointly decide the regulations on the import, distribution, use, and accreditation of pesticides in conformity with international obligations on the use of pesticides for disease vector control. These ministries publish a list of accredited pesticides for public health use.

Against the background of this legislation on the environment, the Government of the Union of Comoros signed the Stockholm Convention on POPs on 31 May 2001. The objective of the Convention is to protect human health and the environment against the adverse effects of POPs. The Convention aims at eliminating or reducing 12 chemicals, eight pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, and toxaphene), two industrially produced chemicals (HCB and PCBs), and two unintentional by-products (dioxins and furans).

Comoros ratified the Stockholm Convention on 20 January 2007 (decree N°07-003/PR). Through its NIP, Comoros will have the opportunity to reduce the potential risks resulting from the use of toxic chemicals and hazardous waste. Through this action, it will contribute to the protection and improvement of the health of its population and environment.

The NIP action programme will help to ensure:

- a better understanding by decision makers on the necessity to include activities and projects related to chemicals in the public investment programmes; and

- mobilisation and awareness raising of other stakeholders (e.g. NGOs, economic sector) concerned with environmental problems.

While the quantities of chemicals and POPs seem minimal, in addressing the sound management of chemicals and in particular POPs, Comoros will take into account:

- its agricultural policy of intensification, that will require the use of fertilisers and chemicals;
- sanitary policy;
- electrification campaign in rural zones; and
- increase of population and rapid urbanisation.

At the same time, the NIP will help the country to obtain the technical and technological means to control POPs releases, and contribute to the protection of human health and the environment.

In this context, the country affirms its willingness to efficiently implement its NIP in conformity with the principles and obligations of the Stockholm Convention.

3.2. IMPLEMENTATION STRATEGY

3.2.1. Strategy objectives

In conformity with the Strategy Document on Growth and Poverty Reduction (Document de la stratégie de croissance et de réduction de la pauvreté, DSRP) developed by the Union of Comoros in 2005, the general objective of the NIP's strategy is to contribute to the fight against poverty and the promotion of sustainable development. This can be achieved through the consideration of chemical safety in the different national strategies to find the appropriate solutions to address chemical risks and threats (from POPs in particular) on human health and the environment.

The specific objectives of the NIP are those outlined by the Stockholm Convention:

i. Environmentally sound management of POPs pesticides and their wastes, and chemicals in general;
ii. Environmentally sound management of PCBs and their wastes;
iii. Environmentally sound management of sources of dioxins and furans;
iv. Identification and environmentally sound management of sites contaminated by POPs and their wastes;
v. Strengthening of the institutions and regulations concerning chemicals;
vi. Establishment of a regional and national system to exchange of information in order to inform, raise awareness, and educate the public;
vii. Undertake research and development and monitoring activities concerning sources of POPs, and their impact on human health and the environment; and
viii. Periodic reports reviewing the effectiveness of the measures taken to implement the Convention.

3.2.2. Areas of intervention to meet the objectives

To fulfil the obligations under the Stockholm Convention, the national strategy builds on five cross-cutting areas of intervention that should be coordinated for the three groups of chemicals (POPs pesticides including DDT, PCBs, and dioxins/furans). All these areas of intervention will be simultaneously mobilised for maximum efficiency. The areas of intervention are as follows:

Political and legislative framework

Comoros needs to strengthen its legislative body as a basis for any future action on POPs. This type of chemical does not yet addressed in Comorian laws. The laws need to be amended to include the obligations under the Stockholm Convention, and set rules for POPs import, use, disposal, and related contaminated sites control as well as assessment of the risks of these pollutants. Implementation texts, for example decrees, will need to be adopted to implement the law (in particular the blueprint law).

In the drafting of new legislation, special attention will be paid to the other international agreements on chemicals ratified by Comoros, in particular the Basel Convention for which no application decree has yet been adopted.

Control procedures will need to be clearly defined and provided with adequate means of implementation.

Institutional and coordination framework

The coordination of the management of chemicals in the country is not yet effective. Control actions are isolated and prevent an integrated approach of the management of chemicals and POPs in particular. The institutional framework for all stakeholders involved in the management of chemicals will need to be strengthened to give greater coherence to the actions undertaken. Coordination could be similar to already existing bodies at the regional or national level such as the National Committee for Sustainable Development (Comité national pour le développement durable, NDD) and the Islands Committees on Sustainable Development (Comités insulaires pour le développement durable, CIDD).

Control and monitoring

Comoros does not have the human and financial resources required to control and monitor POPs. There is a lack of infrastructure to detect POPs and analyse the levels of contamination of the environment and population. The country will have to strengthen its technical and human structures, perhaps in a regional context, to better detect POPs and the levels of contamination of potentially exposed ecosystems.

Awareness raising, information, and education of target populations

There is relatively little knowledge on POPs in Comoros. Those in contact with these substances are often not aware of the risks to human health and the environment. Awareness raising and communication strategies are essential to make each individual more aware of POPs and react in a manner that protects his/her health and the environment.

Information is not systematically available and disseminated. When available, it often remains within the institutions and there is no system in place for sharing information. Furthermore, no mechanism exists to inform workers and citizens of the potential risks associated with the life cycle of chemical products including POPs.

One of the priorities will be the establishment of an information system at the ministerial level. This system will regroup all data collected during the inventories and try to obtain new updated data.

Resource mobilisation

Comoros needs to strengthen its human and technical capacity to implement the NIP. To this end, the country will seek to identify all opportunities provided by existing projects and to develop future projects and programmes to implement certain aspects of its NIP. Implementation of the NIP will also require mobilisation of national funds by including some of the activities in the budgets of the ministries.

The five areas of intervention mentioned above are cross-cutting and intersectoral, and are not specific to any single group of POPs. In this context, these issues will not be translated into specific action plans, but instead integrated into the three specific action plans on the chemical groups.

3.3. ACTION PLANS

The NIP's action plans are based on the strategic axes described above. They include all short-, medium-, and long-term actions and activities identified to fulfil the global and specific objectives of the Convention. Each action plan has a global objective, specific objectives that address the five areas of intervention mentioned above (see 3.2.2), and activities to address concrete problems in a detailed work plan over eight years.

To define the national priorities and action plans for each group of POPs, the three categories of chemicals (PCBs, dioxin and furans and pesticides) were submitted to an a priority setting exercise.

The identification of priority chemicals has been carried out considering all available information on POPs in Comoros. The following information was considered relevant for the study: **(i)** obligations under the Stockholm Convention for POPs reduction or elimination; **(ii)** results of the inventories on the products and equipment containing POPs; **(iii)** evaluation of the legislation and the institutional framework; and **(iv)** evaluation of the means needed to implement the NIP (see Annex 1 for the national study on Comoros' capacities and gaps for the management of POPs).

Discussions on the priority ranking of the chemicals groups were held during a national workshop in November 2006 with some twenty participants, including in particular the Steering Committee of the project.

