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Country: Republic of Mexico

United Nations Development Programme
Project Document

Project Name: Environmentally Sound Management and Destruction of PCBs in Mexico

UNDAF Outcome: Institutional and individual capacities strengthened to stop and/or reverse environmental degradation, support natural resources conservation, encourage participatory management, natural resources governance and promote human development through policies and programs for sustainable development.

Expected Outcome(s)/Indicator(s): Strengthening the management of public policies and citizenship for sustainable development

Expected Outputs(s) /Indicator(s): Support to adaptation of integrated environmental program

Implementing Partner: Ministry of Environment and Natural Resources (SEMARNAT)

Programme Period:_2009-2013	
Programme Component: Energy & Environment	
Project Title: Environmentally Sound Management and Destruction of PCBs in Mexico	
Project ID: 00059701 (PIMS 3692)	
Project Duration: 48 Months	
Management Arrangement: NEX	
Total budget:	4,630,000 US$
Allocated resources:	
• Government (in-kind and cash)	14,000,000 US$
• Local government (in-kind and cash)	60,000 US$
• Private e Sector	
• Other:	
o GEF	4,630,000 US$
o Donor	_____
o Donor	_____

Aproved by:	Sign:	Date:	Name and Title:
Ministry of Environment and Natural Resources (SEMARNAT)			Mr. Alfonso Flores Ramírez General Director of Hazardous Waste and Materials Management
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UNDP Project Document

United Mexican States

Environmentally Sound Management and Destruction of PCBs in Mexico

Brief Description

United Nations Development Programme

The central objective of this four-year project (2009-2013) is to minimize risks of exposure from PCBs to Mexicans, including vulnerable populations, and to the environment, while promoting Mexico's compliance with Stockholm Convention requirements for PCB management and destruction. The project, led by Mexico's Secretariat of Environment and Natural Resources, would achieve this objective through creation of an enabling environment for decommissioning and destruction of Mexico's remaining estimated inventory of 30,639 tons of PCB wastes. PCB wastes to be destroyed during the project period would include Mexico's official (reported) inventory of 3,215 tons and part of those wastes identified and decommissioned within three industrialized states and one municipality. The enabling environment would be established via four project components: (1) development and implementation of strategies and activities for strengthening Mexico's institutional capacity within central and state governments for environmentally sound management and destruction of PCBs, including legislation and enforcement (2) facilitation of expansion and/or upgrading of interim storage so that Mexico has adequate safe central and regional interim PCB storage facilities for its national PCB inventory, with particular emphasis on access to facilities by small- and medium-size enterprises (SMEs) (3) establishment and demonstration of a nationally-coordinated, comprehensive servicing system for PCB management, and (4) raising awareness of legal obligations and best practices for PCB management and destruction in the private and public sectors through outreach and training. The project components would be tested in one state and one municipal pilot, refined and applied in these jurisdictions and replicated in three other states during the project to provide a sound basis for continued implementation beyond the project life.

TABLE OF CONTENTS

Contents

Acronyms

ANIQ	Nacional Chemical Industry Association (*Asociación Nacional de la Industria Química*).
BCD	Base Catalyzed Decomposition
CANIA	National Chamber of the Sugar Refining and Alcohol Industries *(Cámara Nacional de la Industria Azucarera y Alcoholera)*
CAINTRA	Chamber of Industrial Transformation of Nuevo Leon (*Cámara de la Industria de la Transformación de Nuevo Leon*)
CANACERO	Mexican Iron and Steel Producers Chamber (*Cámara Nacional de la Industria del Hierro y del Acero)*
CAS	Country Assistance Strategy (World Bank)
CATA	Committee for Support of Agricultural Workers *(Comité de Apoyo a los Trabajadores Agrícolas)*
CCA	Common Country Assessment (UNDP)
CEC	North American Commission for Environmental Cooperation (*Comisión para la Cooperación Ambiental de América del Norte)*
CEMDA	MexicanCenter of Environmental Right (*Centro Mexicano de Derecho Ambiental)*
CFE	Federal Commission of Electricity *(Comisión Federal de Electricidad)*
COA	Certificate of Yearly Operation (*Cédula de Operación Annual)*
CONAGUA	National Water Commission (*Comisión Nacional del Agua*)
COPARMEX	Employers Confederation of the Republic of Mexico (*Confederación Patronal de la República Mexicana*)
DOF	Official Journal of the Federation (*Diario Oficial de la Nación*)
GDP	Gross Domestic Product (PIB)
IMSS	Mexican Institute of Social Security (*Instituto Mexicano del Seguro Social*)
INE	National Institute of Ecology (*Instituto Nacional de Ecología*)
INEGI	National Institute of Statistics, Geography, and Information *(Instituto Nacional de Estadística, Geografía e Informática)*
IR	Inception Report
ISR	Income Tax
ISSSTE	Institute of Security and Social Services for State Employees (Federal civil servants) (*Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado)*
IW	Inception Workshop
kVA	Kilovolt-Ampere (transformer measurement)
LGEEPA	General Law of Ecological Equilibrium and Environmental Protection (*Ley General del Equilibrio Ecológico y Protección al Ambiente*)
LyFC	Luz y Fuerza del Centro (Electricity company)
M&E	Monitoring and Evaluation
NGO	Nongovernmental Organization
NIP	National Implementation Plan (POPs)
NOM	Norm
OP	Operational Program
PCBs	Polychlorinated Biphenyls
PEMEX	*Petróleos Mexicanos* (National oil company)
PIR	Project Implementation Review
PMO	Project Management Office
POPs	Persistent Organic Pollutants
PROFEPA	Federal Attorney General for Environmental Protection (*Procurador Federal de Protección al Ambiente*)
RETC	Pollutant Release and Transfer Registry (*Registro de Emisiones y Transferencia de Contaminantes)*
SEGOB	Ministry of Interior *(Secretaría de Gobernación)*
SEMARNAT	Ministry of Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*)
SENER	Ministry of Energy (*Secretaría de Energía*)
SMEs	Small and Medium Enterprises
SSA	Ministry of Public Health (*Secretaría de Salud*)
USD	United States Dollars

