

PROJECT BRIEF

1. IDENTIFIERS

PROJECT NUMBER:	2720
PROJECT TITLE:	Regional project to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annexes A, B and/or C of the Stockholm Convention
PROJECT DURATION:	4 Years
IMPLEMENTING AGENCY:	UNIDO
EXECUTING AGENCY:	UNIDO
PRINCIPAL COOPERATING AGENCIES:	Regional Industrial Development Office in Abuja (UNIDO) Ministry of Environment and Science, Accra, Ghana Federal Ministry of Environment, Abuja, Nigeria
REQUESTING COUNTRIES:	Republic of Ghana and Federal Republic of Nigeria
ELIGIBILITY:	Eligible under Para 9 (a) of the GEF instrument. Nigeria and Ghana have signed and ratified the Stockholm Convention
GEF PROGRAMMING:	OP#14 POPs Operational Programme (draft)
CROSS PROGRAMMING:	OP#10 Contaminants based operational programme
BENEFIT:	POPs Enabling Activities (Globally)

2. PROJECT SUMMARY

The Stockholm Convention is a global legally binding environmental agreement adopted in May 2001 with the objective to protect human health and the environment from persistent organic pollutants (POPs). POPs are so far limited to 12 chemicals covered by the Convention. These chemicals remain intact in the environment for long periods, they become widely distributed through transboundary movement and therefore they circulate globally, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. Parties to the Stockholm Convention are required to prepare and develop their National Implementation Plan (NIP) to demonstrate how they will be able to implement the obligations of the Convention.

Article 6 Section 1(e) of the Stockholm Convention states that Parties shall “endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C; if remediation of those sites is undertaken, it shall be performed in an environmentally sound manner.” The implication is that it is incumbent on countries to undertake rehabilitation of contaminated sites following their identification and prioritisation based on risk assessment followed by risk management action. Remediation, if then required,

would be an obvious follow-up activity of disposal of obsolete stocks of POPs in soil, since contaminated hotspots could be a continuous source of pollution to storm and underground waters leading to contamination of lakes, rivers and estuaries and may result in the contamination of international waters. There is always the inherent danger of contaminated land or agriculture lands redeployed as development sites, which could pose danger to society at large. There is an added risk that the volatility of POPs from contaminated soil surface could be a constant source of POPs carried by warm tropical air currents taking the contaminants to far off places and deposit in the cooler parts of the planet. Remedial action after the event will be painful and expensive. Taking this into consideration, the Governments of Ghana and Nigeria approached GEF, through UNIDO for assistance in capacity building in the region to develop appropriate strategies for identifying and treating (if remediation is required) selected sites contaminated by POPs implicated in the Stockholm Convention. A preparatory project in the form of a Project Development Facility (PDF-B) has been approved by GEF in June 2005 for UNIDO implementation.

The preparatory phase identified that while there are a number of environment related policies well enshrined in the countries' legal system, the policy and legal frameworks regarding proper management of polluted land and sites are inadequate both in Ghana and Nigeria. Thus, the PDF-B project while putting great emphasis on the development of a robust policy and legal framework in the participating countries, also realized the almost total absence of strategy to promote the type of capacity needed to identify contaminated sites, assess the level of contamination, conduct risk assessment/management and carry out experimental laboratory scale remediation to select the most economically feasible and environmentally sound technologies applicable in the region. In addition, it was found that these countries at regional and national levels needed socio-economic impact and risk assessment of POPs contaminated sites. During the preparatory phase, extensive discussions took place with government officials, civil societies and various stakeholders. It also involved activities such as assessment of some laboratories in both participating countries, organized seminars for national experts and decision makers, public, press, NGOs and other stakeholders including relevant ministries to prepare the Project Brief of the Full Project. Public awareness and environmental education was given a special emphasis. Many donors (bilateral/multilateral) were consulted regarding their work on environment related activities for synergies, co-financing and linkages.

It has also been realized that it is always difficult to look into POPs contamination in isolation, since environment including land is exposed to wide variety of man made activities resulting in long- and short-term chemical and biological contamination. Therefore, the proposed project will have POPs contaminated sites as its main objective, whilst seeking synergies in the management of other persistent and toxic chemicals covered under the Long Range Transboundary Air pollution on POPs (LRTAP) or under the Oslo-Paris Accord (OSPAR). It is also a major concern of the Governments of Nigeria and Ghana and Civil Societies on the long-term contamination of soil and water by the oil and mining industries respectively where some quantities of PCBs and HCBs are used as well as the agricultural land due to non-judicial use of agrochemicals especially the excessive use of low quality fertilizers.

Based on these findings, the present project brief has come out with the following objectives to build the capacity in the region to develop appropriate strategies for identifying sites contaminated by POPs chemicals listed under Annex A, B or C of the Stockholm Convention and other Persistent Toxic Substances (PTS):

- Develop policy and legal frameworks developed for management of contaminated lands/sites; and
- Strengthening of institutional capacity for mitigation of land contamination and sustainable land management. Potential hotspots identified and prioritised from experimental laboratory testing. Enable selecting appropriate low cost environmentally sound technologies, if remediation is required. However this project will not perform remediation of contaminated sites.

Based on the above objectives, the following outputs will be achieved:

1. A suitable organizational arrangement set up for timely and well-monitored implementation of the project.
2. Establishment of regional policy and national legal frameworks for the management of contaminated sites.
3. Established national and regional capacity building and institutional strengthening.
4. Toolkit for selection of environmentally sound and economically feasible remediation technologies for Ghana and Nigeria.
5. Establishment of Environmental Information Management System (IMS) and Framework for Stakeholders Engagement and Public Educational and Awareness Programme.
6. Regional Monitoring and Evaluation Plan.

Special focus will be placed on civil society engagement through programmes of education and awareness for all stakeholders.

Sustainability/Replicability/Prevention of future sites contamination

This Project Brief takes into account sustainability by:

- Linking project benefits through the participation of private sector and increase in value added of the regenerated and reclamationed land.
- Creation of Policy Units in the Governments dealing with policies and legal framework of contaminated land should prevent further contamination of land by industrial POPs chemicals.
- Involvement of ECOWAS in this project will enhance replication of policies in other countries and will provide incentive for private-public development.
- Adopting a toolkit for stepwise site identification of hotspots based on risk assessment/management and suitable technology selection for remediation.

Most importantly, the proposed project will bring out toolkits for the systematic identification of sites contaminated by POPs and methodologies to be adopted in the region for decontamination of the contaminated sites. Such toolkits could eventually benefit the whole Africa region and beyond. Though the proposed project is limited to the identification of sites contaminated by POPs chemicals listed under Annex A, B or C of the Stockholm Convention, the methodology established through this project could be modified to be used for the identification of sites contaminated by other chemicals.

It is also an obvious linkage to the Africa Stockpiles Programme (ASP) activity, which is intended to help African countries to dispose off stockpiles of POPs, especially pesticides accumulated in many badly maintained warehouses, open areas and buried underneath. The

ASP is also intended to build capacity in African countries to prevent future accumulation of obsolete stocks of POPs and other obsolete agrochemicals.

A recent (2006) World Bank's document entitled "Opportunities for Integrating the Sound Management of Chemicals into Development Planning" links sound chemicals management to Millennium Development Goals (MDG) for sustainability and raises agricultural, fishing, health, energy, mining, water and sanitation sectors' exposure to POPs implicated in the Stockholm Convention. It specifically cites the vulnerability of poor people, in particular, to chemical risks. It is envisaged that this project brief will keep a clear linkage to on-going activities in this area to enhance synergy, cooperation and sustainability

The proposed project will provide value added tools for capacity building in policy/legal development, enforcement, setting up of IMS and technology selection/technology transfer in remediation of POPs contaminated soils with emphasis on low cost proven technology. It will also promote public-private partnership in soil remediation of identified hot spots in Nigeria and Ghana in the development of contaminated land for commercial sites, industrial sites and reclamation of agricultural land. It will also take into consideration some solid recommendations for future prevention of land contamination by POPs drawing from other projects directly implicated in the Stockholm Convention and other PTS.

In close collaboration with the Geoenvironmental Research Centre in the University of Cardiff in the UK (as a reference scientific and technology centre for the project), it is envisaged to twin technical organizations in Ghana and Nigeria with similar institutions in a developed country, which would further strengthen the long-term cooperation in IMS, soil analysis and decontamination techniques. These will establish a broad base of country technical infrastructure for private industry to take up remediation actions.

