REPUBLIC OF UGANDA

National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants for Uganda

December 2008

Foreword

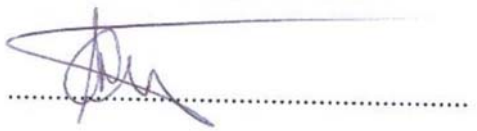
This National Implementation Plan (NIP) for the Stockholm Convention on Persistent Organic Pollutants (POPs) is a major undertaking by the Government of Uganda to eliminate and minimise the impacts of (twelve) 12 of the most harmful hazardous chemicals in the world. The worldwide concern over POPs was consolidated in a treaty on the 22nd May 2001 in Stockholm, Sweden. Uganda acceded to the Convention on the 20th July 2004, and is obligated, under Article 7, to develop a NIP for managing the POPs. The 12 POPs that are targeted are Polychlorinated Biphenyls (PCBs); Persistent Organic Pesticides which consist of DDT, Aldrin, Dieldrin, Endrin, Chlordane, Heptachlor, Mirex, Toxaphene and Hexachloro-Benzene; and Unintentional Persistent Organic Pollutants: Polychlorinated Dioxins and Polychlorinated Furans. The Convention proposes that PCBs production be prohibited and eliminated by 2025; that action be taken to minimise release of dioxins and furans; and that all persistent organic pesticides be banned, with the exception of DDT which may be used in a strict regime for health purposes in disease vector control only and that actions are taken to develop more cost-effective and safe alternatives to replace DDT.

For Uganda, the process of developing the NIP started in 2005 under the Project on enabling activities for implementing the Stockholm Convention which is funded through the Global Environment Facility (GEF) with technical oversight from the United Nations Environment programme (UNEP). The project consisted of five phases:(i) establishing a coordination mechanism and process organisations; (ii) establishment of POPs inventories and assessment of national infrastructure and capacity; (iii) priority and objective setting; (iv) formulation of the NIP; and (v) endorsement and submission of the NIP. NEMA was the executing agency for the project and it was supported by stakeholders from Government and non-governmental agencies and the private sector. The multi-institutional National Coordination Committee (NCC) for the project consisted of representatives from Makerere University, the National Environment Management Authority (NEMA), the Ministry of Finance, Planning and Economic Development (MFPED), the Uganda National Bureau of Standards (UNBS), the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), the Ministry of Tourism, Trade and Industry (MTTI), the Ministry of Health (MoH), the Ministry of Water and Environment (MWE), the Ministry of Gender, Labour and Social Development (MoGLSD),the Uganda Revenue Authority (URA), the Uganda Electricity Transmission Company Ltd (UETCL), the Uganda Cleaner Production Centre (UCPC), and the Uganda Manufacturers Association (UMA).

It is important to note that the management of POPs extends to day-to-day activities of ordinary households and industry. For example, Unintentional Persistent Organic Pollutants are produced from open burning of waste containing chlorine element such as plastics polyethylene bags and materials; paints and oils; industrial combustion at low temperatures often generates dioxins and furans. Similarly, ignorance of handling of transformer oils is suspected be the leading cause of cross contamination and proliferation of PCBs in the country. Recently, Government embarked on an Indoor

Residual Spraying (IRS) programme for malaria vector control using DDT. And while there is considerable international consensus that using DDT is a cost-effective means of controlling malaria, stakeholders have concerns about potential risk to their livelihoods, health and the environment. Therefore, this NIP comes at such a time when a comprehensive and widely accepted plan is needed to sustainably manage through minimisation or elimination of the use and proliferation of POPs and POPs-related substances in the country.

Finally, this NIP provides a means of balancing the country's development priorities, human welfare, environmental and socio-economic concerns in the management of persistent organic pollutants and compliance with national law and the Stockholm convention. I congratulate all the stakeholders that have been involved in developing this NIP for the good work done and I assure them of the Government's commitment to support them during its implementation. It is my great hope that this NIP meets the expectation of all Ugandan citizens and the support of all stakeholders who will be involved in its implementation.



Hon. Maria Mutagamba
Minister of Water and Environment

Acknowledgements

The Government of Uganda through the National Environment Management Authority (NEMA) and its stakeholders has developed POPs) in the throughout the National Implementation Plan (NIP) for the management of Persistent Organic Pollutants (the country. This is largely because, prior to the Stockholm Convention, there was no formally organised mechanism country. POPs are prevalent, are often produced unintentionally and have proliferated of comprehensively addressing the concerns over these chemicals. Hence the NIP provides a platform for comprehensively implementing the Stockholm Convention and minimising and in some cases entirely eliminating the risks posed by these extremely dangerous chemicals.

Uganda's NIP has been developed through a strong multi-stakeholder and consultative process with Government ministries, academic institutions, researchers, the private sector and non-governmental organisations. On behalf of NEMA, I wish to extend my gratitude to all the stakeholders for their commitment. The following individuals and institutions are especially thanked for their contributions as members of the National Coordination Committee:

1. Prof. Bernard Kiremire – Chemistry Department , Makerere University,.
2. Dr. Agaba Friday – Ministry of Health.
3. John Othieno – Uganda Electricity Transmission Company Limited.
4. Robert Mawanda – Uganda Manufacturers Association.
5. Dr. F. M. Nsubuga – Ministry of Gender, Labour and Social Development.
6. Stephen Byantwale – Ministry of Agriculture, Industry and Fisheries.
7. Julius Oboth – Uganda Revenue Authority.
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12. C.J.OKullo- Ministry of Tourism, Trade and Industry (MTTI)
13. Florence Adong- Directorate of Water Resources Management, Ministry of Water &Environment
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2. The Ministry of Gender, Labour and Social Development (MoGLSD);
3. The Ministry of Justice and Constitutional Affairs (MoJ&CA);
4. The Ministry of Health (MoH);
5. The Ministry of Water and Environment (MWE);
6. The Ministry of Tourism Trade and Industry (MTTI);
7. The Ministry of Internal Affairs;
8. The Meteorology Department,(MoW&E);
9. The National Planning Authority (NPA);
10. The National Environment Management Authority (NEMA);
11. The Uganda Revenue Authority (URA);
12. The Government Analytical Laboratory (GAL);
13. The National Forest Authority (NFA);
14. The National Agricultural Research Organisation (NARO);
15. Uganda Electricity Transmission Company Ltd;
16. Luweero Industries, Ministry of Defence (MoD);
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18. Kasese District Council;
19. Kampala City Council (KCC);
20. Uganda Environment Education Foundation (UEEF);
21. Climate and Development Initiatives (CDI);
22. Urban Environment Uganda (UEU);
23. The National Association of Professional Environmentalists (NAPE);
24. Pro-Biodiversity Conservationists;
25. UMEME Ltd;
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27. Kinyara Sugar Works Ltd;
28. Kakira Sugar Works (1985) Ltd;
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32. ENR Africa Associates Ltd;

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David Ogaram and Moses Masiga for their dedication, commitment and professional contribution

Finally, I wish to thank our development partners UNEP, GEF and UNITAR, and the facilitating Government agencies (MFPED and MWE) for the financial and moral support towards the development of the NIP.

I wish you all good reading but above all dedicated implementation of the NIP.

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Aryamanya-Mugisha, Henry
Executive Director - NEMA

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Executive Summary

Uganda acceded to the Stockholm Convention on Persistent Organic Pollutants (POPs) on 20 July 2004, and as a Party to the Convention, the country has developed this National Implementation Plan (NIP). According to Article 5, each Party should develop a plan on how to reduce or eliminate releases from unintentional production of POPs, and to subsequently implement in its NIP. The Convention has 5 major/essential aims: (i) to eliminate dangerous POPs starting with the 12 worst (among them DDT, PCBs, dioxins and other POPs pesticides); (ii) support the transition to safer alternatives; (iii) target additional POPs for action; (iv) clean-up stockpiles of POP's and equipment containing PCBs; and (v) to cooperate with other Parties for a POPs free future.

Uganda's national development programmes, including chemicals management, are articulated in the Poverty Eradication Action Plan (PEAP). Chemicals management falls under the Environment Department of the Ministry of Water and Environment (MWE) and in the Environment and Natural Resources (ENR) sector. In addition, the Government of Uganda is in the process of revising the PEAP and replacing it with the National Development Plan (NDP). The following issues were drawn out as the contributions of the NIP process to the ENR sector paper submitted to the NDP process:

Objectives of the NDP	**Contributions of the NIP to the objectives of the NDP**
1. Uplift household standards of living	• Proper POPs (Article 1) contributes to sustainable development, and free up time for education, and other roles.
2. Enhance the quality and availability of gainful employment	• The use of appropriate technology and, alternatives (Articles 3; 5; 6) for POPs will provide additional opportunities for employment and in many cases increase productivity.
3. Improve social, economic and trade infrastructure nationwide	• Appropriate POPs management practices will enhance trade and increase incomes (Article 9; 10; 11; 12).
4. Develop efficient, innovative and internationally competitive industries	Appropriate technology for POPs will lead to enhanced productivity increasing i.e. efficiency, reduced contamination with hazardous chemicals (Articles3; 5; 6; 9).
5. Develop and optimally exploit the national resource base and ensure environmental and economic sustainability	• Appropriate POPs management practices will prevent and/or minimize harmful exposures and therefore ensure a healthier environment (Article 1).
6. Strengthen good governance and improve human security	• Sound POPs management practices will improve chemical safety and thereby reduce of associated costs of health care (Articles3; 5; 6; 9).
7. Higher quality of life and increased productivity of Uganda's human resources through better educated and healthier Ugandans	• NIP proposes to involve women, children, and less educated. • Integration of POPs management in the education curriculum and in research will ensure greater access to knowledge. • Moreover, the purpose of the Stockholm convention is to protect human health and the environment (Article 1)

Status of Persistent Organic Pollutants in Uganda

Inventory studies conducted in the country established that POPs, as characterized in Annexes A, B and C of the Stockholm Convention i.e. PCBs, pesticides, DDT and by-products such as polychlorinated dioxins and furans, occur in Uganda and they are being proliferated due to inadequate and inappropriate management practices.

Status of PCBs in Uganda

The inventory for PCBs estimated that 12.5 percent of the transformers sampled had PCB contaminated oil to levels in excess of the national threshold of 50 ppm. Fifty two percent of the PCB contaminated transformers were located within or near factory sites, two PCB contaminated transformers were located close a river and two others were located in a residential area and an urban area. The likely sources of the PCB identified are cross-contamination with PCB contaminated oil, during service and repair of transformers; PCB containing transformers manufactured before 1985, which are still in use; accidental spillage and leaks from old PCB contaminated equipment; stolen transformer oil within the distribution network, which is then reportedly used for welding, hair products and treatment of wounds; and transformer oil used as a lubricant, cutting oil, insecticide, plastics, rubber, paints and vanishes. Scenario analyses of PCB risks suggest that the risk of exposure is likely to increase from just 17,640 persons in 2008 to about 141,120 by 2025.

The measures proposed in the NIP for managing PCBs include harmonising of environment laws on priority hazardous wastes especially POPs. Other measures include making sure that all PCB transformers are marked, the mark should show the PCB content in parts per million (ppm); all transformers should be leak proof; and PCB transformer station and storage sites that contain above 50 ppm of PCBs should be licensed and notified.

Inventory of Unintentionally Produced POPs

The estimated total release of unintentional persistent organic pollutants in Uganda was 1,018.76776g TEQ/a. These releases were from the following source categories investigated at the inventory stage: waste incineration; ferrous and non-ferrous meal production; power heating and generation; household heating and cooking; mineral production; uncontrolled combustion processes from domestic waste burning and burning of agricultural residues; leather industry; lead production, domestic heating and cooking with fossil fuels, brick production, transport (4-Stroke Engines, 2-Stroke Engines, Diesel Engines), although this may grow in the future; and other processes such as uncontrolled combustion process of waste burning and accidental fires; production and use of chemical and consumer goods of textiles production; and miscellaneous activities such as crematoria, tobacco smoking.

Over 70 percent of the dioxins and furans emissions were as a result of uncontrolled combustion from open burning. Industrial releases were mostly from releases from

ferrous and non-ferrous metal production, power generation, waste incineration and production of chemicals and consumer goods

The main approach identified for managing unintentional persistent organic pollutants in Uganda is reduction or where possible, elimination of emissions at the source through application of Cleaner Production, and adoption of Best Available Techniques (BAT) and Best Environment Practices (BEP).

Status of DDT in Uganda

The Ministry of Health started using DDT in Indoor Residual Spraying for Malaria Control in April, 2008. However, IRS with DDT was only conducted in two districts Oyam and Apac before an injunction by the High Court of Kampala forced the Ministry of Health to halt the process. By the time the IRS process was suspended about 3 tonnes of DDT had been used in the two districts. However, records show that DDT has never been manufactured in Uganda. DDT was used in agriculture for pest control between 1958 and 1963. According to the WHO, in the 1960s, DDT was used for residual spraying to control malaria vectors and it was able to reduce malaria prevalence from 22.7 percent among all populations to about 0.05 percent.

The country needs to instil measures to track and monitor the use of insecticides when using DDT in its IRS programme. This is essential because failure to do this will not only compromise malaria control but could also cause economic (livelihoods), environmental and health losses. The most likely losses are those due to loss of export markers associated with high concentrations of severely restricted or banned chemicals such as DDT.

Status of POPs pesticides in Uganda

Pesticides imported into Uganda include those used for protection of human health, in agriculture to prevent proliferation of pests and diseases, and in livestock production. It is estimated that over 2,224 tonnes of pesticides are imported annually. According to the FAO (2004), there are about 214 tonnes of obsolete stocks in the country although but none of these were POPs. About 90 metric tonnes of the pesticides had been disposed of, by the FAO 50 tonnes and Novartis 40 tonnes, and at a cost of US$ 200,000 and an additional US$ 642,000 was needed to dispose of the rest of these obsolete pesticides. Although, POPs Pesticides have never been produced or manufactured in the country, some of their formulations were used in agriculture for for Tsetse fly Control (dieldrin); for seed dressing (lindane and dieldrin); for termite control (aldrin); and for soil borne pests (chlordane). A few litres and kilograms of POPs pesticides were found in various places and mainly in the Forestry Resources Research Institute (FORRI) where its suspected to have been used in research. There were no stockpiles of other POPs pesticides were found during the inventorying. But due to the limited coverage, stockpiles cannot be ruled out. Only big quantities of expired stocks of other pesticides were found in various places.

Proposed regulatory and non-regulatory measures for managing POP pesticides include strengthening legislation, coordination among institutions, and enhancing technical and infrastructural capacity for handling, storage, use and elimination.

The estimated overall economic cost to the country of not implementing the regulatory and non-regulatory measures for managing the POPs highlighted in the Stockholm Convention is about US$ 5,0629,848 or Ushs 90 billion per annum. The economic cost consists of the livelihoods and trade losses, and losses due to health care costs and environment impacts. However, this cost excludes dioxins and furans released open combustion and domestic settings where variations in costs were extremely wide.

Priority areas, action plans and activities for the NIP

Six priority areas were agreed upon as the critical areas for managing POPs. They are: (i) the policy and legislative structure for POPs management; (ii) management of unintentional persistent organic pollutants; (iii) awareness and education; (iv) DDT regulation and DDT management; (v) POPs administration and management; and (vi) handling, storage, transportation, disposal and technical capacity. Out of the six priority areas 14 action plans were derived and they will be implemented between 2009 and 2025 in ttwo phases as proposed in the listed below:

Phase I (2009 – 2013)

1. Legal and enforcement framework for persistent organic pollutants in Uganda
2. Capacity building for stakeholders implementing, managing and regulating POPs
3. Strengthening coordination mechanism of the regulatory agencies engaged in POPs management
4. Financing Mechanisms (2010 to 2025)
5. Public Education and Awareness on specific categories for specialised education systems
6. Implementing a national public awareness programme (2010 to 2013)
7. Regulation on DDT
8. DDT Management
9. POPs Information Management System (2009 – 2025)

Phase II (2013 – 2025 and beyond)

10. 9. Reduction of emissions of dioxins from open combustion (2013 to 2015) and beyond.
11. Reductions of emissions of dioxins from industrial sources (2013 to 2015) and beyond.
12. Technical capacity building accreditation plan for national laboratories for laboratory analysis for POPs (2008 – 2014)
13. Handling, storage, transportation, remediation and disposal of persistent organic pollutants (2012 – 2016)

14. Action plan for developing a Monitoring program for hazardous substances (2012 to 2025)

During the process of priority setting and determination of the objectives, it was agreed that the National Environment Management Authority (NEMA) shall be the focal point for implementation of the NIP

Financial resource requirements of the NIP

The overall cost of Uganda's NIP was is US$ 108,877,450. However, US$ 100,000,000 which is about 92% of the entire budget of the NIP has been proposed to enhance the low incineration capacity. Incineration capacity in the NIP was prioritised, by several sector stakeholders such as municipal authorities and the Ministry of Health, due to the need to put in place a long-term strategy for managing unintentional POPs and other chemicals.

Since the incineration capacity is likely to be a separate investment, the general budget of the NIP would be about US$ 8,877,450. Phase I (2009 – 2012) consists of action plans one to ten and they cost US$ 5,416,100; while the phase II (2013 – 2028) with action plans 10 – 14 will cost US$ 103,461,350. However, the investment into infrastructure capacity for POPs specifically incineration capacity makes the cost very large. If the cost of the state of the art incinerator, which may be higher than US$ 100 million, is removed the second phase of the project would be expected to cost US$ 3,461,350.

A summarised matrix of actions, timelines, resource requirements, responsible institutions and expected outputs

Actions	Specific action	Institutions	Cost (US$)	Time line
PHASE I				
1 Legal and enforcement framework for persistent organic pollutants in Uganda (2009 – 2012)				
Objectives 1	*To formulate policy guidelines to adequately address concerns on POPs in the country by 2010*	*NEMA, MWE, JLOS*		*2009 - 2010*
Objective 2	*To develop a standards, regulations and guidelines that adequately addresses POPs*			*2011 - 2012*
Subtotal			**425,700**	
2 Capacity building for stakeholders engaged in implementation, management and regulation of the legal framework				
Objective	*Build technical capacity of about 10 stakeholder institutions to implement, regulate and enforcement legal framework by 2012.*	*NEMA, MWE, JLOS*		*2010 - 2012*
Subtotal cost			**229,300**	
3 Strengthening coordination mechanism of the regulatory agencies engaged in POPs management in Uganda, by2012 and up to 2025				
Objective 1	*To implement mechanism for enhance multi-sectoral co-operation among stakeholders engaged in the management of POPs by 2012*	*NEMA; Institutional stakeholders*		*2011 - 2012 and 2012 - 2025*
Objective 2:	*To design a mechanism for coordinating activities of national regulators in the enforcement of POPs management, especially pesticides, in compliance with the Stockholm Convention, by 2012.*			*2009 - 2010*
Subtotal			**252,400**	
4 Financing Mechanisms (2010 to 2025)				
Objective 1	*To develop a mechanism for utilising the resources of the environment fund in such a way as to allocate equitable resources for POPs.*	*NEMA, MFPED, BoU, URA, MWE*		*2010 - 2012*
Objective 2	*To design and implement market based instruments for the identified POPs threats in the country as a means of financing their management*			*2011 - 2012*
Objective 3	*To develop and implement a strategy for mobilising and seeking resources from development partners*			*2010 - 2025*
Subtotal			**510,600**	
5 Public Education and Awareness on specific categories for specialised education systems (2011 to 2014) Check what article 10 requires				
Objective 1	*To develop training materials to fit formal, non-formal and informal education systems*	*NEMA, MoES, MoGLSD*		*2010 - 2012*
Objective 2	*To facilitate integration of POPs education in the curriculum*	*NEMA, MoES*		*2011 - 2012*

Objective 3	*To build capacity of trainers and researchers in POPs education by 2014*	*NEMA, MoES*		*2010 - 2012*
Subtotal			**618,100**	
6 Implementing a National Public Awareness Programme (2010 to 2013 (Article 10)				
Objective 1	*To develop & implement national public awareness for 70% of the most vulnerable groups by year 2012.*	*NEMA, MoGLSD,*		*2010 - 2012*
Subtotal			**581,100**	
7 Regulation on DDT				
Objective 1	*To review, harmonize and strengthen legislation to handle DDT by one year after adoption of the NIP*	*NEMA, MoH, MTTI, CSOs MoGLSD*		*2009 - 2010*
Objective 2	*To strengthen capacity for compliance and enforcement of DDT regulation*	*NEMA, MoH, MTTI*		*2012*
Subtotal			**861,300**	
8 DDT Management (Article 4,11,12,13, Annex B Part I and II)				
Objective 1	*To develop & implement programme to ensure compliance to proper management of DDT*	*MoGLSD, MoH, NEMA, CSOs, MTTI*		*2009 - 2025*
Objective 2:	*To develop & implement plan for applicable, cost-effective & sustainable alternatives to DDT, by 2012*			*2011 - 2025*
Objective 3:	*To strengthen national capacity to plan, implement and evaluate integrated vector management*			*2013 - 2025*
Subtotal			**670,400**	
9 POPs Information Management System (2009 – 2025)				
Objective 1	*To undertake comprehensive inventories on POPs*	*NEMA; Institutional stakeholders*		*2009 – 2011*
Objective 2	*To continually test, improve databases and technical capacity to ensure sustainability of the PMIS.*			*2012 - 2014*
Objective 3	*To implement platform for sharing information - national and international stakeholders*			*2014 - 2025*
Subtotal			**510,400**	
10 Programme Research, Development and Monitoring (Article 11)				
Objective 1	*To have a monitoring program for POP's designed &a pilot study started by 2010 and finished by 2012*	*NEMA, UCPC, MoH, LGs,*		*2010 - 2012*
Objective 2	*To have a complete running M&E system for hazardous chemicals for the whole country by 2015*	*NEMA, UCPC, MoH, MAAIF, LGs, MTTI*		*2012 -2025*
Objective 3	*To undertake monitoring and evaluation of the implementation of the NIP between 2012 and 2025*	*NEMA, all stakeholders*		*2012 and 2025*

Subtotal			**756,800**	
Total			**5,416,100**	
		PHASE II		
11 Measure to reduce or eliminate releases from unintentional production through open burning of waste including burning of landfill sites				
Objective	*To reduce emissions of dioxins & furans from uncontrolled combustion processes by 70% by 2014*	*NEMA, UCPC, MoH, MAAIF, LGs*		*2012 – 2015*
Subtotal			**674,100**	
12 Reductions of emissions of dioxins from industrial sources				
Objective	*To reduce emissions of dioxins & furans from industrial processes by 60 percent by 2014*	*NEMA, UCPC, MoH, MAAIF*		*2012 – 2015*
Subtotal			**440,450**	
Actions	**Specific action**	**Institutions**	**(US$)**	**Time line**
13 Develop and implement programme for technical and infrastructure capacity for POPs monitoring and accreditation of laboratories				
Objective 1	*To strengthen technical & infrastructure capacity for monitoring & evaluation by 2012*	*NEMA, GAL, URA, MoH, NDA, UNBS MUK,*		*2008 - 2011*
Objective 2	*To design & implement a programme to accredit laboratories for monitoring, by 2015.*			*2008 - 2011*
Objective 3	*To strengthen capacity for identification, analysis & monitoring of the environment 2015*			*2009 - 2013*
Subtotal			**1,409,800**	
14 Measure to reduce or eliminate releases from stockpiles and waste (Article 6)				
Objective 1.	*To develop & implement appropriate strategies to identify stockpiles & contaminated sites, products & articles in use & wastes containing or contaminated with chemicals listed in Annex A, B or C by 2014*	*NEMA, URA MoH, NDA MAAIF, , MFPED,*		*2012 - 2014*
Objective 2	*To develop & implement appropriate strategies for managing stockpiles by 2013.*			*2012 - 2025*
Objective 3:	*To mainstream POPs management into Environment Management Systems of the institutions vulnerable to POPs contamination by 2016.*	*NEMA, URA, MoH, NDA, MFPED,*		*2012 - 2025*
Subtotal			**100,937,000**	
Total			**103,461,350**	
Total-Less Incineration			**3,461,350**	
GRANDTOTAL			**108,877,450**	
	INCINERATION INVESTMENT COSTS		**100,000,000**	
	GENERAL POPS MANAGEMENT COSTS		**8,877,450**	

Abbreviations and Acronyms

ADI	Acceptable Daily Intake
DDT	Dichlorodiphenyltrichloroethane
ECD	Ethylene Chlorine Dichloroethane
EIA	Environment Impact Assessment
FAO	Food and Agricultural Organisation (of the United Nations)
FIRI	Fisheries Research Institute
FORRI	Forestry Resources Research Institute
FOSRI	Food Science and Technology Research Institute
GAL	Government Analytical Laboratory
GEF	Global Environment Facility
GFTAM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GoU	Government of Uganda
HACCP	Hazard Analysis Critical Control Point
HCB	Hexachloro Benzene
INC	Intergovernmental Negotiating Committee
IPM	Integrated Pest Management
IPT	Intermittent Preventive Treatment
IRS	Internal Residual Spraying
ITN	Insecticide Treated Nets
IVM	Integrated Vector Management
JLOs	Justice Law and Order and Order Sector
KARI	Kawanda Agricultural Research Institute
LHRI	Livestock Research Institute
LLINs	Long Lasting Insecticide Treated Nets
LPG	Liquid Petroleum Gas
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MCP	Malaria Control Programme
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreements
MFPED	Ministry of Finance Planning and Economic Development
MLHUD	Ministry of Lands, Housing and Urban Development
MoD	Ministry of Defence
MoGLSD	Ministry of Gender Labour and Social Development
MoH	Ministry of Health
MoW&T	Ministry of Works and Transport
MRL	Minimum Residue Level
MTAC	Management Training and Accountancy Centre
MTTI	Ministry of Tourism Trade and Industry
MUK	Makerere University Kampala
MWE	Ministry of Water and Environment
NAARI	Namulonge Agricultural and Animal Production Research Institute
NDA	National Drug Authority
NEMA	National Environment Management Authority
NIPs	National Implementation Plans
NMCP	National Malaria Control Programme

OECD	Organisation for Economic Co-operation and Development
PMIS	POPs Information Management System
PRL	Pesticide Residue Level
RBM	Roll Back Malaria
RTI	Research Triangle Institute
SAARI	Serere Agricultural and Animal Production Research Institute
SPS	Sanitary and PhytoSanitary
TBT	Technical Barriers to Trade
TCDD	Tetrachloro dibenzo-p-dioxin
TEF	Toxic Equivalent Factor
TEQ	Toxic Equivalent
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Household Survey
UIRI	Uganda Industrial Research Institute
UNBS	Uganda National Bureau of Standards
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNHS	Uganda National Household Survey
UNIDO	United Nations Industry Development Organisation
UNITAR	United Nations Institute for Training and Research
UPDF	Uganda People's Defence Forces
UPF	Uganda Police Force
UPOPs	Unintentional Persistent Organic Pollutants
USAID	United States Agency for International Development
USEPA	United States Environmental Protection Agency
UVRI	Uganda Virus Research Institute
VCM	Vinyl chloride monomer
WB	World Bank
WHO	World Health Organisation
WTO	World Trade Organisation
WTP	Willingness to Pay
WWF	Worldwide Wildlife Fund

CHAPTER ONE
Introduction

1.1 The Stockholm Convention

The Stockholm Convention was adopted by 92 States and the European Community on the 22nd May 2001 in Stockholm, Sweden. The Convention is a global treaty to protect human health and the environment from the negative impacts of Persistent Organic Pollutants (POPs). Uganda was not one of the 92 States that signed the Convention it acceded to it on 20th July 2004. The Convention entered into force for Uganda on 20th October, 2004. And, a National Implementation Plan (NIP) should have been submitted Conference of Parties (COP) on 20th October 2006 but due to unavoidable constraints the country was unable. However, Uganda has now developed this NIP in fulfilment of its obligations under Article 7 of the Convention.

The Stockholm Convention addresses the dangers posed by POPs, starting with the twelve (12) most dangerous ones. Nine of the 12 POPs are pesticides namely aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene and Hexachlorobenzene (HCB) also industrial. The others are industrial chemicals namely Polychlorinated Biphenyls (PCBs) and unintentionally produced by-products (Polychlorinated Dioxins and Furans). It should be noted that the Convention also provides a mechanism for adding other POPs to the above list in due course.

The primary objective of the Stockholm Convention, as articulated in Article 1, is to protect human health and the environment from POPs. The Convention cites Principle 15 of the Rio Declaration on the precautionary approach which advocates for preventive action even before conclusive proof regarding cause and effect is available. In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (UNCED, 1992). The main provisions of the Stockholm Convention articulated in this NIP include:

- Requirement for a total ban on the production and use of eight organochlorine pesticides.
- Elimination of the use of PCBs in equipment by 2025.
- Restricting DDT use to disease vector control in accordance with the WHO recommendations and guidelines, and when locally safe, effective and affordable alternatives are not available.
- Promoting action to minimize the release of industrial by-products as dioxins and furans.
- Employing a precautionary approach to identify and take action against additional POPs. The Convention establishes a scientific POPs Review Committee to

evaluate additional chemicals for inclusion in the treaty, based on criteria of toxicity, persistence, bioaccumulation and long-range transport;

- Channelling financial and technical assistance from developed countries to enable all countries to comply with the Convention.
- Emphasizing preventive measures to address POPs at their source by helping to prevent the development of new chemicals with POP characteristics, and by Promoting changes that eliminate/minimise creation of POPs in industrial processes.
- The requirement to reduce or eliminating releases of POPs from stockpiles and wastes
- Increasing public awareness of the dangers of POPs and providing up to date information on POPs
- Facilitating /undertaking the exchange of information on POPs

1.2 General information on Persistent Organic Pollutants

The POPs are organic compounds of natural or anthropogenic origins with a particular combination of physical and chemical properties such that, once released into the environment, they remain intact for exceptionally long periods of time. They are known to resist photolytic, chemical and biological degradation. POPs include; industrial chemicals such as PCBs, pesticides, DDT and by-products such as polychlorinated dioxins and furans. POPs are characterized by low water and high lipid solubility. They bio-accumulate in the fatty tissues of living organisms, including humans, and are found at higher concentrations at higher levels in the food chain. Thus, humans, and wildlife are exposed to POPs for extended periods of time and spanning generations, resulting in chronic toxic effects. POPs are introduced to humans through the food chain. They can be passed from mother to child and are known to have significant negative immunological, neurological and reproductive health effects. POPs are semi-volatile chemicals that evaporate from the regions in which they are used and are then transported over long distances in the atmosphere and aquatic ecosystems. They are also discharged directly, or through atmospheric deposition, into waterways and are transported by movement of fresh and marine waters. This results in widespread distribution of POPs across the globe, including regions where they have never been used.

The Stockholm Convention has 5 major/essential aims:

a. Eliminate dangerous POPs starting with the 12 worst

It commits the international community to protecting human health and the environment from persistent organic pollutants (*Box 1*).

b. Support the transition to safer alternatives

It permits the production and use of DDT for controlling mosquitoes and other disease vectors in accordance with World Health Organization recommendations and guidelines

and only when locally safe, effective, and affordable alternatives are not available. Use will be carefully regulated and monitored and must be publicly registered. The international community will evaluate at least every three years whether DDT is still needed for this purpose. Thus protection against malaria will not diminish and the use of DDT will probably become more safe and efficient as a natural response to increased scrutiny. Moreover, researchers and environmental and health organizations will have a greater incentive to develop alternative strategies for malaria control, hastening the day when DDT will no longer be such an essential part of the anti-malaria toolkit.

Box 1: POPs and their potential health effects

The Stockholm Convention recognises the health concerns, especially in developing countries, resulting from local exposure to Persistent Organic Pollutants (POPs) and in particular impacts upon women and, through them, on future generations.

The potential health impacts of POPs include:

- Aldrin: deforms foetus in pregnant women.
- Chlordane: linked to liver, kidney and blood disorders; disrupts the endocrine, cardiovascular, and reproductive systems.
- DDT: Probable human carcinogen; may cause tremors and disrupts the kidney, liver, and immune and nervous systems; may cause nausea, diarrhoea, eye, nose and throat irritation.
- Dieldrin: deforms foetus in pregnant women.
- Endrin: affects the central nervous system, liver; causes convulsions, etc.
- Heptachlor: Reduces reproductive abilities of men and women; detected in breast milk.
- Hexachlorobenzene: Probable human carcinogen; exposure over a long period may result in liver, kidney, or thyroid cancer.
- Mirex: Probable human carcinogen increases the risk of miscarriages and it is anti-androgenic.
- Toxaphene: Probable human carcinogen; disrupts the functioning of the liver, lung, kidney, and nervous system; may cause death if ingested in large doses.
- PCBs: Probable human carcinogen, causes acne, rashes, other skin conditions; may irritate the lungs and nose. It is anti-oestrogenic and anti -androgenic

Dioxins and Furans: Reasonably suspected to cause cancer, chloracne, red skin rashes, excessive body hair; changes in blood and urine that signal liver damage.