Units of measurement

mg	milligram
kg	kilogram
Mg	megagram (1,000 kg or 1 ton)
mg/kg	milligram(s) per kilogram. Corresponds to parts per million (ppm) by mass.
ppm	parts per million

Glossary

The glossary is provided to assist proposal reviewers in understanding terms used within the proposal. These terms are *not* regulatory in nature and are not intended to replace or override regulatory definitions established in Mexico or terms as defined within international conventions.

High-concentration PCB liquids: fluids containing high concentrations of PCBs that were utilized because of the dielectric or other properties of the PCBs. An example is askarel fluid used in electrical transformers. PCB concentrations can become higher over time as evaporation occurs.

PCB-containing equipment: Equipment such as electrical transformers and capacitors that contain PCBs in regulated concentrations (> than 50 parts per million). However, concentrations of < 50 ppm at one point in time does not assure that in the future concentrations of PCB will not increase where evaporation occurs. Removal of PCBs from contaminated equipment is the best practice, not dilution.

PCB waste and waste materials: Spent equipment and discarded material that contains regulated concentrations of PCBs, e.g. any PCB liquid, solid or mixture, PCB-contaminated equipment, PCB contaminated soil, or decommissioned electrical equipment. Mexico NOM-133-SEMARNAT-2000 requires that wastes containing >50 ppm PCBs must be managed as PCB hazardous wastes in accordance with the provision of the standard. Concentrations between 5ppm –50 ppm are classified as hazardous waste and to be managed accordingly. Wastes containing or contaminated with concentrations of 0 ppm-4 ppm PCBs are not classified as hazardous waste.

Decontamination: PCB-containing equipment may be decontaminated by removing the PCBs to below regulated concentrations (<50 ppm). This is done either so that the equipment may be reclassified as non-PCB containing equipment for continued use, or so that the non-PCB materials in the decontaminated equipment may be recycled or disposed of in an environmentally sound manner.

Disposal: Long-term storage or depositing of PCB waste materials or residues that are <50 ppm and which occur in solid matrices (e.g., soil) in an environmentally sound manner.

Escrow account: A trust fund managed by a third party (e.g., a development bank) into which SME generators of PCB electrical equipment would pay instalments against services (interim storage; decontamination; destruction of PCBs). The funds would be held in contingency by the trust manager pending fulfilment of full payment for the service to the service provider and provision of proof (certification) by the service provider to the generator that the service has been performed.

Federally-coordinated servicing system: A federally-coordinated system for enhanced access to and promotion of existing and, where deemed feasible and warranted, market-based incentives, to promote sound management and destruction of PCBs in electrical equipment (in-use) in compliance with Mexico law and as consistent with Stockholm and Basel Convention best practices for PCB wastes, and waste equipment and materials. Key elements include:

- *An electronic web-based system* for enhanced (streamlined) inventory reporting (as linked to institutional strengthening), and networking access to verified inventory by service providers and to list of services by generators;
- *Transparent tracking protocol* for PCB movement, inclusive of *strengthened certification requirements* as achieved via legislation strengthening and third party inspections, such that generator declarations can be reconciled with transport declarations, inventory received by and leaving storage and/or decontamination facilities and inventory arriving at and destroyed by destruction facilities).
- *Examination of potential market-based incentives and public and/or private financing options* that, if found feasible, could be implemented during the project to overcome barriers to and promote compliance with legal requirements for decommissioning of contaminated or PCB-containing equipment and destruction of PCB wastes, waste equipment and materials. (Legislative amendments via institutional strengthening a complement to this).

Generators: Possessors of PCB wastes, PCB contaminated or containing equipment, and PCB contaminated materials. Some generators own their own electrical equipment; some are publically owned.

Recycling: PCBs cannot be recycled for reuse *as PCBs*. According to country-specific regulations, recycling may be conducted as follows: the chemical treatment of PCBs may be undertaken to recover, for use, certain elemental constituents of the PCB molecule; or, the recovery of materials from equipment, such as metals that contained PCBs *after* decontamination or the application of a disposal technology to remove the PCBs from the equipment.

Treatment: Processes designed to change the physical, chemical, or biological character or composition of PCB waste; and/or to render that waste non-hazardous or less hazardous, and/or safer or more amenable to handling.

Sensitive sites: Sites in which there is a higher risk of involuntary human exposure to PCBs than elsewhere in Mexico. Examples of sensitive sites include food and beverage preparation facilities, hospitals, schools, and municipal wells that are powered by transformers located in close proximity to the water source.

Service providers. Those entities that maintain PCB equipment (removing contaminated fluids; replacement of liquids lost through evaporation, etc.); transporters licensed to haul PCB wastes and waste materials and equipment; facilities licensed to perform decontamination of PCB-containing electrical equipment (they remove the PCB fraction of oils first); facilities licensed to destroy PCB wastes, PCB electrical equipment and waste materials. In Mexico at this time, firms which transport, decontaminate, dispose of or destroy PCBs must be licensed (registered). Maintenance providers of electrical equipment are not licensed.