The following methodology was used:

- identify ranking criteria
  - Convention obligations; impact on health and the environment; social and economic consequences; and available alternatives
- assign weights
  - 5 = extremely important; 4 = very important; 3 = important; 2 = medium importance; and 1 = low importance
- define a numerical scale for the criteria
  - 4 = very important; 3 = important; 2 = medium; and 1 = low)
- discuss and agree on the numerical values to be assigned to each group of chemicals for the various criteria
- vote of the participants based on the assessments, and
- rank the groups of chemicals in order of priority

The following weights were assigned to the various criteria:

- Convention obligations: 5
- Impact on health and the environment: 5
- Social and economic consequences: 4
- Available alternatives: 4

The assessment of the chemical groups was made possible by the analysis of the POPs situation in Comoros, in particular the findings from the inventories. The complete life cycle of the chemicals was considered: import, export, use, storage, transport, distribution and disposal.

An analysis of capacities and gaps related to the management of chemicals in Comoros was undertaken for each group of POPs (see Annex1).

The ranking of priorities is presented in the table below.

Criteria	Weighted score	Scale	POPs Pesticides	PCBs	Dioxins and furans
Convention obligations	5	1 to 4	5x4=20	5x4=20	5x2=10
Impact on health and the environment	5	1 to 4	5x2=10	5x4=20	5x4=20
Social and economic consequences	4	1 to 4	4x3=12	4x3=12	4x1=4
Available alternatives	4	1 to 4	4x3=12	4x4=16	4x2=8
Total		1 to 4	54	68	42
Ranking			**2**	**1**	**3**

Table 9: Action plans of the NIP by order of implementation priority (2006)

The management of PCBs has been defined as the top priority action in Comoros, followed by pesticides (in particular POPs pesticides), and dioxins and furans.

An action plan was designed for each group of chemicals:

- PCBs;
- Pesticides including POPs; and
- Dioxins and furans.

The action plans are based on the strategy outlined above. Within the action plans, the activities marked with a "(P)" are considered to be priorities, either because they are essential, in the short-term, for the management of chemicals or because they are a prerequisite for other long-term actions.

3.3.1. Action plan 1: Environmentally sound management of polychlorinated biphenyls (PCBs), and related equipment, wastes, and contaminated sites

Problem

The chemical substances listed in Part II of Annex A of the Convention are industrial chemicals called polychlorinated biphenyls (PCBs). The measures to reduce or eliminate the releases resulting from the intentional production and use of these substances are listed in Article 3 of the Convention.

The national inventory carried out in 2006 has shown:

- An absence of PCBs production in Comoros;
- PCBs have been imported for use in the area of power generation and distribution as components of dielectric fluids in transformers (no PCB containing capacitors were found);
- All transformers are held by national electric companies (production and distribution) under the Ministry of Energy;
- There is no legislation on the management of PCBs in the country. As a consequence, there is no system to control their import or any other stage of the life cycle of related equipment;
- The quantity of transformers manufactured with PCBs is low—about 90% of PCB containing equipment was been imported after 1990;
- The rate of contamination of mineral oil seems to be considerably high (above 80%). One explanation could be that maintenance practices (such as topping-up with contaminated oils) are the source of contamination;
- None of the inspected transformers had leaks (outside Mohéli);
- The management of equipment in service and at the end of its life cycle has a significant potential negative impact on the environment (for example, out-of-service equipment may be stored outside without any particular precautionary measures and may be resold in the informal sector);
- Soils and ecosystem contamination has not been analysed with precision, but as described above the risk of contamination is present;
- The country does not have the technical infrastructure to proceed with the environmentally sound disposal of oils and equipment contaminated by PCBs;
- A lack of information on the risks and dangers of PCB handling for those involved and on the precaution measures needed; and
- Quantities of PCBs for disposal (total weight dielectric: 39 tonnes, total weight of empty equipment: 129 tonnes) are not sufficient to envisage local treatment solutions.

The lack of appropriate legislation and precautionary measures regarding the use of PCB containing equipment present significant risks to human health and the environment. The implementation of legislation and regulation on POPs management is dependent upon the existence of a strengthened institutional structure and necessary human resources and capacities.

Based on the Stockholm Convention, the use of PCBs will need to cease, at the latest, by 2025. The environmentally sound management of PCB wastes should be achieved as soon as possible but no later than 2028. In addition, Parties should endeavour to develop appropriate strategies for identifying sites contaminated by PCBs and if remediation of those sites is undertaken it shall be performed in an environmentally sound manner.

As a way to protect human health and the environment against the adverse effects of PCBs, the Union of Comoros adopts this national action plan. The activities and implementation means aim at:

- the progressive withdrawal of PCB containing electric equipment;
- the safe management of wastes and improved national technical capacities and knowledge in the management of contaminated sites; and

- the strengthening of legislation and the institutions by looking for solutions to meet the identified gaps.

To fulfil this action plan, and taking into account the lack of national resources, particular attention is given to international cooperation.

Global objectives

Eliminate the use of PCBs in all equipment by 2025 and obtain the environmentally sound management of PCBs wastes and contaminated sites by 2028.

Specific objectives

1. Develop a legislative and institutional framework for the environmentally sound management of PCBs and related equipment, wastes, and contaminated sites by 2010

2. Establish a monitoring and control system and a programme to secure PCB fluids and PCBs containing equipment and wastes (including contaminated sites) until their final elimination by 2015

3. Inform stakeholders and raise awareness on the risks related to the use of PCBs and PCB containing equipment and their recycling in the informal sector by 2013

4. Undertake the environmentally sound disposal of oil wastes and equipment containing PCBs by 2015

5. Evaluate the exposure of the population to PCBs-related risks

Activities

1. Develop a legislative and institutional framework for the environmentally sound management of PCBs, and related equipment, wastes, and contaminated sites by 2010

1.1. Evaluate current legislation indirectly related to the management of PCBs (e.g. regarding storage, transportation, holding of hazardous substances, classified installations)

1.2. Update existing legislation and develop regulations on PCBs management, equipment, and wastes throughout their life cycle. Identify authorised disposal processes as well as authorised companies to deal with the transportation and handling of PCBs. Identify certified laboratories for the analysis of PCBs

1.3. Promulgate new regulations on PCBs management

1.4. Communicate the new requirements for the management of PCBs, in particular for customs control, regarding the import of oils and electric equipment, and for the Department of Classified Installations

2. Establish a monitoring and control system and a programme to secure PCB fluids and PCBs containing equipment and wastes (including contaminated sites) until their final elimination by 2015

2.1. Ensure effective monitoring and inspection of PCBs through the establishment of a specialised group

2.2. Strengthen tools for analysis, diagnosis, and monitoring of oils, equipment, and PCB contaminated sites (e.g. customs control, inventory updating, density tests and/or chlorine tests, labelling of equipment, implementation of a database)

2.3. Train a team for refilling transformer oil, dismantlement, storage of equipment, transportation between islands, and prevention of contaminated sites

2.4. Develop the technical means for the shipping of PCBs between the islands

2.5. Develop an infrastructure for refilling transformer oil, dismantlement, and temporary storage for the contaminated equipment