3. COST AND FINANCING

		Amount (US\$)
GEF	Full Project (estimate)	2,000,000
	PDF B	650,000
	PDF B (co-financing):	80,000
	UNIDO (in-kind)	30,000
	Govt. of Nigeria (in-kind)	25,000
	Govt. of Ghana (in-kind)	25,000
Co-Financing for Full Project:		
Governments of	Nigeria (in-kind)	250,000
	Ghana (in kind)	250,000
	Other Donors (in-kind & in-cash):	1,500,000
	GRC Cardiff, DFID, local mining and oil companies and others	1,300,000
	UNIDO (in kind)	200,000
TOTAL PROJECT COSTS		4,730,000

4. BASE LINE **US\$ 5,020,000**

5. GEF OPERATIONAL FOCAL POINT ENDORSEMENT

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LIST OF SELECTED ACRONYMS AND ABBREVIATIONS

ASP	Africa Stockpiles Programme
BAT	Best Available Technique
BEP	Best Environmental Practice
CBOs	Community Based Organizations
CEA	Country Environment Analysis
CIDA	Canadian International Development Agency
CLR	Contaminated Land Report
CTA	Chief Technical Advisor
DANIDA	Danish International Aid Agency
DFID	Department for International Development
DPR	Department of Petroleum Resources
EA	Executing Agency
EIA	Environmental Impact Assessment
EHF	Environmental Health Fund
EPA	Environmental Protection Agency
ESEID	Environmentally Sustainable Economic and Industrial Development
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FMENV	Federal Ministry of Environment
GEF	Global Environment Facility
GRC	Geoenvironmental Research Centre
FOTE	Friends of the Environment
FML&P	Federal Ministry of Labour and Productivity
GC-ECD	Gas Chromatograph – Electron Capture Detector
GCLME	Guinea Current Large Marine Ecosystem
GHS	Global Harmonised Labelling System
HCH	Hexa-chlorocyclo-hexane
HPLC	High Pressure Liquid Chromatography
HR GCMS	High Resolution Gas Chromatography
IA	Implementing Agency
IAEA	International Atomic Energy Agency
IC	Incremental Cost
ICP	Inductively Coupled Plasma
IFCS	Intergovernmental Forum on Chemical Safety
IMS	Information Management System
INC	Intergovernmental Negotiating Committee
IOMC	Intergovernmental Organization for the Sound Management of Chemicals
IPEN	International Pesticides Elimination Network
IPEP	International Pesticide Elimination Project
LRTAP	Long Range Transport of Environmental Pollutants
MDG	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MoU	Memorandum of Understanding
NACWC	National Authority on Chemical Weapons Convention
NAFDAC	The National Agency for Food and Drug Administration and Control
NCS	National Classification System
NES	Nigerian Environmental Society
NEST	Nigerian Study Team
NGO	Non-governmental Organization
NIP	National Implementation Plan
NPA	Nigerian Ports Authority
NPD	National Project Coordinator

OP	Operational Programme
OSPAR	Oslo-Paris Accord
PAHs	Polyaromatic hydrocarbons
PBDE	Polybrominated diphenylethers
PC	Programme Coordinator
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated dibenzo-p-dioxin
PCDF	Polychlorinated dibenzofurans
PCP	Pentachlorophenol
PDF	Project Development Facility
POPs	Persistent Organic Pollutants
PPP	Private-Private Partnership
PPRSD	Plant Protection and Regulatory Services Department
PTS	Persistent Toxic Substances
RBDM	Risk Based Decision Making
RCU	Regional Coordination Unit
R&D	Research and Development
RESCUE	Regeneration of European Sites in Cities and Urban Environment
RIDC	Resource Integrated Development Centre
RIDF	Resource Integrated Development Foundation
RMC	Regional Ministerial Committee
RPCU	Regional Programme Coordinator Unit
RSC	Regional Steering Committee
SAICM	Strategic Approaches for International Chemicals Management
SUE	Sustainable Urban Environment
TEQ	Toxic Equivalent
TER	Terminal Evaluation Report
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
URIDO	UNIDO Regional Industrial Development Office
WB	The World Bank

1.0 PROJECT DESCRIPTION: BACKGROUND AND CONTEXT (Baseline Course of Action)

1.1 Context/history

1. The post war period made a big leap in the evolution of chemical and allied industries in that mankind has become very much dependent on chemicals not only for its very basic standard of living but also in keeping a high standard of living. While mankind owes its survival to the use of chemicals in agriculture, public health and control of ailments and diseases, one of the major problems facing the global planet is the innumerable number and vast amounts of chemicals that have been produced, used, stored and disposed of over almost half a century. Many of these chemicals used in the past, understandably, have been used, probably within the law, but without all the information on their long-term persistence, mobility in the environment and their ability to bioaccumulate causing toxic effects. The consequent after effect is that it has left certain persistent toxic residual chemicals, especially the so called ‘dirty dozen’ implicated in the Stockholm Convention, in the environment that they not only get transported from one matrix to another but also tend to move up the food chain and bioaccumulated in humans, other mammals, avian species, wildlife, etc. In the process with proven chronic toxicity they can interfere at three levels of biodiversity through generic level; population species level and community/ecosystem level.
2. While most of the developing countries and the countries with economies in transition banned agricultural and industrial Persistent Organic Pollutants (POPs) decades ago, they are burdened with obsolete stocks of POPs pesticides lying in unattended warehouses, buried underneath the ground without proper records, protective and monitoring measures, and PCBs contaminated and leaking electrical equipment. In addition, there is practically no knowledge/information to the public at large regarding the release of unintentionally produced highly toxic by-products namely dioxins and furans (also HCB and PCBs) from various industrial and non-industrial categories specified in Annex C, Article 5 of the Stockholm Convention. The World Bank, GEF and other bilateral donors have been actively engaged in helping African countries under the Africa Stockpiles Programme (ASP) in getting rid of obsolete stocks of POPs pesticides and capacity building in avoiding future accumulation of stockpiles of obsolete pesticides.
3. However, many countries in Africa such as Ghana and Nigeria recognize the problem of sustainability that ongoing POPs project would face where they deal only with the problem of disposal of stockpiles while ignoring the related problem of subsequent cleanup of sites contaminated with POPs chemicals. Such contaminated sites if redeveloped or redeployed for agricultural or housing purposes will pose significant and immediate threats to human and animal health and the environment. It is always cheaper to take precautionary and preventive action before using contaminated land for rural or urban development or put into agriculture so as to avoid expensive mistakes such as the Love Canal saga in the USA. Ghana and Nigeria have a very vibrant mining and oil producing industries in addition to other chemical industries, which are potential contaminators of POPs implicated in the Stockholm Convention and also those outside the Convention. Based on the findings of the ongoing NIPs in the two countries (also referred to in paras 16-19), Ghana and Nigeria have consequently approached UNIDO to assist them through GEF grant to develop policies and regulations for the

rehabilitation of contaminated sites, capacity building in identifying contaminated land and in the selection of methodology for site remediation, public education, setting up of IMS and at a later stage through public-private partnership and other donors support, promote proper clean up of such sites while promoting the transfer of appropriate remediation technologies conforming to Best Available Techniques (BAT) and Best Environmental Practices (BEP) in accordance with the guidelines prepared by the established Expert Group on BAT/BEP of the Stockholm Convention.

Technology Context

4. Chemicals are essential requirements for modern society and need to be managed properly in order to achieve a suitable level of agricultural and industrial development and a high level of environmental and human health protection.
5. Presently, the major types of chemicals used in Ghana and Nigeria are imported. Many of them are used in or arise from industry, agricultural and public health vector disease control. Human exposure to these chemicals occurs via diet, occupation, accidents, indoor applications, particularly in rural communities, and also from use in agriculture. The inventory of obsolete pesticides has shown that there are stockpiles of persistent organic pollutants (POPs), which need to be disposed of since they are associated with risks to health and the environment.
6. The inventory of obsolete pesticides and other POPs chemical stocks is an integral component of the GEF funded Enabling Activities for the development of the National Implementation Plans (NIP) underway in Ghana and Nigeria and is expected to provide national listings of chemicals contaminated sites. The listings are not, however, associated with the identification of the risks to health and the environment that these sites pose. Both countries are covering NIP activities with the support of UNIDO and are aware of the fact that identification of contaminated sites for developing an inventory is very complicated with no available data.
7. Article 6, Section 1(e) of the Stockholm Convention states that Parties shall “*endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C; if remediation of those sites is undertaken, it shall be performed in an environmentally sound manner.*” The implication is that it is incumbent on countries to undertake rehabilitation of contaminated sites following their identification and prioritisation based on risk assessment followed by risk management action. Furthermore, the Africa Stockpiles Project (ASP) of the WB/GEF mentioned earlier, even while recognizing the importance of clean up of contaminated sites has not included this aspect in its programme of work except in the case of Mali where there was consensus between partners that the severity of contaminated land requires attention. It is therefore important for all African states to take measures and provide a systematic approach to deal with contaminated sites.

1.2 The Stockholm Convention on POPs

8. On 22 May 2001, the Stockholm Convention on POPs was adopted and entered into force on 14 May 2003, one year after the 50th country ratified the Convention. This Convention has led to a new GEF/ POPs Draft Operational Programme (OP 14), and the proposed project will serve as a barrier reduction exercise that can help to inform

future activities mandated or encouraged under the provisions of the Convention when it enters into force for parties.

9. Article 6 of the agreed text addresses the identification and management of (POPs) wastes. It requires such wastes to be “*managed in a manner protective of human health and the environment.*” Parties must “*develop appropriate strategies for identifying stockpiles, products and articles in use, and wastes covered by the treaty, after which they must manage the stockpiles in a “safe, efficient, and environmentally sound manner.”*” The Convention requires that disposal of such wastes be done in such a way that the POP content is “*destroyed or irreversibly transformed*” so that it is no longer a POP, or “*otherwise disposed of in an environmentally sound manner when destruction or irreversible transformation does not represent the environmentally preferable option or the persistent organic pollutant content is low.*”
10. In particular Article 6.1(e) specifically says “*endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B, or C, if remediation of those sites is undertaken it shall be performed in an environmentally sound manner*”
11. Article 10 clearly puts great emphasis on public information, awareness and education to policy/decision makers, provide to the public of all available information on POPs including impact on their health and environmental effects, importance given to public participation ‘training workers, scientists, educators and technical and managerial personnel’.
12. Article 10.1(f) and specifically advocate “*development and exchange of educational and public awareness materials, education and training programmes at the national and international levels*”.
13. Article 11 puts emphasis on Research and Development (R&D) and monitoring where it specifically covers ‘sources and release into the environment, presence, levels and trends in humans and environment, socio-economic impacts and harmonized methodologies for making inventories of sources and analytical techniques for the measurement of releases’. Further, Article 11.2 (b) asks among others for strengthening national scientific and technical research capabilities, particularly in developing countries.
14. It is always difficult to look into POPs contamination in isolation, since environment including land is exposed to wide variety of man-made activities resulting in long- and short-term chemical and biological contamination. Therefore, the proposed project will have POPs contaminated sites as its main objective, whilst seeking synergies in the management of other persistent and toxic chemicals (for example those covered under the Long Range Transboundary Air Pollution on POPs (LRTAP) or under the Oslo-Paris Accord (OSPAR).
15. Ghana and Nigeria are both signatories of the Stockholm Convention. Ghana ratified the Convention on 30 May 2003 while Nigeria ratified it on 24 May 2004. Both countries have developed their National Implementation Plans (NIPs) and heading towards implementation of identified priorities.