Source: UNEP (2004)

1.3 The National Implementation Plan (NIP) for Uganda

As a Party to the Stockholm Convention, Uganda is obligated to produce a National Implementation Plan (NIP). The NIP describes how a Party will meet its obligations under the Convention (Articles 3, 5, 6 and 7 of the Stockholm Convention).

Article 7 sets out the obligations relating to the NIP as follows:

1. Each Party shall: (a) develop and endeavour to implement a plan for the implementation of its obligations under this Convention; (b) transmit its

implementation plan to the Conference of the Parties within two years of the date on which this Convention enters into force for it; and (c) review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.

2. The Parties shall, where appropriate, cooperate directly or through global, regional and sub regional organizations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.

3. The Parties shall endeavour to utilize and, where necessary, establish the means to integrate national implementation plans for persistent organic pollutants in their sustainable development strategies where appropriate.

The process of developing the NIP started in 2005 under the Project for the Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants National Implementation Plan (NIP) for Uganda with funding from the Global Environment Facility (GEF). United Nations Environment Programme (UNEP) was the implementing agency while NEMA was the executing agency.

The Process of developing the NIP consisted of five steps namely: establishment a coordination mechanism and process organisations; establishment of POPs inventories and assessment of national infrastructure and capacity priority setting and objective setting; formulation of the NIP; and endorsement by stakeholders and government. The development process was undertaken by stakeholders drawn from research and academic institutions, government departments, private sector and NGOs.

1.4 Flow of the report

The NIP for Uganda is divided into three chapters; in accordance with the guidance for developing a NIP for the Stockholm Convention. The preceding sections consist of the executive summary and the introduction of the NIP. Chapter two consists of the country baseline in which details of the country profile, institutional, policy and regulatory framework and the status of POPs issue in the country is assessed. The third chapter, the strategy and action plan elements of the NIP, lays out the policy statement, implementation strategy, activities, strategies and action plans, priorities of development and capacity-building proposals and timetable for plan implementation. At the end of the third chapter are annexes, which consist of the details of the proposal activities, strategies and action plans and timetables, NIP endorsement documents and other chemicals regulation and management documents.

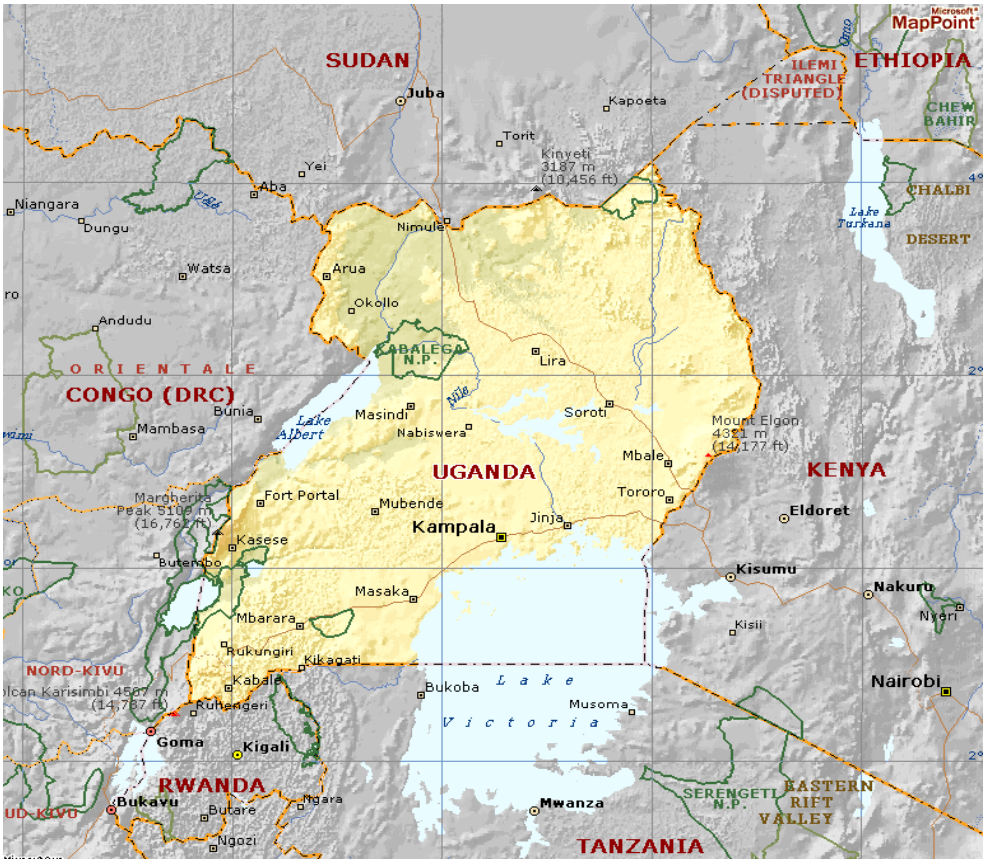
CHAPTER TWO
Country Baseline

2.1 Country Profile

2.1.1 Geography and population

Uganda is located in the East African region (*Figure 1*), and it lies between latitudes $4^0$12' N and 1^0 29' S and longitudes $29^0$34'E and $35^0$0'W. The country is land-locked and bordered by Kenya to the East, Tanzania and Rwanda in the South and Southwest respectively, the Democratic Republic of Congo (DRC) to the West and Sudan to the North. The country's altitude ranges between 620 and 5,110 metres Above Sea Level (ASL). Uganda's total area is 214,038 sq km; about 15.3 percent of the country's surface is open water, with about 13 percent wetlands and 18.4 percent are forest lands. Rainfall ranges between 600mm to 2,000mm/ year and the temperature between 15^0C and 30^0C (NEMA[1], 2007; UBOS, 2007[2]).

Figure 1: Position of Uganda in Africa



Source: Microsoft Uganda Maps (2008)

[1] NEMA (2007) National State of Environment Report (NSOER), 2006/07
[2] UBOS (2007) Statistical Abstract for Uganda 2007. http://www.ubos.org

Since the late 1990s, Uganda's population has been growing at a rate of 3.2 percent; increasing from 24.2 million in 2002 people to 28.2 to in 2007 (UBOS, 2007). The country has a higher population of females than males. In 2008, Uganda's population of females was estimated at 14.6 million; while that of males was 13.8 million (UBOS, 2008). . Fertility rate is 6.7 births per woman and infant mortality rate was 7.6 per 1,000 live births (UDHS, 2006[3]). The urban population is 3.7 million people and the rural population is 25.9 million people.

2.1.2 Political and economic profile

Uganda adopted a multiparty system of government in 2006 and Presidential and Parliamentary elections were held in the same year. Nationally, there are two levels of Government; the Central Government and Local Government. The Central Government consists of ministries and statutory bodies within the ministries. Local Government consists of the higher local government at the District, and lower local government, which consist of sub-counties, parishes and villages. Uganda is a member of the East African Community (EAC) the regional intergovernmental organization together with Kenya, Tanzania, Rwanda and Burundi. The EAC aims to widen and deepen co-operation among the partner states in political, economic and social fields for their mutual benefit. The country also belongs to the Intergovernmental Authority on Development (IGAD). IGAD was shaped around the mandate of drought and desertification issues but has since expanded to cover other issues related to regional security and political dialogue, while the Common Market for East and Southern Africa (COMESA) brings together 19 countries in eastern and southern Africa to boosts cross-border activities including trade

Box 2: Political and economic situation of Uganda since independence

Uganda got its independence on the 9th October 1962 from the British Colonial Government. At independence the country was ruled by monarchial President Sir Edward Muteesa and an Executive Prime Minister Dr. Milton Obote. Only four years after independence Dr. Obote decided to assume total power and Uganda became a republic in 1967 with Dr. Milton Obote as President; the first President Sir Edward Muteesa, who was also king of Buganda, the largest kingdom of Uganda had fled into exile in 1966.

Between 1971 and 1979, the country went through a severe break down in institutions and economic collapse as Idi Amin overthrew Dr. Milton Obote in a military coup and ruled for these eight years. By 1979 when Amin was toppled the economic and several government institutions had virtually collapse. There was a little revival in the early 1980s, whoever, the political stability did not return quickly as the country went through a succession of five different governments and two these came by military coup. Since 1986 (to 2008), the country has been able to have a consistent government. Government institutions were revived and the economy has also grown consistently. In addition, a stable a government means that international agreements signed, such as commitment to the Stockholm Convention can be kept.

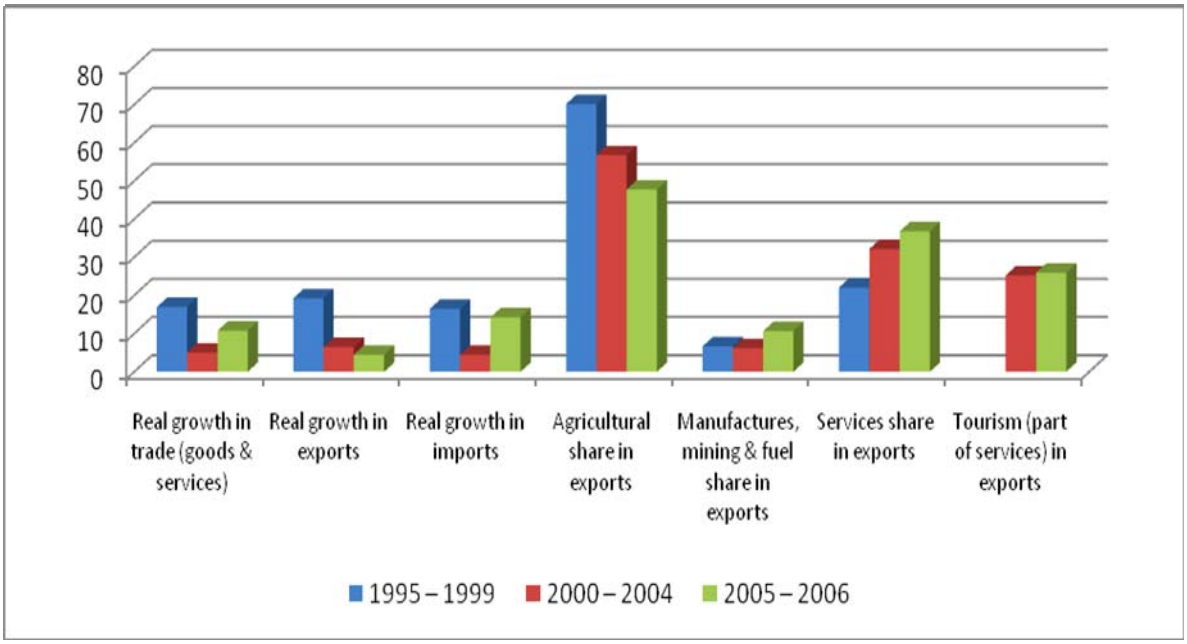
Source: Masiga and Ruhweza (2007)

[3] UBOS/UDHS (2006) Uganda Demographic and Household Statistics, Uganda Bureau of Statistics,

Over the last two decades, Uganda's economy has grown at a rate of 7 percent per annum. Expansion in the agriculture, construction and communications sectors has been credited the economic growth. And, although, the economic growth slowed down to about 5 percent between 2004 and 2006, it has since rebounded to 8.9 in 2007/08 (MFPED, 2008[4]; UBOS, 2008[5]).

The county's growth in total trade of goods and services accelerated from a per annum average of 5.1 per cent in 2000-04 to 10.8 percent in 2005-06, among the top 50 of the 152 countries assessed by the World Bank. Since 2000, the country's exports have expanded at about 4.5 percent per year; while imports grew at 14.3 percent per year. The growth in exports was about 50 percent faster than the average for Sub-Saharan Africa (SSA) (World Bank, 2007[6]). Uganda's growth rate of both exports and imports were quite high in the late 1990s, the trade share in the GDP was only the 39.9 percent by 2005-06. However, the share of trade in the GDP lags behind that of comparable countries by at least 40 percent. The major exports include coffee, fish, tobacco, cotton and cut flowers. Service share in overall exports has grown from an average of 22.1 percent in 1995-99 to 36.8 percent in 2005-06 (*Figure 1*). This growth is mainly due to a growing tourism sector and the Information and Communications Technology sector.

Figure 2: Real growth in trade of goods and services



Source: adapted from UBOS (2007)

The industrial sector is largely agro-based. The risk of POPs in the country is largely from unintentionally produced POPs during industrial processes. In several factories in

[4] MFPED (2008) Budget Speech2008/9, Ministry of Finance Planning and Economic Development,
[5] UBOS (2008) Uganda Statistical Abstract 2008, Uganda Bureau of Statistics, http://www.ubos.org
[6] World Bank (2007) Uganda Trade at a glance.

Uganda chlorine a known precursor of POPs and other combustion processes likely to lead to releases of POPs are carried out with little precaution, see *section 2.8.2*.

The socio-economic indicators of economic growth in the country include housing conditions, sanitation access to energy sources and access to safe water.

i) Housing conditions

Uganda's housing conditions are considered to be generally substandard (Uganda Population and Housing Census – UBOS, 2002); Population Secretariat, 2007[7]). More than 70 percent of the dwelling units were built with temporary materials that cannot maintain their stability for more than three years. The poor housing structures may have implications for indoor residue spraying (IRS) in malaria control programmes (see also section 2.8.3). The proportion of temporary dwelling units was as high as 80 percent in rural areas compared to 27 percent in the urban areas. Units built out of permanent materials constituted 60 percent in the urban areas compared to only 10 percent in the rural areas. In addition, in urban areas, more than 56 percent of the dwelling units were occupied by tenants compared to about 30 percent which were owner occupied.

ii) Sanitation

Households that did not have access to proper sanitation reduced from 22 percent in 1992 to 11 percent in 2005, while those using pit latrines increased from 75 percent to 88 percent over the same period. Currently, the coverage of the main sewer network is only 8 percent in the towns that are served by the National Water and Sewerage Corporation (NWSC), the rest of the areas are not accessible to the main sewer (UBOS, 2007). Plans are underway to increase the coverage of the sewer network. As much as 11 percent of households did not have a toilet facility. Uncontrolled burning of solid waste leads to generation of dioxins and furans (see also section 2.8.2).

iii) Energy sources

The sources of energy for the population in Uganda include electricity, solar, thermal, biogas, paraffin and biomass (MEMD, 2007[8]). Ninety percent of rural households use paraffin as their main source of energy for lighting compared to only 50 percent in urban areas. Electricity is used by 40 percent households in urban areas. There was an increase in the percentage of households using electricity in the rural areas from 2.7 percent in 2002 to 4 percent in 2005/06. Other secondary sources of fuel include charcoal, which is used for cooking in 90 percent of the households in urban areas and 98 percent of the rural households. About 4.3 percent in urban areas use electricity for cooking and only 1 percent in rural areas. On other hand, Uganda's industrial sector predominantly uses energy generated from both biomass and fossil fuels (see also section 2.8.2). The

[7] Population Secretariat (2007) State of Uganda Population Report 2007: Planned urbanisation for Uganda's growing population, Uganda Population Secretariat, Kampala, Uganda
[8] MEMD (2007) Annual Report, Ministry of Energy and Mineral Development http://www.memd.go.ug

inventory on UPOPs identified the use of biomass and fossil fuels as major sources of dioxins and furans (NEMA, 2007b).

iv) Access to safe water

Access to clean and safe water and improved sanitation facilities and practices are pre-requisites to a health population and therefore have a direct impact on the quality of life and productivity of the population (UN water, 2006). The proportion of the population with access to safe water in urban areas declined from 87 percent in 2000 to 84 percent in 2003. On the other hand, access to safe water supply in rural areas increased to 58.5 percent in 2005/06 from 57 percent in 2000 (UBOS, 2008). However, access to water for both urban and rural communities still falls short of the MDG target of 100 percent and 62.5 percent by 2015, respectively. An important risk to safe water supply is contamination of water sources with POPs generated from open burning, industrial processes and POPs contaminated sites. The re-introduction of DDT for malaria vector control may also lead to further contamination of water sources.

2.1.3 Uganda's performance towards achieving the MDG and PEAP targets

In 2000, the world through the United Nations Millennium Declaration in New York adopted eight Millennium Development Goals (MDGs) as the benchmarks for achieving sustainable development in the world. The MDGs are:

- To eradicate extreme poverty and hunger.
- To achieve universal primary education.
- To promote gender equality and empower women.
- To reduce child mortality; to improve maternal health.
- To combat HIV/AIDS, malaria and other diseases.
- To ensure environmental sustainability.
- To develop a global partnership for development.

In Uganda, the MDG indicators have been adapted into the economic development process in the overarching developing framework of the Poverty Eradication Action Plan (PEAP), also the country's poverty reduction strategy paper. Evidence from assessments of the PEAP and MDGs indicate that appropriate policies, institutions, and additional funding have led to a gradual movement towards the MDG targets. For instance, the targets on universal primary education (UPE) and access to safe water has already been achieved. The country is on course to achieve the targets on gender equality. The prevalence of HIV/AIDS was reduced from 20 percent 1990 to 6.2 percent by 2005/06. Environmental sustainability indicators such as access to safe water and access to improved sanitation are on course to being achieved in line with PEAP benchmark. There are still concerns over the declining forest area from 24 percent to 18 percent, between 1990 and 2005, and land tenure. It should be noted that the current indicators do not show a country position on the management of hazardous chemicals, including POPs. However, the ENR sector has made a submission on chemicals management in the new National Development Plan, including POPs management as a specific category.

The Government of Uganda is engaged in the process of revising the PEAP. Cabinet endorsed the development of 30-year, 10-year and 5-year National Development Plans (NDPs) that should be consistent with the National Vision for Uganda (MFPED, 2008). The 5-year medium term plan will act as a precursor to the development of longer term plans as envisaged by the Comprehensive National Development Planning Framework. This new planning arrangement will replace the PEAP. The proposed theme for the 5-year NDP is "Growth, Employment and Prosperity for All" and it seeks to achieve the following national objectives: (i) to uplift household standards of living; (ii) to enhance the quality and availability of gainful employment; (iii) to improve social, economic and trade infrastructure nationwide; (iv) to develop efficient, innovative and internationally competitive industries; (v) to develop and optimally exploit the national resource base and ensure environmental and economic sustainability; and (vi) to strengthen good governance and improve human security.

Table 1: Relationship of POPs management to Key Probable NDP Objectives

Anticipated objectives	Benefits of implementing the NIP to the National Development Plan
1. Uplift household standards of living	• Improved POPs management is essential for the health and safe working conditions of the poor (Article 1) and secured livelihoods.
2. Enhance the quality and availability of gainful employment	• The use of appropriate technologies and availability of knowledge (Articles 3; 5; 6) on POPs management will improve the working conditions, productivity and employment opportunities.
3. Improve social, economic and trade infrastructure nationwide	• Appropriate POPs management practices (Article 9; 10; 11; 12) will enhance the country's ability to trade and improved technical capacity will enhance compliance with international and national standards.
4. Develop efficient, innovative and internationally competitive industries	• Implementing sound POPs management practices (Articles 3; 5; 6; 9) can assist the domestic industry become more efficient and competitive in markets with stringent environment and health standards for products.
5. Develop and optimally exploit the national resource base and ensure environmental and economic sustainability	• Appropriate POPs management practices can help prevent and/or minimize harmful exposures to chemicals. (Article 1). • These practices can ensure a healthier environment by helping to prevent contamination of water, soil, air and flora and fauna and thus reduce the need for complex and costly environmental remediation.
6. Strengthen good governance and improve human security	• Sound POPs management practices and awareness and education, compliance and enforcement will improve safety and reduce costs of health care, environmental degradation (Articles 3; 5; 6; 9).
7. Higher quality of life and increased productivity of Uganda's human resources through better educated and healthier Ugandans	• Article 1 of the Stockholm Convention aims at sound POPs management so as to safeguard human health and the environment. . • Integration of POPs management in the education curriculum and in research will ensure that a wider greater access to knowledge and therefore ability to make decisions regarding chemical use and safety.

Articles of the Stockholm Convention

Source: adapted from National Development Plan documents (MFPED, 2008)

2.1.4 Environment overview

Uganda's environmental sector consists of atmosphere resources that control climate, terrestrial resources composed largely of farmlands, forests and wildlife, aquatic resources composed of wetlands, water and fisheries. The environment sector of Uganda also includes environmental health problems, biodiversity and the environment linkages,

a) Aquatic resources

Uganda's wetland resources cover 13 percent of the country's land surface. Increasingly these wetlands are under pressure from reclamation for agriculture especially rice production. While no estimates exist as yet, several districts have reported an increased use in wetlands for rice production as a result of the current government campaign (upland rice growing) in Uganda. Uganda's water resources cover about 16 percent of the country's total area. The biggest pressure on the water resource is from the growing population and poor waste management practices of industries located near the water system. Uganda is on track to meeting the Millennium Development Goals for access to improved water within the country of 100 percent by the year 2015. Fisheries activities provide an important source of livelihoods to many Ugandans and foreign exchange to the country. About 58 percent of Uganda's fish catches come from Lake Victoria followed by 16 percent from Lake Kyoga and the remaining lakes and rivers contribute 26 percent of fish catches. The major pressures on Uganda's fisheries resources come from the growth in international market demand for Nile perch and Tilapia, deterioration of water quality due to pollution, re-invasion of the lakes by the water hyacinth, and poor fishing practices (NEMA/UNEP, 2006; Odada *et al.*, 2004).

b) Biodiversity

Uganda has a very high wealth of biodiversity resources. For example, the country has more than half of all African bird species occur in the country, and it is the second richest country in mammal species in Africa, after the Democratic Republic of Congo, and the ninth richest in the world (UNEP, NEMA and EPRC 2008). . The principle threats to biodiversity in Uganda continue, including habitat loss, modification and alteration along with unsustainable harvesting, pollution and introduction of alien species.

c) Environmental health problems

Malaria is the most prevent illness in Uganda with the 51 percent of out patients cases reported between 202 and 2005. In 2004, the estimated annual number of deaths from Malaria was 70-100,000 people. Diarrhoea is the major killer of young children and it alone is responsible for 19 percent of all infant mortality rates in Uganda. However cholera cases fatality rate declined from 6 percent in 2000-2001 to 2.5 percent in 2004-2005 although the WHO recommends cholera case fatality rate should be below 1 percent (NEMA, 2007[9]).

[9] NEMA (2007) National State of the Environment Report for Uganda 2006/07; http://www.nemaug.org

2.1.5 Sector profiles

Sectors	Sector mandate and relevance to the Stockholm Convention
I Water and Sanitation and Environment and Natural Resources	The two sectors is responsible for water and sanitation and environment management. The sector takes the lead a on environment management including chemicals (e.g. POPs).
II Agriculture	The Agricultural sector falls in the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), which is responsible for import, use and disposal of all agricultural chemicals in the country including POPs.
III Health	The sector under the Ministry of Health (MoH), which is responsible for policy, standards, management of health services and import, use, disposal and treatment for POPs related health chemicals and wastes.
IV Energy and Mineral Development	The lead Ministry in this sector is the Ministry of Energy and Mineral Development (MEMD). The MEMD is responsible for energy policy in the country and it imports and uses POPs precursors e.g. heavy fuels.
V Tourism, Trade and Industry	Under the Ministry of Tourism, Trade and Industry (MTTI) its responsible, for trade goods and services environmental and health standards to ensure that they do not jeopardize the country's export opportunities.
VIII Education	The sector under the Ministry of Education and Sports is expected to take on some of the POPs information and awareness through formal and non-formal curriculum based programmes run by the Ministry.
IX Justice, Law and Order	The Justice, Law and Order Sector (J/LOS) ensures personal safety, security, rule of law and due (judicial) process, including legislation on POPs management in the country
X Finance, Planning and Economic Development	Under the current arrangement the Ministry of Finance Planning and Economic Development (MFPED) is the operating focal point for GEF programmes with regard to the Stockholm Convention activities. NEMA has been the executing agency.
XI Legislature	The role of the legislature is to pass national legislation and provide oversight over Government programmes and accountability over new projects, including the NIP for the Stockholm Convention.
XII Social Development	The sector is responsible for occupational health and safety in industries and information and awareness programmes for POPs to the general public

2.2 Institutional policy and regulatory framework

2.2.1 Responsibilities of government agencies in POPs management

A. Agencies under the Ministry of Water and Environment

i) National Environment Management Authority (NEMA)

NEMA is a thirteen-year-old institution created in 1995 and established under the National Environment Act Cap 153. The roles and functions of the authority that are related to POPs management in the country include:

- co-ordination of the implementation of Government environment policy;
- integration of environmental concerns in overall national planning; ;
- liaise with the private sector, intergovernmental organizations, non-governmental agencies and governmental agencies of other states on issues relating to the environment;
- propose environmental policies and strategies in the country;
- initiate legislative proposals, standards and guidelines on the environment;
- review and approve environmental impact assessments and environmental impact statements submitted;
- promote public awareness about environmental issues in formal and non-formal education ;
- ensure observance of proper safeguards in the planning and execution of all development projects that have or are likely to have significant impact on the environment;
- undertake research and disseminate information about the environment; and
- mobilize, expedite and monitor resources for environmental management.

ii) Directorate of Water Resources Management

The Water Resources Management Directorate is responsible for managing the water resources of Uganda in an integrated and sustainable manner in order to secure and provide water of adequate quantity and quality for all social and economic needs for the present and future. The directorate has two departments the Rural Water Supply (RWSD) and Urban Water and Sewerage Department (UWSD). The directorate is responsible for ensuring that water used for domestic, industrial and other production purposes is free of harmful substances including POPs.

iii) National Water and Sewerage Corporation (NWSC)

The National Water and Sewerage Corporation is a government owned company responsible for the delivery of safe water supply and sewerage services in 19 larger urban centres. NWSC has one central laboratory and 17 satellite laboratories that analyze water and waste water. Responsibilities further include: ensuring that water quality meets Uganda drinking water standards; monitoring of raw water quality at intake points; and regular collection of water resources data (quantity and quality) relevant to NWSC operations. Water standards, technology and pollution issues are addressed in cooperation with Uganda National Bureau of Standards (UNBS). For drinking water quality guidelines and/or standards, WHO Guidelines for drinking Water are adopted considering the local conditions as reflected in the National Rural Water Quality Guidelines. The above-highlighted functions, roles and responsibilities of the three bodies under the Ministry of Water and Environment clearly indicate their stake/relevance in the life cycle and management of POPs. For instance, the NEMA Technical Committee on the Licensing of Pollution inspects the facility handling waste to ensure environmentally friendly waste management before approval of the license to handle such waste, like POPs, entering the environment. However, other Technical Committees are established as the case and need may arise.

Of the agencies in the Ministry of Water and Environment (MWE), NEMA has good capacity in chemicals management and laboratory with limited capacity for testing POPs such as PCBs and POPs pesticides. The Water Sector also has a good laboratory. However, both in the case of NEMA and especially the Water sector formal POPs management under the Stockholm Convention will only start after the NIP has been consented to by the Government of Uganda and approved by the COP to the Convention. In the intermittent period, there will be need to integrate POPs management into the Water Sector and Environment and Natural Resources Sector plans submitted to the National Development Plan and the Medium Term Framework of the government and the Ministry of Finance Planning and Economic Development (MFPED). For the NIP to be implemented, the government and its development partners have to agree to support additional activities for enforcement, surveillance, upgrading laboratory capacity and training personnel.

B. Agencies under the Ministry of Agriculture, Animal Industry and Fisheries

The MAAIF mainly controls the use of pesticides in Uganda. The Ministry is responsible for the administration of the Agricultural Chemicals Regulation, it regulates the importation and use of and plays its roles in the development of the relevant policies, standards and provision of technical support supervision as well as resource mobilisation for local governments.

i) Agricultural Chemicals Control Board (ACB)

This is a government agency responsible for controlling the use of agricultural chemicals in Uganda mainly for phyto-sanitary plant/crop protection purposes. This body regulates: (i) herbicides; (ii) pesticides; (iii) fungicides; (iv) fertilizers; (v) insecticides; (vi) plant growth regulators; (vii) seed treatment chemicals; (viii) bio pesticides; (ix) chemicals for wood industry (petroleum and wood treatment); and (x) vector control-the Board also handles chemicals for the control of epidemic pests and diseases. The Agricultural Chemicals Board also gives permits to suitable and approved importers of agrochemicals. The Board also maintains a statistical database of these chemicals. The responsibilities of the Agricultural Chemicals Board include:

- Registration and regulations of use of agricultural chemicals.
- Regulations of quality, importation and distribution.
- Licensing.
- Advisory role to MAAIF.

ii) National Agricultural Research Systems

The National Agricultural Research Act, 2005 provides for the development of an agricultural research system for Uganda, hereby referred to as the National Agricultural Research System (NARS), for the purpose of improving agricultural research services delivery, financing and management. The NARS means a cross section of stakeholders

whether in public or private sector; and comprises of the organisation, public agricultural research institutes, universities and other tertiary institutions, farmer groups, civil society organisation, private sector and any other entity engaged in the provision of agricultural research services. The NARS institutional framework encompass Public as well as Private sector institutions in implementing agricultural research, and promoting vertical and horizontal linkages with other national, regional and international institutions. Sub-systems of NARS include: Public Research Institutes under the National Agricultural Research Organisation (NARO); Universities and other tertiary institutions; Private companies/private sector; Farmer organizations; Civil Society Organisations (CSOs); Advisory Service Organizations; NARS Linkage Institutions – the regional and international organizations and Individuals. Integration of the implementation of the NIP of the Stockholm Convention in Uganda into the NARS system will take due cognizance of the new arrangements under the National Agricultural Research Act, 2005.

iii) Uganda Coffee Development Authority (UCDA)

The UCDA was established by the Uganda Coffee Development Authority Act, 1991 under the Ministry of Tourism, Trade and Industry (MTTI) to be the apex body for promoting, overseeing and regulating the coffee sub-sector, including, control of quality and safety. The Coffee Regulations of 1994 support the Act. Through a Cabinet decision the line Ministry for UCDA was changed to the Ministry responsible for Agriculture (MAAIF). However, this decision has not been legally effected, as the UCDA Act, 1991 is still not amended.

iv) Dairy Development Authority (DDA)

The DDA was established by S.2 of the Dairy Industry Act, Cap. 85. It is mandated to provide for promotion and control of the production, processing and marketing of milk and dairy products and generally to facilitate the development of the dairy industry and for other connected matters. Sector standards, guidelines and statutory regulations have been developed for processed milk while those for unprocessed milk are still under consideration. DDA is cooperating with UNBS and there is a Technical Committee coordinating development of harmonized East African Community milk and milk products standards.

v) Cotton Development Organization (CDO)

The CDO was established under the Cotton Development Act, Cap. 30, as a parastatal body under the Ministry of Tourism Trade and Industry, but the government later transferred it to the Ministry responsible for agriculture. The CDO is independent organization and links directly with international cotton buyers and markets. CDO runs a quality assurance system from the farm to the exporter and sets its own national standards from the seed to the ginned cotton. The Uganda ginned cotton standards are referenced to the United States Department of Agriculture (USDA) standards at the international level in export markets. The standards are set every 2 years and sent out to international cotton bodies. Pesticides used in cotton are cotton specific, but pose a problem in their

regulation and proper use. They are normally bought by the Ginners Association and sold to the farmers

The ACB, UCDA, CDO, DDA and stakeholders in the NARS and district agricultural extension services and the National Agricultural Advisory Services (NAADS) are all important stakeholders in the management of POPs in the country. Apart from the ACB, the other agencies are likely to play enforcement and monitoring roles for chemicals use. However, the bulk of the technical capacity infrastructure rests in the hands of the ACB and staff in the directorates for crop and livestock protection. The Ministry has a low laboratory staff capacity with only one fully qualified staff and no laboratory equipment for assessing POPs chemicals. In addition, the ACB is unable to regular sit to assess the chemicals imported in the country and make decisions; and there are no regular field inspections and surveillance due to a limited budget. Through the NIP process the resource constraints of stakeholders have been highlighted to the committees currently developing the National Development Plan. The NIP has set aside resources for laboratory and technical capacity enhancement for the key stakeholders and a plan to harmonise activities and share resources where capacity is higher. Also, the NIP has highlighted the need to train key staff.

C. The Ministry of Health and its agencies engaged in POPs management

The MoH is responsible for health care management and policy at the national level. The ministry is also a major generator of medical wastes (some of which are hazardous), which are partly disposed of by incineration. The incineration process at Mulago Hospital is one of the sources of combustion that have been monitored for the unintentional release of dioxins and furans. The ministry, through the Malarial Control Programme, is using of DDT for Indoor Residual Spraying (IRS) to control the malaria-vector in Uganda. MOH is the principal lead agency charged with all issues concerning importation, storage, use, distribution and disposal of DDT. In addition, many hospitals under the Ministry have been equipped with incinerators, although these have been found to lead to release of dioxins and furans. The other agencies in the ministry undertaking POPs management related activities are:

i) National Drug Authority (NDA)

The NDA was set up by the National Drug Policy and Authority Act, Cap. 206. It is mandated to ensure that only essential, efficacious, safe and good quality drugs are accessed by the entire population of Uganda as a way to guarantee satisfactory health care. The National Drug Authority is charged with the implementation of the National Drug Policy and Authority Act (2006). The other roles and functions are to:

- regulate pharmacies and drug use in the country;
- approve the National List of Essential Drugs and supervise the revisions of the list in a manner provided by the Minister;
- estimate drug needs to ensure that the needs are met as economically as possible;

- control the importation, exportation, and sale of pharmaceuticals; control the quality of drugs;
- promote and control local production of essential drugs; encourage research and development of herbal medicines;
- promote rational use of drugs through appropriate professional training;
- establish and revise professional guidelines and disseminate information to health professionals and the public;
- provide advice and guidance to the Minister and bodies concerned with drugs on the implementation of the National Drug Policy; and
- perform any other function that is connected with the above.