Vendors: Vendors of new, non-contaminated electrical equipment (transformers, capacitors, etc.).

Vulnerable populations: Those populations which are more likely to be exposed to PCBs through occupations that bring them into frequent contact with PCB wastes or PCB-contaminated containing equipment include electrical utility and environmental service industry workers who transport, collect, maintain, prepare and store wastes for disposal/destruction. Promotion of best practices would lower the potential for dermal contact and inhalation of PCBs by workers, although these routes of exposure, except where PCB concentrations are very high, do not necessarily equate with a significant health risk. Typically, the greater concern regarding PCB exposure is via sustained (chronic) consumption of contaminated food, the major exposure pathway for PCB contamination in humans. Therefore prevention of entry of PCBs into the environment is a key concern for preventing exposure of vulnerable populations. PCBs, which accumulate in the fat of animal tissue, typically become more concentrated higher in the food chain. Animals become exposed through processes known as biomagnifications (e.g., accumulation of PCBs directly from the environment, such as in fish) and bioaccumulation, which occurs with PCBs accumulate in body fat over time, e.g., via chronic exposure. Predatory animals higher in the food chain often have the highest levels of PCB contamination because of their consumption of other contaminated animals, each one concentrating the "burden" of PCBs of the animal consumed in their own body fat. Drinking water contaminated by PCBs is less likely to be a concern as a direct source of PCB exposure (except in cases where the concentrations are very high and not diluted, which is rarely the case). In humans, women of child-bearing age and children are at higher risk of exposure through consumption than the general population because they can pass a percentage of their own life-time accumulation of PCB concentrations in body fat to their foetus (the first child taking the greatest "hit" of PCBs as compared to subsequent children she bears). Young children are exposed during breast feeding and consumption of contaminated food. Young children are more vulnerable to the adverse effects of PCBs than are adults exposed to the same contaminated food sources owing to their rapid development, size, etc,. Aboriginal people and other groups that routinely consume contaminated food with high fat content are similarly at greater risk via chronic exposure, than the general population. However, aboriginal groups within Mexico who have diets high in vegetable as opposed to animal protein, are less likely to be at risk than, e.g., aboriginal peoples in Canada's eastern Arctic who regularly consume contaminated marine animals and fish, which also have very high fat content. This project in terms of vulnerable populations emphasizes strategies that will prevent contamination of the environment that could result in availability of PCBs for uptake by biota and subsequently expose humans via their consumption of contaminated food.

SECTION I: Project Concept

PART I: Situation Analysis

Context and global significance

1. **Central project objective:** The central objective of this four-year project (2009-2013) is to minimize risks of exposure from PCBs to Mexicans, including vulnerable populations, and to the environment, while promoting Mexico's compliance with Stockholm Convention requirements for PCB management and destruction. Led by Mexico's Ministry of Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales-SEMARNAT*), the project would achieve its objective through creation of an enabling environment for decommissioning and destruction of Mexico's remaining estimated inventory of 30.639 tons of PCB wastes.
2. While Mexico by 2005 had destroyed much of its "low hanging fruit" or 14.587 metric tons (MT) of PCB wastes—mostly high-concentration PCB waste oils and PCB-containing and contaminated material from its partial national inventory—it is now embarking on the more complex, challenging and costly task of identifying, decommissioning and eliminating its remaining estimated inventory of 30.639 tons of PCB-contaminated waste and waste equipment and materials (preparatory phase estimate). Most of this inventory is still in-use.
3. PCB wastes to be destroyed during the project period would include Mexico's official (reported) 2007 inventory of 3.215 tons. The project, in addition to strengthening Mexico's capacity for compliance with the waste provisions of the Stockholm and Basel Conventions as applicable to PCBs, would have global significance as the PCBs destroyed would otherwise be released to the environment at some stage of the life-cycle, where they would then be susceptible to global transport.
4. The table below provides an overview of the official reported inventory from the Secretariat of Environment and Natural Resources (SEMARNAT) and the preparatory phase estimate of the remaining PCBs to be destroyed, inclusive of PCBs within equipment still in use.[1]

[1] The PPG inventory estimate is based on review of official reported figures of PCB wastes maintained by the Ministry of Environment (SEMARNAT), information provided during interviews by SEMARNAT's semi-autonomous environmental audit and inspection branch (PROFEPA), the Mexican parastatal *Comisión Luz y Fuerza del Centro* (LyFC), which supplies electricity to a quarter of the Mexican population (Mexico City, the Mexico Federal District, and portions of several states), the municipality of Cuatitlán, and as extrapolated from annual energy consumption statistics of Mexico's Ministry of Energy (SENER) for Mexican industry, facility size and typical age of equipment in use (>20 years). SENER has oversight over Mexico's two electriicity parastatal utility providers (the *Comisión Federal de Electricidad* and LyFC).

Sector	PCBs contaminated materials (Metric Ton)[a]				
	Official Inventory[b]	Preparatory phase Inventory Estimate (additional)			Total
	Transformers	Transformers	Capacitors[d]	Contaminated Soils[c]	
Public Industry	1.582	1.557	2.240	6.000	
Sensitive Site entities		4.641			
Private Industry (large)[c]	1.428	10.391			
Private Industry (SMEs)		2.800			
Total	**3.010**	**19.389**	**2.240**	**6.000**	**30.639**

[a] The amount of contaminated oils included in total inventory is 6.271 metric tons (MT). The estimate includes an assumption, based on information provided by Mexico's Comisión Luz y Fuerza del Centro (LyFC) utility, that 300 kVA to 750 kVA transformers are those most likely to have utilized PCB contaminated oils.