2.6. Undertake short-term reform and replacement of equipment presenting risks (e.g. leaking or corrosive equipment, present in dangerous locations, or proximity to inflammable material or safe drinking water equipment)

3. Inform stakeholders and raise awareness on the risks related to the use of PCBs and PCB containing equipment and their recycling in the informal sector by 2013

3.1. Promote training on good practices in the management of PCBs for national electric companies, customs services, and inspectors of classified installations

3.2. Launch awareness raising and information campaigns for the public, key actors (e.g. those working in recycling), and political decision makers

4. Undertake the environmentally sound disposal of oil wastes and equipment containing PCBs by 2015

4.1. Carry out a feasibility study to identify disposal solutions (for PCBs and contaminated mineral oil) based on the quantities of waste to be eliminated

4.2. Eliminate oils and equipment containing PCBs

5. Evaluate the exposure of the population to PCBs-related risks

5.1. Develop a system to evaluate the presence of PCBs in land and marine ecosystems

Global objective:

Eliminate the use of PCBs in all equipment by 2025 and obtain the environmentally sound management of PCB wastes and contaminated sites by 2028

Objective 1: Develop a legislative and institutional framework for the environmentally sound management of PCBs, and related equipment, wastes, and contaminated sites by 2010

Logic of intervention	Indicators	Actors	Schedule	Costs US$
Activity 1.1: Evaluate current legislation indirectly related to the management of PCBs (e.g. regarding storage, transportation, holding of hazardous substances, classified installations) **(P)**	Meeting reports on the drafting of text	Ministries of environment, energy, health, equipment, customs, finances and budget National electric companies Holders of privately-owned transformers Recyclers	2008	5,000
Activity 1.2: Update existing legislation and develop regulations on PCBs management, equipment, and wastes throughout their life cycle. Identify authorised disposal processes as well as authorised companies to deal with the transportation and handling of PCBs. Identify certified laboratories for the analysis of PCBs **(P)**	Meeting reports on the drafting of text	Ministries of environment, energy, health, equipment, customs, finances and budget National electric companies Holders of privately-owned transformers Recyclers Laboratories	2008-2009	10,000
Activity 1.3.: Promulgate new regulations on PCBs management **(P)**	Texts voted and promulgated Application decrees	Ministries of environment, energy, health, equipment, customs, finances and budget Assemblies	2009	10,000
Activity 1.4.: Communicate the new requirements for the management of PCBs, in particular for customs control, regarding the import of oils and electric equipment, and for the Department of Classified Installations **(P)**	Agreed number of workshops undertaken Publication of communications between ministries	Ministries of environment, energy	2010	20,000
Total cost objective 1:				45,000

Objective 2: Establish a monitoring and control system and a programme to secure PCB fluids and PCB containing equipment and wastes (including contaminated sites) until their final elimination by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 2.1: Ensure effective monitoring and inspection of PCBs through the establishment of a specialised group **(P)**	Decree on the creation, composition, and mandate of the group Individual mandates of the members of the group	Ministries of environment, energy Other concerned ministries National electric companies NGOs	2009-2015	60,000
Activity 2.2: Strengthen tools for analysis, diagnosis, and monitoring of oils, equipment, and PCB contaminated sites **(P)**	Inventory final report Risk diagnosis Database available Test kits available	Ministries of environment, energy, customs National electric companies Laboratories Universities	2009-2010	90,000
Activity 2.3: Train a team for refilling transformer oil, dismantlement, storage of equipment, transportation between islands, and prevention of contaminated sites (P)	Training program available with the help of an international consultant	Ministries of environment, energy, customs, transportation National electric companies	2011	30,000
Activity 2.4: Develop technical means for shipping of PCBs between the islands	Safe transportation in place	Ministries of environment, energy, customs, transportation National electric companies	2011-2012	50,000
Activity 2.5: Develop an infrastructure for refilling transformer oil, dismantlement, and temporary storage for the contaminated equipment **(P)**	Storage site available Acceptable conditions exist regarding transformer oil refilling, storage, and dismantlement of equipment	Ministries of environment, energy, customs National electric companies	2011-2012	40,000 (collection) 50,000 (site storage) 40,000 (dismantle-ment) Total: 130,000
Activity 2.6: Undertake short-term reform and replacement of equipment presenting risks **(P)**	Inventories and visits reports	Ministries of environment, energy National electric companies	2010-2012	150,000
Total cost objective 2:				510,000

Objective 3: Inform stakeholders and raise awareness on the risks related to the use of PCBs and PCB containing equipment and their recycling in the informal sector by 2013				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 3.1: Promote training on good practices in the management of PCBs for national electric companies, customs services, and inspectors of classified installations **(P)**	Agreed number of trained trainers Information documents available (communication tools, periodic reports, publications, information bulletins)	Ministries of environment, energy National electric companies University NGOs	2009-2013	50,000
Activity 3.2: Launch awareness raising and information campaigns for the public, key actors (e.g. those working in recycling), and political decision makers	Agreed number of persons with raised awareness Information documents available (communication tools, periodic reports, publications, information bulletins)	Ministries of environment, energy National electric companies Recyclers, holders of privately-owned transformers	2008-2015	30,000
Total cost objective 3:				80,000

Objective 4: Undertake the environmentally sound disposal of oil wastes and equipment containing PCBs by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 4.1: Carry out a feasibility study to identify disposal solutions (for PCBs and contaminated mineral oil) based on the quantities of waste to be eliminated	Feasibility study available	Ministries of environment, health, transportation National electric companies	2013	20,000
Activity 4.2: Eliminate oils and equipment containing PCBs	Contract with the PCB elimination companies Destruction certificates	Ministries of environment, health, transportation National electric companies	2014-2015	270,000
Total cost objective 4:				290,000

Objective 5: Evaluate the exposure of the population to PCBs-related risks				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 5.1.: Develop a system to evaluate the presence of PCBs in land and marine ecosystems	Evaluation results available	Ministries of environment and health	2014-2015	50,000
Total cost objective 5:				50,000

Table 10: Action plan on PCBs (2006)

The implementation of the action plan will be carried out over a period of **eight years (2008-2015)**. For more details, see the action plan's timeframe in Annex 2. The total budget for implementation of the action plan is **975,000 US$**.

3.3.2. Action plan 2: Environmentally sound management of pesticides, in particular POPs pesticides including DDT

Problem

POPs pesticides, listed in Part I of Annex A and Annex B of the Convention, are addressed in this Action Plan. Provisions related to measures to reduce or eliminate releases resulting from intentional production and use of these substances are outlined in Article 3 of the Convention.

The national pesticides inventory[2] carried out in 2006 has shown:

- Absence of official production, import, commercialisation, and use of POPs pesticides;
- Indoor use of DDT in 1975 to fight malaria;
- Massive import of pesticides (others than those mentioned above) in the 1980s and early 1990s has lead to accumulation of obsolete stocks (20 tonnes) and other wastes that should be managed in an environmentally sound manner;
- Absence of an operational legislative framework on hazardous substances such as POPs offering an accreditation system for pesticides;
- Lack of awareness and training of persons involved in the import, production, distribution, and use of chemicals and in particular on reasonable or integrated methods to fight pests;
- Lack of means for quality control (analysis) of chemicals; and
- Insufficient safety in the management of storage and sale units and in the use of chemicals (no protection). As a result human health and the environment are exposed to the adverse effects of pesticides.