NDA is a major stakeholder with regard to the Stockholm Convention. It shall be the responsibility of NDA to ensure requirements of the Stockholm Convention are implemented in the Ministry of Health; especially in reference to DDT which has been re-introduced as a public health chemical.

ii) National Medical Stores (NMS)

The National Medical Stores (NMS) was established by S.2 of the National Medical Stores Act, Cap. 207. It is mandated to ensure, for the national and public benefit;

- The efficient and economical procurement of medicines and of certain other medical supplies for good quality primary to public health;
- The secure, safe and efficient storage, administration, distribution and supply of goods, having regard to national needs and to the special nature of the goods in question in accordance with the National Drug Policy and the National Drug Authority;
- The establishment and maintenance of systems to ensure the quality of goods supplied; and
- The estimation of current and future needs as a basis for procurement planning and for budgeting by the corporation itself and the Ministries concerned.

NMS handles human pharmaceutical products including chemicals for public health use and a variety of laboratory chemicals. Its responsibility stretches from the ports of entry, in case of imported drugs, up to the distribution at the district level. It has a computerized tracking system on expiry of drugs that might occur in its stores to ensure that expired drugs or those with short shelf-life are not supplied to consumers. In case of expired drugs occurring in the district, their management is the responsibility of the district authorities.

NMS has put in place safety procedures which include: a team of well-qualified staff at all levels; safety manuals for the workers; and a well-established storage system. In addition, segregated storage is designed for different categories of chemicals and items handled. These include; inflammables, tables and gloves, injectable drug, corrosives, narcotics that are handled inline with the Vienna Convection on Narcotics, cold-rooms for vaccines and explosives. Destruction of expired drugs is done by Green Label, a privately hired Company.

iii) Uganda Virus Research Institute (UVRI)

The UVRI is one of the analytical research institutes in the area of health related aspects. It uses quite a great number of chemicals and reagents for diagnosis and research purposes. Categories of chemicals include reagents, disinfectants, culture media, drugs and radioactive materials, most of which are imported from well-established companies as finished products although a few are reconstituted at the source. Besides reagents and chemicals, UVRI also uses radioscopic material and applies for permission from the MEMD to use it. The Radiation safety Officer issues permits to competent users only. The Department regulates the importation, use, storage and disposal of radioactive materials in Uganda. The Radiation Safety Officer also advises workers on safety procedures, storage and disposal methods. UVRI observes Safety and Health issues as follows:

- Guidelines on Good Laboratory Practice (GLP).
- In-house training of laboratory staff in use of chemicals.
- An established management committee that oversees implementation of GLP.
- Bio-safety Committee headed by a Laboratory Safety Officer.
- Manufacturer's certificate of imported chemicals indicating country of origin and competence.
- An incinerator (operated by UVRI) for disposal of chemical waste, and the incinerator ash is buried in a well-constructed disposal pit.
- Collaboration with other national and international research institutions like the British Medical Council (UK), the Centre for Disease Control (USA) to ensure UVRI operations conformity to internationally acceptable safety standards for research laboratories.
- Designated stores and laboratory for radioactive chemicals operated by UVRI.

The NDA, NMS and UNVRI have considerable human resource capacity for management and the Ministry of Health has set aside resources for the management of health chemicals and waste. However, it is still envisaged that additional capacity will be need with regard to compliance to the Stockholm Convention. The capacity building is likely to extend to surveillance, monitoring, enforcement and laboratory staff in the three principal agencies mentioned above. In addition, an institutional coordination mechanism has been developed to ensure that the activities of the NDA, NMS and UVRI or any other agencies within the Ministry of Health are integrated with the NIP. The Ministry of health has also indicated a willingness to partner with the other stakeholders in the NIP to enhance the country's incineration capacity to standards that are complaint with the Stockholm Convention.

D Agencies in the MoGLSD engaged in POPs management

The MoGLSD is the lead government ministry mandated to promote dialogue and to ensure good labour administration that prevents injuries, diseases, strikes and industrial

unrest. Agencies within the ministry undertaking POPs management related activities include:

i) Directorate of Labour

The Directorate is mandated to ensure the existence of safety and health at all workplaces and work environments. It is further mandated to evaluate and control the physical, chemical, psychological, physiological, social and technical factors that affect a person at work and the working environment.

The above mandate is achieved through the following functions;

- To control the keeping and use of chemical substances which may be explosive or highly flammable or toxic, otherwise dangerous substances or generally preventing the unlawful acquisition, possession and use of such substances at work.
- To minimize occupational accidents, diseases and disabilities.
- To promote good health of the worker at the workplaces.
- To promote good working environment.
- To promote the construction of environmentally friendly workplaces.
- Protection of workplaces for persons at work against contamination arising out of or in connection with the activities of persons at work.
- To ensure that all new work methods, processes, construction, machinery and substances in an undertaking be it indigenous or imported are assessed for safety, health and environmental effects before they are allowed to be used in the country.
- To educate the worker, employer and public about occupational safety and health matters.

ii) Department of Occupational Safety and Health

The origin of this department is traceable back to 1952. It has developed over years and is now a fully-fledged department headed by a Commissioner.

There are inspectors in the department whose powers were derived from the Factories Ordinance of 1952. The role of the inspectors was to ensure safety and health of workers in factories. However, with developments over the years, the Occupational Safety and Health Department has now become the Directorate of Labour of the Ministry of Gender, Labour and Social Development.

It is envisaged that additional support will be needed to train inspectors in the different departments of the MoGLSD to assess the risk in the work place and to coordinate with the other agencies to ensure overall compliance with the Stockholm Convention in the country.

E The MTTI and its agencies engaged in POPs management

The key POPs related key functions of the MTTI include:

- Formulating and reviewing policy legislation, regulations and standards for sustainable development of tourism, trade, industrialization and technology, co-operative movement and other tradable national products.
- Initiating, co-ordinating, supporting, overseeing and where applicable, facilitate implementation of strategies and programmes aimed at enhancing the development and promotion of tourism, trade, the co-operatives, industry and technology, conservation and preservation of other tradable national products and ensure their maximum benefit to the country.
- Inspecting, monitoring and evaluating the progress, standards, state and efficiency of the various sectors, under its mandate for quality assurance, policy direction and guidance.
- Promoting and co-ordinating research activities and initiatives of the sector with a view to ensure that results are utilized and are beneficial to the country and all stakeholders.
- Participating in negotiations and implementations of arrangements relating to international and national treaties of the diversified sector.

Other POPs management related functions and agencies in the ministry are as follows:

i) Uganda National Bureau of Standards

The UNBS is mandated to develop and promote standardization; quality assurance; laboratory testing; and metrology to enhance the competitiveness of local industry and to strengthen Uganda's economy and promote quality, safety and fair trade. As a trade support institution, UNBS support trade through the provision of the following services:

- Providing information on standards and quality requirements of the export markets;
- Conformity assessment of the export products through laboratory testing and inspection. Certificates of analysis and/or certificates of conformity are issued whenever required by the export markets;
- Providing training and technical advisory services to (both existing and potential) export-oriented industries and businesses on standardization and quality assurance to enable them improve on the quality of the exports;
- Assisting in export-oriented industries and businesses in establishing Quality Management Systems (e.g., ISO 9000) in their processes to improve their capability of producing products that conform to the export market standards and quality requirements.

UNBS also ensures quality imports through implementation of the Import Inspection and Clearance Regulations 2002 by carrying out inspection of imports to:

- Safeguard the health and safety of the consumers and the environment against imported substandard, shoddy and hazardous products;
- Safeguard our industries from cheap counterfeit imports that can be a threat to our infant industries;

- Ensure that Uganda's hard-earned foreign exchange is not wasted on shoddy, substandard and sometimes dangerous products, which may not only further impoverish the people but also cause ill health sometimes resulting in death.

ii) Uganda Industrial Research Institute (UIRI)

The mandate of the UIRI is to undertake applied research and to develop and/or acquire appropriate technology in order to create a strong, effective and competitive industrial sector in Uganda. The current programmes and activities include technology development and transfer, industrial services, pilot plants and prototyping and industrial services. Most of the activities of UIRI are geared towards increased production and productivity of industries. As such UIRI will be a good partner with regard to introduction of Best Available Technology (BAT) and Best Environmental Practices (BEP) as industrial practices for management of POPs.

iii) Uganda Export Promotions Board (UEPB)

Uganda Export Promotions Board is established under S.2 of the Uganda Export Promotions Board Act, Cap. 102. The Board facilitates the development, promotion and coordination of all export-related activities that lead to export growth on a sustainable basis. The functions of the Board include, among others; to provide trade and market information services, including; Lists of importers by country and product category; analyses of market trends for products exported by Uganda; Information on import and export procedures and documentation requirements by Uganda's trading partners; to promote the development of export, including; provision of hands-on technical advice in production and post harvest handling of exports; and formulation and recommendation to the Government export plans, policies and strategies designed to provide efficient, adequate and coordinated measures for promotion of Uganda exports.

iv) Uganda Cleaner Production Centre (UCPC)

The UCPC is a joint project of the Government of Uganda and the United Nations Industrial Development Organization (UNIDO), and is one of the already established National Cleaner Production Centres worldwide. The main objective of UCPC is to introduce Cleaner Production (CP) practices to enterprises in Uganda. Cleaner Production helps companies to reduce operating costs through increased overall efficiency, especially in the use of materials and energy. Consequently, CP helps to reduce environmental impacts and enables companies to achieve environmental compliance.

The role of UCPC is crucial and relevant to POPs management and related matters more especially in companies and/or activities which produce UPOPs. The companies can be advised on technical issues like Best Available Techniques (BATs) and/or Best Environmental Techniques (BETs). These techniques help a great deal in reducing POPs and other connected matters like disposal methods.

H Agencies in the Ministry of Internal Affairs engaged in POPs management

The ministry is charged with guaranteeing safety of persons and property, and stability in accordance with constitutional provisions. It is mandated to ensure and maintain internal security, peace and stability. Some of the functions include;

- Coordinate, supervise and oversee law enforcement activities;
- Coordinate the activities of the National Security Committee;
- Ensure good relations between the Government and communities;
- Ensure that all Government activities are in line with the National Constitution and the overall objectives of PEAP.

Under the Ministry are several departments but of interest to POPs management are these highlighted below:

i) Government Analytical Laboratory

The GAL is a Department under the Ministry of Internal Affairs and has been in existence since 1930's. It is mandated to safeguard lives of people and environment as well as enhancing market competitiveness of products through provisions of forensic and general scientific services. Currently, the main functions of GAL can be broadly categorized as follows:

- Provision of Forensic science services as back up in assuring national internal security, trans-boundary activities, law and order to all interested parties;
- Statutory testing for enforcement of public health, environmental standards and regulations;
- Advisory and investigative services, important in assuring national internal security, trans-border activities, business competitiveness, health and environmental protection.

The above mentioned functions are achieved through different divisions but of more relevancy to POPs are;

ii) Pesticide Residue Laboratory (PRL)

This division was set up under the GAL department by the Government of Uganda as a result of fish poisoning saga in 1997. It was a requirement by the European Union for any fish exporting country to establish and build capacity for a pesticide residue laboratory. PRL is mandated to analyse pesticide residues in water, food and environmental samples for both local consumption and export. It further undertakes the examination of residues of agricultural and veterinary drugs in food and food animals that are of health and public concern. For instance, during fish poisoning as indicated above, the laboratory carried out analysis on the fish samples from the market and identified the poison as endosulfan. This chemical is not yet listed in the Stockholm Convention but it

is one of the prohibited goods as indicated in the East African Customs Management Act which law is already being used in Uganda.

iii) Uganda Police Force (UPF)

In line with Article 212 of the Constitution of the Republic of Uganda and Section 4 of the Police Force Act, Cap. 303, UPF is charged with the establishment, advancement and enhancement of peace and stability, order and adherence to the rule of law and good governance to ensure internal co-existence of the people. UPF is mandated to protect life and property; Preserve Law and Order; Prevent and detect crime; and Cooperate with the civilian authority and other security organs established, and with the population generally. Therefore the role of UPF is very pertinent to POPs management as far as enforcement of the POPs related legislation is concerned.

I. Ministry of Education activities related to POPs management

As a major authority in charge of research in Universities, Institutes and Research centres, this ministry is involved in the importation and the use of chemicals which may include Persistent Organic Pollutants. Moreover, having under its responsibility, secondary and technical education, it imports products and materials of chemical nature for study and research purposes. This Ministry will contribute towards POPs related issues through education and sensitization of the targeted public. This is one of the strategies being adopted by the Government to limit the damages to health and to environment inherent to the use of toxic and dangerous chemicals. Other education programs should be geared towards elimination of POPs, especially use of DDT in malaria prevention through the education programmes in the following areas/fields:

- General information about Malaria, Anopheles mosquitoes and Plasmodium species.
- Environmental practices to reduce breeding places.
- Natural treatments for breeding areas.
- Herbal treatments that can suppress first malaria symptoms.
- Herbal teas to boost the immune system and to prevent malaria respectively.

Under the MoES, public universities such as Makerere University, Kyambogo University, Mbarara University and Gulu University offer courses in Environment Management, public health and medicine, pharmacy, chemical analysis and management and several other courses. Therefore the country has universities and other technical institutions with capacity to produce human resource, which cans assist in hazardous waste management.

J. Ministry of Foreign Affairs activities related to POPs management

In consultation with the concerned organs, the Ministry is responsible for negotiating and signing treaties and agreements which Uganda enters into with other states and international organizations as approved by the Government of Uganda. It undertakes all formalities of ratification of treaties and agreements including agreements on, for instance, various classes of chemicals. It also co-ordinates all relations of other

Government organs with foreign states and international organizations; and ensures that good relations with neighbouring countries are strengthened including environmental protection and chemicals management. The involvement of this Ministry in the subject of POPs is due to its competence to sign and ratify the Stockholm Convention to look into matters concerning the POPs.

K. Activities of MFPED related to POPs management

This ministry is involved in the management of chemicals due to its attributions of State finance and national planning. Its role is very crucial especially at this stage as we strive towards the National Implementation Plan (NIP) of the Stockholm Convention obligations. This is due to the fact that adequate planning, budgeting, financial appropriation, monitoring and evaluation will be required for a timely, effective and successful NIP process.

The Uganda Revenue Authority (URA) is a body corporate established under S.2 of the Uganda Revenue Authority Act, Cap 196. Its main function is to administer and give effect to the laws or the specified provisions of the laws set out in the First Schedule to the Act and to assess, collect, and account for all revenue to which those laws apply. The Customs Department is one of the departments under the Uganda Revenue Authority which was found to be relevant to POPs through its mandate.

Section 9 of the External Trade Act gives powers to customs officers to refuse to allow:(i) the import of any import restricted goods or any goods the import of which has been limiteduntil an import license is produced and he or she is satisfied that the import of goods in question in no way contravenes any of the conditions of the license; (ii) the export of any export restricted goods or any goods the export of which has been limited until an export license is produced to him or her and he or she is satisfied that the export of the goods in no way contravenes any of the conditions of the license; and (iii) the import or export of any goods whose import or export has been prohibited or if under such provisions the import or export of goods has been made subject to any conditions until he or she is satisfied that the conditions have been fulfilled

L. Ministry of Justice and Constitutional Affairs activities related to POPs management

The mandate of the Ministry of Justice and Constitutional Affairs is to advise Government on legal issues, and develop the necessary legal instruments, laws and regulations for the country. Concerning the subject of POPs, the Ministry's involvement will be in translating all policies on POPs into legislation. However, if need arises, whereby Uganda needs to domesticate the Stockholm Convention or Convention related to POPs, the Ministry will work with Ministry of Foreign Affairs so that proper legislation which is harmonized is in place

M. Ministry of Energy and Mineral Development activities related to POPs management

This Ministry, through its departments of Energy and Mineral Development, Geological Survey and Mines, Petroleum Exploration and Petroleum Supplies, is responsible for setting and regulating the energy sector as well as the mining sectors. In particular, the geological survey and mines department is responsible for the enforcement of the provisions of the Mining Act. Of particular concern to POPs subject is the energy sector comprising of two major companies; UMEME Company Limited which is charged with the sale of electricity power; and Uganda Electricity Distribution Company Limited (UEDCL) responsible for generation of electricity all over the country and also overseeing the Government's interest in UMEME.

Electricity distribution involves, among other things, the installation and management of transformers, most of which use oil containing PCBs. PCBs are some of the POPs listed in Annex C of the Stockholm Convention. Therefore, this calls for an urgent action plan to ban, dispose off and completely phase-out PCB-contaminated transformers. However, according to interviewees from the energy sector, all transformers currently imported in the country contain PCB-free oil. This is an achievement and a good gesture towards the phase out strategy, a major component in POPs (PCB) management. The Department of Petroleum Exploration has a laboratory which offers testing services for different parameters like; hydrocarbons, gases, oil content and other parameters. The Department of Petroleum Supplies has a laboratory at UNBS.

N. Ministry of Works and Transport activities related to POPs management

The mandate of this Ministry is to promote an adequate, safe and well-maintained transport infrastructure, an efficient and effective communications system, safe housing and buildings, and to contribute to the socio-economic development of the country. Part of this mandate is supposed to extend to providing for regulations/provisions for the safe transportation of chemicals, which obviously caters for POPs.

The Ministry is comprised of two major Directorates as highlighted below;

(a) Directorate of Engineering: This is mandated to ensure the quality and safety of roads and public buildings;
(b) Directorate of Transport: This is responsible for quality and safety in the transport sector.

This role and involvement of the Ministry is very important because transportation, distribution and storage of POPs should be done in such a manner that will protect the public health and environment.

O. Involvement of private sector

As concerns related to POPs grow in the country, NGOs and other public interest groups like workers unions have played a central role in increasing public awareness on the potential health threats of POPs to human health. The number of NGOs involved with training on safe use of

pesticides, waste management and disposal are however very few. Some of the few active NGOs involved in work related to POPs management include:

i) Chemiphar (U) Ltd

Chemiphar (U) Ltd is an internationally accredited analytical laboratory which is active on different levels of quality control in food and water and their establishments as well as in environmental monitoring and analysis. With regard to POPs management, Chemiphar is an accredited laboratory and equipped with the recommended type of equipment that can be used for monitoring of pesticide related POPs are concerned. However, there is still a lack of information on the scope of their accreditation regarding the POPs subject as a whole.

ii) National Organic Agricultural Movement of Uganda (NOGAMU)

The NOGAMU started in 2001 as a result of demand by all stakeholders to have a national umbrella body in organic agriculture. NOGAMU is well organized and comprises of producers, processors, exporters, trainers and other stakeholders, who are members. NOGAMU markets and promotes local and export organic products; trains and coordinates research and extension; undertakes development of standards and promotion of application of organic standards; and carries out lobbying and advocacy on organic agriculture. NOGAMU is a member of the International Forum for Organic Agriculture Movement (IFOAM). It has already developed the Uganda Organic standard with the guidance and participation of UNBS and is coordinating with the East African Community through the East African Bureau of Standards to formulate the East African organic standards.

iii) Environmental Associations and Non-Governmental Organisations

1. National Association of Professional Environmentalists (NAPE)
2. Uganda Environnemental Education Forum (UEEF)
3. Uganda National Farmers Federation (UNFFE)
4. Uganda Consumers' Protection Association (UCPA)
5. National Union of Plantation and Agricultural Workers in Uganda (NUPAW)
6. Climate and Development Initiative (CDI)
7. Uganda Environnent Protection Forum (UEPF)
8. Pro-Biodiversity Conservationists in Uganda (PROBICON)

General comments on NGOs

- The role and commitment of NGOs is significant in all the stages of the POPs life-cycle right from the importation and production (UPOPs) to waste disposal. NGOs should and will be fully recognized and brought on board as serious partners in all efforts to fight against POPs.
- NGO's capacity to handle POPs is low because of the nature of the short-term projects which they usually undertake.

- NGOs in Uganda lack the financial and technical resources required to adequately manage POPs and related issues. Therefore, there is need for a concerted effort to develop their capacity and other interested players to undertake public awareness on the hazards associated with POPs and toxic chemicals in general.

2.2.2 Policy framework relevant to POPs

There are several sectoral policies used to address chemical and environment management in Uganda. However, the country's policy framework does not specifically address concerns on POPs management in the country; even though current the following policies are relevant to POPs management.

1 The PEAP and the NDP

The PEAP is an overarching national policy upon which other policies are based. Since 1997, the PEAP has been the main framework guiding the development planning in Uganda. It has undergone two revisions and the current PEAP (2004/05 – 2007/08) has mainstreamed environment and natural resources in all its five pillars (MFPED, 2005)[10]. Since POPs falls directly within the Environment and Natural Resource (ENR) sector, POPs management has been addressed in the discussions feeding into the NDP.

2 Plan for Modernization of Agriculture (PMA)

The Plan for the Modernisation of Agriculture (PMA) has seven pillars. These include research and technology, national agricultural advisory services, agro-processing and marketing, sustainable natural resource utilization, and management and physical infrastructure.

The broad strategies for achieving the PMA objectives are, among others; supporting the dissemination and adoption of productivity-enhancing technologies; and ensuring the co-ordination of the multi-sectoral interventions to remove any constraints to agricultural modernization. As much as the PMA strategies are relevant in safeguarding the environment against harmful and undesirable agricultural development and technology, they do not specifically address POPs management issues.

3 The National Environment Management Policy, 1994

This Policy established the framework for the management of pollution and hazardous wastes in general. Objective 3.9 in particular addresses control of pollution and management of domestic and industrial waste and hazardous materials. This broadly includes POPs management.

[10] MFPED (2005) Uganda Poverty Status Report 2005, Ministry of Finance Planning and Economic Development http://www.finance.go.ug

The strategies to achieve the above objective include the establishment of environmental standards for permissible levels of pollution, encouraging better understanding of the effects of hazardous materials through provision of information in a form understandable to users; and strengthening of institutional and technical capacities for waste management and enhancement of institutional co-ordination.

4 The National Trade Policy, 2006

The National Trade Policy (2006) is aimed at poverty reduction, promoting employment, economic growth and promotion and diversification of exports, particularly non-traditional exports. The guiding principles of the Policy that have a linkage with the POPs management is highlighted in the need to mitigate any adverse effects of practices by the country's trading partners. The concerns are dealt with by invoking and implementing trade defense measures as and when appropriate, and taking into account multilateral disciplines in the area. The policy also notes that the country ought to be mindful of the negative social and economic effects that might come with growth in trade, and ensure that mitigating measures and policies are put in place.

5 National Health Policy, 1999

The National Health Policy is implemented through a five-year Health Sector Strategic Plan (HSSP). The Policy focuses on health services that are cost effective and have the largest impact on reducing mortality and morbidity and malaria control is one of its priorities. The policy revolves around prediction and early detection and control of epidemics, early diagnosis and prompt treatment of malarial cases, and preventive measures, including disease vector control. This policy is therefore pertinent to POPs, especially to the use of DDT in malaria vector control.

6 Policy and strategy for Indoor Residual Spraying, 2006

The goal of the Policy and strategy for Indoor Residual Spraying (IRS) is to contribute to the reduction in malaria related mortality, morbidity, poverty and disability through effective vector control interventions. The objectives of the policy include; prevention and control of malaria epidemics in specific malaria prone districts; control of transmission in high risk situations; control of malaria in high population density areas; development of capacity to implement effective IRS in the country; and strengthening operational research on vector control.

The Policy has been the guiding framework for the use of DDT for malaria vector control. The policy also requires the establishment of a Multi-sectoral Monitoring and Evaluation Task Force to ensure the safe and correct application of residual insecticides and safe disposal of residues and expired insecticides in order to limit human and environment exposure to residual insecticides. The Policy also requires adequate regulatory control and enforcement measures to prevent unauthorised use of DDT in agriculture and thus avoiding contamination of agricultural products.

7 National Policy on Injection Safety and Health Care Waste Management, 2004

The National Policy on Injection Safety and Health Care Waste Management establishes the framework for the proper management of health care wastes by use of disposal facilities like incinerators. This policy aims at ensuring safe injection practices and proper management of health care waste. The Policy does not provide for adequate health care waste management system and the recommended alternative measures of waste disposal such as burning may lead to the releases of POPs.

8 The 2003 National Agricultural Research (NAR) Policy

The 2003 National Agricultural Research (NAR) Policy, guided by the principles of the Plan for Modernisation of Agriculture, has a vision based on a market-responsive, client-oriented and demand-driven national agricultural research system comprising public and private institutions working in tandem for the sustainable economic growth of Uganda. The NAR Policy calls for decentralization of research on the basis of agro-ecological zones and seeks to implement different mechanisms of funding research on a sustainable basis. The aspects of research and marketing of agricultural products mentioned in this Policy are of relevance to POPs management in the country.

9 National Oil and Gas Policy

The goal of this Policy is to use the country's oil and gas resources to contribute to the early achievement of poverty eradication and create lasting value to society. Objective 9 of the Policy is to ensure that oil and gas activities are undertaken in a manner that conserves the environment and protects biodiversity. One of the strategies of the Policy is to ensure presence of the necessary capacity and facilities to monitor the impact of oil and gas activities on the environment and biodiversity. There is need to ensure that the appropriate technology is used in the flaring of crude oil and gas from the oil wells to minimise generation of dioxins and furans.

10 Environment Health Policy

The Environmental Health Policy concentrates on the importance of environmental sanitation which includes: safe management of human excreta and associated personal hygiene; the safe collection, storage, and use of drinking water; solid waste management; drainage; and protection against disease vectors (MoH 2005). Environmental health practices include: safe disposal of excreta, hand washing, adequate water quantity for personal hygiene and protecting water quality, all influence the morbidity and mortality of diarrheal diseases. Environmental health practices may contribute to best environmental practices for managing POPs.

2.2.3 Legal framework relevant to POP's

The legislative framework in Uganda does not specifically address concerns on POPs management in the country. However, several sectoral laws are used to address some aspects of chemical management. The laws and regulations relevant to POPs management include the following:

1 The Constitution of the Republic of Uganda, 1995

In its National Objectives and Directive Principles of State Policy, the Constitution provides in paragraph 13 on protection of natural resources that the State shall protect important natural resources including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. In paragraph 22 it provides that the state shall promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced and sustainable manner for the present and future generation. The state is also required to take all possible measures to prevent or minimize damage and destruction to land, air and water resources due to pollution, degradation and other causes.

The National Constitution under article 39 further states that everyone has a right to a clean and healthy environment. Under Article 17(1) (j) every citizen, has a duty to create and protect a clean and healthy environment. Article 245 stipulates that parliament shall by law provide measures intended to protect and preserve the environment from abuse, pollution and degradation and to manage the environment for sustainable development. These constitutional provisions provide the basis for legal and policy action on POPs management in Uganda.

2 The National Environment Act, Cap 153

This is the framework legislation on environment. The Act provides for the control of pollution through mechanisms to establish Environmental Standards and criteria for environmentally acceptable behaviour and phenomena. It prohibits the discharge of hazardous substances into any part of the environment except in accordance with the guidelines of the National Environment Management Authority and prohibits pollution contrary to established standards (sections 24-27, 30, 32 53, 55, 56, 57, and generally Part VI of the Act). The Act prohibits the illegal traffic in hazardous wastes (section 54); and obliges the generator of waste to manage such wastes (section 52) in a manner that does not endanger human health and the environment. The National Environment (Waste Management) Regulations, S.I. 153-2 expound on management of hazardous wastes; while the National Environment Standards (Discharge of Effluent into Water or on Land) Regulations, S.I. 153-3, provide standards for effluent and waste discharge.

The Act also provides for Environmental Impact Assessment and Audits for projects likely to have a negative impact on the environment (sections 19, 20-23). Projects likely to introduce POPs into the environment can thus be regulated under the Act, and in accordance with the Environmental Impact Assessment Regulations, 1999 and the National Environment (Audit) Regulations, 2006. Further, the Act provides for environment restoration orders, improvement notices, and environmental inspectors

(section 67-71, 80). The National Environment Management Authority is in advanced stages of developing Regulations on Air Quality Standards. These Standards will contribute to the management of dioxins and furans.

3 The Public Health Act Cap. 281

The Act provides for preservation of human health. Part XI of the Act provides for the prevention and destruction of mosquitoes. This would be relevant to the use of DDT and as a malarial vector control agent. The Act also gives local authorities power to prevent any pollution dangerous to the water supply, to which the public has access. The Act is relevant in cases where water bodies have been exposed to POPs

4 Access to Information Act No. 6 of 2005

This Act provides for the right of access to information pursuant to Article 41 of the Constitution of Uganda. It also prescribes the classes of information referred to in that article, the procedure for obtaining access to that information and for related matters. The information and records to which a person is entitled to have access under this Act shall be accurate and up-to-date so far as it is practicable (section 5(2). For the purposes of this Convention, information on health and safety of humans and the environment shall not be regarded as confidential except in cases where the release of the information is likely to prejudice the security or sovereignty of the State or interfere with the right to the privacy of any other person.

5 Prohibition of the Burning of Grass Act Cap 33

This Act provides for the prohibition of the burning of grass in Uganda; notwithstanding the Local Governments Act or any other written law to the contrary. Controlled burning of grass for a specific purpose may be authorised and must be supervised, as specified in the Act. Burning of vegetation generates emissions of unintentionally produced POPs (UPOPs) like dioxins and furans in the atmosphere. Enforcement of the Act will contribute to management of POPs.

6 National Drug Policy and Authority Act, Cap. 206

The National Drug Policy and Authority Act, Cap. 206 was established to ensure the availability, at all times, of essential, efficacious and cost-effective drugs to the entire population of Uganda, as a means of providing satisfactory health care and safeguarding the appropriate use of drugs. The Act lists POPs pesticides such as aldrin, chlordane, dieldrin, endrin in its third schedule and allows for their use and sell in contradiction to the Stockholm Convention. DDT has been re-introduced as a public health chemical although it is not listed in the Schedules to the National Drug Policy and Authority Act. Appropriate amendments are necessary (section 8).

7 The Agricultural Chemicals (Control) Act, No. 1 of 2006

This Act is enacted to control and regulate the manufacture, storage, distribution and trade in, use, importation and exportation of agricultural chemical and other related matter save in accordance with regulations made under the Act, and the National Environmental Act, Cap 153 (section 3). The Agricultural Chemicals (Registration and Control) Regulations, 1993, though made under the repealed law, is saved by the Agricultural Chemicals (Control) Act and therefore apply, until modified under the Act. Under this Act, the requirement of packaging, labelling or advertisement of agricultural chemicals is relevant in POPs management to prevent illegal activities related to mislabelling and mis-packaging. In addition, section 13(2) provides for the period in which the seized agricultural chemicals can be detained and the power to dispose them off. The person in whose possession the chemicals were got has to consent in writing for these chemicals to be destroyed by the Government. It is therefore important to put in place an effective and efficient mechanism for disposal of the seized chemicals.

8 Occupational Safety and Health Act No. 9, 2006

The Act operationalises Articles 34(4) and 40(1) (a) of the Constitution and provides for the safety and health of persons in workplaces such as in factories, plantations and other places where hazardous work may be found. This goes beyond the scope of the Factories Act (Cap. 220) repealed by this Act, which had only taken into account factory workers.

The Act obliges the employer to ensure, as far as is reasonably practicable, that the working environment is kept free from any hazard due to pollution (section 13). It further states that where there is major handling of chemicals or any dangerous substances which are liable to be airborne or released into rivers, lakes or soil and are a danger to the animal and plant life, it shall be the duty of the employer to arrange for equipment and apparatus used to monitor the air, soil, and water pollution and arrange for actual monitoring of these mediums, with a view to rendering them safe from the dangerous undertaking" (section18). The employer is also obliged to take all preventive measures including administrative and technical measures to prevent or reduce contamination of the working environment (section 95). Such preventive measures include the keeping of chemical data sheets containing essential information regarding the identity of the chemical, its hazards, safety precautions, emergency procedures and its supplier (sections 96 and 97). The above mentioned provisions of the Act are clearly relevant to POPs management as far as the life cycle of POPs is concerned.

9 Food and Drugs Act Cap 278

This Act prohibits the preparation and sale of injurious food and adulterated drugs (section 6) and false labelling or advertisement of food or drug (section 5), among others. The Act empowers inspectors to take samples for analysis or for bacteriological or other examination (section 19(1). These provisions are relevant in relation to tracing of POP residues in food or other environmental sample.