[b] Decommissioned contaminated equipment, waste materials and PCB oils. Preparatory phase inventory reconciliation estimates this amount at 4.500 MT.

[c] Preparatory phase estimate may overestimate in the range of about 1.500 MT.

[d] Based on a "rule-of-thumb" estimate that assumes 10% of total tons waste destroyed are capacitor wastes as derived from information supplied during PPG interviews with a service company.

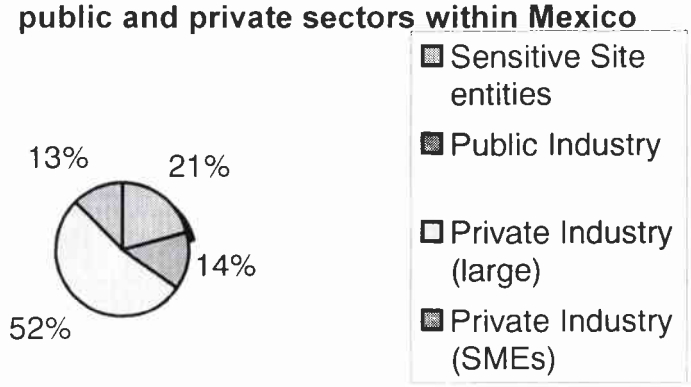
[e] Contaminated soil in immediate vicinity of a transformer as extrapolated from field data obtained during PPG inventory.

Source: UNDP. *Desarrollo del Balance de Materiales Y Refinamiento de Inventario de PCBs. Reporte 2. Producto 3. Complemento del Inventario. Producto 4. Balance de Materiales. Borrador Final.* Prepared by Laura Beltrán García. 9 July 2007.

5. Mexico's electrical utility sector is comprised of two state-owned parastatals. Mexico's *Luz y Fuerza del Centro (LyFC)* supplies electricity to 20% of Mexico's population of 103 million, as distributed within Mexico City, the Mexico Federal District, and portions of several states. The remaining 80% of Mexico's population is supplied by the *Comisión Federal de Electricidad (CFE)*. Despite their size, owing to their past destruction of PCB wastes and contaminated equipment, the electrical utilities together now constitute only about 14% of remaining PCB-contaminated transformers in Mexico.[2] The majority of the remaining inventory of PCB-containing/contaminated electrical equipment is owned by the private sector (e.g., 65% of transformers as shown in Figure 1). The inventory includes electrical equipment owned by 14 private sectors (foremost among them the mining, chemical, iron and steel, paper and cellulose, automotive and sugar refining sectors, as shown in Annex 1). About 13% of these facilities are owned by small-and medium enterprises (SMEs). In addition to the private sector inventory, about 21% of electrical transformers in use are located within sensitive sites (food processing facilities, schools, hospitals, municipalities that use small transformers to power municipal wells, etc.).

[2] See Annex 9, stakeholder profile for more details on transformers owned by parastatals.

Figure 1: Estimated percentage of PCB-contaminated transformers held by public and private sectors within Mexico



Note: Maintenance and disposal of equipment operating within publically-owned facilities, such as public schools and hospitals, are the responsibility of Mexico's public utilities.

Threats, root causes and barriers to environmentally sound management and destruction of PCBs

6. Threats, root causes and barriers (inclusive of socio-economic, sector and geographic issues) are discussed below. The strategies the project will take to address them are discussed in Section II.

7. ***Legislative/regulatory gaps***: The PPG assessment of Mexico's existing legal infrastructure identified a number of gaps relative to environmentally sound life-cycle management of PCBs and ability to track them, while also identifying inconsistencies between the law and regulation. See Annex 7 for a summary of Mexican legislation pertaining to PCBs and legislative/regulatory gaps identified during the preparatory phase.

8. ***Weak capacity for enforcement and PCB traceability have resulted in a lack of certitude***. Mexico has weak capacity for Quality Assurance/Quality Control required for effective identification of PCBs and enforcement of Mexican law (e.g., sampling capacity within industry and by third-party environmental inspectors, and as applicable to gaps in service provider registration and licensing provisions to support "PCB traceability" from the generator's door through to destruction).

   - Several larger private sector entities in recent years have favoured overseas destruction facilities owing to greater confidence in waste certificates obtained post-destruction from these facilities (i.e., liability concerns win out over bottom line costs). Both generators and the servicing industry (treatment and destruction facilities) indicated during preparatory phase consultations that they would like to see improved enforcement capacity for a "level playing field". Mexico's regulatory agency, SEMARNAT, and its semi-autonomous audit branch, the Federal Attorney General for Environmental Protection (Procurador Federal de Protección al Ambiente—PROFEPA), concur that there is a need for strengthening enforcement and institutional capacity for tracking PCB wastes from the generator's door through to destruction. PROFEPA has only 300 inspectors available to inspect an estimated 150,000 to 200,000 hazardous waste and industrial pollution facilities in the country (1 inspector for every 666 facilities). In some states, PROFEPA inspectors are tasked with sampling hazardous wastes in soil, water, air, and for environmental assessment and natural resources, although PROFEPA inspectors lack the technical capacity to do so.

PROFEPA had inspected only 40% of 150 PCB generators that self reported to Mexico's inventory as of 2006 (preparatory phase interviews, 2007).