Even though POPs pesticides have not been detected in Comoros, the current management of pesticides in the country is insufficient to prevent the introduction of POPs pesticides. The action plan aims to improve the general framework for the management of pesticides (addressing the protection of crops and the well-being of human health and the environment).

The action plan on pesticides (POPs and non-POPs) has the following elements:

Global objective

Promote the environmentally sound management of pesticides and contaminated sites and prohibit the import of POPs pesticides in Comoros by 2015.

Specific objectives

1. Strengthen the legislative and administrative framework for the management of pesticides including POPs by 2015

2. Secure and remediate contaminated sites, pesticide storage, and sale units by 2015

3. Raise awareness and provide training to agriculture actors on the safe use of pesticides and alternative methods to fight pest by 2013

4. Consolidate the inventory and strengthen the country's monitoring and analysis capacities in the area of chemicals safety, in particular exposure to pesticides including POPs by 2015

5. Undertake the environmentally sound disposal of the stocks of obsolete pesticides by 2009

[2] The analysis of capacities for the management of pesticides in Comoros (including DDT) and problems related to identified gaps is presented in table 14 in Annex 1.

Activities

1. Strengthen the legislative and administrative framework for the management of pesticides including POPs by 2015

1.1. Develop and adopt application decrees for laws n°95-007, n°95-124, and n°06-010 containing lists of substances for which an accreditation will be required (in particular POPs)

1.2. Develop a registry of pesticides for agriculture and sanitary use

1.3. Establish an inspection and monitoring system for accredited pesticides (imported and available on the market)

2. Secure and remediate contaminated sites, pesticide storage, and sale units by 2015

2.1. Develop guidelines (or a legal instrument) on safety measures for the handling and storage of pesticides

2.2. Raise awareness and provide training on the guidelines to all actors concerned by pesticides

2.3. Identify with salesmen concrete activities to ensure safe storage and safe handling of pesticides

2.4 Develop incentive measures (e.g. no interest loans) to build new storage facilities and purchase safety equipment

2.5. Remediate storage facilities and contaminated sites

2.6. Periodically review storage places and practices regarding the handling of pesticides

2.7. Develop and implement a national programme to monitor and prevent contaminated sites by pesticides

3. Raise awareness and provide training to agriculture actors on the safe use of pesticides and alternative methods to fight pest by 2015

3.1. Deploy trainers (information teams) across the country on safe management and use of pesticides

3.2. Identify alternative methods to combating pests that are applicable in Comoros

3.3. Carry out awareness raising, information, and training campaigns on the biological fight against pests

4. Consolidate and strengthen the inventory and the country's control and analysis capacities in the area of chemicals safety, in particular exposure to pesticides including POPs by 2015

4.1. Consolidate the Regional Programme for Plant Protection (Programme régional de protection des végétaux, PRPV) database and strengthen INRAPE's capacities to consolidate the pests database in Comoros

4.2. Carry out studies on the establishment of a toxicology information centre and the creation of a substantial laboratory

4.3. Initiate analysis on the quality of pesticides and the presence of residues in food at the national and regional level

5. Undertake the environmentally sound disposal of the stocks of obsolete pesticides by 2009

5.1. Guarantee safe storage and transportation until a disposal solution is determined and agreed

5.2. Undertake the environmentally sound disposal of obsolete pesticide stocks**Global objective:**

Promote an environmentally sound management of pesticides and contaminated sites and prohibit the import of POPs pesticides in Comoros by 2015

Objective 1: Strengthen the legislative and administrative framework for the management of pesticides including POPs by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 1.1. Develop and adopt application decrees for laws n°95-007, n°95-124, and n°06-010 containing lists of substances for which an accreditation will be required (in particular POPs) **(P)**	Promulgation in the Official Journal List of accredited chemicals available	Ministries of environment, agriculture, health, customs, economy, finances Assemblies National Advisory Committee on Plant protection Zana Zema, CAPAC and others	2007-2008	10,000
Activity 1.2. Develop a registry of pesticides for agriculture and sanitary use **(P)**	Registration structure established and operational List of pesticides published	Ministries of environment, agriculture, health, customs Zana Zema, CAPAC	2010	20,000
Activity 1.3. Establish an inspection and monitoring system for accredited pesticides (imported and available on the market)	System established Agreed number of inspections	Ministries of environment, agriculture, customs Zana Zema, CAPAC	2011-2015	50,000
Total cost objective 1:				80,000

Objective 2: Secure and remediate contaminated sites, pesticide storage, and sale units by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 2.1. Develop guidelines (or a legal instrument) on safety measures for the handling and storage of pesticides **(P)**	Guidelines text available	Ministries of environment, agriculture, health, equipment Zana Zema, CAPAC Regional project PRPV Associations	2008-2015	5,000
Activity 2.2. Raise awareness and provide training on the guidelines to all actors concerned by pesticides **(P)**	Agreed number of stakeholders aware and trained	Ministries of environment, agriculture, health Zana Zema, CAPAC Regional project PRPV Associations	2009	30,000
Activity 2.3. Identify with salesmen concrete activities to ensure safe storage and safe handling of pesticides	Agreed number of activities	Ministries of environment, agriculture, health Zana Zema, CAPAC Salesmen Associations	2009	10,000
Activity 2.4. Develop incentive measures (e.g. no interest loans) to build new storage facilities and purchase safety equipment	Agreed number and quality of equipment purchases Agreed number of beneficiaries	Ministries of environment, agriculture, health, equipment, finances Zana Zema, CAPAC Salesmen	2011	80,000

Objective 2: Secure and remediate contaminated sites, pesticide storage, and sale units by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 2.5. Remediate storage facilities and contaminated sites (P)	Agreed number of renovations	Ministries of environment, agriculture, health, equipment, finances Private sector	2010	80,000
Activity 2.6. Periodically review storage places and practices in handling of pesticides	Agreed number of inspection reports	Ministries of environment, agriculture, equipment Zana Zema, CAPAC Salesmen	2009-2015	40,000
Activity 2.7. Develop and implement a national programme to monitor and prevent contaminated sites by pesticides	Programme available, approved, and implemented	Ministries of environment, agriculture, health, equipment, finances Zana Zema, CAPAC Salesmen	2012-2015	10,000
Total cost objective 2:				255,000