10 Water Act, Cap 152

The Water Act vests all rights to investigate, control, protect and manage water in the Government of Uganda (section 5). The Act penalises pollution of water or the causing of risk of pollution of water works, unless the activity is licensed by the Act (section 31). The implementation of this Act therefore needs to be cognisant of possible pollution of water sources by POPs.

11 External Trade Act, Cap 88

This Act restricts certain imports (section 3) and empowers the Minister to prohibit the importation or exportation of any goods (section 8). This Act provides Uganda the opportunity to restrict or prohibit the importation of POPs, especially as the provisions of the Customs Management Act can only be amended through the East African Community.

12 Investment Code Act, Cap 92

Chemical industries and pharmaceutical industry are listed among the priority areas of investment under the Act. In section 18(2)(d), the Act makes it an implied term and condition of every holder of an investment license to take necessary steps to ensure that the operation of its business enterprise does not cause injury to the ecology or the environment. Thus, the Act could provide a useful tool for ensuring that emissions from chemical, pharmaceutical and other industries, especially in form of furans and dioxins are minimized or/and eliminated.

13 Uganda National Bureau of Standards Act, Cap 327

The relevant provision of this Act prohibits any person to import, distribute, sell, manufacture or have in possession for sale or distribution any commodity for which a compulsory standard specification has been declared unless such commodity conforms to the compulsory standard or unless the commodity bears a distinctive mark (section 21(1). This Act could be read together with the National Environment Act on chemical standards or the Food and Drugs Act (Cap. 278), in developing standards for POPs in the country.

14 Petroleum (Exploration and Production) Act Update

The Act prohibits the exploration or development operations on petroleum without a licence. It is necessary for one to apply for a petroleum production licence which application should be accompanied by a report on the petroleum reservoir, among other things, which contains particulars of chemical composition, physical properties, petrophysical properties, geological data, particulars of production, equipment and storage facilities, transportation safety measures, necessary measures to be taken for the protection of the environment among other factors. Obligations and duties are imposed on the licensee to ensure control of flow or prevent escape of any mixture of water or drilling fluid and petroleum, prevent pollution and where it occurs to disperse it in an environmentally acceptable manner. Since petroleum exploration in Uganda, has not been

actively pursued it is not easy to determine how practicable this Act is in terms of management of petrol-chemicals.

Although the Minister is empowered to make regulations, none have been made under this Act. In brief, the implementation of this Act is very limited in that, compliance with its provisions is left to occupiers and there are no substantial guidelines and standards which can be followed.

15 Electricity Act, Cap 145

The Electricity Act provides the legal basis for the regulation of electricity in the country under the Electricity Regulatory Authority (ERA). The object of the Act is to regulate the generation, transmission, distribution, sale, export, and import of electrical energy in Uganda (section 2). It also provides for the submission of assessments, including environmental impact assessments, by an applicant for a license under the Act (section 37(1). Since old transformers used PCB –contaminated oil, it is therefore necessary to ensure proper disposal of these transformers and to avoid cross-contamination during transportation and repair of existing transformers.

16 Ratification of Treaties Act Cap. 204

This Act provides for ratification of treaties in accordance with Article 123 of the Constitution of Uganda. Under this Act all treaties shall be ratified by Cabinet. Treaties that relate to armistice, neutrality or peace or those that require amendment of the Constitution must be ratified by Parliament by resolution.

17 Local Governments Act, Cap 243

The Act provides for a system of local government based on the district as an administrative unit. It further provides for the functions of government that the district council is responsible for. This includes protection of streams, lakeshore, wetlands and forests; and environment and sanitation. Under this Act, therefore, district and lower councils may make ordinances and byelaws for the management of the environment under their jurisdiction. These councils may, for instance, legislate on POPs related matters/issues.

2.2.4 International Conventions related to the Stockholm Convention

1. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade: This convention came into force on 24th February 2004 and Uganda acceded to the convention early 2007. The Rotterdam Convention aims to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use. Governments began to

address the problem of toxic pesticides and other hazardous chemicals in the 1980s by establishing a voluntary Prior Informed Consent procedure. PIC required exporters trading in a list of hazardous substances to obtain the prior informed consent of importers before proceeding with the trade (UNEP, 2006). In 1998, governments decided to strengthen the procedure by adopting the Rotterdam Convention, which makes PIC legally binding. The convention establishes a first line of defence by giving importing countries the tools and information they need to identify potential hazards and exclude chemicals they cannot manage safely. When a country agrees to import chemicals, the convention promotes their safe use through labelling standards, technical assistance, and other forms of support. It also ensures that exporters comply with the requirements.

2. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was concluded in Basel, Switzerland, on March 22, 1989, and entered into force in May 1992. Now ratified by 149 countries including 32 of the 53 African countries, the focus of this convention is to control the movement of hazardous wastes, ensure their environmentally sound management and disposal, and prevent illegal waste trafficking (UNEP, 2006). The parties to this convention recognize the serious problems posed by stockpiles of unused and unwanted chemical products which, as a result of their obsolescence, are now considered wastes. At a ministerial-level meeting held in Rabat, Morocco, in January 2001, African countries declared their intent to work with other interested parties from all sectors of civil society to rid all 53 countries of Africa of these stockpiled wastes over the next 10 years.

3. The Rabat Programme of Action at the African Conference on Hazardous waste held in Rabat in 2001, agreed at the close of the ministerial meeting, aims to enhance the capacity of the region to: prevent the future accumulation of unwanted stocks of pesticides (including DDT), PCBs, and used oils; dispose of existing stocks of unwanted pesticides, PCBs, and used oils in a manner that is environmentally sound and socially and economically acceptable; develop a partnership with all stakeholders to address the environmentally sound management of unwanted stocks of pesticides, PCBs, and used oils; and strengthen existing logistical and financial approaches and pursue alternative and innovative approaches at the national, sub-regional, regional, and global levels to prevent and dispose of unwanted stocks of pesticides, PCBs, and used oils UNEP, 2006).

4. The Bamako Convention on the Ban of Export to Africa of hazardous Waste and their Disposal is a regional Convention peculiar to the African continent. It provides for a ban of the import into Africa of hazardous wastes and it controls transboundary movement and management of hazardous wastes within Africa. It was adopted on January 30, 1991 in Bamako, Mali. The Convention's objectives are to protect human health and the environment from dangers posed by hazardous wastes by reducing their generation to a minimum; and to adopt

precautionary measures and ensure proper disposal of hazardous wastes; and prevent the dumping of hazardous wastes in Africa.

a. Under this Convention, all parties are obliged to take appropriate legal, administrative and other measures within their jurisdiction to prohibit the import of all hazardous wastes, forward as soon as possible all information relating to such illegal hazardous waste activity who shall distribute the information to all contracting parties. In Uganda, the Bamako Convention was implemented with the enactment of National Environment (Waste Management) Regulations 1999.

5. The Safety and Health in Agriculture Convention (Convention C184) adopted by the conference of the International Labour Organisation (ILO) addresses the protection of workers in the agricultural sector (UNEP, 2006). More people work in agriculture that in any other sector, more workers are injured in agriculture than in any other sector, and pesticides are a major cause of injury and death. In addition more children work in agriculture than in any other sector and they are differently and particularly vulnerable to the toxic effects of chemicals such as pesticides. A specific section of the convention deals with the sound management of chemicals and advises governments to adopt good management practices for chemicals, to inform users adequately about the chemicals they use and to ensure that adequate mechanisms are in place to safely dispose of empty containers and waste chemicals. Application of the Convention is an important step in improving pesticide management and preventing some of the problems that arise from pesticide distribution and use in developing countries in particular.

6. The International Maritime Dangerous Goods (IMDG) Code was developed as a uniform international code for the transport of dangerous goods by sea (UNEP, 2006). It covers such matters as packing, container traffic and stowage, with particular reference to the segregation of incompatible substances. The Code lays down basic principles; detailed recommendations for individual substances, materials and articles; and a number of recommendations for good operational practice, including advice on terminology, packing, labeling, storage, segregation and handling, and emergency response action. The Code has become the standard guide to all aspects of handling dangerous goods and marine pollutants in sea transport. The Code will ensure compliance to international law in the event that Uganda decides on sea transport for its POPs destined for disposal.

7. The International Code of Conduct for the use and distribution of Pesticides is the worldwide guidance document on pesticide management for all public and private entities engaged in, or associated with, the distribution and use of pesticides. It is designed to provide standards of conduct and to serve as a point of reference in relation to sound pesticide management practices, in particular for government authorities and the pesticide industry. By following the provisions of the Code, developing countries can make significant steps at preventing the accumulation of obsolete pesticide stocks.

8. Uganda UNEP/UNDP Partnership initiative for the implementation of SAICM is intended to assist the Government, through the National Environmental Management Authority (NEMA), to take up the strategic priorities of SAICM Quick Start Program (QSP), namely: develop and strength national chemicals management institutions, plans, programs and activities to implement the Strategic Approach, building upon work conducted to implement international chemicals-related initiatives; and undertake analysis, interagency coordination, and public participation activities directed at enabling the implementation of Strategic Approach by integrating the sound management of chemicals in national development priorities and strategies. The main objectives of SAICM required to strengthen measures for sound management of chemicals (SMC) are:

   1) Risk reduction: To implement comprehensive, efficient and effective risk management strategies, including risk reduction, risk elimination and pollution prevention strategies, to prevent unsafe and unnecessary exposures to chemicals.
   2) Knowledge and information: ensure that knowledge and information on chemicals and chemicals management, and chemical safety is adequate, appropriate, accessible and user-friendly to enable chemicals to be dealt with safely throughout their life cycle by all actors.

   The Governance component aims to:
   - Achieve the sound management of chemicals throughout their life cycle by means of national and international regimes that are comprehensive, effective, efficient, transparent, inclusive and ensures accountability.
   - Promote the integration of chemicals within the sectors that are of special importance to chemicals management, such as agriculture, trade, industry, consumers, academics, transport, development cooperation, environment, health and occupational health.
   - Maximize respect for and compliance with, international and national laws and regulations regarding chemicals as well as relevant instruments such as codes of conduct, including those relating to corporate environmental and social responsibility.
   - Ensure meaningful public participation, including by women, in regulatory and decision-making processes that relate to chemical safety.

   The Capacity-building and technical cooperation component aims to:
   - Develop sustainable capacity-building strategies for chemicals management in developing countries and countries with economies in transition and promote cooperation between these countries.
   - Establish or strengthen partnerships and mechanisms for technical cooperation between developed countries and developing countries and countries with economies in transition.

- Ensure access to information on capacity-building for the sound management of chemicals and enhance transparency regarding donor interests and recipient needs.

SAICM also aims to curb Illegal international traffic, to prevent and control illegal international traffic in toxic and dangerous chemicals and to strengthen control mechanisms in existing multilateral agreements which contain provisions relating to the prevention of illegal international traffic.

2.2.5 Regional Laws/Treaties

The East African Community Customs Management Act No.1 of 2005 is a regional legislation for the EAC, of which Uganda is a state party. Specifically, Sections 18, 19 and 20 of this Act that provide for prohibited and restricted imports is relevant in POPs management. In Section 18(1), the goods specified in Part A of the Second Schedule are prohibited goods and the importation thereof is prohibited. The prohibited goods include: hazardous wastes, other wastes and their disposal as provided for under the Basel Convention; agricultural chemicals like dieldrin, lindane, heptachlor, aldrin, and hexachlorobenzene; industrial chemicals like Polychlorinated Biphenyls (PCB) and HCH. Under this Act, the Council has powers in section 19 to amend the Second Schedule by an Order published in the Gazette to provide that (a) the importation of any good or class of good is prohibited; and (b) is prohibited save in accordance with any condition regulating their importation, either generally or in relation to a partner state.

2.3 Status of the POPs Issue in the Country

2.3.1 Polychlorinated Biphenyls in the Stockholm Convention

Polychlorinated Biphenyls are aromatic compounds formed in such a manner that the hydrogen atoms on the biphenyl molecule are replaced by chlorine atoms. PCBs include 12 congeners for which the WHO has assigned toxicity equivalency factors because they exhibit dioxin-like toxicity (Greenfacts, 2004). PCBs have excellent dielectric properties, longevity, non-flammability and resistance to thermal and chemical degradation. For this reason, prior to national bans, they were manufactured for use in electrical equipment, heat exchangers, hydraulic systems and several other specialized applications. The Stockholm Convention differentiates between two categories of PCBs: (a) Intentionally produced PCBs whose production and use is to be eliminated and, as wastes, are to be managed and disposed of in an environmentally sound manner in accordance with the provisions of articles 3 and 6 and Annex A; and (b) Unintentionally produced PCBs, for which Parties are required to take specified measures to reduce total releases derived from anthropogenic sources.

According to Annex A Part II of the Stockholm Convention Each Party shall:

- With regard to the elimination of the use of polychlorinated biphenyls in equipment by 2025: (i) Make determined efforts to identify, label and remove from use equipment containing greater than 10 percent polychlorinated biphenyls and volumes greater than 5 litres; (ii) Make determined efforts to identify, label and remove from use equipment containing greater than 0.05 percent polychlorinated biphenyls and volumes greater than 5 litres; and (iii) Endeavour to identify and remove from use equipment containing greater than 0.005 percent polychlorinated biphenyls and volumes greater than 0.05 litres;

Additional measures include:

- Promote the following measures to reduce exposures and risk to control the use of polychlorinated biphenyls: (i) Use only in intact and non-leaking equipment and only in areas where the risk from environmental release can be minimised and quickly remedied; (ii) Not use in equipment in areas associated with the production or processing of food or feed; (iii) When used in populated areas, including schools and hospitals, all reasonable measures to protect from electrical failure which could result in a fire, and regular inspection of equipment for leaks;

- Except for maintenance and servicing operations, not allow recovery for the purpose of reuse in other equipment of liquids with polychlorinated biphenyls content above 0.005 per cent;

- Make determined efforts designed to lead to environmentally sound waste management of liquids containing polychlorinated biphenyls and equipment contaminated with polychlorinated biphenyls having a polychlorinated biphenyls content above 0.005 percent as soon as possible but no later than 2028, subject to review by the Conference of the Parties;

- Endeavour to identify other articles containing more than 0.005 percent polychlorinated biphenyls;

- Provide a report every five years on progress in eliminating polychlorinated biphenyls and submit it to the Conference of the Parties

2.3.1.1 Status of PCBs in Uganda

The preliminary inventory for PCBs consisted of taking samples of transformer oil from four regions of the country; Eastern, Northern, Western and Central. Uganda has an estimated 7115 transformers; however, only 159[11] were sampled, as follows: 52 from the Western Region, 4 from the northern region, 24 from the western region and 80 samples from Central. The samples were analysed for PCBs at the NEMA laboratory using the L2000 DX analyser. 12.5 percent of the samples were found to have PCB levels beyond the recommended threshold i.e. 50 ppm. Fifty two percent of the PCB contaminated

[11] Logistical problems of break-down of PCB testing equipment and the time restrictions limited the sample size of transformers used.

transformers were located within or near factory sites, two PCB contaminated transformers were located close a river and two others were located in a residential area and an urban area (*Table 2*).

Table 2: Location of transformer oil contaminated with PCBs

Locations/site	No. contaminated transformers	% by location
Residential/office centre	2	20
Water system (river/ lake)	2	21
Factory	16	52
Hospital	0	5
Unspecified	0	1

Source: NEMA (2007)

Since the early 1990s, the country has not imported PCB transformers. This policy is coordination of the electricity utility companies and private energy uses and enforced by the Uganda Revenue Authority Customs Officers. The inventory identified likely sources of the PCB identified as: cross-contamination with PCB contaminated oil, during service and repair of transformers; PCB containing transformers manufactured before 1985, which are still in use; accidental spillage and leaks from old PCB contaminated equipment; stolen transformer oil within the distribution network, which is then reportedly used for welding, hair products and treatment of wounds; and transformer oil used as a lubricant, cutting oil, insecticide, plastics, rubber, paints and vanishes.

2.3.1.2 Identified risks from PCBs

Twelve percent of the transformers sampled in the inventory were PCB contaminated; and about 16 percent were corroded and thus carried the risk of leaking in future if the corrosion increased (*Table 3*). Indeed, 10 out of the 159 transformer (6.3 percent) had definite leaks; and, six out of the 10 transformers that had leaks were found within factory premises, two were located in trading centre areas, one close to a water source.

Table 3: Level of risk presence of PCBs, corrosion and leaks

Locations/site	Corroded transformers	Transformers with leaks
Residential/business centre	5	2
Water system (river/ lake)	0	1
Factory	20	6
Hospital	0	
Un specified	0	1
Total	25	10

***as percentage of six with PCB >50 ppm transformers tested**
Source: PCB Inventory NEMA (2007)

The immediate risk of PCBs is from transformers whose oil is contaminated with PCBs. Since no operational PCB transformers were identified in the inventories, the PCB-contamination identified is envisaged to be largely as a result of cross-contamination during transformer repair and servicing. Technicians within the factories and specialised

transformer repairers and fabricators often check on the quality of oil of the transformers. In the process of checking the transformer oil and changing of the oil, the technicians expose themselves to the PCBs in the oil. In addition, in all the sites visited during the PCB inventory there was inadequate use of protective personal equipment.

Beyond the contaminated transformers located in factories, contaminated, leaking and corroded transformers located in public places and near water systems also pose danger. The PCBs may leak into water systems, agricultural fields or on surfaces where they could enter into the food cycle e.g. water to fish to human consumption or from water/ on-land spillage to pasture, livestock and then to humans. However, by all indications the risk is still quite low. Only a few transformers are contaminated. The contaminated transformers are located in low risk areas for distribution through media to humans and the environment. But this also means that the cost of eliminating PCBs will be at its lowest the earlier action is taken to eliminate PCBs.

2.3.1.3 Potential future risk from PCBs

The risk of PCBs to the country will be based on whether or not PCBs are managed and eventually eliminated by 2025. Below, two scenarios are project one where PCBs are neither managed nor eliminated by 2025 – *The Status Quo* scenario; and the other where PCBs are managed as proposed in the NIP i.e. eliminated by 2025 – *The NIP* scenario.

The factors that influence the presence and therefore the potential future risk of PCB include: (i) the electrification rate; (ii) population growth rate; (iii) number of PCB-contaminated transformers in existence; and (iv) the rate of increase in transformers in the country. Currently, the electrification rate is estimated at 8 percent and it is envisaged to stay at this level between 2008 and 2025 (MEMD, 2006). From a population of 28 million in 2007 increasing to 53 million in 2025 (UBOS, 2006; UN, 2004), from 5 percent in 2008 about 10 percent of Uganda's population will have access to electricity by 2025, equivalent to an increase from 1.4 to 5.2 million people, respectively (*Table 4*).

Table 4: Projected electrification rate and transformer distribution, 2008 to 2025

Description of indicators	2008	2025
Electrification rate (%)	8*	8
Uganda's population (million)	28 *	53
Number of transformers	7,115**	26,326
Number of Distribution transformers	7,000**	25,900
People with access to electricity (million)	1.4	5.2
Percentage of populations (%)	5	~ 10

***Source: (adapted from UBOS 2006; **Source: (adapted from NEMA, 2007)**

Under the *Status Quo*, the population that is likely to be most at risk from PCBs in Uganda is estimated to range between 17,640 and 141,120 between 2008 and 2025 (*Table 5*) i.e. about 10 per cent of the population that is being served with electricity. On the other hand the NIP scenario envisages that the risk will disappear (zero) by 2025.

Table 5: Accumulation of PCBs over the years from cross contamination

Years	Likely PCB contaminated** Transformers	Population* served	Population most at risk (leaks) X PCB contaminated)
2008 – 2012	882	176,400	17,640
2013 – 2017	1764	352,800	35,280
2018 – 2022	3528	705,600	70,560
2023 - 2025	7056	1,411,200	141,120

Source: (adapted from *UBOS 2006; **NEMA, 2007)

Trends indicate that Uganda has fairly low level of urbanisation. However, this is likely to grow as the population of the country grows. By 2002, 12.3 percent of Uganda's population lived in urban areas, and this was growing at a rate of 5.1 percent. Most of the people at risk due to their proximity to transformers, that could potentially carry PCBs, are the urban residents.

Uganda's urban population is expected to be about 12.3 percent of the national population, by 2008, the percentage of the urban population will grow to 28.6 percent by 2025. The actual population likely to be exposed under the *Status Quo* scenario is 40,360 people by 2025 (*Table 6*.

Table 6: Population exposed to PCBs

Years	Population most at risk (12.6% (leaks) X 8% (% PCB contaminated) = 10%)	% of population	Urban pop most at risk
2008 – 2012	17,640	13.6	2,397
2013 – 2017	35,280	17.4	6,139
2018 – 2022	70,560	22.1	15,594
2023 - 2025	141,120	28.6	40,360

Source: Uganda Population Secretariat (2007)

2.3.1.4 Measures for managing PCBs

Harmonisation of environment laws on priority hazardous wastes for management was identified among the first line of actions needed for managing PCBs. This also includes measures to ensure that: : all PCB transformers are marked, the mark should show the PCB content in ppm; all transformers should be leak proof; and PCB transformer station and storage sites that contain above 45 ppm of PCBs should be licensed and notified.

Furthermore, two other actions were identified and integrated into the action plans of regulations and technical and infrastructure capacity for POPs: The establishment of a proper storage facility, which includes: adequate roof and walls to prevent rain-water from reaching the stored material and items; adequate floor with a continuous curbing (minimum 6" high). Secondly, to utilise proper PCB containers for storage; with the: steel drum without a removable head designed, constructed, and operated with safety requirements for flammable and combustible liquids; manage the store in accordance

with marking, record keeping, and inspection requirements; and removal from store and disposal within 1 year.

2.3.2 POPs issues related to the risk of dioxins

Dioxins are unwanted by-products of incineration, uncontrolled burning and certain industrial processes. Industrial sources of dioxin to the environment include incinerators, metal smelters, cement kilns, the manufacture of chlorinated organics, and coal burning power plants (Greenfacts, 2004). Dioxins are also produced by non-industrial sources including open burning of waste, residential wood burning, oil heating, and emissions from diesel vehicles. Cigarette smoke also contains a small amount of dioxins. Dioxin releases from production of chemicals and consumer goods are due to dioxin input with the raw materials themselves or formation in the production process.

Dioxins are very toxic even at low levels of exposure ([12]LD_{50} = 0.001mg/Kg of body weight). It is therefore very important to take action to eliminate dioxins releases into the environment in order to minimise the risk of exposure. Dioxins will build up and remain in the body long enough to cause serious health problems. It takes roughly seven years for dioxins to pass through the body. During that time, it is likely that more and more has been ingested, thus perpetuating the damage caused by exposure. The only other way to eradicate dioxin from the body is its transmission to a foetus or infant through the placenta or breast milk. While nursing, a baby receives ninety-five percent of the dioxin present in breast milk. This is one of the reasons that dioxin toxicity poses such a significant threat to infants and children.

2.3.2.1 Status of dioxins in Uganda

The inventory on unintentional persistent organic pollutant identified the following categories of processes as posing the greatest risk of high emissions of dioxins and furans:

(a) waste incineration – medical waste incineration;
(b) ferrous and non-ferrous metal production – iron and steel foundries production and aluminium production;
(c) power heating and generation – fossil fuel power dioxins and furans were highly emitted from biomass plants, while under household heating and cooking dioxins and furans were produced from firewood, charcoal; and agricultural residues;
(d) in mineral production dioxins and furans were highly emitted from cement and lime production;
(e) uncontrolled combustion processes generated emissions from uncontrolled domestic waste and agricultural residues;
(f) the leather industry also generated high emissions of unintentional persistent organic pollutants;

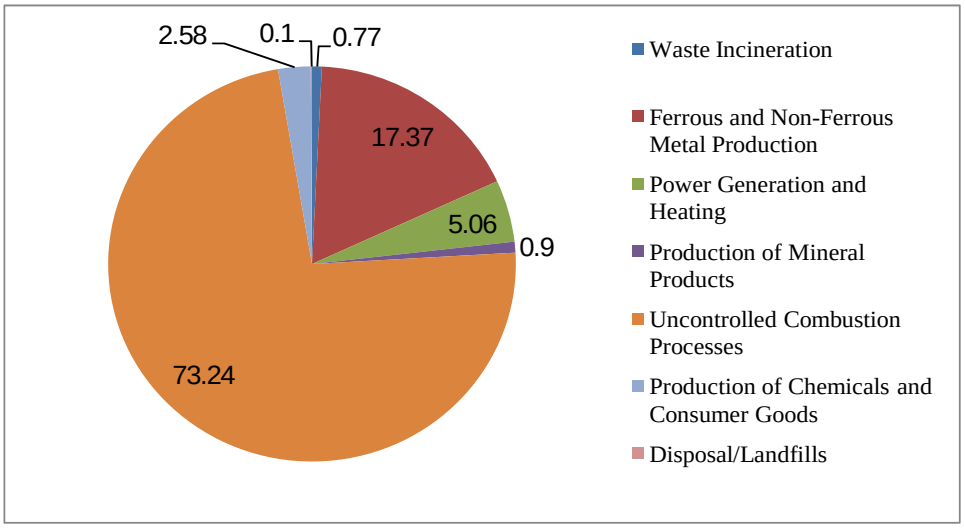
[12] LD 50 a lethal dose that kills 50% of exposed population of organisms (animals and even human beings).

(g) Low to very low emissions were reported for Lead production, domestic heating and cooking with fossil fuels, brick production, transport (4-Stroke Engines, 2-Stroke Engines, Diesel Engines), although this may grow in the future.
(h) Other processes with low emissions of UPOPs were: uncontrolled combustion and use of chemicals and consumer goods from textiles production; and miscellaneous activities such as cremation, tobacco smoking.

The inventory has been conducted according to step developed in "Toolkit for identification of Dioxin and furan Releases" published by UNEP chemicals in 2005. The methodology in the Toolkit helps to estimate releases of PCDD/PCDF especially for countries that have not yet measured actual emission factors. This standardized Toolkit gives a 5-step approach, which have to be followed in the course of inventory making using the UNEP Toolkit and it includes tasks to: (i) apply screening matrix of standardized Toolkit to identify main source categories; (ii) check subcategories to identify existing activities and source in the country; (iii) gather detailed information on the processes and classify processes into similar groups by applying the standard questionnaire; (iv) quantify identified sources with default/ measured emission factors; and (v) apply nation-wide to establish full inventory and report results using guidance in the standard format.

Over 70 percent of the dioxins and furans emissions were as a result of uncontrolled combustion from open burning. Industrial releases were mostly from releases from ferrous and non-ferrous metal production, power generation, waste incineration and production of chemicals and consumer goods (*Figure 3*).

Figure 3: Annual releases of dioxins and furans identified during the inventory



Source: Adapted from NEMA-UPOPs inventory (2007)

From inventory studies the releases of dioxins and furans were ranked on the basis of the Intergovernmental Forum on Chemical Safety (IFCS) standard acceptable limits of dioxins and furans from the various sources. Three categories of ranking emerged: (i) those where the emissions were much lower that the set acceptable limits ranked as very low to low; (ii) those with fairly high emissions but still lower than the standard ranked as moderate; and (iii) those who emissions were higher than the acceptable limit ranked from high to very high based on the actual releases.

In ranking order based on acceptable limits, in addition to releases by percentage in *Figure 3* above, emissions from *hazardous waste incineration and medical waste incineration* were much higher than the acceptable limit and therefore posed a definite threat to the health of humans and to the environment[13]). *Iron and steel production and foundries, and aluminium production* also produce, higher than acceptable limits of, releases of dioxins and furans. A large segment of this production of ferrous and non ferrous metals is carried out by local artisans and fabricators. The risk from power generation and heating is considered to be high from biomass power plants where electricity is cogenerated from sugarcane baggase. Moderate and low releases of dioxins and furans were observed for industrial firewood use, and industrial power generation from both biomass and fossil fuels. However, household heating and cooking with biomass is one of the highest producers of dioxins and furans from charcoal, firewood, and agricultural residues. Liquefied Petroleum Gas (LPG) and gasoline for cooking release low volumes of dioxins and furans.

2.3.2.3 Best Available Technology (BAT) and Best Environmental Practices (BEP)

Unintentionally produced Persistent Organic Pollutants can be regulated or controlled through adopting best available technologies (BAT) and best environmental practices (BEP) (UNEP, 2004). Uganda is in the early stages of implementing cleaner production practices. Cleaner production is expected to compliment BAT and BEP initiatives.

Best Environment Practices options available include: a) composting: (i) for household waste that is biodegradable and where the population density is low and these processes can be integrated into the actions if municipalities; (ii) part of the composting strategy is the reuse of waste for animal feeds and other similar productive uses; and (iii) composting requires education and availability of space; b) reuse: (i) parts or devices can be recovered, repaired, washed or reclaimed as fabricated articles, thereby reducing the need for disposal; and (ii) there are two benefits also associated with the costs that there will be need for cost-effective labour and use of second hand products; c) recycling: (i) metals, glass, clean dry paper, corrugated board, cloth, plastics and wood are recyclable streams; (ii) centralised collection and recycling infrastructure can be cost effective in particular if combined with sorting at source; and (iii) or providing a safe staging area at a disposal site and encouraging development of markets for recycled materials can facilitate recovery by scavengers.

[13] Detailed table of Annual releases of dioxins and furans in the Annexes

When it comes to waste incineration processes the risk of emissions of UPOPs is quite high. Primary measures to minimise the formation of dioxins and furans include: use of appropriate combustion technology, control of the post combustion processes, operation of the incinerator and waste quality and amount and its management. For the chosen combustion technology, it must minimise the formation of furans and dioxins as a result of products of incomplete combustion processes. A combustion temperature of 850 ^{0}C and a residence time of two seconds are believed to be sufficient for thermal destruction of gas phase compounds. It is believed that an incinerator that operates on a 24-hour basis is a prerequisite for the reduction of dioxin and furan formation. In the post combustion zone, de-novo synthesis of dioxins and furans is avoided by minimising the reducing time of gases (or particulate matter) in the critical 200 ^{0}C to 600 ^{0}C region. The formal and informal metal industry in Uganda was also identified as a potential source of UPOPs. The options available to this sector of industry, in terms of best environmental practices and best available technology include the use of either or both primary and secondary measures. The Primary measures include: (i) pre-sorting of feed material; and (ii) effective control processes. While the Secondary measures include: (i) high efficiency dust removal; (ii) adsorption technology; and (iii) catalytic oxidation

2.3.3 POPs issues related to the risk of DDT use in Uganda

In April 2008, the Ministry of Health started using Dichlorodiphenyltrichloroethane (DDT) for Indoor Residual Spraying (IRS) for malaria vector control in Oyam and Apac districts in Northern Uganda. However, at the start of June 2008, the High Court in Kampala ordered the Ministry to suspend the spraying of DDT until there is a ruling on a suit that seeks to stop the spraying of the chemical in northern Uganda. The suit was brought by nine agro-based companies engaged who produce and export agricultural commodities with an organic orsustainable label. The companies and one NGO are: Lango Cooperative Union, Lango Organic Farming Promotion, Dunavant (U) Limited, Bo Weevil (U) Limited, Shares (U) Limited, Outspan Enterprises Limited, Kyagalanyi Coffee Limited, Bakwanye Trading Limited, and Pro Biodiversity Conservationists (U) Limited. The order to suspend spraying came just one month after commencement of IRS with DDT for malaria vector control in Northen Uganda. By the time the programme was suspended only the two above-mentioned districts of the initial five had been sprayed.

Sixty thousand Sackets of 50g of DDT (i.e. about 3 tonnes) of DDT had been used for IRS in Apac and Arua. There are ongoing studies of the effectiveness of the early programme being undertaken by the stakeholders including Research Triangle Institute, contracted by the Ministry of Health to carry out the IRS, the agencies within the Ministry, NEMA and the MAAIF.

The Ministry of Health is using DDT after recievng support from the WHO, and the government of Uganda. An Environment Impact Assessment conducted prior to the IRS with DDT programme was passed and NEMA also consented to the use of DDT provided

that the WHO guidelines, compliance to the Stockholm Convention and sufficient monitoring, enforcement and mitigation measures were put in place (NEMA, 2005).

The Stockholm Convention states that DDT may be produced and used only for disease vector control in accordance with the recommendations and guidelines of the WHO and in line with the Convention. The World Health Organisation (WHO) recommends the use of DDT as one of 12 insecticides for indoor residual spraying (IRS) for disease vector control towards curtailing malaria transmission (*Table 9*). IRS involves the application of long-acting chemical insecticides on the walls or roof of all houses and domestic animal shelters in a given area in order to kill adult vector mosquitoes that rests on these surfaces (WHO, 2005).