- SEMARNAT does not currently report to PROFEPA (or share with generators) the conditions of operational (certification requirements) it issues to treatment and destruction companies,
- With regard to PCB "traceability," decontamination/destruction facility permits do not require third-party verification of PCB waste volumes destroyed, nor is certification to verify quantities of PCB waste inventory arriving and leaving authorized storage facilities. Such requirements would enable cross-checking against generator declarations, licensing provisions and contractual commitments.
- Maintenance contractors for PCB electrical equipment are unregulated, hence amounts of PCB-contaminated oils that are removed and from electrical equipment are not tracked and there is no training required for such workers. SEMARNAT include periodic reporting to PROFEPA, as well as to SEMARNAT as a condition within operational permits and a requirement that treatment and destruction companies be required to provide copies of certification not just to SEMARANT, but also to PROFEPA and the generators.

9. These factors, taken together, contribute to a widespread lack of "certitude" among the key actors[3] that remaining PCB stocks can be properly identified and managed, inclusive of decommissioning and destruction of remaining PCBs in use and in storage.
10. ***Smaller generators found to have low awareness of legal obligations***: SMEs and sensitive site generators typically have low awareness of legal obligations for PCB inventory reporting and destruction deadlines and weak technical knowledge of best practices for identifying, handling and proper on-site storage of PCB-contaminated equipment. Because of the small volumes of PCB wastes and waste equipment in their inventory, they lack the leverage to negotiate lower transport[4] and decontamination and destruction costs of the electrical utilities and larger private sector generators that negotiate prices via bid procedures. The limited resources of SMEs and private sector PCB generators is a factor in their reluctance to decommission contaminated equipment and has led to "hoarding" PCB waste inventory on site as they seek to amass the bulk or all of their small inventory for one-time collection so as to lower costs. Given weak knowledge of best storage practices, this trend, reported during the preparatory phase, contributes to risk of environmental exposure.
11. ***Impediments to sensitive site PCB waste identification***. Mexico's two state-owned electrical utilities are responsible for collection and destruction of PCB-containing or contaminated units operating within state-owned sensitive sites, but the low awareness and technical capacity among

[3] Key actors include government, private and parastatal generators or possessors of PCBs; and Mexico's small NGO community that addresses toxic chemical issues, administrators of sensitive sites, including food processing facilities, schools and hospitals, and those populations living near facilities that store or use, and which treat/dispose of PCBs.

[4] Preparatory phase estimates indicate SMEs pay up to USD $6,00 per kilogram in treatment costs, compared to USD $2,80-$3,20 paid by parastatals and larger generators, which have larger inventory volume for which they solicit bids for services (transport, decontamination and destruction). For a 2,500 kg transformer, about USD $3,000 can be recovered from sale of decontaminated scrap at current market prices (mostly copper content) against the treatment cost of between $8,750-$17,500, plus transport. Decontamination of equipment, where viable, reduces the cost of hazardous residual materials to be destroyed to about 20% of the total gross weight of a transformer. However, for units older than 20 years, the best option may be destruction. The cost of destruction of a transformer, less transport, within Mexico is about USD$3,000/ton-$4,000/t (ASESCOR, 2007), as compared to overseas destruction (incineration) costs of between USD$ 175/ton -$3,000/t per transformer (UNEP, 2004). Domestic costs for destruction of PCB oils are about USD $2.70/litre, compared to overseas prices for PCB oils of from USD$ 30/ton-USD$3,700/t , and for contaminated solids between USD $310/ton to $1,850 US$/t (UNEP, 2004). Transport costs, typically based on a collection cost, plus charge based on the size of the load (less for a full load), average USD$1,5/kg within Mexico, as compared to USD $2,90/kg for shipment overseas (ASESCOR, 2007).

managers of such sites regarding the need for identifying and decommissioning units—coupled with incomplete record keeping (many units entered into operation years prior to Mexico's 2000 legislation for PCB decommissioning)—pose challenges to their identification and subsequent PCB phase out.

12. ***Insufficient access to interim storage facilities relative to Mexico's SME and private sector sensitive site inventory***. Most SMEs and some of the larger private sector generators lack adequate on-site storage facilities for their PCB waste inventory and have no access to regional or centrally located interim storage facilities that would enable them to transfer and maintain their inventory in an environmentally sound manner pending destruction, while allowing them to have greater economies-of-scale with reduced transport costs for shorter distances and reduced decontamination and/or destruction costs that could be achieved as a result of consolidation of waste inventory with that of other generators and subsequent negotiations with the servicing sector. (e.g., as facilitated by states, municipalities, industry sector associations or via other options that would be explored, tested and applied during the project phase). There are 45 privately owned hazardous waste storage facilities within Mexico authorized to store PCBs, but they are not fully utilized because there is not enough movement of PCBs elimination and destruction. Parastatal interim storage facilities could potentially be used as supplement to these facilities so as to accommodate Mexico's private sector inventory that currently lacks access to interim storage facilities, as predicated upon capacity of individual facilities and taking into account parastatal inventory, facility location relative to SMEs, and conclusion of inter-service agreements with parastatals. Annex 11 gives an overview of Mexico's PCB interim storage and destruction facilities.

13. ***Lack of financing assistance or strategies to enable generators to achieve improved economies-of-scale***. Currently there is no financing assistance available to assist generators to offset costs associated with interim storage, decontamination and destruction for destruction of PCBs costs, which could help promote compliance and speedy decommissioning in advance of legal deadlines. The costs of equipment replacement following decommissioning of PCB-containing/contaminated equipment is also a contributing factor to a tendency by generators—large and small alike—to defer decommissioning until the final moments of the legislated deadline. SMEs, owing to smaller waste volumes if PCBs and waste equipment, may pay more than two times as much for decontamination of transformers or destruction than do larger generators.