Objective 3: Raise awareness and provide training to agriculture actors on the safe use of pesticides and alternative methods to fight pest by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 3.1. Deploy trainers (information teams) across the country on the safe management and use of pesticides **(P)**	Training documents available Agreed number of persons trained	Ministries of environment, agriculture Zana Zema, CAPAC Salesmen Regional project PRPV NGOs	2009	50,000
Activity 3.2. Identify alternative methods to combating pests that are applicable in Comoros	Study on different techniques available	Ministries of environment, agriculture, health Zana Zema, CAPAC Salesmen Regional project PRPV NGOs	2010-2011	80,000
Activity 3.3. Carry out awareness raising, information and training campaigns on the biological fight against pests	Agreed number of actors trained Campaign reports available	Ministries of environment, agriculture, health Zana Zema, CAPAC Salesmen NGOs Regional project PRPV	2009-2015	20,000
Total cost objective 3:				150,000

Objective 4: Consolidate and strengthen the inventory and the country's control and analysis capacities in the area of chemicals safety, in particular exposure to pesticides including POPs by 2015				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 4.1. Consolidate the Regional Programme for Plant Protection database and strengthen INRAPE's capacities to consolidate the pests database in Comoros **(P)**	Quantity and quality of information transmitted	Ministries of environment, agriculture (INRAPE) PRPV	2008-2015	10,000
Activity 4.2. Carry out studies on the establishment of a toxicology information centre and the creation of a substantial laboratory	Feasibility study to provide new equipment to a laboratory available	Ministries of environment, agriculture (INRAPE) PRPV	2010-2012	30,000
Activity 4.3. Initiate analysis on the quality of pesticides and the presence of residues in food at national and regional level	Results available	Ministries of environment, agriculture (INRAPE) University	2008	30,000
Total cost objective 4:				70,000

Objective 5: Undertake the environmentally sound disposal of the stocks of obsolete pesticides by 2009				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 5.1. Guarantee safe storage and transportation until a disposal solution is determined and agreed	Storage building and transportation means available	Ministries of environment, agriculture, health, equipment	2009	50,000
Activity 5.2. Undertake the environmentally sound disposal of obsolete pesticide stocks	Agreed contract with company to eliminate pesticides Destruction certificates	Ministries of environment, agriculture, health, finances Zana Zema, CAPAC Africa Stockpiles Programme (ASP)	2009	40,000
Total cost objective 5:				90,000

Table 11: Action plan on pesticides (2006)

The implementation of the action plan will be carried out over a period of **eight years (2008-2015)**. For more details, see the action plan's timeframe in Annex 2. The total budget for implementation of the action plan is **645,000 US$**.

3.3.3. Action plan 3: Environmentally sound management of dioxin and furan sources

Problem

Dioxins and furans are unintentionally formed and released from thermal process involving organic matter and chlorine as a result of incomplete combustion or chemical reactions. The initial inventory carried out in 2006 provides the first indication of the anthropogenic sources of releases of dioxins and furans in Comoros. Practices of uncontrolled combustion, such as uncontrolled burning of vegetal biomass for power generation, are among the main sources of dioxins and furans.

To ensure the environmentally sound management of source categories, Article 5 focuses in particular on the application of best available techniques (BAT) and best environmental practices (BEP) to reduce or eliminate unintentional releases of POPs.

The national inventory carried out in 2006 has shown:

- A lack of knowledge on dioxins and furans. There is no statistical data on the source categories of dioxins and furans and these chemicals are practically unknown to the public;
- Dioxins and furans have no legal existence (there are not submitted to any law or regulation);
- Dioxins and furans are at released at 24.196 g TEQ/year. The releases are mainly to air (68%) and residues (31%);
- Open burning processes is the most significant source category in Comoros, amounting to more than 77% of the total release of dioxins and furans, and 90% of the total release to air. The uncontrolled burning of domestic wastes amounts to 87% of the total releases in this category;
- The second greatest source of releases of dioxins and furans is the production of electricity and heating, accounting for 17% of the total releases. The use of wood ovens generates most of the releases in this source category; and
- Numerous problems have been found regarding the gathering of data and calculating releases (e.g. related to wood consumption, surface of burned zones, food smoking workshops).

A considerable amount of works still needs to be undertaken to ascertain the extent of the problems related to dioxins and furans. Minimal data is available on potential source categories and related activities to enable effective use of the recommended methodology, and the identification of the contaminated sites has not been done.

For the Union of Comoros, this action plan is both a response to Article 5 of the Convention and a road map for all stakeholders to improve their knowledge of the different source categories of releases and to understand the health and environmental risks related to them. It will also allow for a better understanding of the measures that are proposed to reduce these risks.

Global objective

Environmentally sound management of the sources of release of dioxins and furans in Comoros by 2015 and continuing minimization and, where feasible, ultimate elimination

Specific objectives

1. Evaluate the legal and political framework to develop legislation on dioxins and furans by 2010

2. Improve information and knowledge on dioxins and furans and on BAT and BEP, in particular in the framework of regional cooperation by 2011

3. Improve the management of domestic waste using BAT and BEP by 2012

4. Improve the management of medical waste using BAT and BEP by 2013

5. Improve the management of hazardous waste using BAT and BEP, in particular in the framework of regional cooperation by 2015

Activities

1. Evaluate the legal and political framework to develop legislation on dioxins and furans by 2010

1.1. Evaluate the legal and political framework in this area

1.2. Introduce a draft law on sources of releases of dioxins and furans

2. Improve information and knowledge on dioxins and furans and on BAT and BEP, in particular in the framework of regional cooperation by 2011

2.1. Systematise the inventory work for a better identification and categorisation of national sources of releases

2.2. Create a register of releases with their locations and contaminated sites

2.3. Develop a national guide on BAT and BEP

3. Improve the management of domestic waste using BAT and BEP by 2012

3.1. Raise awareness of the population and the economic sector for a better management of waste, in particular concerning the impact of open burning processes

3.2. Regulate waste management including waste collection, and establishment and management of waste disposal sites and intermediary waste transfer stations

3.3. Develop waste disposal sites and waste transfer stations for cities

3.4. Train and provide appropriate equipment to local administration, NGOs, the private sector, and other stakeholders for primary waste collection and treatment

4. Improve the management of medical waste using BAT and BEP by 2013

4.1. Develop and implement an environmentally sound management policy for hospital waste

4.2. Establish a system for medical waste collection in townships

4.3. Upgrade existing incinerators to meet international standards or import medical waste incinerators (Montfort, SICIM or VULCAIN)

4.4. Raise awareness of health personnel on the need to properly manage medical waste

5. Improve the management of hazardous waste using BAT and BEP by 2015 in particular in the framework of regional cooperation by 2015

5.1. Study the feasibility of disposal options

5.2. Establish waste sorting sites (based on the type of hazardous waste: batteries, fluorescent tubes, tires, motor oils, solvents, paints, aerosols, including PCBs and pesticides) and safe storage (in conformity with Objective 2.3. of the PCBs action plan and Objective 5.2. of the pesticides action plan) prior to export

5.3. Undertake the removal of hazardous waste (in conformity with Activity 5.1.) for final disposal abroad

5.4 Establish chemicals import mechanisms and export procedures for treatment, as well as taxes covering treatment costs (e.g. related to batteries, fluorescents tube, tires, motor oils, solvent, paint, aerosols)

Global objective:

Environmentally sound management of sources of release of dioxins and furans in Comoros by 2015 and continuing minimization and, where feasible, ultimate elimination.