Table 7: WHO-recommended insecticides for IRS against malaria vectors

Compounds and formulations	Class	Dosage	Months of effective action
Alpha-cypermethrin WP and SC	P	0.02 – 003	4-6
Bendiocarb WP	C	0.1 – 0.4	2-6
Bifenthrin WP	P	0.025 – 0.05	3-6
Cyfluthrin WP	P	0.020 – 0.05	3-6
DDP WP	OC	1 – 2	>6
Deltamethrin WP, WG	P	0.020 – 0.025	3-6
Etofenprox WP	P	0.1 – 0.3	3-6
Fenintropen WP	OP	2	3-6
Lambda-Cyhalothrin WP	P	0.02 – 0.03	2-3
Malathion WP	OP	2	2-3
Pirimiphos-methyl WP and EC	OP	1 – 2	2-3
Propoxur WP	C	1 – 2	3-6

EC (emulsifiable concentrate); WG (water-dispersible granules); WP (wettable powder); SC (suspension concentrate); OC (organochlorine); C (carbamate); P (pyrethroid)
Source: Najera and Zaim (2002)

The choice of insecticide is informed by three considerations: insecticide susceptibility and vector behaviour; safety for humans and the environment; and efficacy and cost-effectiveness. IRS will only be effective if the target vectors are susceptible to the insecticide. The development of resistance to insecticide constitutes a major threat to the chemical control of malaria vectors (WHO, 2005). Resistance to all 12 insecticides recommended by the WHO has been reported in west, central and eastern and southern Africa. The resistance has built up because of the regular and multiple uses of insecticides. With DDT, however, since it is to be used exclusively for public health, resistance development is no longer influenced by other used such as agriculture. Therefore, it is advisable to maintain the use of DDT until a suitable alternative is available. Concerns over the use of DDT are reflected in the Stockholm Convention. Therefore, provided that stringent measures are taken to avoid misuse and leakage outside public health, DDT can be used for IRS for malaria vector control.

2.3.3.1 Status of institutional capacity to management DDT use in Uganda

The inventory on DDT in Uganda assessed the capacity of several public institutions likely to be engaged in DDT use and management in the country and found as follows:

Table 8: Capacity of government agencies to manage DDT

Government Agencies	Capacity for handling DDT
Government Analytical Laboratory (GAL)	• Capacity to handle, test and store DDT at the GAL is low.
National Drug Authority (NDA)	• The NDA is drafting policy guidelines for management of DDT use in public health. • NDA has capacity to monitor DDT quality at production or importation.
Uganda National Bureau of Standards (UNBS)	• UNBS is a partner in quality monitoring of DDT use.
Department Fisheries Resources (DFR)	• Has mandate and capacity to monitor DDT and other chemical residues.
Makerere University	• Has capacity to handle lab quantities of DDT.
Department of Chemistry	• The department of Chemistry can also analyse DDT residues and capacity to analyse DDT residues in soils and agriculture produce.
Department of Soil Science	• Department of Soil Science has capacity to analyse DDT residues in body tissues.
The Institute of Public Health	• Institute of Public Health capacity for research still in infancy at the other universities.

Source: NEMA DDT-Inventory (2007)

The assessment of private sector stakeholders likely to be engaged in DDT management in the country found as follows:

Table 9: Capacity of private companies to manage DDT

Private company	Capacity for handling DDT
Chemiphar Ltd.	• Chemiphar an internationally accredited private laboratory in Uganda has capacity as partner to analyze DDT residues in agriculture.
General laboratory analysis (SGS) Ltd.	• SGS) has capacity for analyzing DDT residues but has no local laboratories for it.
Twiga Chemicals Ltd	• Twiga was main importer of DDT in the 1960/70s for cotton but there was no evidence of stockpiles or records of importation.
Coopers (Uganda) Ltd.	• Coopers has been operating in Uganda for many years but was mainly involved in veterinary drugs and no evidence of DDT importation.
Balton	• There were no records of DDT importation or storage capacity
Quality Chemicals	• There were no records of DDT importation or storage capacity now or in the past
Research Triangle Institute (RTI)	• RTI maintains stores of Lambda cyhalothrin (Icon^{Tm}) and DDT under agreement of the Ministry of Health.

Source NEMA DDT-Inventory (2007)

2.3.3.2 Economic analysis of using DDT for IRS Uganda

I Economic burden of malaria for households

Decisions about treatment and coping with malaria are based on negotiations between the household, illness costs are incurred by care-givers as well as the sick, and the costs fall on the household budget. Illness costs are broken down into direct and indirect costs. Direct costs refer to household expenditure linked with seeking treatment, including non-medical expenses such as transport or special food. Indirect costs refer to the loss of household productive labour time from patients and caregivers (Russel, 2004). The cost burden refers to the direct and indirect costs expressed as a percentage of household income. Only the direct costs of malaria to households in rural areas have been estimated; and this ranges from 9.3% to 11% (Hanson, 2004). The direct costs for urban areas and the indirect costs for the whole country have not been determined, thereby limiting a comprehensive economic analysis. However, considerable work has been done to determine the cost-effectiveness ratios (CERs) of the different options for controlling malaria, including using DDT.

In Africa and elsewhere in the world where malaria is evident, IRS is a highly adjusted cost-effective intervention (US$ 9 to US$ 24 per disability adjusted life (DALY) averted. A recent study in southern African implemented in rural and peri-urban areas showed that DDT is an extremely cost-effective option for IRS in malaria control and only deltamethrin was found to be at par. The other IRS options considered were much less cost-effective by five to twelve times (*Table 10*).

Table 10: Cost comparison of the WHO-recommended insecticides for IRS, excluding operational costs and freight and other external costs

Insecticide	Dosage (g/m2)	Approximate duration of residual effect on mud surface (months)	No. of spraying rounds per 6 months	Total dosage per 6 months	Formulation	Approximate amount of formulated product required per house per 6 months (kg)	Approximate cost of formulated product (US$ per kg)	Cost per house per 6 months (US$)	Cost ration (DDT =1)
DDT	2	6	1	2	75% WP	0.5	3.0	1.6	1.0
Deltamethrin	0.025	3	2	0.05	2.5%WP	0.4	4.0	1.6	1.0
Malathion	2	2	3	6	50% WP	2.4	3.4	8.2	5.1
Lambda-cyhalothrin	0.03	3	2	0.06	10% WP	0.3	72.0	8.6	5.4
Bendiocarb	0.4	2	3	1.2	80% WP	0.3	46.0	13.8	8.6
Fenitrothion	2	3	2	4	40% WP	2.0	7.4	14.8	9.3
Propoxur	2	3	2	4	80% WP	1.0	18.8	18.8	11.8

DDT: Dichlorodiphenyltrichloroethane; WP: Wettable Powder

Source: Sadasivaiah *et al.* (2007)

II Context specific concerns in Uganda

Uganda has a predominantly stable malaria transmission and it has also started using DDT for IRS, and the situation illustrates the dilemma faced by many countries. Those in support of the deployment of DDT claim that the financial resources required for spraying programmes with deltamethrin more households could be protected by using DDT. Those opposed to DDT use question the environmental and health impact of DDT. In addition, there are concerns that trade relations with the European Union (EU) may be endangered. In 2005, the EU warned Uganda that if DDT were used for malaria control, stringent measures would have to be taken to ensure that the food stuffs were not contaminated. Even with precautions, a negative perception of Ugandan agricultural products may have profound economic consequences. Therefore, before implementing an IRS programme with DDT potential barriers to trade must be thoroughly addressed (Sadasivaiah *et al.,* 2007).

Uganda's fish and fish products exports in 2005 were valued at US$ 142 million, about 18 percent of all exports (UBOS, 2006). In terms of effect on trade, economy and competitiveness, the Lake Victoria is by far the most important fishery in Uganda and it is the only certified lake as source for exporting fish to the EU. Therefore, the country needs to recognise the potential negative image of using DDT. Overall, fruits and vegetables contributed about US$ 12 million to Uganda's exports, while flowers contributed US$ 24.128 million (UBOS, 2006). The competitiveness of this sub-sector has already been in decline due to the higher costs of production in Uganda. However, there are signs that the sub-sector is making a turn about. The European market, Uganda's premier market for horticulture is extremely sensitive to environmental concerns and regular tests are carried out to ensure compliance to MRLs and HACCP. Therefore, it is possible that DDT use could purposely be avoided in these important commercial areas. In addition, the country would put in place appropriate safeguards to prevent transportation and accidents related to DDT in the Lake Victoria basin and Lake Kyoga basin.

III The economics of malaria control interventions

A comparison of the cost-effectiveness of a wide range of malaria interventions found that in a very low-income country, the cost-effectiveness range per DALY averted was US$ 19 to US$ 85 for ITNs (nets plus insecticide); US$ 32 to US$ 58 for residual spraying (two rounds per year), US$ 3 to US$ 12 for chemoprophylaxis for children (assuming an existing delivery system), US$ 4 to US$ 29 for IPT for pregnant women and US$ 8 for case management improvements. The cost –effectiveness of using IRS considered DDT, Malathion and two pyrethroids; deltamethrin and lambda-cyhalothrin (*Table 11*) (Goodman *et al.,* 2000). DDT is extremely cost-effective and comparisons with deltamethrin used for IRS in Uganda indicate that the later has to be sprayed two times more often than DDT.

Table 11: Cost-effectiveness ratios (CERs) for ITNs, IRS, IPT (2001 US$) – Africa

Intervention	Mean cost US$/DALY averted	Range of cost US$ 90%
ITNs (nets plus insecticide treatment)		
Deltamethrin	11	5-21
Permethrin (1 treatment)	12	6-20
Permethrin (2 treatments)	17	9-31
ITNs (without provision of nets)		
Deltamethrin	5	2-7
Permethrin (1 treatment)	6	3-9
Permethrin (2 treatments)	11	6-17
IRS (1 round)		
Melathion	12	8-18
DDT	9	5-13
Deltamethrin	10	6-14
Lambda-cyhalothrin	10	6-14
IRS (2 rounds)		
Melathion	24	15-34
DDT	17	11-24
Deltamethrin	18	12-27
Lambda-cyhalothrin	19	12-28
Intermittent Preventive Treatment (IPT)		
Incremental costs	13	9-21
Average costs	24	16-35

Source: World Bank (2006)

The choice of an insecticide has implications for cost-effectiveness and efficacy of the IRS interventions. Insecticides suitable for IRS should be sufficiently stable to maintain biological efficiency on treated surfaces overtime, so as to minimise the number of spray cycles needed to cover a malaria transmission season. DDT has long been the cheapest insecticide and the one with the longest residual efficacy against malaria vectors. Other insecticides have relatively shorter residual effect thus the use of DDT alternatives might require two to four spray cycles per year instead of one depending on the length of the transmission season, with important operational and financial considerations for the spraying programmes and the risk of fatigue for the households involved.

2.3.3.3 Proposed regulatory and non-regulatory measures for DDT

DDT is already being used in the country. It is important however to ensure that an effective system of use and safe storage of DDT is put in place. As noted by the WHO this will rely on compliance with well-established and well-enforced rules and regulations in accordance with national guidelines and with WHO technical guidance within the context of the Stockholm Convention. The actions for DDT management in the country will have to cover the administrative and legislative measures need to ensure proper enforcement and compliance to agreed standards of use and storage, an adequate monitoring and evaluation system and regular and ongoing management of all DDT use

through undertaking preparatory environmental assessment and *ex post* assessments and clean up to minimise waste and other potential impacts.

2.3.4 Assessment with respect to other POPs Pesticides

2.3.4.1 Other POPs pesticides in the Stockholm Convention

The chemicals in this category of POPs include: aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), mirex and toxaphane. They are listed in Annex A of the Stockholm Convention along with PCBs are chemicals to be eliminated. However, the convention has noted special exemptions such as: (i) the use of aldrin as ectoparasiticides and insecticides; (ii) chlordane for registered Parties production and use as local ectoparasiticide, insecticide, termiticide and additive in plywood adhesives, dieldrin in agriculture; (iii) heptachlor a termiticide, wood treatment, and protection of underground cable boxes; and (iv) HCB production for registered Parties as allowed and for use as an intermediate, solvent for pesticide and closed system site intermediate, mirex for use as a termiticide and production for registered Parties.

2.3.4.2 Status of POPs pesticides in Uganda

Inventory findings indicate that POPs pesticides have never been produced or manufactured in the country. However, some have been used for agriculture purposes. For example, Dieldrin (Dieldrex) for Tsetse fly Control; gamma HCH 20 per cent EC or lindane for seed dressing; alandrin for termite control; chlordox (Chlordane emulsion) for soil borne pests; fernasan D (thiram or lindane) for seed dressing; seedox DM (dieldrin 50 percent or mercury 0.8 per cent) for seed dressing.

Table 12: Persistent Organic Pesticides

No	Site	District	Chemical Name	Active ingredient	Packaging	Quantity	Remarks
1	FORRI	Kampala	Alandrin 2.5	Aldrin 2.5%	250g tin	500g	Termite Control
2	FORRI	Kampala	Unkown	Suspected Benzene hexachloride	500g container	500g	Small quantities-no sample taken
3	FICA Seeds	Masindi	Gamma HCH 20% EC/ Lindane	Benzene hexachloride 200 % WV	25 litres Container	25 litres	Used for seed dressing
4	FORRI	Kampala	Chlordox	Chlordane emulsion	1 litre bottle	1 litre	
5	FORRI	Kampala	Fernasan D	Thiram/ Lindane	500g container	500g	Seed dressing chemical
6	FORRI	Kampala	Seedox DM	Dieldrin 50%, Mercury 0.8%	4 litre tins	8 litres	Seed dressing Chemical

Source: NEMA-Pesticides Inventory (2008)

Although data on importation was not readily available a few available records indicate that some few litres and kilograms of these products were found in various places and mainly in the Forestry Resources Research Institute (FORRI) which were suspected to have been mainly for research use. No stockpiles of other POPs Pesticides were found during the inventorying. But due to the limited coverage, stockpiles cannot be ruled out. Only big quantities of expired stocks of other pesticides were found in various places. Most areas visited especially Cattle ranches had abandoned dips and spray races where Toxaphene formulations were used. These are hence contaminated. Areas where dieldrin was stored and gamma HCH was being used for seed dressing also were contaminated through leakages in the stores, and poor disposal of the containers.

2.3.4.3 Proposed regulatory and non-regulatory measures for POPs pesticides

There is a number of legislation pertaining to the management of other POPs Pesticides management in place but lack harmonization. The various players in the chemicals management are poorly coordinated and operate independent of each other. The infrastructural capacity is inadequate and there are poor linkages in between the stakeholders. Information on Pesticides management available to the public is limited. There is also inadequate information sharing amongst stakeholders. There is a need for operationalization of a joint databank of all other POPs pesticides stakeholders. The following gaps were identified and will be addressed in recommendation as follows:

- A few sites were selected for the assessment and some of them were inaccessible hence unable to confidently draw a conclusion on the situation of POPs in the country. It is strongly recommend that a more intensive inventorying exercise be embarked on to cover all the suspected sites after a massive sensitization of the stakeholders for improved interactions and public participation during the exercise.
- The government should increase the budgetary allocations for the various regulatory agencies to effectively enforce the mandated regulations related to pesticides management.
- The MAAIF Pesticides Analytical Laboratories require funding for equipment and furniture. There is also a need for recruiting more personnel and capacity building for the existing ones to effectively manage the laboratory.
- Strengthen the coordination mechanisms of the various regulatory agencies in order to compliment each other in the enforcement efforts on Pesticides including POPs.
- Health surveillance through conducting periodic examinations of the people having direct contacts with Pesticides and environmental monitoring through bio-monitoring activities should be given urgent consideration.
- There is a need for Investment in disposal facilities (Incinerators) and other disposal facilities at farm level) for expired pesticides (including persistent organic pollutants) and empty containers to avoid further contamination of the environment.
- To address the problem of the information exchange and lack of a database, there is need to enhance the exchange through creation of a “Joint forum” for the

regulatory bodies with a Common Database for ease of information dissemination and accessibility.

2.3.5 Economic cost of not implementing the Stockholm Convention in Uganda

a) The economic cost of the continued presence of PCB in the country

The total discounted economic losses from maintaining not implementing regulatory and non-regulatory measures to manage and eliminate PCBs will grow from about Ushs 352 million (or US$ 207,059) in 2008 to Ushs 1.3 billion (or US$ 760,394) per annum by 2025.

The economic losses from PCBs were calculated as a partial budget analysis of the added costs of measures proposed for PCB management i.e. transformer decontamination, ientification and labelling transformers, personal protective equipment, PCB testing equipment, cost of the PCB inventory, cost of publicising in media, training programmes Ushs 1,740,000 per person and transformer standards administration substracted from the costs of taking no action i.e. the associated health costs based on proxies from other parts of Africa, loss of productive life DALYs avoided and the forestalled loss in trade

b) The economic cost of emission of dioxins and furans in the country

Given the lack of sufficient data on the production systems of industries and especially data on open combustion the economic cost of emissions of dioxins and furans cannot be accurately estimated. However, an estimate based on the cost of not employing BEP and BAT in industrial release of dioxins and furans (Ferrous and Non-Ferrous Metal Production) shows an economic cost of about Ushs 5.3 billion (or US$ 3,117,647). This cost consists of man-days lost in illnesses and health-care expenses for workers affected by toxic fumes in industries in the country; however, this figure also includes non-POPs chemicals.

c) The economic cost of not implementing IRS using DDT

An estimated 10.6 million malaria cases were reported in 2006 in Uganda with transmission occurring all year round in most parts of the country (WHO, 2008: World Malaria Report). The economic cost calculated on the established cost of malaria treatment in Uganda[14]. The following assumptions were used to estimate the costs of malaria management: population of country (estimated): 29,378,000; pregnant women: 4% of total population = 1,469,000 pregnant women; infants (children <1): 3% of population = 881,340 infants; children <5 years: 20% of population = 6,022,000 children under five; and number of Households: 5,875,600 (PMI, 2008).

The cost of malaria case management was estimated at:

Illness	Total costs (US$)
Children under five years (US$ 0.45/ treatment) 3 episodes/year	8,130,297
Older children (US$ 1.00/treatment) 2 episodes/ year	11,751,200

[14] The economic cost of potential loss in trade, environmental and health impacts have not been scientifically verified.

Adults (US$ 1.35/ treatment) 1 episode/ year	23,796,180
Total	43,677,677

The country needs 4,920,600 ITNs. The total cost of reaching all children under five and pregnant women (assuming $7.00 per net) is US$ 21,171,640[15]. In southern Africa malaria cases have declined markedly to less than 25% of the levels that existed before and in some cases malaria has been totally eradicated. The total cost of malaria treatment is about US$ 64,849,317 (or about Ushs 110.2 billion) per year.

- The economic cost of not implementing IRS using DDT was estimated from benefit cost analysis of net savings of controlling the malaria vectors with DDT versus the cost of malaria case management and the use of ITNs as the two traditional approaches. The estimated the cost of DDT for IRS is about US$ 3.2 per household per annum (Sadasivaiah *et al.,* 2007). Since 90% of the households live in malaria endemic areas they may be a target for IRS with DDT. Therefore the cost of DDT per annum would be about US$ 16,921,728, for 90% of 5,875,600 households.

- If as in the 1960s, DDT was able to reduce malaria prevalence by 45 times i.e. from 22.7% among all populations to about 0.05%, malaria prevalence could reduce from 10.6 million cases to just 223,000 cases. It should be noted that the estimated cost of ITNS is based on the 27% of population consisting of pregnant women and children. The net savings from controlling malaria with DDT were estimated at US$ 47,205,069 (or Ushs 84.6 billion) per annum. However, this excludes the economic cost of losses to the environment and health impacts that may result from using DDT. It is envisaged that the NIP will focus on determine these and mitigating the potential damage and finding an alternative to DDT.

d) The economic cost of implementing regulatory and non-regulatory measures to control POPs pesticides

The economic cost of not implementing regulatory and non-regulatory measures to control pesticides were estimated at Ushs 170 million (or US$ 100,073) per year.

- Therefore, the estimated overall economic cost to the country of not implementing the regulatory and non-regulatory measures for managing the POPs highlighted in the Stockholm Convention is over about US$ 5,0629,848 or Ushs 90 billion per annum. These economic costs will be in terms of the health and environment impacts of PCBs, dioxins and furans, pesticides, and the higher cost of malaria case management or using ITNs in the case of DDT. This cost excludes dioxins and furans released open combustion and domestic settings where variations in costs were extremely wide.

[15] IRS has been left out as it would be mean replacing current insecticides with DDT, therefore the cost of replacement is assumed to cancel out.

CHAPTER THREE

Strategy and Action Plans of the NIP

3.1 Policy Statement

The government of Uganda is committed to addressing POPs issues. As a result, government acceded to the Stockholm Convention and has developed this NIP to systematically demonstrate how it intends to mainstream POPs management into government policies and the National Development Plan. In the spirit of mainstreaming POPs issues, Government adopts and endorses this NIP

3.2 Implementation strategy

The implementation strategy for the NIP has been built on three main considerations:

(i) Building technical capacity and strengthening the institutions that will be involved in implementation of the NIP.
(ii) Appropriate prioritizing of the actions planned.
(iii)Reviewing, reporting evaluation and updating of the NIP.

The strategy recognises the challenges related to phasing out and elimination of POPs in the country including enhancing national capacities through human resource development, institutional strengthening taking advantage of technical assistance and international funding mechanisms including the Global Environment Facility (GEF).

3.2.1 Overall Objective

The overall objective of the NIP is to strengthen national capacity for the management of POPs throughout their life cycle in order to prevent, reduce or minimise their potential impacts on human health and the environment by 2025.

The specific objectives of the NIP are:

(i) To formulate, develop or and improve existing policy, legislative and administrative measures for POPs management in Uganda.
(ii) To design and implement information, communication and awareness strategy and programmes.
(iii) To investigate and update inventory of unintentionally generated POPs releases and the inventories of electrical equipment containing PCBs and other POPs wastes and POPs pesticides.
(iv) To develop a strategy for integration of POPs management in the NDP process.
(v) To establish financial mechanisms to ensure the successful implementation of the action plans.

(vi) To enhance institutional coordination and cooperation and build national, regional and international partnerships that will contribute to the achievement of the objectives of the Stockholm Convention.

3.2.2 Priority areas, action plans and activities

Priority areas

The priority areas under the NIP for Uganda are based on the findings of the national POPs inventory process that took place between and stakeholder Priority Setting, Action Planning and NIP development Workshops held in February, May and June 2008 developed a list of priorities for implementing the Stockholm Convention. In subsequent meetings of the National Coordination Committee June 2008 and stakeholders in October 2008; and a high-level workshop for stakeholders on the NIP held in December the six priorities were agreed and endorsed, respectively:

(i) Formulating, developing and improving the policy and legislative structure for POPs management in Uganda.
(ii) Developing and implementing BAT, BEP and Cleaner Production practices for the management of unintentional persistent organic pollutants.
(iii) Develop and implement programmes for information, communication, awareness and education on POPs in Uganda.
(iv) Develop a DDT regulation and implement DDT management activities.
(v) Develop and implement programmes for handling, storage, transportation, disposal and technical capacity for POPs in the country.
(vi) Implement activities for overall administration and management of the NIP.

3.2.3 Institutional arrangements

The National Environment Management Authority (NEMA) shall be the focal point for implementation of the NIP and shall coordinate its implementation through a harmonised information management system, financial mechanism and a monitoring and evaluation framework. A comprehensive institutional arrangement will be elaborated in the early stages of implementation of the NIP.

3.3 Activities and Action plans

Fourteen action plans were accordingly derived out of these six priority areas. The NIP will be executed between 2009 and 2025; although the implementation of some actions such as the management of dioxins and furans may extend beyond the proposed timelines. In order to implement the fourteen action plans, two phases of implementation are proposed as listed below:

Phase I (2009 – 2013)

1. Legal and enforcement framework for persistent organic pollutants in Uganda
2. Capacity building for stakeholders implementing, managing and regulating POPs
3. Strengthening coordination mechanism of the regulatory agencies engaged in POPs management
4. Financing Mechanisms (2010 to 2025)
5. Public Education and Awareness on specific categories for specialised education systems
6. Implementing a national public awareness programme (2010 to 2013)
7. Regulation on DDT
8. DDT Management
9. POPs Information Management System (2009 – 2025)
10. Action plan for developing a Monitoring program for hazardous substances (2012 to 2025)

Phase II (2013 – 2025 and beyond)

11. Technical capacity building accreditation plan for national laboratories for laboratory analysis for POPs (2008 – 2014)
12. Reduction of emissions of dioxins from open combustion (2013 to 2015) and beyond
13. Reductions of emissions of dioxins from industrial sources (2013 to 2015) and beyond
14. Handling, storage, transportation, remediation and disposal of persistent organic pollutants (2012 – 2016)

3.3.1 Develop policy guidelines and a legislative framework for POPs management

Goal: Develop policy guidelines and a legislative framework on POPs management in Uganda, two years after transmission of the NIP to the COP.

Problem statement

Uganda does not produce or reformulate POPs however, POPs are present in the country are from stockpiles that were imported for use in agriculture and public health. Indeed, a number of suspected stockpiles and obsolete stocks of POPs pesticides, as well as contaminated sites and equipment were found during the inventory process. In addition, unintentional POPs are frequently released from industrial and uncontrolled (including domestic) combustion. The baseline analysis of the current administrative and legislative structure indicated that current policies and laws are inadequate to manage POPs to the levels compatible with the Stockholm Convention. Therefore, it has been proposed that an appropriate legal and policy framework be put in place to domesticate the Stockholm Convention, to support management and enforcement and compliance to the Stockholm Convention on POPs.

Objectives

1) To formulate policy guidelines that adequately address concerns on persistent organic pollutants in the country by 2010.
2) To formulate regulations, guidelines and standards for POPs management by 2012

3.3.2 Build capacity for compliance and enforcement of the administrative and legislative framework (2010 - 2012)

Goal: Build capacity of stakeholder institutions to enforce the legal framework three (3) years after adoption of the NIP.

Problem statement

Developing a new policy and legal framework on POPs management in the country will pose challenges on compliance and enforcement. It is therefore also necessary to develop both technical and institutional capacity to ensure that the regulatory institutions are able to enforcement and ensure compliance to the new developed legislative and policy framework.

Objective

To build the capacity of stakeholder institutions involved in enforcement and compliance to the POPs administrative and legislative framework; undertaken from 2010 to 2012.

3.3.3 Develop programmes for strengthening coordination and cooperation among stakeholders engaged in POPs management

Goal: Develop and implement mechanisms for strengthening coordination and cooperation among the stakeholders engaged in POPs management by 2012.

Problem Statement

The stakeholders engaged in POPs management including government ministries, Private sector, NGOs, and others are operating in isolation of each other. This is attributed to inadequate monitoring and follow-up mechanisms of POPs related activities, which has caused inefficiency and duplicity of efforts in regard to the management of POPs.

To solve this inadequacy a multi-sectoral and multi-institutional functional linkage is needed. The cooperation and coordination proposed is needed to both strengthen and contribute additional means of linkage and harmonisation of responsibilities of the stakeholders engaged in POPs management.

Objectives

1) To strengthen the existing mechanisms for coordination and cooperation among stakeholders engaged in POPs management by 2011;
2) To develop and implement additional mechanism for enhancing multi-sectoral coordination and co-operation among stakeholders engaged in the management of POPs by 2012.

3.3.4 Develop and implement financing mechanisms for POPs management

Goal: Develop and implement mechanisms for financing POPs management by 2012 and ensure its sustainability.

Problem statement

The government of Uganda observes the importance of POPs through its mainstream activities such as: use of DDT in malaria control; actions to regulate use of plastics in waste; requirement for EIAs and environmental audits on industrial activities; efforts to minimise the burden of industrial, domestic, urban and health waste; and regulation of effluent discharge.

Current national priorities do not articulate the country's position on chemicals management and yet there is need for regular monitoring and actions to reduce or eliminate POPs. This is because if POPs are allowed to accumulate they will pose severe health and environmental impacts. The NIP suggests several action plans for managing POPs which require financing on short, medium and long term basis for implementation.

Objectives

1) To develop mechanisms for utilising resources of the environment fund to cater for chemicals management, particularly POPs.
2) To design and implement market based instruments for financing POPs management.
3) To develop and implement a strategy for mobilizing resources from development partners to finance POPs management.

3.3.5 Develop and implement specialised public education and awareness programmes on POPs

Goal: Integrate POPs education, training and research at primary, secondary and tertiary education levels by 2012.

Problem Statement

The Inventories on POPs in Uganda regarding level of awareness, research and monitoring indicate that; 85 percent of the organizations and industries were not aware of

the Stockholm Convention on POPs; 92 percent of the government institutions, non governmental organizations and private sector were not involved in POPs related research and 77 percent of the institutions did not have mechanisms for monitoring of UPOPs. Further more, the institutions did not have programmes on awareness, education and training on management on POPs.

It is therefore imperative to integrate POPs into formal and non formal education and research. It is envisaged that, this would contribute to sound management of POPs.

Objectives

1) To develop training materials on specific categories of POPs tailored to fit the formal, non-formal and informal education systems, by 2012.
2) To facilitate integration of education on POPs in the education curricula by the year 2014
3) To build capacity of trainers and researchers in POPs education by 2012

3.3.6 To implement a national public awareness programme

Goal: Raise awareness on POPs among at least 70 percent of the most vulnerable groups by 2012 and at least 50 percent of the country's population by 2015

Problem statement

Inventories that have been carried out in Uganda indicate that there is low awareness among the key stakeholders and the general public. It has been established that 71 percent of the respondents were not knowledgeable about management of POPs. Among the industrial workers interviewed, 45 percent reported that their organizations did not provide them with personal protective equipments/gear hence poor handling, storage and disposal of POPs. Therefore, with this low awareness among the various key stakeholders, the general public is at risk if ignorance about the likely negative impacts of POPs if not addressed. It is imperative to reach the public through a deliberate awareness strategy/action plan with the necessary information in order to protect and safe guard their health and the environment.

Objective

To develop and implement a national public awareness programme for the general public for at least 70 percent of the vulnerable groups by year 2012; and a general public awareness programmes by 2015.

3.3.7 Put in place a regulation on the use of DDT

Goal: Strengthen regulation on DDT use to ensure that it is safe and restricted to disease vector control, in accordance with the Stockholm Convention and the WHO guidelines.

Problem Statement

Uganda has reintroduced DDT and restricted it to IRS for the malaria vector control. DDT will be used by the Ministry of Health for malaria vector control. In addition, the Ministry has indicated that it will conduct its mandate in line with the Stockholm Convention, WHO guidelines, and the IRS Policy. So far only an IRS policy has been developed. Moreover, the policy only guides implementation of DDT use. Leaving a glaring gap of the absence of legal backing to ensure that DDT use is restricted to disease vector control. In addition, some stakeholders in the trade and environment sectors are not convinced that the existing policy comprehensively integrates concerns over DDT.

As such, the NIP proposes developing a new regulatory framework for DDT. This will cater for the safe use and restriction of DDT use to disease vector control. The new regulatory framework will also increase focus on the development of alternatives, and eventual lead to the elimination of DDT use in the country.

Objectives

1) To review, harmonize, and strengthen legislation to manage DDT one year after the adoption of the NIP.
2) To strengthen capacity for compliance and enforcement for the existing legislation by 2011.

3.3.8 Undertake actions for management of DDT use and development of alternatives

Goal: Ensure safe use, reduction and eventual elimination of DDT in line with the Stockholm Convention and the WHO guidelines.

Problem Statement

The Government of Uganda has reintroduced DDT for IRS for malaria vector control. As a POP, DDT is persistent, bio-accumulates in the environment and it poses several health risks.

Whereas the decision to reintroduce DDT has been made, there is limited technical know how of safe handling during IRS. There is also inadequate capacity for safe use and effective monitoring of IRS operations. The burden of malaria however still persists and yet cost effective alternatives are not readily available. Research into effective alternatives is still limited. The precautionary principle requires that where there are threats of serious or irreversible damage to human health and the environment, the lack of scientific certainty shall not be used as a reason for postponing cost effective measures to prevent further degradation. There is inadequate sharing of information among institutions and the public. The re-introduction of DDT will therefore require a number of strategies to be put in place involving:

(i) demonstrating the applicability and cost-effectiveness of alternatives to DDT in specific eco-epidemiological settings and within the context of WHO's Global Strategic Framework for Integrated Vector Management (IVM);
(ii) strengthening national capacity to plan, implement and evaluate integrated vector management;
(iii) strengthening country capacity for pesticides management and to promote judicious use; and
(iv) establishing mechanisms for dissemination and sharing of country experience.

Objectives

1) To undertake activities that will ensure compliance with the appropriate management of DDT through enforcement of rules and regulations after the adoption of the NIP;
2) To develop and implement a programme to demonstrate the applicability, cost-effectiveness and sustainability of alternatives to DDT in specific eco-epidemiological settings and within the context of WHO's Global Strategic Framework for IVM by 2012
3) To strengthen national capacity to plan, implement and evaluate integrated vector management, and monitor and evaluate environmental and health impacts of the alternatives to DDT by 2013

3.3.9 Operationalise the POPs Information Management System

Goal: Enhance the functionality, accessibility and sustainability of the POPs Information Management System by 2012.

Problem statement

A POPs Information Management System (PIMS) has been designed based on preliminary inventory of; PCB containing equipment, dioxins, Obsolete Pesticides and DDT. The PIMS also consists of sections on risk, technical capacity and socio-economic assessment. In addition, stakeholders have been trained on the use of the PIMS. However, the PIMS system is unsustainable because it still requires collection of comprehensive data, regular collation and analysis of data, and assessment of the information. Furthermore, there is no platform for data and information exchange based on the PIMS among stakeholders.