Processing and replacement costs of transformers				
Process \ Size Transformer	300 kVA	500 kVA	750 kVA	
Management Cost (High)	19.000	24.000	30.000	Market prices at 6 US$/kg
Management Cost (Low)	9.500	12.000	15.000	Market prices at 3 US$/kg
In situ decontamination Cost	4.800	6.000	7.500	From Feasibility study data (Asescor, 2007)
Replacement Cost	7.400	23.000	29.800	
Subtotal (Management + replacement)	21.700-29.200	41.000-53.000	51.300-67.300	
Scrap Metal Value	1.600		3.030	

Source: ASESCOR and Guillermo Roman, 2007

14. ***Inclusion of PCBs management within federal budgets***. Currently, hazardous waste management is not included as a line item in Mexico's federal budget but development of a national Hazardous Waste Management Plan to be included in the future for sustainable long-term funding for hazardous waste management at the programmatic level.

15. ***Unpredictable waste flow has implications for servicing sector economic sustainability***. Destruction facilities in Mexico require a predictable and steady "flow" of PCB wastes and waste equipment and materials to operate. The bulk of Mexico's remaining inventory—coming from numerous smaller generators—is highly unpredictable regarding its entry into the market place for destruction and the volumes involved in shipments. While the preparatory phase assessment of Mexico's destruction infrastructure suggests there is sufficient capacity among licensed domestic facilities to address the remaining PCB inventory,56 facilities often operate below capacity, while one facility (Ferropak) has ceased its provision of services just after conclusion of the preparatory phase. Closure of one or two more facilities could alter the current scenario of adequate destruction capacity. Transport companies, decontamination and destruction facilities, for their part, have limited ability and incentive to identify and collect small quantities of PCB wastes from 1000s of SMEs widely dispersed throughout Mexico's 2 million square kilometeres of territory, spread at maximum distance of 4,500 kilometres. Hence, the lack of predictability of PCB waste volumes and "flow" coupled with lack of certitude noted above have implications for economic sustainability of Mexico's decontamination and destruction waste servicing sector, as supportive of the Basel Convention Art. 4, paragraph 2(b).7 Annex 11 gives an overview of Mexico's PCB interim storage and destruction facilities.

16. ***State and municipal jurisdictions, working in coordination with the federal government*** need to strengthen their role in oversight for environmentally sound PCB waste management given the support role they play in enforcement of Mexico's General Law for Prevention and Management of Wastes State and as consistent with Mexico's decentralization plans. The main issues identified during the preparatory phase are lack of adequate state institutional mechanisms for facilitating and monitoring hazardous waste management (PCBs), inclusive of a state-level regulatory regime aligned with federal legislation. Low awareness of federal legislative requirements and adequate human and financial resources were identified as barriers to their ability to perform their intended support role. A legislative barrier (to be addressed as part of Mexico's legislative review to be initiated in 2009) is a legal provision prohibiting states and municipalities from or managing materials listed within international treaties to which Mexico is a Party under current Mexican law.

17. ***Awareness of PCB issues in Mexican civil society is very low and the NIMBY or "not in my backyard" syndrome could be a potential threat***: Given that Mexico has destroyed a good portion of its high concentration PCB transformers, it is most likely that the majority of remaining contaminated transformers still in use, particularly the smaller size units likely to be utilized by SME and sensitive sites, contain low volumes and concentrations of PCBs that pose no immediate health risk in the event of leakage. Outreach (together with appropriate environmental impact processes, as warranted) would be important to allay public fears, while also informing the public of potential routes of exposure and what the country and they personally can do to minimize risk. However, even with education, there is a potential that the syndrome could result in resistance to technologically viable options. For this reason, as well as cost considerations, the preparatory phase assessment suggests that options involving use of existing interim storage and potentially decontamination and destruction infrastructure (with enhancements and/or upgrading as required) should be considered as an alternative or supplement to construction of new infrastructure.

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[5] Mexico has worked to build its domestic infrastructure since 1984 and also following a U.S. Supreme Court decision that prevents export of PCB wastes to that country for destruction.

[6] A further ananlysis will be undertaken to divide inventory in low and high concentration PCBs. The project will look at both national and international disposal options, and the selection will be based on cost and environmental impact.

[7] Art. 4, paragraph 2(b) of the Basel Convention: "Each Party shall take the appropriate measures to ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal".

Stakeholder analysis[8]

18. State-coordinated access to existing PCB management and destruction services requires participation from the following stakeholder groups, which were consulted during the PPG phase. These groups will be consulted during the project, and several of these entities (with asterisks after their name) will work with the project as its partners.