Objective 1: Evaluate the legal and political framework to develop legislation on dioxins and furans by 2010

Logic of intervention	Indicators	Actor	Schedule	Costs US$
Activity 1.1: Evaluate the legal and political framework in this area **(P)**	Report of the comprehensive study on the legal and political framework approved and available (by July 2008)	Ministries of environment, health, energy, transportation, finances, craft Hospitals and clinics Environmental NGOs	2008	10,000
Activity 1.2.: Introduce a draft law on sources of releases of dioxins and furans **(P)**	Promulgation of the law or measures on dioxins/furans	Ministries of environment, health, energy, transportation, economy, finances Assemblies	2009-2010	20,000
Total cost objective 1:				30,000

Objective 2: Improve information and knowledge on dioxins and furans and on best available techniques (BAT) and best environmental practices (BEP), in particular in the framework of regional cooperation by 2011

Logic of intervention	Indicators	Actors	Schedule	Costs US$
Activity 2.1: Systematise the inventory work for a better identification and categorisation of national releases sources **(P)**	New data available on dioxins/furans	Information Centre and Assistance in Decision Making (Centre d'information et d'assistance dans la prise de decisions, CIAD): Ministries of environment, health, energy, transportation, craft Townships Hospitals and clinics Environmental NGOs	2010-2011	46,000
Activity 2.2: Create a register of releases with their locations and contaminated sites	Database with a map of contaminated sites available	Ministries of environment, health, energy, transportation, craft Townships	2011	25,000
Activity 2.3.: Develop a national guide on BAT and BEP	Guide available	Ministries of environment, health, energy, transportation, craft Townships Hospitals and clinics Environmental NGOs	2011	20,000
Total cost objective 2:				91,000

Objective 3: Improve the management of domestic waste using BAT and BEP by 2012				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 3.1. Raise awareness of the population and the economic sector for a better management of waste, in particular concerning the impact of open burning processes **(P)**	Activity reports available	Ministries of environment, health, energy, transportation, craft Townships Hospitals and clinics Environmental NGOs Media	2010	20,000
Activity 3.2.: Regulate waste management including waste collection, and establishment and management of waste disposal sites and intermediary waste transfer stations **(P)**	Texts/decrees adopted and published Waste management contracts in place	Ministries of environment, health, transportation, craft Townships Hospitals and clinics Environmental NGOs	2010	20,000
Activity 3.3.: Develop waste disposal sites and waste transfer stations for cities **(P)**	Municipal decree on the establishment of official waste sites with operational details available Document on studies available	Ministries of environment, health, economy, finances Townships Environmental NGOs	2011-2012	350,000 (one waste site per island)
Activity 3.4. Train and provide appropriate equipment to local administration, NGOs, the private sector, and other stakeholders for primary waste collection and treatment **(P)**	Activity reports available	Ministries of environment, health, economy, finances Townships Environmental NGOs	2012	50,000
Total cost objective 3:				440,000

Objective 4: Improve the management of medical waste using BAT and BEP by 2013				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 4.1.: Develop and implement an environmentally sound management policy for hospital waste **(P)**	Policy text available	Ministries of environment, health, economy Townships Hospitals and clinics Environmental NGOs	2011	10,000
Activity 4.2: Establish a system for medical waste collection in townships	Activity report available	Ministry of environment Environmental NGOs	2010	15,000
Activity 4. 3: Upgrade existing incinerators to meet international standards or import medical waste incinerators **(P)**	Contracts and invoices available	Ministries of environment, economy, equipment Hospitals and clinics Environmental NGOs	2012-2013	100,000
Activity 4.4: Raise awareness of health personnel on the need to properly manage medical waste **(P)**	Activity reports available	Ministries of health, environment Hospitals and clinics	2012	15,000
Total cost objective 4:				140,000

Objective 5: Improve the management of hazardous waste using BAT and BEP by 2015 in particular through regional cooperation				
Logic of intervention	**Indicators**	**Actors**	**Schedule**	**Costs US$**
Activity 5.1.: Study the feasibility of disposal options **(P)**	Study available	Ministries of environment, health, economy and finance, craft, agriculture Townships Environment NGOs	2012	15,000
Activity 5.2.: Establish waste sorting sites and safe storage prior to export **(P)**	Place for sorting waste identified and operational	Ministries of environment, health, economy and finance Townships Environment NGOs	2013	40,000
Activity 5.3.: Undertake the removal of hazardous waste (in conformity with Activity 5.1.) for final disposal abroad	Contract with company of disposal available Destruction certificate available	Ministries of environment, health, economy and finance, craft, agriculture Disposal companies	2014-2015	70,000
Activity 5.4.: Establish chemicals import mechanisms and export procedures for treatment, as well as taxes covering treatment costs	Draft law available	Ministries of environment, health, economy and finance, craft, agriculture	2014	15,000
Total cost objective 5:				140,000

Table 12: Action plan on dioxins and furans (2006)

The implementation of the action plan will be carried out over a period of **eight years (2008-2015)**. For more details, see the action plan's timeframe presented in Annex 2. The total budget of the implementation of the action plan is **841,000 US$**.

3.4. COORDINATION AND IMPLEMENTATION MECHANISMS FOR NATIONAL STRATEGY AND ACTION PLAN IMPLEMENTATION

NIP implementation activities will be under the responsibility of the **National Department of the Environment and Forests** of the Ministry of the Environment. This department is in charge of the coordination of the national implementation of the Stockholm Convention. The structures developed during the NIP project will be made permanent and will aim to facilitate greater participation of all stakeholders.

To facilitate coordination, a NIP coordination unit has been established, which is directed by the National **Focal Point** for the Stockholm Convention and assisted by experts. The unit will be in charge of mobilising funds for the action plans, monitoring and evaluating activities, and liaising with the Secretariat of the Stockholm Convention.

The implementation of the action plans and the preparation of interim reports on NIP implementation will be the entrusted to the islands institutions (Ministries of the Environment of the autonomous islands).

The Steering Committee of the NIP (**Comité directeur**, CDP), composed of representatives of the three autonomous islands, could become a **National Platform for Consultation and Coordination** and integrate a greater number of other representatives from the ministries, civil society, and private sector companies of the three autonomous islands

The National Platform for Consultation and Coordination could then be merged or linked (e.g. as a sub-group) to the National Committee for Sustainable Development (Comité National pour le développement durable, CNDD). In this context, the Islands Committees for Sustainable Development (Comité des îles pour le développement durable, CIDD) will facilitate the activities and discussions of the National Committee at islands level.

For the time being, the Steering Committee will remain the key body for coordination, and follow-up of the implementation of the national strategy and action plans on POPs. The Steering Committee will use **consultation groups** for each major area of management and **working groups** for each action plan. If necessary, the Steering Committee will be assisted by national and international specialised consultants.