16. The results of inventories carried out in Ghana and Nigeria as part of the preparation of their NIPs indicated that there are several hundreds of metric tonnes of stockpiles of obsolete industrial POPs chemicals. Sites where the stockpiles are stored need to be investigated for possible risks posed to soil and ground water contamination. Potential sources of POPs releases in Ghana and Nigeria include:
- locations where electrical equipment (particularly transformers and capacitors) were serviced;
 - areas where spillages occurred during the filling of such equipment with PCBs;
 - poorly designed and maintained storage sites;
 - locations where POPs wastes were/are potentially dumped (including co-disposal of hazardous and/or domestic waste);
 - waste discharges from chemical plants, where elemental chlorine is involved in the technology;
 - sewage sludge treatment plants; and
 - former organochlorine pesticides manufacturing/formulation plants;
17. The immediate surroundings of all leaking transformers are potential contaminated sites. This could be as a result of spillage resulting from maintenance operations of the main utility service providers. Transformers are occasionally filled or topped up with oil, which could be PCB oil. PCB-containing wastes for example may also be found at the Accra Central Station of the Electricity Company of Ghana, where broken down transformers from all over the country are repaired. This is located in the city's biggest open market where all types of goods, including vegetables, fruits, groceries, clothes and other goods are sold. There is a drainage, which carries all spilled oil into the sea. Thus, if the transformer oil is contaminated with PCBs, it is a major hotspot not only contaminating the local areas but also the international waters. In Nigeria, similar sites contaminated with PCBs may be found at Ijora warehouse of the Power Holding Company of Nigeria.
18. Available evidence indicates that contents of the dirty oil (PCB contaminated oil) reservoir in both countries are unofficially and illegally sold out to:
- enterprising women who illegally use the oil or possibly PCBs to formulate beauty creams for sale on the open market;
 - welders for use in welding machines as coolants;
 - people who apply them as lubricants in domestic sewing machines; and
 - other entrepreneurs that formulate mixtures with sawdust for industrial and domestic use as fuel.
19. There are unconfirmed reports of volumes of pesticides containers buried at some specific locations. For example in Ghana, it is alleged that the pesticides containers, which might include POPs pesticides, were buried in the early 1970's at the premises of the Plant Protection and Regulatory Services Department (PPRSD) at Pokuase in the Ga District of the Greater Accra Region as well as at the Tono and Veve Irrigation projects in the Upper East Region. These locations are within important river basins such as the Densu and Volta. Ghana is very much concerned about potential POPs contamination of land and specifically refers to its priorities of action in the NIP as "carry out further investigations to identify contaminated sites, secure and label sites, identify potential remediation technologies available, establish regulation and

guidelines for clean-up of contaminated sites”. It requests specially technical and financial support over a period of 5-10 years. Similarly in Nigeria, the ASP has identified some warehouses where obsolete pesticides including POPs are stocked. These places are: Lagos, Kaduna, Ibadan and Kano. The Government of Nigeria’s concern is on various studies indicating presence of POPs (pesticides and PCBs) in environmental samples, food, fish, wildlife and human milk. Even though these studies are old, they are concerned among other things, about soil contamination as one of the sources from waste stockpiles of POPs. According to the NIP, a study carried out in 2002 indicated a wide spread contamination of Nigerian soils covering farmland, industrial soils and refuse dump soils. The noted presence of POPs despite studies showing “relatively short half-lives of POPs in Nigerian soils” also raised concern. With many unknown factors, data gaps and lack of capacity to identify and monitor contaminated land, Nigeria is giving one of the priorities to capacity building contaminated soil management.

1.3 Barriers to project implementation

20. Experience gained during the project brief preparation has resulted in an improved understanding of the barriers to be overcome during the full project implementation. The major barriers identified to date include:

Inadequate National Policy on POPs

21. Appropriate policies and regulations constitute the first two axes in managing contaminated sites. This calls for legislation and legal framework.
22. A Government policy on POPs is often part of a broader policy on chemicals management. The current policy direction for the management of potentially bio-accumulative and toxic substances in both Ghana and Nigeria is inadequate and incapable of dealing with the specific requirements of the Stockholm Convention. An explicit policy needs to be established to implement the Stockholm Convention and to promote POPs free agriculture, health and industry sectors and at the same time ensure protection of the environment and the natural resources.

Inadequate Policy and Legal Framework

23. In both Ghana and Nigeria, there are a number of laws that have some relevance to the POPs and PTS. Many of these laws, however, do not address the dangers posed to human and the environment by the chemicals in question. Where they may be relevant, the institutions that deal with them do not have the resources to monitor or research into their effects on health and the environment and do not have adequate disposal guidelines as required by the Convention.

Ghana

24. In Ghana, there are currently seventeen (17) existing chemical-related legislation. Although these laws are not specific to the POPs, they provide a framework for the management of all chemicals and pesticides. The existing laws in the country are listed as follows:
 - The Environmental Protection Agency (EPA) Act, (Act 490) of 1994. This Act which established the Environmental Protection Agency, seeks among other things to control the volumes, types, constituents and effects of waste discharges,

emissions, deposits or other sources of pollutants and/or substances which are hazardous or potentially dangerous to the quality of life, human health and the environment through the issuance of environmental permits and pollution abatement notices.

- The Pesticides Control and Management Act, 1996 (Act 528) provides rules for registration, manufacturing, use, disposal and non-disclosure of information, classification, licensing, reporting, labelling and inspections of pesticides.
- The Food and Drugs Law, 1992 (PNDCL) 305B, which was enacted to control the manufacture, import, export, distribution, sale, use and advertisement of foods, drugs, cosmetics, household chemicals and medical devices are made from several chemical substances that may have a negative impact on health and environment if the manufacture, distribution and disposal are not controlled and managed properly.
- The Factories, Offices and Shops Act, (Act 328) 1970, which seeks to protect the health and safety of workers from the dangers posed by chemicals to employees in the working environment.
- The Standards Decree, 1973 (NRCD 1273)
- The Draft Policy and Bill on Occupational Safety and Health, 2000, which seeks to ensure that measures are instituted to ensure the attainment of optimum health for workers in all occupations in Ghana
- The Mercury Law, 1989
- The Minerals (Off-Shore) Regulations, 1962 (as amended)
- The Oil in Navigable Waters Act, 1964
- Infectious Disease Ordinance (Cap 78)
- The Prevention and Control of Pests and Diseases of Plants Act, 1965 (Act 307)
- Prevention of Damage by Pests Decree, 1968 (NLCD 245)
- Cocoa Industry Regulations, 1968 (NLCD 278)
- Merchant Shipping (Dangerous Goods) Rules, 1974 (LI 971)
- Customs, Excise and Preventive Service Law
- Local Government Act, 1992 (Act 458)
- Export and Import Act, 1995 (Act 528)
- Environmental Assessment Regulations, 1999 (LI 1652)

Nigeria

25. Similarly, in Nigeria, there are a number of laws set up under the Federal Ministries of Environment, Health and Agriculture, which deal with chemicals and hazardous wastes. Some of these laws are:

- S.1.8 National Environmental Protection (Effluent Limitation) Reg. 1991
- S.1.9 National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Reg. 1991
- S.1.15 National Environmental Protection (Management of Solid and Hazardous Wastes), Reg. 1991
- FEPA Decree 58 of 1988 (Amended by FEPA Decree 59 of 1992)
- FEPA Decree 86 – Environmental Impact Assessment 1992
- FEPA Sectoral Guidelines and Standards 1991
- Factories Act 1990
- Harmful Waste (Special Criminal Provisions etc.) Decree 1988
- NAFDAC Decree 15 1993

- Pesticides Registration Regulation 1996
 - Pharmacy Council Decree 1992
 - IPAN Decree No. 100 of 1992
 - Customs & Excise Act 1990
 - Standards Organization of Nigeria
 - Occupational Safety & Health Guidelines
 - Nigerian Ports Authority Act
 - Nigerian Maritime Decree
 - DPR Guidelines & Standards for the Petroleum Industry in Nigeria (2002)
 - NDLEA Decree
26. The National Agency for Food and Drug Administration and Control (NAFDAC) also set up laws to regulate food, drugs, cosmetics, medical devices, bottled water and chemicals.
27. Additionally, the Factories Act 1990, Chapter 126 Vol. III Laws of the Federation of Nigeria, being implemented by the Factories Inspectorate Division of the Federal Ministry of Labour and Productivity (FML&P) concerns itself with the occupational health and safety of workers from the chemicals and other risks in the workplace. Other Ministries/Agencies that have relevant laws are the following:
- The Produce Inspection Service Divisions of the Federal Ministry of Commerce imports chemicals and oversees the quality of produce leaving the country. It also provides industry analysis and statistical information, as well as business counselling and export assistance.
 - The Nigerian Ports Authority (NPA) which is responsible for ensuring the safe transportation, loading, unloading, and handling of goods, including chemicals, carriage, embarking/disembarking of passengers in or from sea going vessels. Efforts are made to ensure that all hazardous materials imported and exported are transported in accordance with international regulations and the manufacturer's recommendations.
 - The Federal Ministry of Industry, though not an institutional manager of chemicals and pesticides, supervises industries and companies that handle chemicals in the course of production.
 - The Department of Petroleum Resources (DPR), in cooperation with FMEN, regulates the petroleum sector (both upstream and downstream). This includes regulation of hazardous materials, consignors, consignees of drilling chemicals, exploration, formulation, refineries, distribution, import and export of petroleum products.
 - The Nigerian Custom Service is responsible for the control of imports and exports of all goods including chemicals. It also ensures that the imports and exports are in accordance with the national and international regulations.
 - The National Authority on Chemical Weapons Convention (NACWC), located in the office of the Secretary to the Government of the Federation, ensures the implementation of Nigeria's obligations under the chemical weapons convention.
28. It is thus clear from the above that there is a need for harmonization of all these responsibilities at the government level. It is also necessary for greater efficiency and

effectiveness to strengthen capacity for enforcement of laws and regulations through provision of adequate funding to the relevant government agencies, improvements in management capacity, adequate equipment, transport and staff career development.