- Federal government ministries would be included per their respective responsibilities for regulatory and/or enforcement role, oversight for electrical utilities, role in monitoring (health and environment), financing sustainability (finance) and which work with jurisdictions
    - SEMARNAT (project lead).
    - PROFEPA*
    - SENER* The energy ministry has oversight for Mexico's electrical parastatals and its national oil company. Historically, these represented the majority of Mexico's high-concentration PCB inventory. Owing to destruction of the bulk of their contaminated PCB wastes and contaminated equipment, the waste inventory electrical utilities reported in the most recent official (2006) inventory (1084 ton LyFC and 477 tons CFE) is from or contained within waste equipment that was used within their respective electrical power generation installations and substations.
    - Comisión Federal de Electricidad (CFE)
    - Luz y Fuerza del Centro (LyFC)
    - PEMEX (oil refineries)
    - Secretariat of Health (Secretaría de Salud—SSA)*
    - CONAGUA
    - SEGOB (Ministry of Interior) for coordination with municipalities.
    - Ministry of Finance (regarding inclusion of special programmatic item for waste management in federal budget, inclusive of PCB management as part of project sustainability strategy)
- State and municipal jurisdictions (participants in pilot projects and candidates for replication of proposed federally facilitated system)
    - Guanajuato State* (pilot state; subsequent application of a federally-coordinated PCB management system)
    - Cuautitlán Izcalli * (pilot municipality located in State of Mexico; subsequent application of a federally-coordinated PCB management system)
    - Two other industrialized states to be identified during the project for replication of federally-coordinated PCB management system
    - Association of Municipalities Asociación de Municipios
- *Comisión Medio Ambiente Camara de Diputados* and the *Comisión Medio Ambiente Senado* (awareness of legislative issues as associated with Mexico's international obligations under the Stockholm, Basel and Rotterdam conventions and gaps in domestic legislation that need to be addressed to meet international obligations and improve certitude domestically for PCB management and destruction)
- Private Sector generators of potentially contaminated electrical equipment, especially within the following top five energy-consuming sectors, inclusive of large and SME enterprises):
    - Chemical (Asociación Nacional de la Industria Química—ANIQ)
    - Iron and Steel (Cámara Nacional de la Industria del Hierro y del Acero –CANACERO)
    - Sugar Refining (Cámara Nacional de la Industria Azucarera y Alcoholera—CAINA)
    - Paper and Cellulose
    - Automotive

[8] See Annex 9 for a profile of stakeholders

- Other industry associations
    - Confederación Patronal de la República Mexicana—COPARMEX)*. COPARMEX is Mexico's largest industry association, representing 36,000 companies. It provides training and outreach, including through a COMPRAMEX campus.
- Sensitive site generators
    - Food processing companies (beverages and other)
    - Hospitals
- The service industry (maintenance, transport, interim storage, decontamination and destruction)
    - Companies authorized to treat, decontaminate, destroy and export hazardous PCB wastes[9]
- Non-governmental organizations. Mexico's NGO community with expertise in chemical management issues is modest, in part a reflection of low awareness among civil society generally and also the common problem facing most NGOs of limited human resource and financial resources. The NGOs consulted are interested in strengthening technical capacity to perform community outreach, as well as to be better able to weigh in on policy and progress within Mexico on environmentally sound PCB management.
    - Greenpeace Mexico
    - CEMDA

Baseline analysis

19. Mexico had by the end of 2005 destroyed 14.587 metric tons (MT) of PCB wastes -- mostly high-concentration PCB waste oils and PCB-containing and contaminated material from its partial national inventory. It is now embarking on the more complex, challenging and costly task of identifying, decommissioning and eliminating its remaining estimated inventory of 30.639 tons of PCB-contaminated waste and waste equipment and materials. Currently, most of this inventory is still in-use.

20. Parastatal companies are currently implementing discrete activities related to PCB management and disposal; whereas PCB management and phase-out among SMEs and at sensitive sites will remain inadequate and not be dealt with in a systematic manner. Confidence in compliance with law, particularly by SMEs, will remain low because of a weak capacity by environmental inspectors and industry, including a weak capacity for the identification of PCBs in equipment and for appropriate interim storage pending destruction. Awareness of best practices for management of PCBs is low, as is the knowledge of Mexican law among SME industry sectors that are generators or PCB users, sensitive site administrators and the general public. Lack of adequate infrastructure, high costs of transport to decontamination and destruction facilities are disincentive to compliance by SME PCB users for environmentally sound management of PCBs.

21. Further, the potential for worker exposure and the exposure of sensitive site populations (school children, etc.) is heightened because of low awareness and, as a consequence, low adherence to best practices for PCB management.

22. Consequently, the baseline situation in Mexico is characterized by a situation where the country's ability to implement and meet its Stockholm Convention obligations and those within Mexican law for phase out and destruction PCBs will not be met because of a weak infrastructure and a weak institutional (particularly in enforcement) and technical capacity, as well as a lack of financial means and the need for improved outreach among SME industries.

[9] See Annex 11for a list of authorized treatment and destruction facilities in Mexico. Maintenance workers who service electrical units are not regulated, hence would need to be identified during the project.

23. Without GEF support, Mexico will continue to lack the institutional and managerial technical skills and key infrastructure required to ensure environmentally sound PCB management, as needed to meet its Stockholm Convention obligations and to adequately protect those workers who manage PCBs, those living, working and playing near facilities that store or use PCBs, including sensitive sites (e.g., school children, hospital staff), the public at large, and the environment.