3.5. RESOURCES REQUIRED

The total cost of NIP implementation is as follows:

N°	Designation	US$
1	Management of PCBs and equipment containing PCBs	**975,000**
2	Management of pesticides (including POPs)	**645,000**
3	Management of dioxins and furans	**841,000**
Total		**2,461,000**

Table 13: Total cost of the National Implementation Plan of the Stockholm Convention (2006)

4. CONCLUSION

Comoros ratified the Stockholm Convention on Persistent Organic Pollutants on 20 January 2007 (decree N°07-003/PR). By this act the country has become a Party to the Convention and has accepted the obligation to develop a NIP. The governments of the Union and the autonomous islands have undertaken activities that show their commitment to fulfil their obligations under the Convention in order to reduce and eliminate POPs, preserve the environment, and protect the human population. A National Committee for the Implementation of the Convention has also been established to coordinate all actions required for NIP implementation. The NIP includes the action plans and specific strategies that have been adopted.

The cost of the NIP has been estimated at **2,461,000 US dollars**; sources of possible funding include the Comorian state budget, the Global Environment Facility, and other public or private institutions concerned with environmental issues. The NIP is consistent with the National Environmental Policy (Politique Nationale de l'Environment, PNE), the Strategy to Eradicate Poverty (SEP), and the Millennium Development Goals (MDGs).

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ANNEXES OF THE NATIONAL IMPLEMENTATION PLAN

ANNEX 1

Summary the analysis of capacities and problems related to the management of chemicals in Comoros

The national gap analysis related to pesticides management (including POPs) is summarised in table 14 below:

Type of POPs	Capacity area	Brief description of identified gaps during the management cycle	Problems/concerns related to identified gaps
Pesticides	**Institutional, political and regulatory framework**	- No official legislation on pesticides management - No control over imported quantities - No definition of accredited products available in the country	- No quality control of pesticides, no disposal of obsolete pesticides - Products left over - Anarchic import
	Technical Infrastructures	- Lack of appropriate storage installations - Laboratories and customs personnel insufficiently trained - Unskilled users and managers - Equipment to use products sometimes inadequate, insufficient protection equipment - Lack of a system to control residues of pesticides in food - Non recognition of alternative methods to fight pests (alternatives to pesticides) - Lack of toxicology centres (poison control)	- Risk of exposure for pesticide users and neighbouring populations - No border identification of products entering the country - Lack of knowledge on the danger of these products - Risk of ingestion of contaminated food - Causes of potential intoxication unidentified
	Awareness raising and dissemination of information	- Weak dissemination of information - Lack of public awareness - Lack of knowledge of the public, media and the majority of decision makers on chemicals in general and POPs in particular - Unclear labelling of products	- Irrational import and use of products - Contamination of water table and soil following uncontrolled disposal of obsolete products and packaging - Confusion in the perception of products
DDT	**Institutional, political and regulatory framework**	- Lack of specific legislation on the use of DDT in case of new introduction in the local market (recommendations of the WHO and the Stockholm Convention)	
	Technical Infrastructures		
	Awareness raising and dissemination of information		
PCBs	**Institutional, political and regulatory framework**	- Lack of specific legislation on PCBs throughout life cycle (import, handling, defining equipment without PCBs, disposal, contamination) - Lack of prohibition of resale of equipment contaminated by PCBs - Lack of follow up for equipment during their life cycle (introduction, maintenance, out of service, etc.)	- Risk of PCBs import - Contamination of the environment and exposure to PCBs

Type of POPs	Capacity area	Brief description of identified gaps during the management cycle	Problems/concerns related to identified gaps
	Technical infrastructures	- Lack of temporary storage installations prior to sustainable disposal - Lack of equipment, infrastructure, and human resources for the diagnosis and treatment of oils and contaminated equipment - No safe transportation for contaminated equipment (on and between islands) - Lack of technical means to eliminate PCBs	- Risk of contamination of the environment and population - Increase of the risk of resale and accidental or intentional spillage - Lack of knowledge of the impacted populations and environments and the gravity of the impact on health and the quality of the environment
	Awareness raising and dissemination of information	- Lack of knowledge and training on PCBs and their impact for managers and technicians of the national electric company - No data or information on the rate of contamination by PCBs of equipment and more globally of the environment	- Agents of thermal power stations are not trained to safely handle PCBs - Risk of accident, intoxication, spillage
Unintentionally produced POPs	**Institutional, political and regulatory framework**	- Lack of specific legislation on dioxins/furans during their life cycle (i.e. type of emission sources to be monitored, prohibition, uncontrolled burning, acceptable level of contamination of food products) - Lack of a legislative framework for the management of domestic and hazardous wastes (e.g. medical) - Lack of quality control of vehicles fuel - Lack of a programme to monitor and collect data on the identification and categorisation of sources of releases	- Potential exposure of the population to dioxins/furans
	Technical Infrastructures	- Lack of data on the identification and categorisation of sources of releases - Lack of infrastructure for the management of domestic and medical wastes (i.e. sorting, collection, final disposal: incineration) - Lack of protective equipment for aluminium users - Lack of laboratories to analyse dioxins and furans	- Problems to assess releases - High releases of PCDD/PCDF - Risk of high exposure of the neighbouring populations - Risk of high exposure of workers - Lack of knowledge of the quantities of PCDD/PCDF in food
	Awareness raising and dissemination of information	- Total lack of information of decision makers and the public on dioxins and their dangers	

Table 14: Capacity analysis on the management of chemicals in Comoros and related gaps (2006)

ANNEX 2: TIMEFRAME OF THE NIP ACTION PLANS

Timeframe of the action plan: Environmentally sound management of PCBs, equipments, wastes and contaminated sites

Global objective: Eliminate the use of PCBs fluids in all equipments by 2025 and obtain the environmentally sound management of PCBs wastes and contaminated sites by 2028

Objectives/activities	2008		2009		2010		2011		2012		2013		2014		2015	
Obj. 1: Legislative and institutional framework by 2010																
Act. 1.1: Evaluate current legislation indirectly related to the management of PCBs (P)	■	■														
Act. 1.2: Update existing legislation and develop regulations on PCBs management, equipment, and wastes throughout their life cycle. Identify authorised disposal processes as well as authorised companies to deal with the transportation and handling of PCBs. Identify certified laboratories for the analysis of PCBs (P)	■	■	■	■												
Act. 1.3: Promulgate new regulations on PCBs management (P)			■	■												
Act. 1.4: Communicate the new requirements for the management of PCBs (P)					■	■										
Obj. 2: Establish monitoring and control system and a programme to secure PCB fluids and PCB containing equipment and wastes until their final elimination by 2015																
Act. 2.1: Ensure effective monitoring and inspection of PCBs through the establishment of a specialised group (P)			■	■			■	■	■	■	■	■	■	■	■	■
Act. 2.2: Strengthen tools for analysis, diagnosis, and monitoring of oils, equipment, and PCB contaminated sites (P)			■	■	■	■										
Act. 2.3: Train a team for refilling transformer oil, dismantlement, storage of equipment, transportation between islands, and prevention of contaminated sites (P)																
Act. 2.4: Develop technical means for shipping							■	■	■	■						
Act. 2.5: Develop an infrastructure for refilling transformer oil, dismantlement, and temporary storage for the contaminated equipment (P)									■	■						
Act. 2.6: Undertake short-term reform and replacement of equipment presenting risks (P)					■	■	■	■	■	■						
Obj. 3: Inform stakeholders and raise awareness on the risks related to the use of PCBs and PCB containing equipment and their recycling in the informal sector by 2013																
Act. 3.1: Promote training on good practices in the management of PCBs for national electric companies, customs services, and inspectors of classified installations (P)			■	■	■	■	■	■	■	■	■	■				
Act. 3.2: Launch awareness raising and information campaigns for the public, key actors and political decision makers	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Obj. 4: Undertake the environmentally sound disposal of oil wastes and equipment containing PCBs by 2015																
Act. 4.1: Carry out a feasibility study to identify disposal solutions (for PCBs and contaminated mineral oil) based on the quantities of waste to be eliminated											■	■				