29. On the other hand, the near total absence of legislation on issues related to contaminated lands/sites is the first major barrier to their identification and management. Yet, it is universally acknowledged that the provision of appropriate legislation is “the beginning of wisdom” in this regard. A suitable legislative framework providing the rules of management for contaminated lands/sites including economic incentives, but also sanctions tied to compliance or failures is crucial. Difficulties in the development of suitable legislation could include:
- low prioritisation to draft and pass such legislation;
 - often fragmented nature of responsibility for management of chemicals and contaminated lands;
 - inadequate data and information that normally underpins such legislation; and
 - considerable cost of such an undertaking including enforcement.

Inadequate Comprehensive Scientific/Socio-economic Data:

30. The formulation of suitable and effective management framework for contaminated lands should be underpinned by adequate scientific and socio-economic data and information. The information gathered must cover sources, pathways, fate and transport, human and ecosystem exposure, toxicology and ecotoxicology. A detailed understanding of the socio-economic indices must complement it. Decision makers must take account of threats posed and costs incurred by possible changes and identify realistic measures needed to ensure effective management of contaminated lands. Difficulties in achieving scientific and socio-economic data include:
- absence of comprehensive scientific data on toxic chemicals and the risks they pose to humans, wildlife and the environment;
 - insufficient analytical facilities for hazard/risk assessment;
 - lack of tools for proper assessment of the socio-economic aspects of remediation and contaminated land management;
 - limited technical expertise to enable rational choice of remediation technologies and ensure successful implementation; and
 - unsatisfactory environmental practices.

Ineffective Enforcement of Regulations and Legislation:

31. Even in countries where there is a semblance of legislation, there is no functional enforcement and surveillance procedure to ensure the effectiveness of such laws. Designing an effective system of enforcement and linking this to appropriate monitoring strategies is a complex task that calls for ongoing inputs in terms of training and resources. The difficulties in providing this necessary outfit include:
- providing suitable training and resources to achieve a critical mass of personnel with the requisite skills and equipment to enforce envisaged legislation;
 - near absence of resources to undertake required inspection and pursue offenders and reward compliers; and
 - lack of technical and management capacity for monitoring to underpin enforcement;

Lack of a National Classification System:

32. Setting priorities for remediation of contaminated lands require the existence of a rational approach for contaminated land site identification methodology and site classification system. A National Classification System (NCS) affords a vantage platform based on scientific and socio-economic considerations for such judgment. The difficulties in adopting such a system include:
- lack of capacity to develop a NCS;
 - lack of implementation of a Global Harmonized Labelling System (GHS);
 - weakness in the procedures of risk assessment; and
 - lack of necessary legislation to underpin such a system.

Absence of Clear Responsibilities and Limited Coordination:

33. The multi-sectoral nature of chemicals management in most developing country situations results in a lack of coordination, which is a *sine qua non* in the management of contaminated lands. Assigning responsibilities explicitly must be dealt within any framework legislation on contaminated lands. Barriers in assigning and agreeing responsibilities include:
- competition amongst the various Ministries and Departments concerned with the management of contaminated land;
 - absence of positive engagement of key players and potential problems with assumption of liability; and
 - historical actions carried out in good faith but also in ignorance of potential for future problems.

Inadequate Financial Resources:

34. The implementation of remediation of contaminated lands requires adequate financial resources. In developing country situation, lack of funding is and will always be a problem for reasons, which include:
- often limited budgets from governments and therefore no matching funds from bilateral/multilateral donors;
 - competing demands for limited resources and lack of mechanism for evaluating comparative seriousness of competing problems;
 - difficulty in applying the “polluter pays” principle while ensuring needed improvement and actions; and
 - difficulties in ensuring the rational use of meagre resources.

Inadequate Awareness and Information:

35. In most developing countries, information is not available to stakeholders who are in a position to influence decisions on contaminated land/site management. Provision of vital scientific as well as socio-economic data to politicians and policy makers is generally inadequate. Awareness for stakeholders on the requirements and practices for effective contaminated lands management needs to be improved. Difficulties in achieving this include:
- limited capacity to collect relevant data and information on issues of contaminated sites and their socio-economic impacts;

- insufficient and limited effective tools to communicate appropriate messages in a form that can be easily understood and relevant to the target audience;
- inadequate resources to undertake outreach campaigns; and
- low level of general awareness.

Lack of Capacity and Experience in Selecting Environmentally Sound Cost Effective Technology for Soil Remediation

36. It is always difficult for developing countries to adopt well-proven expensive technologies followed in industrialized countries mainly due to lack of know-how, and the proprietary nature of technology. There are however existing technologies such as bioremediation and emerging technology such as phytoremediation that could be looked at as viable technologies for developing countries. Obviously one has to do some model analytical scale experiments in the countries concerned, to prove their performance and pinpoint any modifications that need to be incorporated. One has to look into the merits of BAT/BEP experiences in similar developing economies.

Lack of Capacity to Conduct Risk Management Decision for Contaminated Land/Site Remediation

37. Risk Based Decision Making (RBDM) is a very complicated process and before embarking on a costly land remediation exercise, one has to take into account all factors. Some are linked to capacity building in bringing stakeholders involvement, consideration of all the technology, legal, social factors are of utmost importance for any public and /or private involvement in land/site remediation.

1.4 Regional and Global Benefits

38. The main outcome of the Full Project would involve development of policy and legal frameworks for the management of POPs contaminated lands/sites in Ghana and Nigeria and possible use of this experience to extend the results to the West African region. It would also include activities leading to enhance national and regional assessment capacity and institutional strengthening on issues of POPs contaminated lands/sites. Over and above, it will establish planning details for pilot case demonstration for identification and assessment of use of low cost but environmentally sound remediation technologies in selected hotspots in the two participating countries. The activities would also address outcome of issues of socio-economic importance namely stakeholder involvement and establishment of IMS, public awareness and Environmental Education Programme.

Environmentally Sustainable Economic and Industrial Development (ESEID)

39. Persistent Organic Pollutants (POPs) can injure human health and ecosystems at locations nearby the site from which they escape into the environment and also at very far distant from that site and can impact adversely on wildlife, aquatic and marine life, domestic animals and humans. Because of their unique properties, POPs do not respect national boundaries, and therefore pose a special kind of challenge that makes it possible for any one-nation acting alone to remedy the problems. Therefore a regional approach will have a far-reaching effect for other countries in the region to move towards ESEID.

Global and Regional Environment/Conservation of Biological Diversity

40. The rationale of the Stockholm Convention is the long-range transport of PCBs and other POPs. The most important long-range transport vector is air transport and subsequent deposition at far distant locations and upward movement through the food chain. Ecosystems with the greatest identified harms caused by POPs originating at far distant locations include the inland rivers and the Gulf of Guinea. The destruction and cleanup of significant PCB global hotspots benefits the region by reducing the amount of POPs available to volatilize into the air. These benefit the ecosystems as a whole as well as the producers and consumers of fish or meat from these ecosystems especially indigenous peoples who depend on wild fish and meat. This project will decrease the PCB pollution risk and burden on the environment of the *Guinea Current Large Marine Ecosystem (GCLME)* and therefore biodiversity benefits would accrue to this area and result as well in beneficial transboundary effects.

International Waters/Improved Water Quality

41. POPs normally escape from storage sites and from contaminated locations into the wider environment by volatilisation, by ground and surface water run-off and by other means. By providing the framework for the destruction and cleanup of obsolete pesticides and hazardous industrial chemicals, the project will therefore contribute in preventing future contamination and threats to the quality of the global hydrological cycle. Some recorded data and incidents have shown that PCBs have contaminated local rivers both in Ghana and Nigeria, and by addressing the PCB stockpile issue in each of these countries, water quality that has suffered from PCB leakage and dumping will improve as a result of this Programme and Project intervention
42. The successful destruction and clean-up of the POPs stockpile and associate waste matrices (e.g. contaminated soils and sediment) in the demonstration area would eliminate the source of heavily contaminated leachate that is continuously feeding into the GCLME and consequently would obviate a major source of PCB to the GCLME's input inland waters, thus mitigating what is currently a very serious public health problem in the Region, while simultaneously addressing designated hotspots in the GCLME Region, which is the subject of a series of interventions under the International Waters Operational Programme (OP) # 8 of the GEF.

Synergies with other programmes in the region

43. There are a number of ongoing programmes and projects, which are being supported by different donors in both countries, that because they are closely related to the proposed project, provides leverage for obtaining further donor support. A summary of the ongoing programmes and projects is given below.

Guinea Current Large Marine Ecosystem (GCLME)

44. The GCLME is a regional GEF funded project which focuses on environmental degradation, pollution control and eco-diversity conservation in the Guinea Current. The project focuses on five integrated modules: resource productivity, natural resources management of fish and fisheries, pollution and ecosystem health, socio-economics and governance. This project will complement GCLME project through the prevention of pollution of the Guinea Marine Current from activities particularly the contaminated sites. It will facilitate the achievement of the outputs of the pollution and

ecosystem health reduction as well as enhancing the biodiversity conservation of the Guinea Current region, sustainable development of LME resources, greater food security and the promotion of increased socio-economic benefits.