Therefore, there is need to ensure that the PIMS is sustainable through comprehensive inventory data, regular collation, analysis and assessment of the information. There is also a need to develop and maintain an information exchange platform on POPs management among the stakeholders and to continually monitor information relating to POPs risks and the probable economic and social costs

Objectives

1. To undertake comprehensive inventory and update the existing database on POPs.
2. To continually test and improve the database and technical capacity for sustainability of the PIMS.
3. To implement information sharing platform for stakeholders engaged in POPs management, including international information exchange networks.

3.3.10 Programme for monitoring and evaluation of POPs management

Goal: Strengthen existing mechanisms and put in place additional monitoring and evaluation programmes of POPs management.

Problem statement

The NIP for Uganda has 14 action plans including monitoring and evaluation. Each action plan has a goal, objectives, activities and tasks. In addition, the action plans have a resource requirement matrix and timelines for implementation. To ensure successful implementation of each of the action plans, monitoring and evaluation has to be carried out on implementation of the elements of the action plans mentioned above. Currently, the monitoring and evaluation is limited to the activities of the different ministries that undertake POPs management related activities. However, neither the POPs management activities nor the monitoring and evaluation are comprehensive enough to meet the country's obligations under the Stockholm Convention.

As the implementation of the NIP progresses it will be imperative that the activities and tasks implemented are continually monitored and evaluated to ensure that they are in line with the set goals and objectives. This will also ensure that the existing programmes within government ministries and agencies are enhanced and aligned with the NIP.

Objectives

1. To have a monitoring and evaluation program for POPs designed and a pilot study started by the year 2010 and finished by 2012
2. To have a complete running monitoring and evaluation system for hazardous chemicals for the whole country by 2015.
3. To undertake monitoring and evaluation of the implementation of the NIP, between 2012 and 2025.

3.3.11 Develop and implement programmes for technical and infrastructural capacity for POPs monitoring and laboratory accreditation.

Goal: Develop and implement programmes for strengthening technical and infrastructural capacity for POPs monitoring and accreditation of national laboratories by 2015.

Problem statement

An assessment of the existing laboratory facilities showed that there is inadequate infrastructural and technical capacity for monitoring POPs. Although the existing laboratories are equipped to analyze POPs pesticides, there is no laboratory capable of analysing dioxins and furans. In addition, the laboratories in the country that are not internationally accredited to determine undertake residual analysis on POPs and the country has no standards that would limit transmission of POPs to products.

Enhancing the laboratory standards in the country so that they are accredited for POPs analysis will create sufficient capacity for POPs monitoring and research in Uganda.

Objectives:

1) To strengthen the laboratory technical and infrastructural capacity for POPs monitoring by 2012.
2) To design and implement a programmes for accreditation of at least one laboratory for monitoring of POPs by 2015.

3.3.12 Reduce emission of dioxins from uncontrolled combustion from non-industrial sources in Uganda

Goal: Reduce the emissions of dioxins and furans from uncontrolled burning/combustion (non-industrial) by 70 percent within five years after adoption of the NIP.

Problem Statement

An inventory of sources and quantities of dioxins and furans in Uganda established that about 1,018g of dioxins and furans are released annually into the environment. At least 70 percent of dioxins and furans identified during the inventory were from uncontrolled burning of domestic waste and agriculture. With increasing population growth, emissions from uncontrolled combustion are likely to increase. Dioxins and furans are a classified as chemical compounds which are extremely toxic to animal and human life. Therefore a comprehensive set of measures is needed to manage uncontrolled combustion and the resultant emissions of dioxins and furans including CP, BAT and BEP which are currently inadequate and/or not in use.

One other critical factor of uncontrolled burning and combustion is the generation of toxic by products beyond the POPs currently under control including polycyclic aromatic hydrocarbons, particulate matter, benzene and heavy metals, among others.

Objective

To develop and implement a programme to reduce dioxin-emissions from uncontrolled combustion by 70 percent by introducing integrated waste management hierarchy of BAT

and BEP that combines source reduction, reuse/recycle and treatment and disposal strategiesby the year 2014.

3.3.13 Reduce emissions of dioxins from industrial sources in Uganda

Goal: Reduce the emissions of dioxins and furans from industrial processes by 60 percent within five years after the adoption of the NIP.

Problem Statement

Industrial sources of dioxins and furans in Uganda include, low temperature incinerators, metal smelters, cement kilns, the manufacture of chlorinated organic compounds. The industrial sector is growing rapidly especially in the production of building and construction materials such as cement, reinforcing rods, corrugated roofing sheets and paint. Given government`s current focus on industrialization and private sector led investments, there is a likelihood that emissions of dioxins and furans would increase if appropriate control measures are not taken. The 2006 inventory shows that releases to land from the industrial sector accounted for about 2.6 percent of the total dioxin releases into the environment. Therefore, there is need to implement the appropriate BAT and BEP measures to reduce dioxins and furan emissions.

Objective

To reduce dioxins emissions from industrial processes by 60 percent through the application of BAT and BEP, by 2014.

3.3.14 Undertake actions on handling, storage, transportation, disposal of POPs and remediation of contaminated sites

Goal: Develop and implement a programme, in accordance with internationally acceptable guidelines and practises for handling, storage, transportation, disposal by 2015.

Problem Statement

The inventory studies identified a poorly coordinated and in many cases absence of a system for handling, storage, transportation and their disposal. Certain disposal practices identified during the inventory process, such as open burning of assorted waste are responsible for the generation and release of UPOPs. The inventory also established that appropriate strategies for identification of stockpiles and their management have not been integrated in the activities of the institutions responsible for POPs.

In the absence of appropriate systems for POPs management and the high risk of additional POPs releases from existing technologies, it is imperative that appropriate infrastructure and capacity is built for handling, storage, transportation, disposal of POPs, and remediation of contaminated sites.

Objectives

1) To develop and implement appropriate strategies for identifying stockpiles and contaminated sites, products and articles in use and wastes containing or contaminated with any chemical listed in Annex A, B or C of the Stockholm Convention by 2014.
2) To develop and implement strategies for managing stockpiles and remediation of contaminated sites in a safe, efficient and environmentally sound manner by 2015.
3) To mainstream POPs management into the Environment Management Systems of the institutions with high potential exposure and vulnerability to POPs.

3.4 Time table for implementation

The activities of the actions plans will be implemented over a 17 year period between 2009 and 2025. The activities are phased to be undertaken between 2009 and 2013 for the first phase and 2013 and 2025 for the second phase. The extended deadline to 2025 is dictated by factors of technical capacity building and process to put in place a sustainable system for eliminating PCBs, POPs pesticides. In addition, since the country is already using DDT a longer period is needed for research into cost-effective alternatives so that DDT use can also be eliminated by 2025.

Activities occurring beyond 2016 are supposed to support the sustainability of the exercise and they consist of maintenance of the POPs Information Management System, monitoring and evaluation, POP and management of dioxins and furans. The later is expected to continue beyond 2025. However, the NIP project period will provide technical capacity and put in place an institutional structure to sustain dioxins and furans management after 2025.

Table 13: activities and timelines for implementation

Actions	Specific action	Institutions	Time line							
			2009	2010	2011	2012	2013	2014	2015	2016-25
1 Legal and enforcement framework for persistent organic pollutants in Uganda (2009 – 2012)										
Objectives 1	*To formulate policy guidelines to adequately address concerns on persistent organic pollutants in the country by 2010*	*NEMA, MWE, JLOS*	√	√						
Activity 1.1	Review Inventory Reports.		√							
Activity 1.2	Consultative meetings with stakeholders: (a) Personnel; (b) Members of Parliament; (c) CSOs; (d) media; (e) private sector.		√	√						
Activity 1.3	Develop issue paper/ policy brief/white papers			√						
Objective 2	*To develop a standards, regulations and guidelines that adequately addresses POPs by 2012*	*NEMA, MWE, JLOS*			√	√				
Activity 2.1	Preparatory activity to develop a standards, regulations & guidelines				√					
Activity 2.2	Develop suggestions on revise to existing chemicals management legislation to apportion the various POPs to the different sectors					√				
Activity 2.3	Develop guidelines on enforcement of revised waste management regulations, especially persistent organic pollutants					√				
Activity 2.4	Develop Standards and Operating procedures for POPs management					√				
2 Build capacity for compliance and enforcement of administrative and legislative framework										
Objective 1	*Build technical capacity of stakeholder institutions to implement, administrative and legislative framework by 2012.*	*NEMA, MWE, JLOS*		√	√	√				
Activity 1	Develop training materials			√	√	√				
Activity 2	Conduct trainings and meetings for stakeholder institutions.			√	√	√				
Activity 3	Evaluate the training programme					√				
3 Strengthening coordination mechanism of the regulatory agencies engaged in POPs management in Uganda, by2012 and up to 2025										
Objective 1	*To design a mechanism for coordinating the activities of the national regulatory agencies in the enforcement of POPs management, especially pesticides, in compliance with the Stockholm Convention, by 2012.*	*NEMA Institutional stakeholders to POPs*	√	√		√				

Actions	Specific action	Institutions	Time line							
			2009	2010	2011	2012	2013	2014	2015	2016-25
Activity 1.1	Establish framework of the chemicals management coordination institution		√							
Activity 1.2	undertake activities leading to approval of document by agency boards and Ministry		√	√						
Objective 2	*To implement mechanism for enhance multi-sectoral co-operation among stakeholders engaged in the management of POPs by 2012*	*NEMA; Institutional stakeholders to POPs*			√	√				
Activity 2.1	Set up a coordination secretariat with desk officers in charge of coordination in each agency by 2012				√					
Activity 2.2	Undertake annual reviews through writing, discussing and submitting annual monitoring & evaluation reports to the national POPs secretariat, mother ministries, & POPs secretariat					√				
4 Financing Mechanisms (2010 to 2025)										
Objective 1	*To develop a mechanism for utilising the resources of the environment fund to allocate equitable resources for POPs management*	*NEMA, MFPED, BoU, URA, MWE*		√	√	√				
Activity 1.1	Seek legal guidance and set up fund secretariat;			√	√					
Activity 1.2	Undertake feasibility study to assess the amount of resources that can be generated from the EF;				√	√				
Activity 1.3	Undertake activities to seek adoption of structure of the EF for chemicals management				√					
Objective 2	*To design and implement market based instruments for the identified POPs threats in the country as a means of financing their management*	*NEMA, MFPED, BoU, URA, MWE*			√					
Activity 2.1	Develop institutional arrangements for undertaking studies (This a function of the NIP coordinating office				√					
Activity 2.2	Undertake studies to develop MBIs				√					
Activity 2.3	Undertake stakeholder consultations									
Objective 3	*To develop and implement a strategy for mobilising and seeking resources from bilateral and multilateral partners*	*NEMA, BoU, MFPED, URA, MWE*			√	√	√	√	√	√
Activity 3.1	Establish technical committees				√	√				
Activity 3.2	Recruit staff and experts				√	√				

Actions	Specific action	Institutions	Time line							
			2009	2010	2011	2012	2013	2014	2015	2016-25
Activity 3.3	Undertake stakeholder consultations (government and donors) on resource mobilisation strategy					√	√	√		
Activity 3.4	Undertake resource mobilisation							√	√	√
5 Public Education and Awareness on specific categories for specialised education systems (2011 to 2012) Check what article 10 requires										
Objective 1	*To develop training materials to fit formal, non-formal and informal education systems*	*NEMA, MoES, MoGLSD*			√	√				
Activity 1.1	Set up the Public awareness office with relevant equipment and support staff				√					
Activity 1.2	Facilitate them to develop learning materials for different education levels				√					
Activity 1.3	Develop electronic training\instructional materials for audio, audio-visual and online transmission				√	√				
Objective 2	*To facilitate integration of POPs education in curriculum by 2014*	*NEMA, MoES*			√	√				
Activity 2.1	Identify and engage consultants to integrate POPs into primary, secondary education(activity 1.1,1.2)					√				
Activity 2.2	Facilitate the identification of research issues on POPs				√	√				
Activity 2.3	Undertake consultations to identify of research issues on POPs				√	√				
Activity 2.4	Undertake, monitor and evaluate progress of the integration of POPs into education curriculum				√	√				
Objective 3	*To build capacity of trainers and researchers in POPs education by 2014*	*NEMA, MoES*			√	√				
Activity 3.1	Develop TORs for POPs education programmes				√	√				
Activity 3.2	Carryout on-job training for researchers and teachers									
Activity 3.3	Provide training and research materials									
6 Implementing a National Public Awareness Programme (2010 to 2013)(Check what article 10 requires)										
Objective 1	*To develop and implement a national public awareness programmes for at least 70 percent of the most vulnerable groups by year 2012.*	*NEMA, MoGLSD,*		√	√	√				

Activity 1.1	Set up the Public awareness office with relevant equipment and support staff			√						
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Activity 1.2	Define working teams, identify lead members and agents, assign responsibilities and provide TORs.			√						
Activity 1.3	Develop, including pre-testing, public awareness materials, identify and mobilize medium			√	√	√				
Activity 1.4	Undertake training				√	√				
Activity 1.5	TOTs at Regional level go out to the field to disseminate the information/ create public awareness using public radios and television programmes			√	√	√				
7 Regulation on DDT										
Objective 1	*To review, harmonize and strengthen legislation to handle DDT by one year after adoption of the NIP by the COP.*	*NEMA, MoH, MTTI, CSOs, MoGLSD,*	√	√						
Activity 1.1	Identify and mobilize stakeholders to review the existing legislation & establish secretariat		√							
Activity 1.2	Carry out an assessment of the existing legislation		√							
Activity 1.3	Development of TORs for the consultant to review the existing legislation.		√	√						
Activity 1.4	Sensitization of stakeholders about the reviewed legislation.		√							
Activity 1.5	Documentation and dissemination of the reviewed legislation to the stakeholders and the general public			√						
Activity 1.6	Carry out monitoring and evaluation of the reviewed legislation.			√						
Activity 1.7	Development of TORs for the consultant to review legislation.			√						
Activity 1.8	Undertake Consultancy to develop a DDT for public health regulation approved by the MoH, parliament;			√	√					
Activity 1.9	Reports on stakeholder consultations				√					
Activity 1.10	Copies of the DDT regulations distributed to all regulation enforcement offices in the country/ district				√					

Activity 1.11	Design a market based instrument for DDT applicators and disposal teams					√				
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Objective 2	*To strengthen capacity for compliance and enforcement of DDT regulation*	*NEMA, MoH, MTTI*			√	√				
Activity 1	Conduct situation analysis and develop training materials on human, and infrastructure capacity for compliance and enforcement of regulation				√					
Activity 2	Conduct trainings and meetings for stakeholder institutions.					√				
Activity 3	Monitoring and evaluate the training programme					√				
8 DDT Management (Article 4,11,12,13, Annex B Part I and II)										
Objective 1	*To develop and implement a programme to ensure compliance to the appropriate management of DDT*	*MoGLSD, MoH, NEMA, CSOs, MTTI*	√	√	√	√	√	√	√	√
Activity 1.1	Set up institutional structure for DDT management under the Stockholm Convention in Uganda;		√	√						
Activity 1.2	Develop TORs and hire Consultant on compliance with the Stockholm Convention and national regulations;			√	√					
Activity 1.3	Recruit new and existing inspectors to undertake enforcement;				√	√	√	√		
Activity 1.4	Undertake enforcement and compliance activities		√	√	√	√	√	√	√	√
Activity 1.5	Undertake quarterly and annual reporting on the enforcement of compliance on DDT use regulations in the country				√	√	√	√	√	√
Objective 2	*To develop and implement plan to demonstrate the applicability, cost-effectiveness and sustainability of alternatives to DDT, by 2012*	*NEMA, MoH, CSOs, MTTI*			√	√	√	√	√	√
Activity 2.1	Develop TORs and hire key experts to develop a strategy to demonstrate the applicability, cost-effectiveness & sustainability of alternatives to DDT				√	√				
Activity 2.2:	Conduct regular integrated risk assessment studies, chemical analyses & socio-economic analyses quarterly &annually;					√	√	√	√	√
Objectives/ activities	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**

Activity 2.3	Undertake annual syntheses of progress on DDT alternatives in the country					√	√	√	√	√
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Objective 3	*To strengthen national capacity to plan, implement and evaluate integrated vector management*	*NEMA, MoH, CSOs, MTTI*					√	√	√	√
Activity 3.1	Recruit among staff and other candidates to undertake 1 PhD & 3 masters						√	√	√	√
Activity 3.2	Undertake trainings for capacity building for environment inspectors						√	√	√	√
Activity 3.3	Monitor and evaluate environmental and health impacts of the alternatives to DDT							√	√	√
9 POPs Information Management System (2009 – 2025)										
Objective 1	*To undertake comprehensive inventories on POPs*	*NEMA; stakeholders*	√	√	√					
Activity 1.1	Create project secretariat		√	√						
Activity 1.2	Undertake training on database management and inventorying for PCBs			√						
Activity 1.3	Undertake comprehensive inventory on all POPs			√	√					
Activity 1.4	Carry out stakeholder consultations on PCBs				√					
Activity 1.5	Update databases				√					
Objective 2	*To continually test, improve databases and technical capacity to ensure sustainability of the PMIS.*	*NEMA; Institutional stakeholders*				√	√	√		
Activity 2.1	Undertake consultations with stakeholders					√				
Activity 2.2	Acquire facilities for data base						√			
Activity 2.3	Provide technical capacity for 10 staff from all institutions						√	√	√	
Objective 3	*To implement information sharing platform for stakeholders including international information exchange networks.*	*NEMA; Institutional stakeholders*						√	√	√
Activity 3.1	Develop information sharing portal with sufficient security safety nets							√		

Activity 3.2	Carry out information releases and share findings on POPs with Stockholm Convention secretariat							√	√	√
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
10 Programme Research, Development and Monitoring (Article 11)										
Objective 1	*To have a monitoring program for POP's designed and a pilot study started by 2010 and by 2012*	*NEMA, UCPC, MoH, LGs, UMA*		√	√	√				
Activity 1.1	Establish pre-conditions and requirements for a national monitoring and evaluation programme			√						
Activity 1.2	Specify monitoring programme and preparations for a pilot study				√					
Activity 1.3	Implementing national monitoring programme					√	√	√	√	√
Objective 2	*To have a complete running M&E system for hazardous chemicals for the country by 2015*	*NEMA, UCPC,*				√	√	√	√	√
Activity 2.1	Evaluating and identify the needs to include other hazardous compounds in the national monitoring programme	*MoH, MAAIF, LGs, MTTI*				√	√			
Activity 2.2	Implementing the additional relevant sub-programmes					√	√			
Activity 2.3	Executing the additional concerns in national monitoring programmes					√	√			
Activity 2.4	Assessment of monitoring results			√	√	√	√	√	√	√
Activity 2.5	Evaluate total programme & adapt programme on a regular basis					√			√	√
Objective 3	*To undertake monitoring and evaluation of implementation of NIP between 2012 and 2025*	*NEMA, all stakeholders*				√				√
Activity 3.1	Undertake Consultancy to determine baseline conditions, indicators					√				
Activity 3.2	Undertake annual monitoring, medium term and final evaluation of the NIP programmes					√	√	√	√	√
11 Measure to reduce or eliminate releases from unintentional production through open burning of waste including burning of landfill sites										
Objective	*to reducing emissions of dioxins and furans from uncontrolled combustion processes by 70 percent by 2014*	*NEMA, UCPC, MoH, MAAIF, LGs*				√	√	√	√	
Activity 1.1	Establish UPOPs management secretariat and upscale office		√	√						
Activity 1.2	Determine current emission sources & levels of uncontrolled combustion		√	√	√	√	√	√	√	√

Activity 1.3	Design a programme on BAT and BEP identified in the inventory for adopted for uncontrolled combustion					√	√	√	√	
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Activity 1.4	Undertake pilot BAT and BEP trials						√			
Activity 1.5	Carry out awareness programmes on, and promote BAT and BEP						√			
Activity 1.6	Work with target groups to implement identified BAT & BEP					√	√	√	√	
Activity 1.7	Undertake M&E of the BAT and BEP implementation programme					√	√	√	√	
Activity 1.8	Evaluate and report on the overall reduction in emissions					√	√	√	√	
12Reductions of emissions of dioxins from industrial sources										
Objective:	*To reduce emissions of dioxins & furans from industrial processes by 60 percent by 2014*	*NEMA, UCPC, MoH, MAAIF, UMA, MTTI,*				√	√	√	√	
Activity 1.1	Determine the current emission sources and levels from uncontrolled combustion		√	√	√	√	√	√	√	√
Activity 1.2	Design a programme on BAT and BEP identified in the inventory for adopted for uncontrolled combustion					√	√	√	√	
Activity 1.3	Undertake pilot BAT and BEP trials						√			
Activity 1.4	Carry out awareness programmes on, and promote BAT and BEP						√			
Activity 1.5	Work with target groups to implement identified BAT & BEP to manage emission					√	√	√	√	
Activity 1.6	Undertake Monitoring and Evaluation of the Bat and BEP implementation programme					√	√	√	√	
Activity 1.7	Evaluate and report on the overall reduction in emissions					√	√	√	√	
13 Develop and implement programme for technical and infrastructure capacity for POPs monitoring and accreditation of laboratories										
Objective 1	*To strengthen laboratory technical and infrastructure capacity for POPs monitoring and evaluation by 2012*	*NEMA, GAL, URA, MoH, NDA, UNBS*		√	√	√				
Activity 1.1	Constitute technical committee (TC) to coordinate development of the plan			√	√	√				
Activity 1.2	Designate a secretariat for the activities			√	√	√				

Activity 1.3	Commissioning technical and feasibility studies including EIA on handling, storage and disposal of hazardous chemicals			√	√					
Activity 1.4	Procure an expert to develop the plan			√						
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Activity 1.5	Approval and adoption of the plan				√					
Objective 2	*To design and implement a programme for accreditation of at least one laboratory for monitoring and evaluation of POPs, by 2015.*	*NEMA, GAL, URA, MoH, NDA, UNBS*		√	√					
Activity 2.1	Conduct a rapid needs assessment for laboratory analysis of POPs		√	√						
Activity 2.2	Review &evaluate working terms & conditions		√	√						
Activity 2.3	Support approval and upgrade of working terms and conditions				√					
Objective 3	*To strengthen capacity and capability for the identification, analysis and monitoring of POPs in the environment 2015*	*NEMA, GAL, MUK, URA, MoH, NDA*	√	√	√	√	√			
Activity 3.1	Constitute technical committee to coordinate capacity building plan.		√							
Activity 3.2	Conduct training needs for laboratory analysis		√	√						
Activity 3.3	Conduct Training Programme for enhancement of analytical capacity			√	√	√				
Activity 3.4	Procure and install equipments for enhancement of laboratory capacity			√	√	√	√	√		
14 Measure to reduce or eliminate releases from stockpiles and waste (Article 6)										
Objective 1	*To develop and implement appropriate strategies for indentifying stockpiles and for identifying contaminated sites,*	*NEMA, MoH, MAAIF, NDA, MFPED, URA*				√	√	√		
Activity 1.1	Design a programme on strategies for identification of stockpiles and sites contaminated by 2011.					√	√			
Activity 1.2	Train 20 Ugandan technicians and other stakeholders					√	√			
Activity 1.3	Undertake activities to updated inventory on obsolete stocks and contaminated sites of POPs.		√	√	√	√	√	√	√	√
Objective 2	*Develop & implement appropriate strategies for managing stockpiles in a safe, & environmentally sound manner by 2013.*	*NEMA, MoH, MAAIF, NDA,*				√	√	√	√	√
Activity 2.1	Design a programme on strategies for managing obsolete stockpiles and sites contaminated with persistent by the 4th quarter 2011.					√	√			

Activity 2.2	Train technicians in safe, efficient and environmentally sound manner of handling, collection, transport, storage & disposal of POPs by 2012.	*MFPED, URA*				√	√			
Activity 2.3	Write and disseminate a field activity comprehensive report on the implementation of the obsolete POPs management by 2012.					√	√	√		
Actions	**Specific action**	**Institutions**	**Time line**							
			2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016-25**
Activity 2.4	Write and disseminate about four synthesis reports on the effectiveness of management of obsolete stockpiles and contaminated sites					√	√	√		
Activity 2.5	Put in place a state of the art POPs remediation programme (estimates)					√	√	√	√	
Activity 2.6	Put in place a state of the art disposal unit/ incinerator (estimates)							√	√	
Activity 2.7	Put in place a state of the art storage system for POPs							√	√	
Activity 2.8	Put in place a state of the art transportation system for POPs							√	√	
Objective 3	*To mainstream POPs management into the Environment Management Systems of the institutions vulnerable to POPs contamination.*	*NEMA, MoH, MAAIF, NDA, MFPED, URA*				√	√	√	√	√
Activity 3.1	Review of work environment policy and environment planning									√
Activity 3.2	Support operationalisation of EMS									√
Activity 3.3	Checking and undertaking corrective procedures									√
Activity 3.4	Periodic management reviews of overall EMS									√

3.5 Financial requirements and arrangements

The overall cost of Uganda's NIP was is US$ 108,877,450. However, US$ 100,000,000 which is about 92% of the entire budget of the NIP has been proposed to enhance the low incineration capacity. Incineration capacity in the NIP was prioritised, by several sector stakeholders such as municipal authorities and the Ministry of Health, due to the need to put in place a long-term strategy for managing unintentional POPs and other chemicals.

If the incineration capacity were considered a separate investment of the NIP, the overall budget of the NIP would be about US$ 8,877,450. in addition, it is envisaged that a contribution of US$ 100 million to a state of the art incinerator plus contributions from the other stakeholder sectors such as health and agriculture would cover for the country's need to dispose of different types chemicals waste; including POPs.

Phase I action plans consist of action plans one to ten and they cost US$ 5,416,100; while the phase II action plans are 10 – 14 and they cost in all US$ 103,461,350. However, again the investment into infrastructure capacity for POPs specifically incineration capacity makes the cost very large. If the cost of the state of the art incinerator, which may be higher than US$ 100 million, is removed the second phase of the project would be expected to cost US$ 3,461,350.

Table 14: Financial requirements for implementing action plans of the NIP

Objectives and activities	Specific action	Resources (US$)
1 Legal and enforcement framework for persistent organic pollutants in Uganda (2009–2012)		
Objectives 1	*To formulate policy guidelines to adequately address concerns on persistent organic pollutants in the country by 2010*	
Activity 1.1	Review Inventory Reports.	65,500
Activity 1.2	Consultative meetings with key stakeholders: (a) Members of Parliament; (b) Personnel; (c) CSOs; (d) media; (e) private sector.	36,000
Activity 1.3	Develop issue paper/ policy brief/white papers (Government policy document)	45,200
Objective 2	*To develop a standards, regulations and guidelines that adequately addresses POPs*	
Activity 2.1	Preparatory activity to develop a standards, regulations and guidelines	134,300
Activity 2.2	Develop suggestions on revise to existing chemicals management legislation to apportion the various POPs to the different sectors	52,300
Activity 2.3	Develop guidelines on enforcement of revised waste management regulations, especially persistent organic	62,400

	pollutants	
Activity 2.4	Develop Standards and Operating procedures for management of POPs	30,000
Subtotal		**425,700**
2 Capacity building for stakeholders engaged in implementation, management and regulation of the legal framework		
Objective 1	*Build technical capacity of about 10 stakeholder institutions to implement, regulate and enforcement legal framework by 2014.*	
Activity 1	Develop training materials	119,800
Activity 2	Conduct trainings and meetings for stakeholder institutions.	74,500
Activity 3	Evaluate the training programme	35,000
Subtotal		**229,300**
3 Strengthening coordination mechanism of the regulatory agencies engaged in POPs management in Uganda, by2012 and up to 2025		
Objective 1:	*To design a mechanism for coordinating the activities of the national regulatory agencies in the enforcement of POPs management, especially pesticides, in compliance with the Stockholm Convention, by 2012.*	
Activity 1.1	Establish framework of the chemicals management coordination institution	99,400
Activity 1.2	undertake activities leading to approval of document by agency boards and Ministry	18,000
Objective 2	To implement mechanism for enhance multi-sectoral co-operation among stakeholders engaged in the management of POPs by 2012	
Activity 2.1	Set up a coordination secretariat with desk officers in charge of coordination in each agency by 2013	45,000
Activity 2.2	Undertake annual reviews through writing, discussing and submitting annual monitoring & evaluation reports to the national POPs secretariat, mother ministries, & POPs secretariat	90,000
Subtotal		**252,400**
4 Financing Mechanisms (2010 to 2025)		
Objective 1	*To develop a mechanism for utilising the resources of the environment fund in such a way as to allocate equitable resources for hazardous waste management including POPs.*	
Activity 1.1	Seek legal guidance on the feasibility and practicality of fund and set up fund secretariat;	220,600
Activity 1.2	Undertake feasibility study to assess the amount of resources that can be generated from the EF;	36,000

Activity 1.3	Undertake activities to seek adoption of structure of the EF for chemicals management	32,400
Objective 2	To design and implement market based instruments for the identified POPs threats in the country as a means of financing their management	
Activity 2.1	Develop institutional arrangements for undertaking studies	32,400
Activity 2.2	Undertake studies to develop MBIs	36,000
Activity 2.3	Undertake stakeholder consultations	42,400
Objective 3	To develop and implement a strategy for mobilising and seeking resources from bilateral and multilateral partners	
Activity 3.1	Establish technical committees	32,400
Activity 3.2	Recruit staff and experts	36,000
Activity 3.3	Undertake stakeholder consultations (government and donors) on resource mobilisation strategy	42,400
Activity 3.4	Undertake resource mobilisation	32,400
Subtotal		**510,600**
5 Public Education and Awareness on specific categories for specialised education systems (2011 to 2014)		
Objective 1	*To develop training materials to fit formal, non-formal and informal education systems*	
Activity 1.1	Set up the Public awareness office with relevant equipment and support staff	190,300
Activity 1.2	Facilitate them to develop learning materials for different education levels	61,300
Activity 1.3	Develop electronic training\instructional materials for audio, audio-visual and online transmission	53,000
Objective 2	*To facilitate integration of POPs education in the curriculum by 2014*	
Activity 2.1	Identify and engage consultants to integrate POPs into primary, secondary education	68,000
Activity 2.2	Facilitate the identification of research issues on POPs	16,500
Activity 2.3	Undertake consultations to identify of research issues on POPs	27,000
Activity 2.4	Undertake, monitor and evaluate progress of the integration of POPs into education curriculum	86,000
Objective 3	*To build capacity of trainers and researchers in POPs education by 2014*	
Activity 3.1	Develop TORs for POPs education programmes	10,000
Activity 3.2	Carryout on job training and refresher courses for researchers and teachers	86,000
Activity 3.3	Provide training and research materials	20,000
Subtotal		618,100
6 Implementing a National Public Awareness Programme (2010 to 2013		

Objective 1	*To develop and implement a national public awareness programmes for at least 70 percent of the most vulnerable groups by year 2012.*	
Activity 1.1	Set up the Public awareness office with relevant equipment and support staff	covered
Activity 1.2	Define working teams, identify lead members and agents, assign responsibilities and provide TORs.	6,100
Activity 1.3	Develop, including pre-testing, public awareness materials, identify and mobilize medium/channel of awareness creation/dissemination.	68,000
Activity 1.4	Undertake training	26,500
Activity 1.5	TOTs at Regional level go out to the field to disseminate the information/ create public awareness using public radios and television programmes	480,500
Subtotal		**581,100**
7 Regulation on DDT		
Objective 1	*To review, harmonize and strengthen legislation to handle DDT by one year after adoption of the NIP by the COP.*	
Activity 1.1	Identify and mobilize stakeholders to review the existing legislation & establish secretariat	358,700
Activity 1.2	Carry out an assessment of the existing legislation	34,000
Activity 1.3	Development of TORs for the consultant to review the existing legislation.	20,000
Activity 1.4	Sensitization of stakeholders about the reviewed legislation.	49,600
Activity 1.5	Documentation and dissemination of the reviewed legislation to the stakeholders and the general public	66,000
Activity 1.6	Carry out monitoring and evaluation of the reviewed legislation.	68,000
Activity 1.7	Development of TORs for the consultant to review legislation.	5,000
Activity 1.8	Undertake Consultancy to develop a DDT for public health regulation approved by the MoH, parliament;	34,000
Activity 1.9	Reports on stakeholder consultations (with the public, parliament etc.)	18,000
Activity 1.10	Copies of the DDT regulations distributed to all regulation enforcement offices in the country/ district	66,000
Activity 1.11	Design a market based instrument for DDT applicators and disposal teams	10,000
Objective 2	*To strengthen capacity for compliance and enforcement of DDT regulation*	
Activity 1	Conduct situation analysis and develop training materials on human, and infrastructure capacity for compliance and enforcement of regulation	34,000