Objectives/activities	2008		2009		2010		2011		2012		2013		2014		2015	
Act. 4.2: Eliminate oils and equipment containing PCBs																
Obj. 5: Evaluate the exposure of the population to PCBs-related risks																
Act. 5.1: Develop a system to evaluate the presence of PCBs in land and marine ecosystems																

Timeframe of the action plan: Environmentally sound management of pesticides in particular POPs pesticides including DDT

Objective global: Promote the environmentally sound management of pesticides and contaminated sites and prohibit the introduction of POPs pesticides in Comoros by 2015

Objectives/activities	2007		2008		2009		2010		2011		2012		2013		2014		2015	
Obj. 1: Strengthen the legislative and administrative framework for the management of pesticides including POPs by 2015																		
Act. 1.1: Develop and adopt application decrees for laws n° 95-007, n°95-124 and n°06-010 containing lists of substances requiring accreditation (in particular POPs) (P)	■	■	■	■														
Act. 1.2: Develop a registry of pesticides for agriculture and sanitary use (P)							■	■										
Act. 1.3: Establish an inspection and monitoring system for accredited pesticides (imported and available on the market)									■	■	■	■	■	■	■	■	■	■
Obj. 2: Secure and remediate contaminated sites, pesticide storage, and sale units by 2015																		
Act. 2.1: Develop guidelines (or a legal instrument) on safety measures for the handling and storage of pesticides (P)			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Act. 2.2: Raise awareness and provide training on the guidelines to all actors concerned by pesticides (P)					■	■												
Act. 2.3: Identify with salesmen concrete activities to ensure safe storage and safe handling of pesticides					■	■												
Act. 2.4: Develop incentive measures (e.g. no interest loans) to build new storage facilities and purchase safety equipment									■	■								
Act. 2.5: Remediate storage facilities and contaminated sites (P)							■	■										
Act. 2.6: Periodically review storage places and practices in handling of pesticides					■	■	■	■	■	■	■	■	■	■	■	■	■	■
Act. 2.7: Develop and implement a national programme to monitor and prevent contaminated sites by pesticides											■	■	■	■	■	■	■	■
Obj. 3: Raise awareness and provide training to agriculture actors on the safe use of pesticides and alternative methods to fight pest by 2015																		
Act. 3.1: Deploy trainers across the country (information teams) on the safe management and use of pesticides (P)					■	■												
Act. 3.2: Identify alternative methods to combating pests that are applicable in Comoros							■	■	■	■								
Act. 3.3: Carry out awareness raising, information and training campaigns on the biological fight against pest					■	■	■	■	■	■	■	■	■	■	■	■	■	■
Obj 4: Consolidate and strengthen the inventory and the country's control and analysis capacities in the area of chemicals safety, in particular exposure to pesticides including POPs by 2015																		
Act. 4.1: Consolidate the Regional Programme for Plant Protection database and strengthen INRAPE's capacities to consolidate the pests database in Comoros (P)			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Act. 4.2: Carry out studies on the establishment of a toxicology information centre and the creation of a							■	■	■	■	■	■						

Objectives/activities	2007		2008		2009		2010		2011		2012		2013		2014		2015	
substantial laboratory							■	■	■	■	■	■						
Act. 4.3: Initiate analysis on the quality of pesticides and the presence of residues in food at national and regional level			■	■														
Obj 5: Undertake the environmentally sound disposal of the stocks of obsolete pesticides by 2009																		
Act. 5.1: Guarantee safe storage and transportation until a disposal solution is determined and agreed					■	■												
Act. 5.2: Undertake the environmentally sound disposal of obsolete pesticide stocks					■	■												

Timeframe of the action plan: Environmentally sound management of sources of dioxins and furans

Global objective: Environmentally sound management of the sources of release of dioxins and furans in Comoros by 2015 and continuing minimization and, where feasible, ultimate elimination.

Objectives/activities	2008		2009		2010		2011		2012		2013		2014		2015	
Obj 1: Evaluate the legal and political framework to develop legislation on dioxins and furans by 2010																
Act. 1.1: Evaluate the legal and political framework in this area (P)	■	■														
Act. 1.2: Introduce a draft law on sources of releases of dioxins and furans (P)			■	■	■	■										
Obj 2: Improve information and knowledge on dioxins and furans and on BAT and BEP																
Act. 2.1:Systematise the inventory work for a better identification and categorisation of national releases sources (P)					■	■	■	■								
Act. 2.2: Create a register of releases with their locations and contaminated sites							■	■								
Act. 2.3: Develop a national guide on BAT and BEP							■	■								
Obj 3: Improve the management of domestic waste using BAT and BEP by 2012																
Act. 3.1: Raise awareness of the population and the economic sector for a better management of waste, in particular concerning the impact of open burning processes (P)					■	■										
Act. 3.2: Regulate waste management including waste collection, and establishment and management of waste disposal sites and intermediary waste transfer stations (P)					■	■										
Act. 3.3: Develop waste disposal sites and waste transfer stations for cities (P)							■	■	■	■						
Act. 3.4: Train and provide appropriate equipment to local administration, NGOs, the private sector, and other stakeholders for primary waste collection and treatment (P)									■	■						
Obj 4: Improve the management of medical waste using BAT and BEP by 2013																
Act. 4.1: Develop and implement an environmentally sound management policy for hospital waste (P)							■	■								
Act.4.2: Establish a system for medical waste collection in townships					■	■										
Act. 4.3: Upgrade existing incinerators to meet international standards or import medical waste incinerators (P)									■	■	■	■				
Act. 4.4: Raise awareness of health personnel on the need to properly manage medical waste (P)									■	■						
Obj 5: Improve the management of hazardous waste using BAT and BEP by 2015 in particular through regional cooperation																
Act. 5.1: Study the feasibility of disposal options (P)									■	■						
Act. 5.2: Establish waste sorting sites and safe storage prior to export (P)											■	■				
Act. 5.3: Undertake the removal of hazardous waste for final disposal abroad													■	■	■	■
Act. 5.4: Establish chemicals import mechanisms and export procedures for treatment, as well as taxes covering treatment costs													■	■		