African Stockpiles Programme (ASP) In Nigeria

45. Canadian International Development Agency (CIDA) along with the World Bank has already approved a subprogram under ASP for disposal of obsolete stockpiles of pesticides including POPs. The ASP project is aimed at clearing and disposing stocks of obsolete pesticides including POPs with a view to preventing further stockpiles and contamination of the environment. A preliminary survey carried out under the project identified some warehouses stocked with some obsolete pesticides prohibited under the Stockholm Convention. The warehouses are located in Lagos, Ibadan, Kano and Kaduna. This proposed project would complement the ASP project by identifying the extent of soil/site contamination created by the use of obsolete pesticides, especially those that are POPs.

Strategic Approaches For International Chemicals Management (SAICM)

46. Strategic Approach for International Chemicals Management (SAICM) has been finalised and includes a Global Action Plan that has put forward a number of concrete measures mainly intended to facilitate implementation of global conventions and agreements including the relevant chapters of Agenda 21 dealing with environmentally sound management of chemicals and chemical wastes. Ghana and Nigeria participated fully in the Global Action Plan and play an important role in the African Regional Consultation to the Action Plan (see Appendix 3 of Annex 4). Under concrete measures SAICM refers to 288 items and among other things item 253 specifies

“establish infrastructure for analyzing and remediating contaminated sites. Provide training in rehabilitation approaches. Develop capacity to rehabilitate contaminated sites. Develop remediation techniques. Increase international cooperation in provision of technical and financial assistance to remedy environmental and human health effects of chemicals...”

Danish International Development Agency (DANIDA) Densu Basin Pollution Control Project (Ghana)

47. DANIDA is currently supporting Ghana through the Water Resources Commission to address the Densu River Basin pollution problem. The main sources of water pollution have been identified to include pesticides mismanagement, contaminated farmlands along the river basin, domestic and industrial wastes from the numerous settlements along the Densu river and its tributaries, unconventional fishing practices in the Densu River and Weija Lake downstream, which form the main source for water supply for the whole of Western part of Accra.
48. The Pokuase Agricultural Station, located on the banks of the Nsakyi River (a major tributary of the Densu River) was identified as a major hotspot where obsolete and containers of POP pesticides have been disposed off through burial. However, decontamination of such sites has not been included in the DANIDA support programme. Extension of support to cover this current proposal for decontamination,

public participation, awareness creation and education in the basin by DANIDA will facilitate achievement of these noble objectives.

Country Environment Analysis (CEA) in Ghana

49. The CEA in Ghana is a multi-donor support programme to carry out a country environmental analysis, focusing on forestry, wildlife, urban/rural development and land degradation. The project support provides assistance for and promotion of water and sanitation facilities, sustainable agricultural practices and reclamation of degraded mining lands. This current project will strive to complement the CEA through contributing to the safety and quality of underground water from POP contamination and enhancement of agricultural productivity, urban/rural development and analyze the potential use of remediated lands for agricultural, industrial and commercial purposes.

PCB Management (GEF/UNDP/GHANA)

50. The main objective of the PCB management project is to identify all possible sources of PCBs such as capacitors, transformers, contaminated sites, stockpiles and any other sources. This would enable the development of disposal plans. However, this project like the ASP does not include decontamination of PCB-contaminated sites as an additional responsibility. This regional project, to identify and treat selected chemically contaminated sites, could be a major collaborator to clean the environment of POPs.

NGO/Industries Cooperation

51. On 1st May 2004, the International POPs Elimination Network (IPEN), in partnership with UNIDO and UNEP, began a global NGO project called the International POPs Elimination Project (IPEP). The GEF provided core funding for the project. The three principal objectives of IPEN are:
- Encourage and enable NGOs in 40 developing countries in their efforts in preparing for the implementation of the Stockholm Convention.
 - Enhance the skills and knowledge of NGOs to help build capacity as effective stakeholders in the Convention implementation process.
 - Help establish regional and national NGO coordination and capacity in all regions of the world in support of long-term efforts to achieve chemical safety.
52. Two NGOs covering Anglophone Africa in Tanzania and Francophone Africa in Senegal are signatories to this agreement and will be linked on a long-term objective. Figure 1 gives the various linkages envisaged during the implementation of the project.
53. Oil and mining industries play a key economic role in Nigeria and Ghana. As already mentioned, NGOs and the industries themselves are aware of soil/water contamination caused by these activities using POPs chemicals such as PCBs and HCBs. Based on discussions during the PDF-B implementation, the government, private and public industries and the NGOs have shown great interest in the project and will be joining in the capacity building on contaminated site identification, technology selection and prioritization leading to future land remediation. (see Appendix 2 of Annex 4)

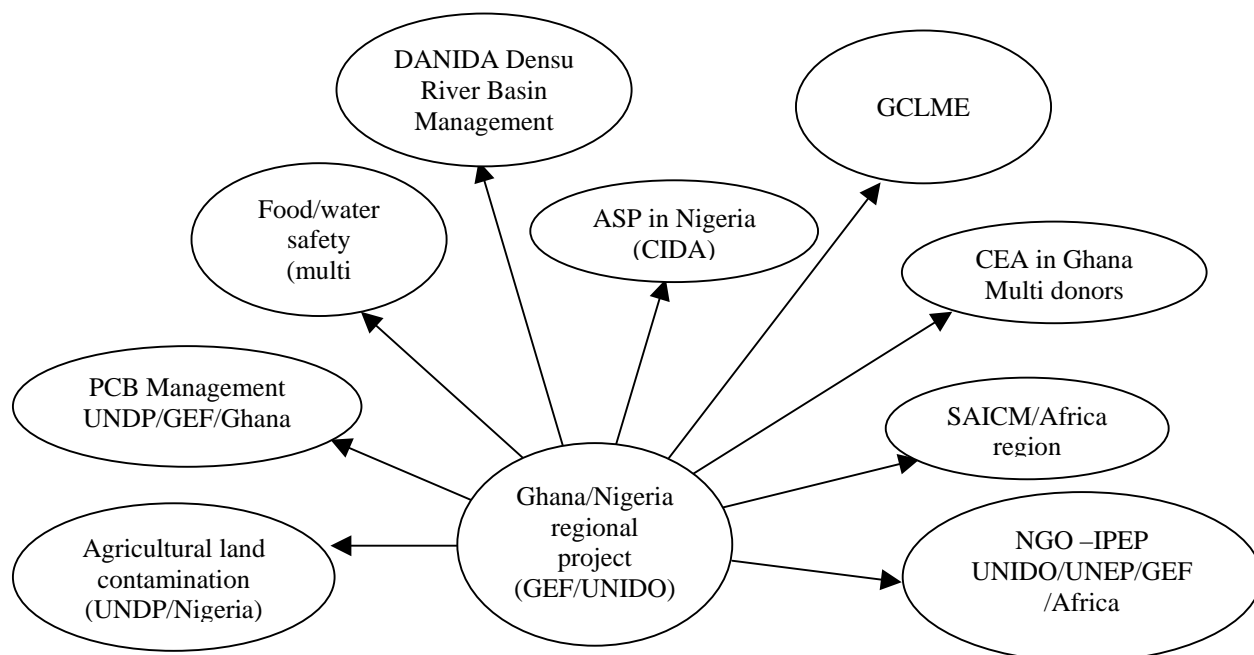


Fig. 1: Possible Linkages and Synergies to other Ongoing Programmes in the Region

54. Most countries with developing economies and economies in transition lack adequate and appropriate technical capacity to properly destroy obsolete stocks of POPs and/or remediate POPs-contaminated environmental reservoirs. By establishing criteria and guidelines for the identification and selection of appropriate methodology for identification of polluted sites and selection of environment friendly and economically feasible low cost remediation as well as planning guidelines for the deployment of these technologies, this project would provide a model for the decontamination of sites associated with POPs in the region. The World Bank document (2005) entitled “Opportunities for integrating the Sound Management of Chemicals to the Millennium Development Goals (MDG)” specially links:

- MDG 1: Eradicate poverty and extreme hunger
- MDG 4: Reduce child mortality
- MDG 5: Improve maternal health
- MDG 6: Combat /HIV/aids, malaria and other diseases
- MDG 7: Ensure environmental sustainability
- MDG 8: Build a global partnership for development.

55. This document clearly cites the vulnerability of poor people in particular to chemical risks, and links agricultural, fishing, health, energy, mining, water and sanitation sectors’ exposure to POPs implicated in Stockholm Convention.

1.5 Special Features

Hotspots Cleanup

56. Following the identification of hotspots using the proposed methodology for site identification and after the selection of the economically viable and environmentally friendly remediation technologies, experimental scale remediation experiments for low cost technologies will be undertaken in both Ghana and Nigeria. Special emphasis will be given to sites that can be considered as hotspots of contamination. Suitable training and supervisory assistance will also be provided to the participating countries by linkage and partnership arrangement with relevant institution(s) in the developed world. Most importantly, the proposed project will bring out two sets of toolkit: one for the systematic identification of land/sites contaminated by POPs and another for the methodologies to be adopted in the region for decontamination using low cost technologies. Such toolkits will benefit the whole of the Africa region.

Civil Society Involvement

57. Civil Society involvement was a hallmark of the preparation activities. Repeated consultations with the NGO community took place in Ghana and Nigeria. In addition, preparatory activities included two regional seminars. The first one held in Abuja, Nigeria on 26th January 2006 considered the technology options for site remediation and the second one held in Accra, Ghana on 2nd February 2006 considered the policy and legal framework for the project. In both seminars more than 20% of the participants belonged to NGOs, educational institutions, press and TV media.
58. Even more extensive Civil Society involvement is planned during the implementation of this project. Arrangements have therefore been included for substantial and ongoing country-based Civil Society participation both in project implementation and project monitoring in both Ghana and Nigeria. The project also provides for explicit and continuing regional Civil Society involvement in both the work of the Project and the overall Programme Linkages with the NGO network in Africa, as shown in Fig. 1. A sample letter from a NGO organization, Nigerian Environmental Society (NES) is attached in Appendix 2 of Annex 4.