Activity 2	Conduct trainings and meetings for stakeholder institutions.	80,000
Activity 3	Monitoring and evaluate the training programme	18,000
Subtotal		**861,300**
8 DDT Management (Article 4,11,12,13, Annex B Part I and II)		
Objective 1	*To develop and implement a programme to ensure compliance to the appropriate management of DDT*	
Activity 1.1	Set up institutional structure for DDT management under the Stockholm Convention in Uganda;	(Covered)
Activity 1.2	Develop TORs and hire Consultant on compliance with the Stockholm Convention and national regulations;	46,000
Activity 1.3	Recruit new and existing inspectors to undertake enforcement;	60,000
Activity 1.4	Undertake enforcement and compliance activities	94,600
Activity 1.5	Undertake quarterly and annual reporting on the enforcement of compliance on DDT use regulations in the country	28,000
Objective 2	*To develop and implement plan to demonstrate the applicability, cost-effectiveness and sustainability of alternatives to DDT, by 2012*	
Activity 2.1	Develop TORs and hire key experts to develop a strategy to demonstrate the applicability, cost-effectiveness & sustainability of alternatives to DDT	70,800
Activity 2.2	Conduct regular integrated risk assessment studies, chemical analyses & socio-economic analyses quarterly &annually;	150,000
Activity 2.3	Undertake annual syntheses of progress on DDT alternatives in the country	50,000
Objective 3:	*To strengthen national capacity to plan, implement and evaluate integrated vector management*	
Activity 3.1:	Recruit among staff and other candidates to undertake 1 PhD & 3 masters	83,000
Activity 3.2:	Undertake trainings for capacity building for environment inspectors	33,000
Activity 3.3	Monitor and evaluate environmental and health impacts of the alternatives to DDT	55,000
Subtotal		**670,400**
9 POPs Information Management System (2009 – 2025)		
Objective 1	*To undertake comprehensive inventories on POPs*	
Activity 1.1	Create project secretariat	220,600
Activity 1.2	Undertake training on database management and inventorying for PCBs	34,000
Activity 1.3	Undertake comprehensive inventory on all POPs	33,000
Activity 1.4	Carry out stakeholder consultations on PCBs	16,000
Activity 1.5	Update databases	24,400

Objective 2	*To continually test, improve databases and technical capacity to ensure sustainability of the PMIS.*	
Activity 2.1	Undertake consultations with stakeholders	34,000
Activity 2.2	Acquire facilities for data base	40,000
Activity 2.3	Provide technical capacity for 10 staff from all institutions	34,000
Objective 3	*To implement information sharing platform for stakeholders including international information exchange networks.*	
Activity 3.1	Develop information sharing portal with sufficient security safety nets	34,000
Activity 3.2	Carry out information releases and share findings on POPs with Stockholm Convention secretariat	40,400
Subtotal		**510,400**
14 Programme Research, Development and Monitoring (Article 11)		
Objective 1	*To have a monitoring program for POP's designed and a pilot study started by the year 2010 and finished by 2012*	
Activity 1.1	Establish pre-conditions and requirements for a national monitoring and evaluation programme	135,300
Activity 1.2	Specify monitoring programme and preparations for a pilot study	41,500
Activity 1.3	Implementing national monitoring programme	162,500
Objective 2	*To have a complete running M&E system for hazardous chemicals for the whole country by 2015*	
Activity 2.1	Evaluating and identify the needs to include other hazardous compounds in the national monitoring programme	16,500
Activity 2.2	Implementing the additional relevant sub-programmes	10,000
Activity 2.3	Executing the additional concerns in the national monitoring programmes	162,500
Activity 2.4	Assessment of monitoring results	41,500
Activity 2.5	Evaluate total programme & adapt programme on a regular basis	21,000
Objective 3	*To undertake monitoring and evaluation of the implementation of the NIP between 2012 and 2025*	
Activity 3.1	Undertake Consultancy to determine baseline conditions, indicators, targets	41,500
Activity 3.2	Undertake annual monitoring, medium term and final evaluation of the NIP programmes	124,500
Subtotal		**756,800**
11 Measure to reduce or eliminate releases from unintentional production through open burning of waste including burning of landfill sites		
Objective	*to reducing emissions of dioxins and furans from uncontrolled combustion processes by 70 percent by 2014*	
Activity 1.1	Establish UPOPs management secretariat and upscale office	226,300

Activity 1.2	Determine current emission sources & levels of uncontrolled combustion	(covered)
Activity 1.3	Design a programme on BAT and BEP identified in the inventory for adopted for uncontrolled combustion	136,700
Activity 1.4	Undertake pilot BAT and BEP trials	67,350
Activity 1.5	Carry out awareness programmes on, and promote BAT and BEP	48,000
Activity 1.6	Work with target groups to implement identified BAT & BEP	40,000
Activity 1.7	Undertake M&E of the BAT and BEP implementation programme	67,350
Activity 1.8	Evaluate and report on the overall reduction in emissions	88,400
Subtotal		**674,100**
12 Reductions of emissions of dioxins from industrial sources		
Objective:	*To reduce emissions of dioxins & furans from industrial processes by 60 percent by 2014*	
Activity 1.1:	Determine the current emission sources and levels from uncontrolled combustion	(covered)
Activity 1.2	Design a programme on BAT and BEP identified in the inventory for adopted for uncontrolled combustion	(covered)
Activity 1.3	Undertake pilot BAT and BEP trials	136,700
Activity 1.4	Carry out awareness programmes on, and promote BAT and BEP	48,000
Activity 1.5	Work with target groups to implement identified BAT & BEP to manage emission	40,000
Activity 1.6	Undertake Monitoring and Evaluation of the Bat and BEP implementation programme	67,350
Activity 1.7	Evaluate and report on the overall reduction in emissions	88,400
Subtotal		**440,450**
13 Develop and implement programme for technical and infrastructure capacity for POPs monitoring and accreditation of laboratories		
Objective 1	*To strengthen laboratory technical and infrastructure capacity for POPs monitoring and evaluation by 2012*	
Activity 1.1	Constitute technical committee (TC) to coordinate development of the plan	(covered)
Activity 1.2	Designate a secretariat for the activities of the TC.	220,600
Activity 1.3	Commissioning technical and feasibility studies including EIA on handling, storage and disposal of hazardous chemicals	18,000
Activity 1.4	Procure an expert to develop the plan	50,000
Activity 1.5	Approval and adoption of the plan	(covered)
Objective 2	*To design and implement a programme for accreditation of at least one laboratory for monitoring and evaluation of*	

	POPs, by 2015.	
Activity 2.1	Conduct a rapid needs assessment for laboratory analysis of POPs	11,600
Activity 2.2	Review &evaluate working terms & conditions	15,600
Activity 2.3	Support approval and upgrade of working terms and conditions	12,000
Objective 3	*To strengthen capacity and capability for the identification, analysis and monitoring of POPs in the environment 2015*	
Activity 3.1	Constitute technical committee to coordinate capacity building plan.	3,600
Activity 3.2	Conduct training needs for laboratory analysis	11,600
Activity 3.3	Conduct Training Programme for enhancement of analytical capacity	47,200
Activity 3.4	Procure and install equipments for enhancement of laboratory capacity	1, 019,600
Subtotal		**1,409,800**
14 Measure to reduce or eliminate releases from stockpiles and waste (Article 6)		
Objective 1.	*To develop and implement appropriate strategies for indentifying stockpiles and for identifying contaminated sites,*	
Activity 1.1	Design a programme on strategies for identification of stockpiles and sites contaminated by the second quarter of 2011.	54,000
Activity 1.2	Train 20 Ugandan technicians and other key stakeholders	145,000
Activity 1.3	Undertake activities to updated inventory on obsolete stocks and contaminated sites of POPs.	(covered)
Objective 2	*Develop and implement appropriate strategies for managing stockpiles in a safe, efficient and environmentally sound manner by 2013.*	
Activity 2.1	Design a programme on strategies for managing obsolete stockpiles and sites contaminated with persistent by the 4th quarter 2011.	79,000
Activity 2.2	Train 20 technicians in safe, efficient and environmentally sound manner of handling, collection, transportation, storage & disposal of POPs by the first quarter of 2012.	145,000
Activity 2.3	Write and disseminate a field activity comprehensive report on the implementation of the obsolete POPs management by 2012.	119,000
Activity 2.4	Write and disseminate about four synthesis reports on the effectiveness of management of obsolete stockpiles and contaminated sites	(covered)
Activity 2.5	Put in place a state of the art POPs remediation programme (estimates)	50,000
Activity 2.6	Put in place a state of the art disposal unit/ incinerator	100,000,000

	(estimates)	
Activity 2.7	Put in place a state of the art storage system for POPs	150,000
Activity 2.8	Put in place a state of the art transportation system for POPs	100,000
Objective 3	*To mainstream POPs management into the Environment Management Systems of the institutions vulnerable to POPs contamination.*	
Activity 3.1	Supervise review of work environment policy and support environment planning	18,000
Activity 3.2	Support operationalisation of EMS	18,000
Activity 3.3	Checking and undertaking corrective procedures	50,000
Activity 3.4	Periodic management reviews of overall EMS	18,000
Subtotal		**100,937,000**
Grand-total		**108,877,450**

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ANNEX I: Detail Tables of Action Plan Gantt Charts

1 An action plan for legal and enforcement framework for persistent organic pollutants in Uganda

Objectives & Activities, Tasks	**2009**				**2010**				**2011**				**2012**				**2013**				**2014**				**2015–2025**			
Goal: Develop policy guidelines and a legislative framework on POPs management in Uganda, within three years from adoption of the NIP																												
Objectives 1: To formulate policy guidelines to adequately address concerns on persistent organic pollutants in the country by 2011																												
Tasks	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 1.1: Review Inventory Reports.																												
1.1.1 Constitute Review committee.																												
1.1.2 Develop ToRs																												
1.1.3 Undertake review and compile a report.																												
Activity 1.2: Consultative meetings with key stakeholders: (a) Members of Parliament;																												
2.1 Prepare a synthesis report & present to parliament Committee.																												
2.2 Undertake stakeholder meetings																												
2.3 Review findings of stakeholder meetings and compile them																												
Activity 1.3 Develop / policy Paper																												
3.1 Collate information and write a policy brief																												
3.2 Consultative meetings - review draft policy brief & analysis																												
3.3 Presentation of the draft policy to the NEMA Board for review																												
3.4 Presentation of the reviewed draft Policy to the Policy Review Committee and sanction for presentation to cabinet																												
3.5 Presentation Draft policy to Minister MWE - develop a policy paper for cabinet																												
Objective 2: To formulate regulations, guidelines and standards for POPs management by 2012																												
Activity 2.1: Draft, and guidelines. regulations and standards																												
2.1.1 Constitute Committee to supervise the review, amend or/& revise existing laws																												
2.1.2 Draft ToRs for consultant to draft law																												
2.1.3 Hire a Consultant																												
Activity 2.2: Develop suggestions for revising existing chemicals management legislation																												
2.2.1 Undertake consultations with stakeholders, representatives																												
2.2.2 Undertake stakeholder consultations include WHO, MoH and other partners																												
2.2.3 Write report on stakeholder suggestion and the identified priorities																												

Activity 2.3: Develop guidelines on enforcement of revised waste management regulations including persistent organic pollutants																													
2.3.1 Nominate technical team																													
2.3.2 Review submissions of stakeholders, and existing legislative framework																													
2.3.3 Draft guidelines on enforcement of revised POPs management regulations																													
2.3.4 Submit the proposed guidelines to NEMA board, MWE and Cabinet																													
2.3.5 Support ministry to submit guidelines to parliament for approval																													
Activity 2.4: Develop Standards and Operating Guidelines for use at Local Government levels																													
2.4.1 Nominate technical team																													
2.4.2 Review suggestions of stakeholders and national laws on waste management																													
2.4.3 Draft standards and operating procedure on enforcement of POPs management																													
2.4.4 submit Draft standards & operating procedures to NEMA board, Ministry of Water & Environment and Cabinet for approval																													

2 An action plan for capacity building to be undertaken for a number of stakeholder institutions with regard to implementation, management and regulation of the legal framework three (3) years after NIP Endorsement.

Objectives & Activities	**Tasks**	**2013**				**2014**				**2015**				**2016**				**2017**				**2018**				**2018 – 2025**			
Goal: Built capacity at a number of stakeholder institutions to implement, manage and regulate on POPs management three (3) years after COP agreement																													
Objective 1: To build technical capacity of stakeholder institutions to implementation, management, regulation & enforcement of the legal framework by 2014.																													
Activities and Tasks		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Activity 1: Develop training materials/ manuals tailored for the 10 groups																													
1.1.1. Conduct needs assessment																													
1.1.2. Develop TORs and hire Consultant																													
1.1.3. produce training manual																													
1.1.3. pre-test training materials																													
1.1.4 distribute training materials																													
Activity 2: Conduct training workshops and meetings tailored for the 10 groups																													
1.2.1. Develop TORs for a consultant																													
1.2.2. Training for Parliament																													
1.2.3. Training chemicals national regulators NEMA, UNBS																													
1.2.4.Training for Legislature																													
1.2.5. Training of public prosecutor																													
1.2.6. Training for private lawyers																													
1.2.7. Training of Police																													
1.2.8. Training for URA																													
1.2.9. Training for Industry technicians																													
1.2.10. Training for private laboratories																													
Activity 3: Monitor & evaluate training programme																													
1.3.1. Develop TORs for a consultant																													
1.3.2. Conduct concurrent monitoring of training																													
1.3.3. Distribute findings on evaluation																													
1.3.4. Distribute findings																													

3 Action plan for a programme for strengthening the coordination mechanisms of the regulatory agencies engaged in POPs management, including pesticides, by 2012.

	2009				2010				2011				2012			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: Develop and implement mechanisms for strengthening coordination and cooperation among stakeholders engaged in POPs management by 2014																
Objective 1: To design a mechanism for coordinating the activities of the national stakeholders engaged in POPs management, especially by 2010																
Activity 1.1. Establish framework of the chemicals management coordination institution																
Task 1.1.1 Identification of stakeholders and relevant legislation																
Task 1.1.2 Develop TORs & hire Consultant to design coordination mechanism																
Task 1.1.3 Complete assignment on design of coordination mechanism																
Task 1.1.4 Provide technical support with technical team & stakeholders																
Activity 1.2 undertake activities leading to approval of document by agency boards and Ministry																
Task 1.2.1 Submit the mechanism document to agency boards, mother ministries and other stakeholders																
Task 1.2.2 Undertake discussion of the plan and follow up adjustments as suggested by stakeholders																
Task 1.2.3 Submit for approval of mechanism by the Government																
Objective 2: To implement mechanism for enhance multi-sectoral co-operation among stakeholders engaged in the management of POPs by 2012																
Activity 2.1 Set up a coordination secretariat with desk officers in charge of coordination in each agency by 2013																
Task 2.1.2 Carry out consultations & sensitizations with stakeholders																
Task 2.1.3 identify secretariat office, officers & the coordination office																
Task 2.1.4 Create of a Database and a communication interlinkage																
Activity 2.2 Undertake annual reviews through writing, discussing and submitting annual monitoring & evaluation reports to the national POPs secretariat, mother ministries, & POPs secretariat																
Task 2.2.1 Designate technical team for report writing, to undertake quarterly reporting																
Task 2.2.2 Hire independent Consultants to undertake M&E performance reviews																
Task 2.2.3 Discuss report findings & internalize outcomes in next year activities																
Task 2.2.4 Submit annual reports to the national POPs secretariat, mother ministries, & POPs secretariat																

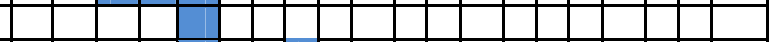
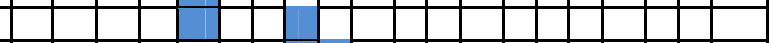
4. Action plan for financial mechanisms

Goal:																																								
Activity/task for the work	2010				2011				2012				2013				2014				2015				2016				2017				2018-2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: Develop and implement mechanisms for financing POPs management by 20133 and ensure its sustainability																																								
Objective 1:To develop mechanisms for utilising resources of the environment fund to cater for chemicals management in particular																																								
Act 1.1 Seek legal guidance on feasibility & practicality of using environment fund resources for POPs management																																								
Task 1.1.1: Establish technical committee to																																								
Task 1.1.2: develop TORs, legal & institutional review																																								
Task 1.1.3: undertake stakeholder consultations on reviews - EF																																								
Task 1.1.4: seek policy guidance on how to proceed with EF																																								
Act 1.2 Undertake feasibility study of EF;																																								
Task 1.2.1: Develop TORs for study																																								
Task 1.2.2: Undertake Consultancy on feasibility of running EF																																								
Task 1.2.3: Undertake stakeholder consultations & report																																								
Act 1.3: S seek adoption of structure of the EF for chemicals																																								
Task 1.3.1: Seek policy guidance on new institutional structure																																								
Task 1.3.2: Undertake wider Stakeholder Consultation on EF																																								
Task 1.3.3: Drafting papers to seek for approval by parliament																																								
Task 1.3.3: Drafting papers to seek for approval by Cabinet																																								
Task 1.3.4: put in place institutional & legislative structure of EF																																								
Objective 2: To design and implement market based instruments for the identified POPs threats in the country as a means of financing their management in the country																																								
Activity 2.1: Develop institutional arrangements for studies																																								
Task 2.1.1: Appoint coordination committee for studies																																								
Task 2.1.2: Develop TORs for the coordination committee and nominate a technical committee for examining the studies																																								
Task.2.1.3: Develop TORs for the studies to be undertaken																																								
Activity 2.2: Develop institutional arrangements for undertaking studies																																								
Task 2.2.1: Develop TORs for scoping studies																																								
Task 2.2.2: Undertake scoping studies of MBIs																																								

Task 2.2.3: Review scoping studies, sample MBIs which can be studies first, those for later studies									
Activity/task for the work	2010	2011	2012	2013	2013	2014	2015	2016	2017-2025
Objective 2: To design and implement market based instruments for the identified POPs threats in the country as a means of financing their management in the country									
Act 2.3 undertake studies to develop specific MBIs selected;									
Task 2.3.1: Appoint Consultants & start studies									
Task 2.3.2: Undertake stakeholder consultations									
Task 2.3.3: review study, produce papers - Cabinet & parliament									
Act 2.4 Undertake stakeholder Consultations									
Task 2.4.1: circulate the papers from studies									
Task 2.4.2: hold discussions & proceed with MBIs									
Task 2.4.3: circulate reports & minutes for cabinet & parliament									
Objective 3: To develop and implement a strategy for mobilizing and seeking resources from bilateral and multilateral partners to finance POPs chemicals management in Uganda									
Act 3.1: Establish technical committees & other committees;									
Task 3.1.1: Appoint coordination committee									
Task 3.1.2: Develop TORs for the technical committee									
Task.3.1.3: Develop TORs for the various studies									
Act 3.2: Appoint Consultants and relevant staff;									
Task 3.2.1: Develop TORs for advisors, consultants									
Task 3.2.2: Appoint advisors within country & donors									
Act 3.3: undertake studies for mobilization strategy									
Task 3.3.1 : Appoint Consultants & start studies									
Task 3.3.2: Undertake stakeholder consultations									
Task 3.3.3: review study & paper - Cabinet & parliament:									
Act 3.4: implement programme for mobilizing donor funds									
Task 3.4.1: establish the coordination committee for									
Task 3.4.2: decide on the first activities ,p execution									
Task 3.4.3: develop budget, appoint staff & mobilise revenue									

5 Action Plan to Develop and Implement public education and awareness programmes on POPs

Goal, o**bjectives, activities & tasks**	**2011**				**2012**				**2013**				**2014**				**2015 - 2025**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
GOAL: Integrate POPs education in training and research at primary, secondary and tertiary education levels by 2014																				
Objective1: to develop training materials on specific categories of POPs for primary, secondary and tertiary education levels																				
Activity 1.1 Identify subject matter specialists and curriculum developers																				
Task 1.1.1 Identify specialists \ expert on POPs curriculum development																				
Task 1.1.2 Web based search for experts on POPs																				
Task 1.1.3 Contact the experts																				
Task 1.1.4 Convene meetings																				
Activity 1.2 Facilitate them to develop subject matter for different education levels																				
Task 1.2.1 Develop TORs on curriculum development																				
Task 1.2.2 Organise a workshop for subject matter specialists & curriculum developers																				
Task 1.2.3 Workshop to present drafts to stakeholders for input																				
Task 1.2.4 Finalise report on curriculum content																				
Activity 1.3 Develop electronic based training\instructional materials for T V and radio, and online transmission																				
Task 1.3.1 Identify task team on material development																				
Task 1.3.2 Develop TORs for the task teams																				
Task 1.3.3 Organise a planning meeting for developing draft modules																				
Task 1.3.4 review draft modules																				
Task 1.3.5 Pre-test the modules																				
Task 1.3.6 Finalise modules & disseminate for use																				
Objective 2: To facilitate integration of POPs into formal education in primary, secondary and tertiary curriculum by the year2012																				
Activity 2.1 Identify & engage consultants to integrate POPs into primary, secondary education																				
Task 2.1.1 Identify consultants and develop TORs																				
Task 2.1.2 Hire consultant to integrate education																				
Task 2.1.3 Convene stakeholders' consultative meetings																				
Task 2.1.4 Refine & present to the ministry of education																				
Activity 2.2 engage consultants to integrate POPs subject matter into tertiary education curriculum																				
Task 2.2.1 Identify consultants and develop TORs																				
Task2.2.2 Engage a consultant																				
Task 2.2.3 Convene stakeholders' consultative meetings																				
Task 2.2.4 Refine & present to the ministry of education																				

Activity 2.3 Undertake consultations to identify of research issues on POPs	
Task 2.3.1 Develop TORs and identify consultants	
Task2.3.2 Engage a consultant	
Task 2.3.3 Convene stakeholders' consultative meetings	
Task 2.3.4 Compile research areas for research	
Activity 2.4 Monitor & evaluate progress of the integration of POPs into education curriculum	
Task 2.4.1 Identify and recruit technical team	
Task 2.4.2 Define indicators, baseline and methodology for M&E	
Task 2.4.3 Undertake M &E visits	
Task 2.4.4 Compile monitoring reports	
Task 2.4.5 Circulate the reports	
Objective 3: To build capacity of trainers and researchers in POPs education by 2012	
Activity 3.1 undertake TORs on POPs education	
Task 3.1.1 Identify the TOTs	
Task3.1.2 Develop training programmes	
Task 3.1.3 Develop training materials & identify trainers	
Task 3.1.4 Invite the TOTs	
Task 3.1.5 Train the TOTs	
Activity 3.2 Carryout on Job Training and refresher courses for researchers and teachers	
Task 3.2.1 Identify the TOTs	
Task3.2.2 Develop training programmes	
Task 3.2.3 Develop training materials	
Task 3.2.4 Invite the TOTs and train TOTs	
Task 3.2.5 Organise regional training workshops	
Activity 3.3 Provide training and research materials	
Task 3.3.1 Sort and distribute materials	
Task3.3.2 Follow up delivery/use and impact	

6. Action plan to implementing a national public awareness programme

Goal, objectives, activities & tasks	2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To raise awareness on POPs among at least 70 percent of the most vulnerable groups by 2013																
Objective1: To Implement a national public awareness programme for at least 70% of the most vulnerable groups by year 2012.																
Activity 1.1 Set up the Public awareness office with relevant equipment and support staff																
Task 1.1.1 Procure office equipment.																
Task 1.1.2 Recruit a desk officer for PAW.																
Activity 1.2 Define working teams, identify lead members and agents, assign responsibilities and provide TORs.																
Task 1.2.1 Form teams																
Task 1.2.2 Nominate leaders																
Task 1.2.3 Draft TORs and circulate.																
Task 1.2.4 Assign responsibilities																
Activity 1.3 Develop Including Pre-testing of the public awareness materials, Identify and mobilize medium/channel of awareness creation/dissemination.																
Task 1.3.1 Literature review																
Task 1.3.2 Stakeholders analysis to identify specialists for materials development																
Task 1.3.3 Organize a residential materials development workshop.																
Task 1.3.4 Organize a residential workshop for editing the materials.																
Task 1.3.5 Pre-test the materials in the 5 Regions																
Task 1.3.6 Finalize the materials and print for wider dissemination																
Activity 1.4 Capacity Building & skills development for the implementing team																
Task 1.4.1 Identify facilitators and engage them.																
Task 1.4.2 Organize and conduct training workshops at National, Regional and District levels.																
Activity 1.5: TOTs at Regional level go out to the field to disseminate the information & create public awareness.																
Task 1.5.1 Contact target, beneficiaries, and vulnerable groups; draw the work plans and start the programme for public awareness creation in the Sub-counties.Teams move out to the field.																
Task 1.5.2: Hold review meetings and visits at national and regional levels to assess progress and impact of the programme and materials.																

7 Action Plan for the Regulation on DDT Management

Goal, Objectives, activity and tasks	2008				2009				2010				2011				2012				2013-2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To strengthen existing regulatory compliance mechanisms and ensure that DDT use is restricted to public health and that its use is safe.																								
Objective 1:To review harmonize and strengthen legislation on DDT use and management by 2011																								
Activity 1.1 Identify and mobilize stakeholders to review the existing legislation.																								
Task 1.1.1 create institutional structure for project																								
Task 1.1.2 Identify the stakeholders																								
Task 1.1.3 Conduct sensitization workshops																								
Task 1.1.4 procure consultant																								
Activity 1.2: Carry out an assessment of the existing legislation																								
Task 1.2.1 Design questions for assessment																								
Task 1.2.2 Administer the questionnaire																								
Task 1.2.3 Analyze, interpret & produce report																								
Activity 1.3: Development of TORs for the consultant to review the existing legislation.																								
Task 1.3.1 Develop TORs for the Consultant																								
Task 1.3.2 undertake review of existing legislation																								
Activity 1.4: Sensitization of stakeholders about the reviewed legislation.																								
Task 1.4.1 Invite stakeholders for a sensitization.																								
Task 1.4.2 Organize & conduct workshop																								
Activity 1.5: Documentation and dissemination of the reviewed legislation to the stakeholders and the general public																								
Task 1.5.1 Procure IEC(information Education and Communication) materials i.e. media																								
Task 1.5.2 Disseminate information on the legislation																								
Activity 1.6: Carry out monitoring and evaluation of the implementation of the reviewed legislation.																								
Task 1.6.1 Develop M&E parameters.																								
Task 1.6.2 Recruit an M&E consultant																								
Task 1.6.3 Guide the consultant																								
Objective 2: to strengthen capacity for compliance with new DDT regulation																								
Activity 2.1: Develop training materials/ manuals tailored for the 10 groups																								
2.1.1. Conduct needs assessment																								
2.1.2. Develop TORs and hire Consultant																								
2.1.3. produce training manual																								
2.1.3. pre-test training materials																								

Activity 2.2: Conduct training workshops and meetings tailored for the 10 groups																								
2.2.1. Develop TORs for a consultant																								
2.2.2. Training for Parliament																								
2.2.3. Training chemicals national regulators NEMA, and GAL																								
2.2.4.Training for Legislature																								
2.2.5. Training of public prosecutor																								
2.2.6. Training for private lawyers																								
2.2.7. Training of Police																								
2.2.8. Training for URA																								
2.2.9. Training for Industry technicians																								
2.2.10. Training for private laboratories																								
Activity 2.3: Monitor & evaluate training programme																								
2.3.1. Develop TORs for a consultant																								
2.3.2. Conduct concurrent monitoring of training																								
2.3.3. Distribute findings on evaluation																								
2.3.4. Distribute findings																								

8 Action plan for DDT management

Objectives, Activities, Tasks	2009				2010				2011				2012				2013				2014				2015-2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To ensure safe use, reduction and eventual elimination of DDT in line with WHO guidelines and the Stockholm Convention																												
Objective 1: to develop and implement a programme to ensure compliance to the appropriate management of DDT through enforcement of rules and regulations																												
Activity 1.1: Set up institutional structure for DDT management under the Stockholm Convention in Uganda;																												
1.1.1 notify institutions and set up a secretariat																												
1.1.2 appoint a technical oversight committee																												
1.1.3 acquire office equipment, office, internet,																												
1.1.4 recruit project coordinator & assistant & one secretary																												
Activity 1.2: develop TORs & hire Consultant to develop plan for DDT management;																												
1.2.1 Identify researchers																												
1.2.2 workshop for orientation																												
1.2.3 Develop TORs for research																												
1.2.4 Contract research institutions																												
1.2.5 undertake Consultancy to develop plan of activities to ensure compliance																												
Activity 1.3: recruit new (10) and among existing inspectors (10) and undertake enforcement of compliance on DDT use regulations																												
1.3.1 identify suitable office &supervisor																												
1.3.2 develop TORs of																												
1.3.3 workshop for orientation																												
1.3.4 acquire equipment for undertaking tests																												
1.3.5 monthly compliance/enforcement visits																												
1.3.6 produce field reports and monthly report																												
Activity 1.4: produce quarterly & annual reports on compliance on regulations																												
1.4.1 collate quarterly date																												
1.4.2 analyse data, hold discussions, produce qrtrly reports																												
1.4.3 produce annual reports																												

Objective 2: Undertake activities to demonstrate the applicability, cost-effectiveness and sustainability of alternatives to DDT in specific eco-epidemiological settings and within the context of WHO's Global Strategic Framework for Integrated Vector Management (IVM)																												
	2009				**2010**				**2011**				**2012**				**2013**				**2014**				**2015-2025**			
Activity 2.1 develop TORs & hire experts to develop a national strategy to demonstrate applicability, cost-effectiveness & sustainability of alternatives to DDT in specific eco-epidemiological setting;																												
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Task 2.1.1 appoint technical committee																												
Task 2.1.2 identify experts, develop TORs and hire experts																												
Task 2.1.3 undertake Consultancy to develop strategy																												
Task 2.1.4 stakeholder workshop to review strategy																												
Task 2.1.5 presentation of strategy to parliament & MoH																												
Task 2.1.6 adoption of strategy																												
Activity 2.2: conduct regular integrated risk assessment studies, chemical analyses and socio-economic analyses with quarterly, and annual reporting;																												
Task 2.2.1 identify experts, develop TORs and hire experts																												
Task 2.2.2 notify stakeholders and appoint a technical oversight committee for the project																												
Task 2.2.3 Conduct a study on the cost effectiveness of the various alternatives																												
Task 2.2.4 Develop TORs & assign technical team for testing alternatives																												
Task 2.2.5 with guidance, MoH & NEMA, test alternatives																												
Task 2.2.6 undertake stakeholder consultations on the results																												
Task 2.2.7 undertake peer review of findings, with experts																												
Task 2.2.8 adoption research involving the communities																												
Activity 2.3 undertake annual synthesis studies of progress on DDT alternatives in the country																												
Task 2.3.1 identify experts, develop TORs and hire experts																												
Task 2.3.2 analyse quarterly data & hold discussions, reports																												
Task 2.3.3 compile and produce annual report																												
Task 2.3.4 undertake stakeholder discussions																												
Task 2.3.5 hold discussions & adopt annual synthesis reports																												

	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Objective 3: Strengthening national capacity to plan, implement and evaluate integrated vector management																												
Activity 3.1: Recruit among staff & other university students candidates to undertake 1 PhD & 3 masters on integrated risk assessment & socio-economic assessment of DDT & alternatives to run between 2013 and 2025																												
Task 3.1.1 identify through recruitment candidates for the study programmes																												
Task 3.1.2 identify partner institutions and study programmes and research areas																												
Task 3.1.3 provide support to students to undertake study programmes																												
Task 3.1.4 review programmes & make placements of trained staff																												
Activity 3.2 undertake trainings for capacity building for new (10) and among existing inspectors (10) to undertake enforcement of compliance on DDT use regulations in the country																												
Task 3.2.1 identify through recruitment candidates for the study programmes																												
Task 3.2.2 develop TORs for capacity building programme and designate technical team																												
Task 3.2.3 design study programme																												
Task 3.2.4 carry out review of study programme																												
Task 3.2.3 identify partner institutions and study programmes and research areas																												
Task 3.2.4 undertake the training																												
Task 3.2.5 review programmes & make placements of trained staff																												
Activity 3.3 Monitor and evaluate environmental and health impacts of the alternatives to DDT																												
Task 2.4.1 Identify and recruit technical team																												
Task 2.4.2 Define indicators, baseline and methodology for M&E																												
Task 2.4.3 Undertake M &E visits																												
Task 2.4.4 Compile monitoring reports																												
Task 2.4.5 Circulate the reports																												

9 Action Plan for POPs Information Management System

Activity/task for the work	2009				2010				2011				2013				2017-2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To set up a specialised and easily accessible POPs Information Management System for Uganda, by 2014.																				
Objective 1: To undertake comprehensive inventories of POPs in Uganda																				
Activity 1.1: Create project secretariat																				
Task 1.1.1: Establish project steering committee																				
Task 1.1.2: Hire project staff																				
Task 1.1.3: Establish offices for project																				
Activity 1.2: Undertake training on database management																				
Task 1.2.1: Develop ToRs for capacity building																				
Task 1.2.2: Hire Consultants & undertake Capacity building																				
Task 1.2.3: Decide on learners for the programme																				
Task 1.2.4: Carry out monitoring & evaluation of programme																				
Activity 1.3 Undertake comprehensive inventory on all POPs																				
Task 1.3.1: Develop ToRs																				
Task 1.3.2: Hire consultancy team																				
Task 1.3.3: undertake inventory																				
Activity 1.4; Carry out stakeholder consultations on all POPs																				
Task 1.4.1: compile lists of relevant stakeholder & contacted																				
Task 1.4.2: share information from inventory with stakeholders																				
Task 1.4.3: obtain consensus on results of the inventory																				
Activity 1.5:Update databases																				
Task 1.5.1: collate information from inventory and stakeholders																				
Task 1.5.2: update information onto the PCBs database																				
Task 1.5.3: review PCBs database for quality of info. update																				
Objective 2: To continually test, monitor and improve databases and technical capacity to ensure the sustainability of the PIMS																				
Activity 2.1 Undertake consultations with stakeholders																				
Task 2.1.1 designate institutions and their roles																				
Task 2.1.1: decide on quantity of information required and designate officers per institutions and agree on resource allocation																				
Task 2.1.2: put in place a supervision and performance assessment criteria																				
Activity 2.2: Acquire facilities for data base																				
Task 2.2.1: undertake needs assessment																				

Task 2.2.2: procure equipment , hire and train staff																					
Task 2.2.3: staff information upload and sharing																					
Activity 2.3: Provide technical capacity for 10 staff from all institutions																					
Task 2.3.1: identify staff from institutions																					
Task 2.3.2 Hire technical experts and design programme for capacity building																					
Task 2.3.3 Undertake technical capacity building																					
Task 2.3.2: Carry out M&E for training programme																					
Objective 3: To implement an information sharing platform for stakeholders including international exchange networks																					
Activity 3.1: Develop information sharing portal																					
Task 3.1.1: Develop institutional coordination committee on information sharing																					
Task 3.1.2: Develop guidelines for information sharing																					
Task 5.1.3: Designate officers in the institutions and provide technical capacity support for information sharing																					
Activity 3.2: Carry out releases & share findings with Stockholm Convention secretariat																					
Task 3.2.1: collate synthesis reports & information on the PIMS																					
Task 3.2.2: produce quarterly and annual information reports																					
Task 3.2.3: exchange reports, including presentation of information with POPs Secretariat.																					

10. Action plan for developing and implementing a Monitoring and Evaluation program for hazardous substances

	2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal – Strengthen existing mechanisms and to in place additional system for the monitoring of POPs, by 2015																				
Objective 1: To have a monitoring program for POP's designed and a pilot study started by the year 2010 and finished by 2012																				
Activity 1.1: Establish pre-conditions & requirements for a national monitoring programme																				
Task 1.1.1: establish monitoring secretariat																				
Task 1.1.2.: identify formal requirements for data as specified by law & international conventions																				
Task 1.1.3.: identify needs for enforcement																				
Task 1.1.4: identify possible spin-off benefits																				
Task 1.1.5: Identify possible stakeholders																				
Task 1.1.6. prepare document with general requirements & conditions for a monitoring programme																				
Activity 1.2: specify monitoring programme including preparations for a pilot study																				
Task 1.2.1: Assignment of responsibilities																				
Task 1.2.2: Describe the formal context of the monitoring programme recognizing requirements for the different needs leading possibly to sub-programmes																				
Task 1.2.3: identify the technical aspects for each of the possible sub-programmes (specific locations, timelines, frequencies, sampling methodology, types of analysis, types of samples, parameters (chemical, biological), data management,																				
Task 1.2.4: design a pilot study for one or two sub-programmes, including compliance assessment procedures																				
Task 1.2.5: Carrying out the Pilot study																				
Task 1.2.6: evaluating during and at the end of the pilot study & reporting buy the project group																				
Task 1.2.7: assessment and evaluation by all stakeholders																				
Task 1.2.8: adaptation of the national monitoring programme based on the previous evaluation and discussions																				
Activity 1.3: Implementing the national monitoring programme step by step																				
Task 1.3.1: confirm the programme with all stakeholders and decide on implementing schedule of different sub-programmes																				
Task 1.3.2: develop TOR's for each of the sub-programmes																				
Task 1.3.3: assign sub-programmes to appropriate organizations																				
Task 1.3.4: prepare general data collection system as to how and by whom data will be introduced in the environmental Information management system																				
Task 1.3.5: implement and execute the sub-programmes																				

	2015				2016				2017				2018				2019 - 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Objective 2: To have a complete running monitoring system for hazardous chemicals in the environment and for hazardous chemicals at the working place together with a proper data management system for the whole country by 2015																				
Activity 2.1: Evaluating and identify the needs to include other hazardous compounds in the national monitoring programme																				
Task 2.1.1: Identify relevant stakeholders																				
Task 2.1.2:Identify formal requirements with regard to other hazardous substances, specified by laws or because of other reasons																				
Task 2.1.3: Study the options to include the selected hazardous compounds in the national monitoring programme																				
Task 2.1.4: Select best options for inclusion of substances in programme																				
Activity 2: Implementing the additional hazardous substances in the relevant sub-programmes																				
Task 2.2.1: Assign responsibility for implementing in the sub-programmes																				
Task 2.2.2: develop technical methodology for the selected hazardous substances(sampling techniques, analysis, locations, frequencies etc)																				
Task 2.2.3: adapt the programme and implement the compounds/substances in the sampling procedures of the ongoing monitoring (sub-) programmes																				
Activity 3: executing the additional suggestions in national monitoring programmes																				
Task 2.3.1: execute programme																				
Task 2.3.2: collect data and transfer to general data system																				
Task 2.2.3: report to relevant stakeholders																				
Activity 4: Assessment of monitoring results																				
Task 2.4.1: Assessment of evidential compliance																				
Task 2.4.2: Assessment of compliance with limit values																				
Task 2.4.3: evaluating the monitoring results on a regular basis																				
Activity 5: Reporting of the monitoring programme																				
Task 2.5.1: Identify audiences for reports																				
Task 2.5.2: Identify and assign responsibility for reporting																				
Task 2.5.3: assess the scope of reports																				
Task 2.5.4: Produce reports for the general programmes as well as for programmes																				
Task 2.5.5: Develop programme for disseminating the reports																				
Task 2.5.6: Evaluate impact and use of reports;																				
Activity 6: Evaluate total programme and adapt programme on a regular basis																				

10 Action plan on developing and implementing programmes for technical capacity building accreditation plan for national laboratories for laboratory analysis for POPs

Objective/Activity, Tasks	Time line in years and quarters (per year)																															
Years	2008		2009				2010				2011				2012				2013				2014				2015-2025			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To develop and implement programmes for technical capacity building, and undertake accreditation of the national laboratories by 2015																														
Objective 1: To enhance laboratory technical capacity and improve infrastructure capacity for POPs monitoring by 2014																														
Activity 1.1 Constitute a Technical Committee (TC) to oversee and coordinate the development of the plan.																														
Task 1.1 Agree on composition of the committee.																														
Task 1.2 Develop TORs for the TC																														
Task 1.3 writing to respective organizations																														
Task 1.4 Commission the team																														
Activity 1.1 Designate a secretariat for the activities of the TC.																														
Task 2.1 Assigning officers to man secretariat																														
Task 2.2 Designate space & equip secretariat																														
activity 1.1 Commissioning technical and feasibility studies including EIA on handling, storage and disposal of hazardous chemicals																														
Task 3.1 identifying experts																														
Task 3.2 developing TORs																														
Task 3.3 Procure experts & commence studies																														
Task 3.4 Consult stakeholders & draft reports.																														
activity 1.1 Procure an expert to develop the plan																														
Task 5.1 developing TORs																														
Task 5.2 Invite bids																														
Task 5.3 Evaluate bids																														
Task 5.4 Award contract to successful bidder.																														
Task 5.5 Development of the plan (consult, review & validate, drafting, etc.)																														
Task 5.6: Hire expert to design plan for enhancement of National incinerator capacity																														
Task 5.6 monitor the execution of the contract																														
activity 1.1 Approval and adoption of the plan																														
Task 6.1 Prepare relevant documentation																														
Task 6.2 Table the document to relevant authorities for approval																														
Task 6.3 Approve and adopt the plan																														
Objective 3: To design and implement programmes for accreditation of at least one national laboratory t 2015																														

Activity 3.1 Constitute Technical Committee to oversee and coordinate development of capacity building plan.
Task 3.1.1 Agree on the composition of the committee.
Task 3.1.2 Develop Terms of Reference (TORs) for the TC
Task 3.1.3 writing to respective organizations
Task 3.1.4 Commission the team
Activity 3.2 Conduct rapid needs assessment to agree and harmonize training needs for laboratory analysis
Task 3.2.1 mobilize resources for the activity
Task 3.2.2 procure experts to carry out needs
Task 3.2.3 Acquire necessary equipment for training
Task 3.2.4 monitor execution of activity
Activity 3.3 Conduct Training Programme for enhancement of analytical capacity
Task 3.3.1 develop curriculum and schedule of training
Task 3.3.2 identify experts to conduct the training
Task 3.3.3 Identify & agree number of personnel to train
Task 3.3.4 Identify the location
Activity 3.4 Procure and install equipments for enhancement of laboratory capacity
Task 3.4.1 Rapid appraisal of equipment needs
Task 3.4.2 Agree on instrument specification
Task 3.4.3 Process bids
Task 3.4.4 Award Contracts
Task 3.4.5 Install equipment and train users
Task 3.4.6 Evaluate execution of the activity

11 Action Plan to reduce emission of dioxins (from uncontrolled combustion

Goal: Reduce the emissions of dioxins and furans by 70% within five years after COP's Agreement	1st Year				2nd Year				3rd Year				4th Year			
Objective: To develop and implement programme for reducing emissions of dioxins and furans from uncontrolled combustion processes by 70 percent within 5 years of COP agreement																
Activity 1.1: Determine the current emission sources and levels from uncontrolled combustion																
Task 1.1.1 Establish project secretariat																
Task 1.1.2 Review 2006, and POPs database updates																
Task 1.1.3 Provide support to field data collection on current practices and emission levels																
Activity 1.2 Design a programme on BAT and BEP identified in the inventory																
Task 1.3.1 Review literature on BAT and BEP																
Task 1.3.2 Identify and prioritise the most suitable BAT and BEP																
Task 1.3.3 Report on the identified BAT and BEP																
Activity 1.3 Undertake pilot BAT and BEP trials																
Task 1.3.1 identify starting partners/ households																
Task 1.3.2 develop TORs and nominate technical teams and hire them																
Task 1.3.3 develop trial methods, tools, report mechanism and M&E mechanism																
Task 1.3.4 Carry out trial																
Task 1.3.5 Report on trial																
Task 1.3.6 Assess success of trial with stakeholders																
Activity 1.4 Carry out awareness programmes on, and promote BAT and BEP																
Task 1.4.1 Develop awareness programme																
Task 1.4.2 Identify resources persons																
Task 1.4.3 Identify target groups																
Activity 1.5 Work with target groups to implement identified BAT & BEP to manage emission																
Task 1.5.2 Undertake participatory planning with the target groups to integrate the identified options																
Task 1.5.3 Develop TORS and nominate and hire technical teams for Implementation of identified BAT and BEP																
Task 1.5.4 Implement programme on BAT and BEP throughout the country																
Activity 1.6 Undertake Monitoring and Evaluation of the Bat and BEP implementation programme																
Task 1.5.4 Develop a monitoring and evaluation programme																
Task 1.5.5 Carry out monitoring & evaluation of implementation of measures																
Activity 1.6 Evaluate and report on the overall reduction in emissions																
Task 2.6.1 Develop an evaluation criteria based on the indicators																
Task 1.6.2 Undertake the monitoring and evaluation																
Task 1.6.2 Evaluation and reporting																

12. Action Plan to reduce emission of dioxins from industrial sources

Objectives, activities and tasks	1st Year				2nd Year				3rd Year				4th Year			
Goal: Reduce the emissions of dioxins and furans by 60% within five years after COP's Agreement.																
Objective: To reduce emissions of dioxins and furans from industrial processes by 60% within 5 years after COP's agreement through implementation of Best Available Techniques (BAT) and Best Environmental Practices (BEP)																
Activity 1.1: Determine the current emission sources and levels from uncontrolled combustion																
Task 1.1.1 Establish project secretariat																
Task 1.1.2 Review 2006, and POPs database updates																
Task 1.1.3 Provide support to field data collection on current practices and emission levels		■	■	■	■				■				■			
Activity 1.2 Design a programme on BAT and BEP identified in the inventory		■	■	■	■				■				■			
Task 1.3.1 Review literature on BAT and BEP					■	■										
Task 1.3.2 Identify and prioritise the most suitable BAT and BEP					■	■										
Task 1.3.3 Report on the identified BAT and BEP							■	■								
Activity 1.3 Undertake pilot BAT and BEP trials							■	■								
Task 1.3.1 identify starting partners/ households							■	■								
Task 1.3.2 develop TORs and nominate technical teams and hire them							■	■								
Task 1.3.3 develop trial methods, tools, report mechanism and M&E mechanism							■	■								
Task 1.3.4 Carry out trial							■	■								
Task 1.3.5 Report on trial							■	■								
Task 1.3.6 Assess success of trial with stakeholders							■	■								
Activity 1.4 Carry out awareness programmes on, and promote BAT and BEP							■	■								
Task 1.4.1 Develop awareness programme							■									
Task 1.4.2 Identify resources persons								■								
Task 1.4.3 Identify target groups								■								
Activity 1.5 Work with target groups to implement identified BAT & BEP to manage emission								■								
Task 1.5.2 Undertake participatory planning with the target groups to integrate the identified options									■	■	■	■				
Task 1.5.3 Develop TORS and nominate and hire technical teams for Implementation of the identified BAT & BEP									■	■	■	■				
Task 1.5.4 Implement programme on BAT and BEP throughout the country									■	■	■	■				
Activity 1.6 Undertake Monitoring and Evaluation of the Bat and BEP implementation programme									■	■	■	■				
Task 1.5.4 Develop a monitoring and evaluation programme													■			
Task 1.5.5 Carry out monitoring & evaluation of implementation of measures	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Activity 1.6 Evaluate and report on the overall reduction in emissions	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task 2.6.1 Develop an evaluation criteria based on the indicators												■	■			
Task 1.6.2 Undertake the monitoring and evaluation												■	■			
Task 1.6.2 Evaluation and reporting													■	■	■	■

13 Action Plan for a Programme on handling, storage, transportation, remediation and disposal of persistent organic pollutants in Uganda

	2009				2010				2011				2012				2013				2014				2015				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal: To develop, in accordance with international standards by 2012, and operationalise a programme for handling, storage, transportation remediation and disposal of POPs by 2015																																
Objective 1. To develop and implement appropriate strategies for indentifying stockpiles and for identifying sites contaminated, if any exist, consisting of or containing chemicals listed either in Annex A or Annex B; and products and articles in use and wastes consisting of, containing or contaminated with a chemical listed in Annex A, B or C by 2015.																																
Activity 1.1 Design a programme on strategies for identification of stockpiles and sites contaminated by the second quarter of 2013.																																
Task 1.1.1 Establish secretariat for project																																
Task 1.1.2 Develop TORs and hire Consultant																																
Task 1.1.3 supervise consultant - technical team																																
Task 1.1.4 cause for approval of programme																																
Activity 1.2 Train 20 Ugandan technicians and other key stakeholders in using state of the art equipment for identification of obsolete stocks and contaminated sites by 2014.																																
Task 1.2.1 Undertake training needs assessment																																
Task 1.2.2 TORs, hire Consultant, technical team																																
Task 1.2.3 Develop training programme																																
Task 1.2.4 Pre-test programme, evaluate & approve																																
Task 1.2.5 identify trainees																																
Task 1.2.6 Identify Trainers & hire																																
Task 1.2.7 Undertake training																																
Task 1.2 8 undertake M&E																																
Activity 1.3 Undertake activities to updated inventory on obsolete stocks and contaminated sites of persistent organic pollutants in Uganda, by the second quarter of 2013.																																
Task 1.3.1 Develop TORs and hire consultant.																																
Task 1.3.2 undertake Inventory																																
Task 1.3.3 supervise consultant - technical team																																
Task 1.3.4 undertake M&E																																
Objective 2. Develop and implement appropriate strategies for managing stockpiles, as appropriate, in a safe, efficient and environmentally sound manner of handling, collection, transportation, storage and disposal in an environmentally sound matter; disposed of in such a way consistent with the Stockholm Convention by 2015.																																
Activity 2.1 Design a programme on strategies for managing obsolete stockpiles and sites contaminated with persistent by the 4th quarter 2014.																																
Task 2.1.1 Develop TORs & hire consultant																																
Task 2.1.2 supervise consultant - technical team																																
Task 2.1.3 cause for approval of programme																																
Activity 2.2 Train technicians in safe, efficient & environmentally sound manner of handling, collection, transportation, storage & disposal of POPs by 1st quarter of 2013.																																

Task 2.2.1 Needs assessment	
Task 2.2.2 Develop TORs and hire Consultant,	
Task 2.2.4 Develop training programme	
Task 1.2.5 Pre-test programme, evaluate & approve	
Task 2.2.2 identify trainees	
Task 2.2.3 Identify Trainers & hire	
Task 2.2.4 Undertake training	
Task 2.2.5 undertake M&E	
Activity 2.3 integrate efficient and environmentally sound manner of handling, collection, transportation, storage and disposal of POPs into the day to day activities	
Task 2.3.1 set guidelines for integrating environment sound criteria at work place	
Task 2.3.2 procure necessary equipment for environmentally sound practices at the workplace	
Task 2.3.3 set performance criteria	
Task 2.3.4 carry out regular inspection	
Task 2.3.5 contribute to M&E reports on implementation	
Activity 2.4 Write and disseminate a field activity comprehensive report on the implementation of the obsolete POPs management by the fourth quarter of 2015.	
Task 2.3.1 identify technical team	
Task 2.3.2 Develop TORs and hire Technical team	
Task 2.3.3 supervise technical tem - stakeholders	
Task 2.3.4 write report & review - technical team	
Task 2.3.5 cause for approval of report	
Task 2.3.6 produce report &send to stakeholders	
Activity 2.5 Write & disseminate at least four(by POPs category) synthesis report on the effectiveness of management of obsolete stockpiles and contaminated sites by 2015	
Task 2.4.1 identify technical team	
Task 2.4.2 Develop TORs and hire Technical team	
Task 2.4.3 supervise technical team - stakeholders	
Task 2.4.4 write report & review - technical team	
Task 2.4.5 cause for approval of report	
Task 2.4.6 produce approved report, circulate to stakeholders, & Stockholm Convention Secretariat	
Objective 3: To mainstream POPs management into the Environment Management Systems of the institutions vulnerable to POPs contamination.	
Activity 3.1 establish/review environment policy	
Task 3.1.1 identify technical teams, define TORs and hire technical teams and Consultants:	

Task 3.1.2 review status of environment policies																														
Task 3.1.3 write reports on adequacy of current policies and revisions needed to cater for POPs																														
Activity 3.2 undertake environment planning																														
Task 3.2.1 identify environment aspects needed to consider in planning EMS																														
Task 3.2.2 assess how products or services impact on environment institution stakeholders propose a plan of the EMS																														
Task 3.2.3 together with company																														
Task 3.243 produce report on planning																														
Activity 3.3 operationalise the EMS																														
Task 3.3.1 review existing procedures, practices and produce procedures and codes of practice																														
Task 3.3.2 have independent approval of EMS by Uganda Cleaner Production Centre and NEMA																														
Task 3.3.3 disseminate procedures, practices and codes to workers																														
Task 3.3.4 assign responsibility and resources for implementing EMS																														
Task 3.3.5 implement EMS																														
Activity 3.4 checking and undertaking corrective procedures																														
Task 3.4.1 identify baseline,criteria for EMS audit																														
Task 3.4.2 review records and draft EMS audit report																														
Task 3.4.3 clarify the standard for audit																														
Task 3.4.4 produce report and indicate corrections needed to meet standard																														
Activity 3.5 periodic management reviews of EMS																														
Task 3.5.1 establish criteria of review on basis of changes in chemicals used in factory etc.																														
Task 3.5.2 undertake review with external and internal teams																														
Task 3.5.3 report of findings of review and disseminate report																														

Annex II: Stakeholder Endorsement Document

Adoption of the NIP Document at the National Stakeholder Workshop held at Hotel Africana, Kampala on 10th December, 2008

Three proponents presented their brief statements (proposals) for adoption of the NIP document, for onward transmission to the next level of approval of the same. The adoption was proposed by Mr. Michael Okia, and seconded by Mr. Robert Tumwesigye and Edinard Nsimbe Bulega, respectively. The full text of their statements (*in verbatim*) is as below.

Adoption Proposed by: Mr. Michael Okia
(*Senior Entomologist, Ministry of Health*)

Development of the NIP has taken three years. All the relevant stakeholders have been involved in all stages of the development of the NIP, and have provided a comprehensive input. There have been exhaustive discussions on the NIP document over the past years. I believe all stakeholders herein gathered are satisfied with the current document with the suggested amendments included. With all these reasons, I have the honour to move a motion that "we adopt the NIP document, with the necessary amendments that have been suggested".

Reason for Secondment by: Mr. Robert Baganda
(*Pro-Biodiversity Conservationist in Uganda*)

Having realised that the presence of POPs in Uganda is real as reflected in the draft NIP, and realising that the NIP has revealed their intensity in Uganda, and the problems brought about by POPs as indicated in the Stockholm Convention, are a reality in Uganda, I therefore, second the adoption of the NIP on POPs in Uganda.

Reason for Secondment By: Mr. Edinard Nsimbe Bulega
(*Principal Fisheries Inspector, Ministry of Agriculture, Animal Industry and Fisheries*)

Realising the need to protect the current and future population of Uganda from the effects of POPs, I second this proposal to adopt the NIP; provided the agreed amendments to the draft NIP document during this Workshop are made.

Annex III: Key participants in the Project for the Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs) National Implementation Plan (NIP) for Uganda

1. Members of the National Coordination Committee(NCC)

Names	**Organization/ institution represented**
1. Dr. Fred M Nsubuga	Ministry of Gender, Labour and Social Development
2. Mr. Robert Mawanda	Uganda Manufacturers Association
3. Ms Rwabutomize Angella	Ministry of Finance, Planning and Economic Development Desk Officer, Environment and Natural Resources
4. Ms. Florence G. Adongo	Assistant Commissioner –Water Quality Water Resources Management Department (WRMD)
5. Mr. Martin Imalingat	Uganda National Bureau of Standards
6. Mr. Silver Ssebaggala	Uganda Cleaner production Centre (UCPC)
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8. Mr Julius Oboth	Manager Investigations – Chemist URA
9. Dr. Bernard Kiremire	Associate Professor Department of Chemistry Makerere University
10. Dr. Agaba Friday	Ministry of Health Principal Medical Officer (Environmental Health)
11. Mr.Cankwo J Okulo	Principal Industrial Officer-Ministry of Tourism, Trade and Industry
12. Mr. Eliphaz Bazira	Commissioner Environment Affairs- MWLE
13. Ms Pauline Akiidi	Principal Economist Ministry of Finance, Planning and Economic Development
14. Mr. Timothy Byakora	Climate and Development Initiative
15. Mr. John Othieno	UETCL

2. Summary List Participants in the inventories and priority setting

No.	Name	Organization
1.	Mr. Peter Kityo	National Forest Authority
2.	Mr. Agapitus Kato	Ministry of Agriculture, Animal Industry and Fisheries Department of Live Stock Health and Entomology
3.	Mr. Wilber Nsiyona	Department of Customs (URA) Officer Enforcement
4.	Mr. Sebutare Gilbert	Ministry of Agriculture, Animal Industry and Fisheries Department of Crop Protection
5.	Mr. John Bosco Kavuma	National Planning Authority
6.	Mr. Edward Nyakahuma	Climate and Development Initiatives
7.	Mr. Wabomba Geoffrey	Kakira Sugar works Ltd
8.	Mr. Karyabakola James	Ministry of Agriculture, Animal Industry and Fisheries Department of Crop Protection
9. (	Mr. Stanely Ahimbisibwe	Government Chemist Analytical Laboratory
10.	Ms. Susan Nakabuye.	Ministry of Justice
11.	Mr. Peter Wamboga	The Farmers Voice Limited
12.	Ms. Isabel Omal	Ministry of Justice
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14.	Mrs. Sunny Byakagaba	Government Chemist Analytical Laboratory
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17.	Mr. Egitat Geoffrey	Ministry of Health
18.	Mr. Robert Baganda	Pro-Biodiversity Conservationists in Uganda
19.	Ms. Tryphosa Kwagala	NEMA
20.	Ms. Enid Turyahikayo	NEMA
21.	Mr.Gerald Tenywa	New Vision
22.	Dr. F. M. Nsubuga	Ministry of Labour, Gender and Social Development
23.	Ms. Immaculate Kijjagulwe	National Consultant, Public awareness and Education
24.	Mr. Pathias Karekona	Uganda Media Trust for Environment
25.	Mr. John Othieno	Uganda Electricity Transmission Company limited
26.	Mr. Byantwale Stephen	Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)
27.	Mr. Micheal Okia	Ministry of Health
28.	Ms. Wasswa Geraldine	U.E.U
29.	Mr. Patrick Kamanda	NEMA
30.	Mr. Evaristo Byekwaso	NEMA
31.	Ms. Christine Akello	NEMA
32.	Mr. David Mugisa	Ministry of Gender, Labour and Social Development
33.	Ms. Pheobe Gubya	Kampala City Council
34.	Mr. Andrew Byakutaga	Uganda Revenue Authority(URA)
35.	Ms. Priscilla Nakiboneka	Ministry of Health
36.	Mr. Kamese Geoffrey	NAPE

37.	Mr. Sam Kwebiha	Private Sector
38.	Mr. Magezi Akiiki	Department of Meteorology
39.	Mr. Richard Rumeena	AgroSystems Ltd
40.	Ms. Emodek Phenella	NEMA
41.	Mr. Aisu Olupot	Balton(U)Ltd
42.	Mr. James Khauka	Kinyara Sugar Works Ltd
43.	Mr. Agaba Charles	Ministry of Energy
44.	Mr. Habyarimana Deo	UBC-TV
45.	Mr. Festus Bagoora	NEMA
46.	Mr. C.J. Okullo	Ministry of Tourism, Trade and Industry
47.	Mr. Masiga Moses	ENR Africa Associates Ltd.
48.	Mr. Sam Kwebiha	Private Sector
49.	Mr. Richard Rumeena	Agro Systems Ltd
50.	Mr. Allan Bean Jagwe	Luweero Industries Ltd
51.	Mr. Kaukas Abdallah	WBS-TV
52.	Mr. Silver Ssebagala	Uganda Cleaner Production Centre
53.	Mr. Emmanuel Kaye	Government Chemist Analytical Laboratory
54.	Ms. Justine Namuli	James Finlays (U) Ltd
55.	Mr. Geoffrey Tindimwebwa	Scie-Tax Ltd
56.	Mr. Kusiime Jamil	Makere University(Chemistry department)
57.	Mr. James Menya	Edhomy Systems Ltd
58.	Dr. John Bahana	Agrosystems Ltd
59.	Mr. Tom Oluka	UMEME
60.	Eng. Mutambi Joshua	Ministry of Tourism Trade and Industry
61.	Mr. Henry Bogere	Steel Rolling Mills
62.	Mr.Andrew Rubanza	Shumuk Group of Companies

3. Working Groups for the Action Planning

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Mr. Egitat Geofrey
Mr. James Karyabakola
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Mr. David Mugisa

Annex IV: Summary of the current risk from dioxins and furans in Uganda

Category	Sub-category		Amount and comments on releases	Acceptable	Ranking
Waste Incineration	*Municipal solid waste*		Not practiced		---
	Hazardous Waste Incineration		Only a single facility was identified, facility used to disposal hazardous waste estimated at 85 tons[3]. The annual total emissions to air were estimated to be 2.975g TEQ/a. Emissions due to fly ash was estimated at 0.765g TEQ/a. This gave an annual release estimate of 3.74gTEQ/a	0.1 ng/Nm3	High
	Medical Waste Incineration		Insufficient data available, 80% unused, 20% underutilised; Single chamber incinerators temperatures less than 800^0C; Dispose of waste in open pits, open air burning, municipal skips, discharge into waste water system; Total releases estimated 4.1000g TEQ/a	0.1 ng/Nm3	High (*most of unknown*)
	Light-Fraction Shredder Waste Incineration		Not practiced		-----
	Sewage Sludge Incineration		Not practiced		-----
	Waste wood and waste biomass incineration		Not practiced		-----
	Destruction of animal Carcasses		No data		-----
Ferrous & Non-Ferrous Metal Production	*Iron Ore sintering*		Not practiced		-----
	Coke Production		No coke production		-----
	Iron & Steel production & Foundries		3 operational foundries; They are locally made; no air pollution control systems; Total annual Releases 15,100 tons/a	0.1 ng TEQ/ Nm^3	very high
	Copper Production		Not produced from scrap materials in Uganda	0.1-0.5 ng TE/m^3	-----
	Aluminium Production		Only one factory makes products from recycling; Scrap contains paints, polymeric materials, plastics, lubricants No dust removal, No air pollution control Total Annual releases 176.400g TEQ/a	0.1-0.5 ng TE/m^3	Very high

	Lead Production		One factory produces secondary lead from scrap Total annual releases 0.0800g/a	0.1-0.5 ng TE/m^3	Low
	Zinc Production		Not produced in Uganda		-----
	Brass and Bronze		Not produced in Uganda		-----
	Magnesium Production		Not produced in Uganda		-----
	Other non-ferrous Production		Not regarded as having any dioxins		-----
	Thermal Wire Reclamation		No significant thermal wire reclamation		-----
Power Generation & Heating	*Fossil Fuel Power*	*Electrical power Station Industrial*	Diesel fuel used for power generation Total annual releases 0.0068818g TEQ/a		low
		Industrial Power Generation	Industrial boilers use both biomass and fossil fuel Total annual emissions 3631.25µg TEQ/a		low
		Firewood consumption in industries	Total annual releases 0.19858g TEQ/a		moderate
		Biomass power Plants	Three sugar factories; Total Annual releases 6.857 g TEQ/a		high
	Landfill/Biogas Combustion		Activity not yet realised		-----
	Household Heating and Cooking with Biomass	Charcoal consumption	312g TEQ/a		very high
		Fuel wood consumption	5.590g TEQ/a		high
		Agricultural crop residues	2.2271g TEQ/a		high
	Domestic Heating and Cooking with Fossil Fuels		LPG and gasoline for cooking Potential releases 0.0031g TEQ/a		very low
Production of Mineral Products	*Cement production*		Two factories (Hima and Tororo) Total annual releases 3.720g TEQ/a	0.1	high
	Lime production		5.7076g TEQ/a	0.1	high
	Brick Production		0.01088g/a	0.1	low
	Glass Production		No glass production		-----
	Ceramic Production		No production		-----
	Asphalt Mixing		0.00029946g TEQ/a		
Transport	*4-Stroke Engines*		0.012880g TEQ/a	0.1	low
	2-Stroke Engines		0.0230g TEQ/a	0.1	low
	Diesel Engines		0.02716g TEQ/a	0.1	low
	Heavy Oil Fired		Not confirmed during inventory		-----

	Engines				
Uncontrolled combustion Process	*Waste burning and accidental fires*	*Uncontrolled domestic waste burning*	737.6465g TEQ/a	0.1	very high
		Accidental fires	0.59g TEQ/a	0.1	low
	Agriculture residue burning		7.880g TEQ/a	0.1	high
Production & use of chemical & Consumer Goods	*Pulp and Paper Production*		Not confirmed		-----
	Chemical Industry		No chemical factory with UPOPs confirmed		-----
	Petroleum (Refinery)		No refinery yet		-----
	Textiles Production		0.0507 g TEQ/a	0.1	low
	Leather Industry		26.250g TEQ/a	0.1	high
Miscellaneous	*Drying of biomass*		Not practiced		-----
	Crematoria		0.000095g TEQ/a	0.1	very low
	Smoke Houses		Negligible		-----
	Dry Cleaning		No data		----
	Tobacco Smoking		0.0001863g TEQ/a	0.1	very low
	Landfill and Waste Dumps		No data could be obtained for reasonable estimation		(further study)
	Sewage and Sewage Treatment		2.646g TEQ/a	0.1 mg TEQ/Nm^3	high
	Open Water Dumping		No reliable data available		-----
	Compositing		Not practiced in Uganda		-----
Hot Spots	*Production sites of Chlorinated*		No production in Uganda		-----
	Organics Production site of chlorine		No production confirmed		-----
	Application sites of chlorinated phenols		No data		-----
	Timber manufacture and treatment sites		No available data		-----
	Dump of wastes/residues from categories 1-9		All dumping sites in Uganda are potential hot spots		(further study)
	Sites of relevant accidents		Three sites accidents. In one accident several people were hospitalised		(further study)
	Dredging of sediments		No information of such activities in Uganda		-----

Source: adapted from NEMA (2008)