Regional Approaches to POPs Stockpile Destruction

59. Since the ASP has taken a Regional Approach to the elimination of obsolete stockpiles of pesticides on the African continent, this project is considered as an obvious extension into identification and remediation if required of contaminated lands. For this reason, there will be a close linkage between the project and the ASP.

Inclusion of Other Countries in the Region

60. As stated earlier, Nigeria and Senegal's active role in SAICM and Mali's initiative in land contamination will all strengthen the inclusion and participation of more countries in the regional project.

2.0 RATIONALE FOR GEF INTERVENTION

61. In general, the project has been designed in full conformity with GEF policies and programme guidelines. It is built upon a partnership between and among the Implementing and Executing Agencies, the Government, the Private Sector and the bilateral donors. It enjoys the strong support of Civil Society at local, national and regional levels.
62. The project is consistent with the GEF operational programme on POPs, OP # 14 (GEF/C.22/Inf.4), and is aligned with POPs strategic priority “c”: “Demonstration and promotion of replication of innovative and cost-effective technologies and practices” (GEF Business Plan FY04-06, GEF/C.21/9). This Programme emphasizes the need to develop and strengthen country capacity to fulfil its Stockholm Convention obligations through the provision of on-the-ground interventions to implement specific phase-out and remediation measures at national and/or regional level, and includes provision for capacity building. The Project is consistent with this stated intent of OP#14. Additionally, the proposed Project are seen to be consistent with paragraph 16 of OP#14, which states that on-the-ground interventions to assist eligible countries include “environmentally sound destruction of wastes that contain POPs and remediation of related affected sites, where warranted, taking into account the assessment of the risks posed to ecosystems and human health and cost-effectiveness”. This paragraph further states that activities eligible for GEF funding may include identification, containment and stabilization of wastes that contain POPs and environmentally sound management of stockpiles. Lastly, the proposal responds to OP#14 emphasis on strengthening capacity and infrastructure and institutions at different levels, monitoring, strengthening of enforcement capacity and facilitation of technology transfer.
63. This Project is also eligible and consistent with the objectives of GEF OP#10 – Contaminated-Based operational programme that identify new technologies that could be used to assess and reduce contaminant loading and to prevent the releases of globally significant POPs. Another important emphasis in any GEF project is to secure full civil society involvement in the work associated with GEF projects - affected communities, NGOs, Community Based Organizations (CBOs), the scientific community, and all affected stakeholders. As designed, the Project is consistent with the emphasis of NGO involvement in the Project Brief preparation and implementation.

3.0 Project Objectives, Outputs and Activities

64. As previously mentioned, the project is a response to address problems of inadequate capacity in developing countries in identifying and remediating POPs contaminated lands/sites based on systematic investigation and risk assessment studies.
65. With the ASP putting emphasis on environmentally sound disposal of obsolete stocks of POPs pesticides, an obvious follow-up is needed to develop capacity for the identification and remediation of POPs contaminated lands/sites. African countries therefore need a national/regional approach to clean the agricultural and industrial land/sites contaminated with POPs and other similar contaminants.

3.1 Objectives

Overall Objective of the Project

66. The overall objective of the programme is to build capacity and strengthen institutional arrangement and develop appropriate strategies for identifying sites contaminated by POPs chemicals listed in Annexes A, B and/or C of the Stockholm Convention. The project will also assess the viability of environmentally sound and low-cost remediation technologies. Results of these experimental scale testing project experiences will be extended to other countries in the region.

Immediate Objective of the Project

67. The immediate objective of the project includes:
- Development of policy and legal frameworks for management of contaminated lands/sites; and
 - Strengthening of institutional capacity for mitigation of land contamination and sustainable land management, potential hotspots identified and prioritised for experimental scale testing of appropriate low-cost environmentally sound technologies, *if remediation is required*.

3.2. Outputs and Activities

Output 1 A suitable organization arrangement set up for timely and well monitored implementation of the project

- Activity 1.1 Establish a Regional Ministerial Committee (RMC) from Ghana and Nigeria for overall monitoring of the project implementation and meeting twice annually.
- Activity 1.2 Establish a Regional Steering Committee (RSC) to meet three times annually to monitor the progress of the project, make recommendations for any changes/modifications to activities outputs and budget allocations. Prepare terms of reference for the RSC.
- Activity 1.3 Establish a Regional Coordination Unit (RCU) for the day-to-day implementation of the project. Prepare terms of reference for the Unit.
- Activity 1.4 Recruit Chief Technical Advisor (CTA).
- Activity 1.5 Appoint Regional Co-ordinator and administrative staff for the RCU (maximize synergies and avoid regional duplication).
- Activity 1.6 Identify and recruit National Project Director and administrative staff in each country.
- Activity 1.7 Establish all the National Coordination Units and prepare terms of reference.
- Activity 1.8 Equip the RCU with office equipment and other facilities as agreed during the project implementation.
- Activity 1.9 Skill share workshops in Ghana and Nigeria annually for project teams (RMC and RCU) and other potential country participation.

Output 2: Establishment of Regional Policy and National Legal frameworks for the management of contaminated sites

- Activity 2.1 Develop regional policy for the management, (enforcement, monitoring and evaluation) of contaminated sites based on a risk assessment model.
- Activity 2.2 Recruit international and national experts to assist in the drafting of the environmental legislation.
- Activity 2.3 Develop, reform and extend existing policy and legislation to cover the management of contaminated sites.
- Activity 2.4 Keep the RMC fully informed of the policies developed in and to have overall responsibility for monitoring the implementation of the policy when enacted through national legislation.
- Activity 2.5 Establish regional/national training programme for staff in the meanings, requirements and enforcement of the legal framework.

Output 3: National and Regional Capacity Building and Institutional Strengthening

- Activity 3.1 Establishment of a Regional National Classification System for contaminated sites.
- Activity 3.2 Strengthening of institutional capacity for mitigation of land contamination and for sustainable contaminated land management.
- Activity 3.3 Human resource capacity development on sustainable methodologies for contaminated land site identification and remediation.
- Activity 3.4 Development of capacity for programmes of stakeholder engagement, public awareness and education programmes.

Output 4: Toolkit for the selection of environmentally sound and economically feasible remediation technologies for Ghana and Nigeria

- Activity 4.1 Establish two national Geoenvironmental Centres within an existing institution (public-private sector partnership) in Ghana and Nigeria for remediation of (POPs) contaminated sites.
- Activity 4.2 Develop methodology for the systematic and stepwise identification of potentially POPs contaminated sites in Ghana and Nigeria with a regional prospect (including all risk studies).
- Activity 4.3 Develop a framework, including an analytical toolkit for a decision support system for the selection of environmentally sound economically feasible technologies for the remediation of POPs contaminated sites.
- Activity 4.4 Deploy selected methodology and framework for the identification and selection of appropriate low-cost remediation technology for POPs contaminated sites based on samples taken from the contaminated sites.
- Activity 4.5 Undertake experimental project(s) in Ghana and Nigeria to verify effectiveness of low-cost technology and validate the site selection methodology, the framework for remediation technology selection and the selected technology option. No site remediation will be undertaken.

Output 5: Establishment of environmental IMS and framework for stakeholders engagement and public educational and awareness Programme

- Activity 5.1 Development of project strategy for communication and stakeholder engagement including a strategic communication plan.
- Activity 5.2 Establish, organise and maintain effective, national databases for potentially contaminated POPs sites to assist in site prioritisation and best practise development.
- Activity 5.3 Establishment of an effective environmental Information Management System (IMS) to share information, relevant assessment tools, classification system, remediation methodologies and best practices techniques through the development and deployment of a 10-year IMS Strategic Plan.
- Activity 5.4 Undertake activities necessary to strengthen the understanding of POPs issues through programmes of education and awareness for all relevant stakeholders.
- Activity 5.5 Development and deployment of complementary websites, newsletters and systems for internal and external dissemination of POPs related information.

Output 6: Regional Monitoring and Evaluation Plan

- Activity 6.1 Develop baseline for some M&E indicators for the project outputs.
- Activity 6.2 Establish a socio-economic assessment and indicators for POPs exposure likely to emanate from contaminated sites.
- Activity 6.3 Mid-term and terminal Project Implementation Review (PIR) exercise (excluding UNIDO staff time).
- Activity 6.4 M&E of the various non-civil society stakeholders.
- Activity 6.5 Establish continuous civil society involvement/participation in M&E.

4.0 RISKS, SUSTAINABILITY AND COMMITMENT

4.1. Possible risks

68. The five principal risks that need to be taken into account for this project include:

- The possibility that the Project will not be sustainable for financial and other reasons beyond the life of the GEF intervention.

The risk is low due to the fact that the capacity building achieved in the project would be broadly applicable to many similar toxic contaminants.

- The possibility that there exists inadequate and ineffective political will, government support and actual commitment for the Project.

This is low since the project puts emphasis on policy and legal framework, country driven and country ownership approach and will be implemented under the supervision of a committee at Ministerial level indicating full commitment.

- The possibility of inadequate timeframe in which to complete and achieve the outlined tasks.

The risk is none due to the fact the implementation will be based on a work plan that will be monitored periodically and remedial action and adjustments made to meet the timely inputs to achieve the outputs.

- The possibility of inadequate and ineffective stakeholder participation during the project as well as the possibility of conflicting long term stakeholder priorities.

The risk is low due to the fact that during the preparation of the country NIPs and the present project brief all the stakeholders played an important role and even wanted expanded coverage of toxic contaminants and not restricted to POPs only.

4.2. Sustainability, Replicability, Commitment and Future Sites Contamination Prevention

69. The project gives great importance to policy development and legal framework for giving credibility, sustainability and above all commitment at ministerial level due to its role in Outputs 1 and 2 of the project.
70. The capacity building, especially in public awareness, environmental education, NGOs and stakeholders' involvement and establishment of a well functioning IMS will provide the long term knowledge upgrade of public, civil servants and civil society which will have its own momentum for providing information on POPs land pollution and consequent impact on other environmental matrices including water bodies.
71. Sufficient cooperation/linkage with projects related to Stockholm Convention in the region is envisaged in the implementation of the project.
72. During the project brief preparation, there has been a great cooperation and understanding and full involvement and interaction among the national experts, several Ministries and NGOs in order to keep the partnership, country ownership and country driven approach.
73. Many of the outputs from the six components offer scope of replicability to other countries in the region. It is envisaged to hold two regional seminars in cooperation with ECOWAS as part of the activities to promote policy/legal framework, enactment and enforcement and also on the use of toolkit to stepwise identify POPs contaminated sites/lands and carry out risk assessment/management strategy to prioritize contaminated lands and in selecting appropriate technology, if remediation is needed.
74. The expectation is that by enacting policy/legal framework on a national basis and consequently on a regional basis will have an impact on the prevention of future land contamination. Projects like the ASP that look after the prevention of future accumulation of obsolete stocks and as part of NIP action taken in industrial and non-industrial categories implicated in the Stockholm Convention, the toolkit and the set of policies should as well take care for the elimination or reduction of POPs. This will have a direct effect on land contamination prevention. This project strategy of

monitoring/containment of POPs contaminated land will contribute to the prevention of further contamination

75. There will be no creation of any new stand-alone centre but only existing institutions and laboratories will be upgraded thereby increasing the probability of long-term sustainability and replicability.

5.0 STAKEHOLDER PARTICIPATION AND PROJECT IMPLEMENTATION/ INSTITUTIONAL FRAMEWORK/NATIONAL/REGIONAL INSTITUTIONS

5.1. Stakeholder Participation /Preparation

76. Throughout the project preparation stakeholders' participation and discussions were given cardinal importance and this will continue to be a major feature of the project implementation. The project will stress participation within the two countries through workshops, IMS and dissemination of information giving transparency. NGOs along with relevant ministries will be part of the public awareness and environmental education programmes. The table below shows the list of stakeholders that have fully agreed to participate in the project implementation.

Organization	Involvement
NIGERIA	
1. Federal Ministry of Environment	Overall in-charge of implementing the project in Nigeria/Geoenvironmental Centre/IMS
2. Federal Ministry of Agriculture and Natural Resources	POPs pesticides contamination/data collection and related issues
3. Federal Ministry of Health	Health indicators/interpretation
4. National Agency for Food and Agricultural Administration and Control	Pesticides export/import registration
5. Power Holding Company of Nigeria	PCB contamination/partner for Geoenvironmental Centre and private-public partnership
6. Nigerian National Petroleum Corporation	POPs and other PTS contamination, partner with Geoenvironmental Centre and private-public partnership
7. Print and Electronic Media	Public awareness/information dissemination (IMS)
8. Manufacturing Association of Nigeria	General aspects of chemical contamination
9. Mobile Oil Company Plc	Part of private-public partnership
10. Nigerian Environment Society	Public awareness/IMS
11. Clean-up Nigeria Environmental Resources Managers Ltd.	Policy aspects
GHANA	
1. Ministry of Environment and Science – Environmental Protection Agency Ghana	Overall implementation of the project in Ghana/IMS
2. National Plant Protection, Ministry of Agriculture	POPs pesticides contamination
3. Electrical Company of Ghana	PCB contamination and private-public partnership
4. Council of Scientific and Industrial Research	Analysis of contaminants
5. EcoLab, University of Ghana, Accra	Geoenvironmental Centre

5.2 Project Implementation

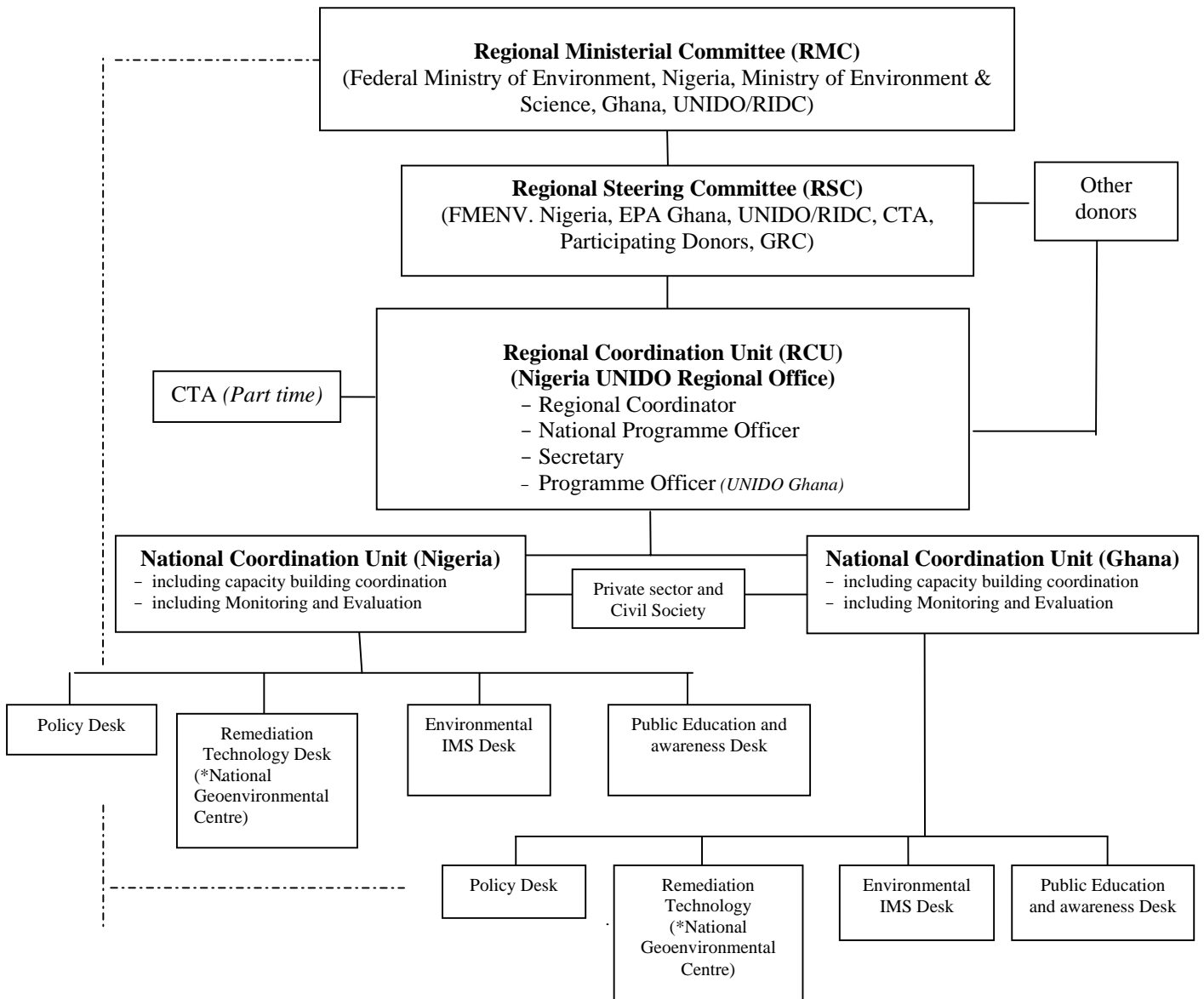
77. The project implementation will be under the oversight of a Regional Ministerial Committee (RMC) to ensure that a high-level importance is given to policy and legal objectives of the project. The organizational arrangement (Fig. 2) is proposed and will be modified after further consultations. The policy units in Ghana and Nigeria will be in contact with the Regional Coordination Unit (RCU) and RMC to be briefed on the policy issues, ways and means to be included in the countries' legal framework and existing relevant laws and decrees and finally agreeing to enforcement at national and regional levels.
78. The proposed RCU office will be located at the UNIDO Regional Office in Abuja for ease of communication from the Regional office to all counterpart organizations in Nigeria and Ghana. It is also cost-effective in the sense that UNIDO will cover the salary of the Regional Coordinator, office space and at least one secretary under its field operational budget. The Government departments will deal with national coordination units assigned to them on a national basis.
79. While the RCU will take care of the day-to-day functioning of the project, the Regional Steering Committee (RSC) will supervise the overall implementation of the project and recommend any modifications or change of work-plan including budget provisions. The RSC will meet twice a year, once in Nigeria and once in Ghana. During the project implementation, it will meet at UNIDO Headquarters or in an institution in Europe that provides technical training.
80. The establishment of Geoenvironmental Centres, linked to private sector, is a unique undertaking in the region that, with fully developed programmes on land/site development of contaminated land, will have a cost effective benefit to the region. Care has been taken not to establish any stand-alone institution that would eventually be difficult for governments to cover the operational costs from their recurrent budgets. The Centres will play a key role in technical capacity building in Ghana and Nigeria on identification of contaminated sites due to industrial, non-industrial and agricultural activities, develop environmental indicators, soil and other matrices analysis of prioritization of contaminated land based on risk assessment/management and develop capacity to select appropriate low cost technology for remediation of POPs contaminated soil. These Centres will continue to be responsible to develop and update the toolkit for stepwise strategy to identify and prioritize POPs contaminated sites and methodology for the selection of appropriate low-cost technology for remediation, if required.
81. It is also conceived that industries especially oil, mining (particularly users and producers of PCBs and HCBs) and agricultural industries (users and producers of pesticides) will join as partners in running the Geoenvironmental Centres with the Government in line with public-private partnership to share the cost beyond the proposed project.

5.2.1. *Intertwining of Institutions*

82. In order to promote sustainability and capacity building, the Geoenvironmental Centre, IMS unit and the Risk Assessment units will intertwine with similar institutions in industrialized world. Such an intertwining will promote interaction within the project but also in other areas related to sound environmental management beyond the project life.

5.2.2 *Cost-effectiveness*

83. The project aims at cost-effective means of environmentally sound management of POPs contaminated sites in Ghana and Nigeria. Past experiences in the US Super Fund exercise and the experience of Holland in the 1960s due to lindane contamination have shown that land remediation by all means is an expensive undertaking particularly to developing countries. According to UNIDO/UNECE “Compendium on soil-cleanup technologies” published in 2000, a remediation cost range of Euro100-300 per metric tonne is entertained, depending on the level of contamination, selection of technology and the level of clean up required by law for various development uses. This project will aim to verify if these costs could be decreased and render remediation technologies usable for environmentally acceptable standards and if low-cost technology deployment for Ghana and Nigeria could be affordable to private-public sector participation. The outputs of the toolkit project would be applicable (including the policy/legal framework, the toolkit for identification of POPs contaminated sites) for the whole region of Africa in a cost effective way. In addition, in each component, effective measures have been taken to reduce the cost such as the RCU office to be located in the UNIDO Regional Office and the NCUs be hosted in the existing government offices.



** Note: The Centre will not be a stand-alone institution. It will be established within the existing institutions in order to be cost effective and sustainable in the long term.*

Figure 2: Proposed Organization Chart for the Implementation of the Regional Project

6.0 INCREMENTAL COSTS AND PROJECT FINANCING

78. The total cost of the project is **US\$4,730,000**. This total cost includes US\$730,000 expended for the PDF-B (including US\$ 80,000 co-financing) during the project preparation. The GEF contribution to the project, which is the subject of this proposal, is **US\$2,000,000**. The Governments of the participating countries will contribute **US\$500,000** in kind and other donors including GRC-Cardiff, DFID, national oil and mining industries and UNIDO will contribute **US\$1,500,000** in-cash and in-kind. UNDP has expressed interest in co-financing the land management through the on-going projects in this domain in the region. The total baseline is estimated at US\$5,020,000. The Government baseline is the estimated cost of resources as well as the estimated

values of the benefits accruing from the future planning for clean up, remediation and recovery of the contaminated sites. The cleaning up of the site will result in national, regional and global benefits. It will also have considerable benefits in reducing health risks to users of the decontaminated sites. In addition, it will potentially boost revenue income to be derived from tourism and through the commercial use of such recovered site.

7.0 MONITORING AND EVALUATION

84. The project objectives, outputs and activities and information on experimental laboratory scale and technology selection will be reviewed and evaluated according to GEF/UNIDO project evaluation policies and procedures. Two committees, the Regional Ministerial Committee (RMC) and the Regional Steering Committee (RSC) will be meeting regularly to monitor and provide necessary coordination. The reports of these meetings (RMC and RSC) will be prepared by the regional coordinator (RC). The RC will prepare progress reports and submit to UNIDO Hqs. every three months. UNIDO Hqs. Project Manager will submit a yearly Project Implementation Report (PIR) to the GEF Secretariat. A more detailed description of the exact nature of the monitoring and evaluation process, including monitoring the work plan will be provided as part of the project document. The table below shows the activity and responsibility of stakeholders in reporting on project progress activities. This takes into account the technical aspects of implementation.

Item	Responsible	Time
Baseline activities report	UNIDO Hqs. Project Manager (Task Manager)	3 months after the start of the project
Regional Ministerial Committee meetings report	Regional Coordinator	On yearly basis
Regional Steering Committee reports	Regional Coordinator	Twice a year
Mid-term review report	UNIDO Project Manager and M&E branch	After two years of the start of the project
Terminal evaluation report	UNIDO M&E branch	At the end of the project

85. The mid-term review will look at criteria used for hotspots identified, impact on stakeholders, progress of the IMS and public education and the progress of the methodology for site identification/investigation/toolkit for appropriate technology selection and the government's response to the policy/legal framework. Output 6 to some extent covers the M&E approach for both technical and logistic implementation. The monitoring and evaluation GEF budget is US\$ 100,000 (excluding UNIDO staff costs, which are covered by the Agency fee).

8.0 LESSONS LEARNED

86. Lessons learned will be derived from, and communicated as a result of the comprehensive set of activities related to Output 2 on policy/legal issues, interest shown by stakeholders and the public based in Output 5 and the technology selection process based in Output 4. In addition, several indicators especially in site analysis will provide a lesson as to how far one should look into other contaminants along with POPs.

9.0 GEF PROJECT BUDGET (estimated)

Component	Sub-component	Increment in US\$				
		Ghana	Nigeria	GEF	UNIDO	Other Donors
1. Project Coordination	1.1 Establish RMC for Ghana and Nigeria 1.2. Establish RSC with TOR 1.3. Establish RCU with TOR and all support facilities	10,000	10,000	10,000		
	1.4. Recruit CTA	0	0	100,000		80,000
	1.5. Appoint Regional Coordinator and Admin. Staff (maximize synergies and avoid regional duplication)				120,000	
	1.6 Recruit two National Programme Officers and admin. staff	20,000	20,000	150,000		
	1.7. Establish all NCUs with TOR 1.8. Equip RCU with all required facilities including office space rent	10,000	10,000	10,000	50,000	5,000
	1.9. Skill share workshops for RMC/RCU and regular review meetings	10,000	10,000	30,000		10,000
Sub-Total		50,000	50,000	300,000	170,000	95,000
2. Regional Policy/Legal Framework	2.1. Develop regional policy for management of contaminated sites. 2.2. Recruit international and national experts to assist in drafting of environmental legislation. 2.3. Develop, reform existing policies to cover management of contaminated sites. 2.4. Keep RMC fully informed of the policies developed to facilitate enactment.	40,000	40,000	200,000		120,000
	2.5. Organize and conduct regional/national training programme for staff on requirements/enforcement of legal framework.	10,000	10,000	50,000		30,000
Sub-Total		50,000	50,000	250,000		150,000

Component	Sub-component	Increment in US\$				
		Ghana	Nigeria	GEF	UNIDO	Other Donors
3. National and Regional capacity building and institutional strengthening	3.1. Regional/national classification system.	5,000	5,000	25,000		20,000
	3.2. Strengthening of institutional capacity for mitigation of land contamination and sustainable contaminated land management.	20,000	20,000	250,000		130,000
	3.3. Human resource capacity development on sustainable methodologies for contaminated land site identification and remediation.					
	3.4. Programmes for stakeholder involvement, public awareness and education programmes.					
Sub-Total		25,000	25,000	275,000		150,000
4. Toolkit for selection of environmentally and economically feasible remediation technologies for Ghana and Nigeria	4.1. Establish two geoenvironmental centres in participating countries.	55,000	55,000	725,000		250,000
	4.2. Develop methodology for the systematic and stepwise identification of potentially POPs contaminated sites with regional context (including all risk studies).					
	4.3. Develop an analytical toolkit for decision/support system for environmentally sound and economically feasible technologies for contaminated sites.					
	4.4. Deploy selected methodology and framework for the identification and selection of appropriate low- cost remediation technology for POPs contaminated sites based on samples taken from the contaminated sites. <i>Note: GEF funds will be used for the development of the methodology and not for remediation purposes.</i>					
	4.5. Undertake experimental project(s) to verify effectiveness of low-cost technology and validate site selection methodology, framework for remediation technology selection and the selected technology option. <i>Note: GEF funds will not be used for for remediation purposes.</i>	20,000	20,000	150,000		375,000
Sub-Total		75,000	75,000	875,000		625,000

Component	Sub-component	Increment in US\$				
		Ghana	Nigeria	GEF	UNIDO	Other Donors
5. IMS, public awareness and environmental education	5.1. Develop project strategy for communication for all parties engagement.	5,000	5,000	70,000		70,000
	5.2. Establish effective national database on POPs contaminated sites.					
	5.3. Establish IMS as per requirements for a 10-year IMS strategic plan.	8,000	8,000	42,000		42,000
	5.4. Organize programmes of education and awareness for all relevant stakeholders including ECOWAS region.	8,000	8,000	42,000	10,000	32,000
	5.5. Develop/deploy complimentary websites, newsletters for regional dissemination of POPs related information	4,000	4,000	46,000		46,000
Sub-Total		25,000	25,000	200,000	10,000	190,000
6. Regional M&E Plan	6.1. Develop baseline for some M&E indicators for the project outputs	5,000	5,000	30,000		30,000
	6.2. Establish a socio-economic assessment and indicators for POPs exposure due to POPs contaminated sites	5,000	5,000	20,000		20,000
	6.3. Mid-term and Terminal project review exercise (excluding UNIDO staff time)	5,000	5,000	20,000	20,000	
	6.4. M&E of the various non-civil society stakeholders	5,000	5,000	20,000		20,000
	6.5. Involve civil society/participation in M&E	5,000	5,000	10,000		20,000
Sub-Total		25,000	25,000	100,000	20,000	90,000
GRAND TOTAL	4,000,000	250,000	250,000	2,000,000	200,000	1,300,000

Co-financing Sources

Name of Co-financier (source)	Classification	Type	Amount (US\$)	Status
Ministry of Environment and Science – Ghana	Government	In-kind	250,000	Confirmed
Federal Ministry of Environment - Nigeria	Government	In-kind	250,000	Confirmed
UNIDO	GEF Implementing/Executing Agency	In-kind	200,000	Confirmed
GeoEnvironmental Research Centre, UK	Private	In-kind/in-cash	700,000	Confirmed
Department for International Development (DFID), UK	Government	In-cash	Being negotiated	To be confirmed in the region
Canadian International Development Agency (CIDA)	Government	In-kind/in-cash	Under discussion	To be confirmed in the region
Oil industries in Nigeria and mining industries in Ghana	Private	In-kind	Under discussion	To be confirmed on case by case basis