Project consistency with Mexican national priorities

24. The project is consistent with the following:

    a. Mexico's priorities for PCBs as identified to date within its *National Implementation Plan (NIP) on Persistent Organic Pollutants* "with regard to a reliable and statistically verified national inventory, review of legislation and regulation to address gaps, improving with respect to ability to track PCBs from use through to destruction, outreach to raise awareness among generators of their legal obligations, and guidance on best practices to enhance capacity for environmentally sound life-cycle management of PCB waste equipment and materials undertaken in a cost-effective manner". Please refer to Annex 5 for a more detailed description of the NIP PCB priorities. The NIP was officially submitted to the Stockholm Convention Secretariat on February 12, 2008.

    b. Mexico's federal legislation for PCBs and toxic and hazardous wastes.

    c. Mexico's *National Development Plan 2007-2012,* which includes as an objective promotion of development that is in harmony with nature and the environment, increased citizen confidence in Mexico's institutions, and support for decentralization.

    d. Mexico's *United Nations Common Country Assessment (CCA), the United Nations Development Assistance Framework (UNDAF)* situational analysis and the World Bank's *Country Assistance Strategy (CAS)* for Mexico, inclusive of their emphasis on sustainable development and further integration of Mexico's SMEs, which represent three quarters of Mexico's employment.[10]

    e. Millennium Development Goals (MDG), given the positive effect the environmentally sound management of PCBs is expected to have on environmental, economic and health-related MDGs.

PART II: Strategy

Project Goal

25. The project goal is to minimize risks of exposure to PCBs for Mexicans (estimated population 103.3 million (INEGI, 2007), including vulnerable populations, and for the environment, while promoting Mexico's compliance with Stockholm Convention requirements for PCB management and destruction.

26. The project seeks to achieve this goal by strengthening federal and state legal and enforcement capacity, raising awareness of legal obligations for PCB identification and phase out, building technical capacity for best management practices for PCB identification, management and phase out and verifiable tracking such phase out, and facilitating access by generators to environmentally sound PCB management services at the lowest possible cost, with particular emphasis on access

[10] For details, see Annex 6 on project consistency with Mexican National Plans priorities.

afforded to SMEs and sensitive site administrators. These components, discussed in more detail below, would be grounded in an improved, statistically verifiable national PCB inventory that includes reporting from currently non-reporting private sector generators and a more comprehensive and consistent legal framework for PCBs. The project's mutually supported components, collectively, are designed to result in a comprehensive and more rigorous PCB management regime as implemented at the federal and state levels. The nationally coordinated servicing system would be demonstrated in two pilot projects and then, upon refinement, applied in these jurisdictions and two other states during the four-year project, while providing the basis for subsequent implementation throughout the country.

Project components, expected outcomes and outputs

27. There are five (5) project components. They are listed below, together with anticipated project outcomes, each of which is followed by a description of the expected outputs (activities) associated with it.

Component 1: Strengthened institutional capacity within Mexico's central and state governments for environmentally sound and safe management and destruction of PCBs

Expected Outcomes:
A. Strengthened legal framework adopted

A.1 *SEMARNAT legislative review* to address gaps and inconsistencies, review decommissioning deadlines: (i) recruitment of environmental and chemicals law expert (ii) full diagnostic review of provisions within legislation and report with recommendations (iii) SEMARNAT development of draft legislation and regulations; (iv) consultation with stakeholders and revisions; (v) Amended legislation presented to Chamber of Deputies in 2009. Linkage to Component 4.

B. Enhanced technical and institutional enforcement capacity

B1. *Inspectors trained at federal and state level* by (i) identifying and engaging experts via RFP process as linked to Component 5, (ii) development of best practices guidance for environmental inspectors (iii) negotiating price with firms that sell screening test kits with firms rapid immuno-assay kits for testing PCBs in dielectric oils, drum surfaces, soil, water, etc and with certified laboratories in Mexico and potentially external laboratories with internationally acceptable standards for double-blind samples for use during training and pilots (iii) training-trainer workshop for presenting guidance and demonstrating best practice inspection protocols and use of screening kits as appropriate to participants, including:

(a) 1 workshop for PROFEPA inspectors and custom officials, inclusive of protocols for sample collection and preparation for congener-specific and whole PCB analysis and on-site inspections;

(b) 4 workshops for state and municipal environmental inspectors (two during pilot and at least two coordinated with system application in activity G2), including best practices for on-site inspection, spills and leaks response.

B2 *Improved administrative systems for PCBs*, including (i) improved and formalized information-sharing procedures between federal institutions, i.e., SEMARNAT and PROFEPA (e.g. regarding inventory reporting and facility permit conditions); SEMARNAT and SENER (regarding access to parastatal temporary storage sites, etc.), (ii) inclusion of PCB management within hazardous waste management programme budget (to be created in 2009) and as reflected in programmes pertaining to these;

C. Improved reporting on PCBs to the Stockholm Convention Secretariat

C1 Refined national PCB inventory (verified statistically and with field screening and testing) to be undertaken in 2009, as coordinated with activities B1 and B2.

C2 PCB material flow balance system created 2008 as baseline and for subsequent use, as coordinated with B1, B2 and with results informing I1.

***Component 2*: Safe central and regional interim PCB storage facilities established/upgraded, in particular, interim storage for PCBs decommissioned from Small and Medium Enterprises and sensitive sites**

Expected Outcomes

D. Adequate PCB interim storage capacity established

D1 Enhancement of existing interim storage facilities as required for environmentally sound operation and to accommodate expanded or alternative inventory as parastatal waste PCB oils and contaminated materials are destroyed (linked to F1). This activity includes (i) determination of facility capacity against Mexico's verified inventory, (ii) costing for upgrades and/or construction required (iii) financing options for upgrades and/or construction (iv) operational review of staffing needs for facilities (v) review of licensing and operational permit conditions relative to accommodation of private sector inventory and PCB management best practices from use through to facility decommissioning, and (vi) selection of particular facilities, (vii), Environmental Impact Assessment of Storage, and implementation of proposed upgrades and/or construction, coupled with outreach to SMEs and private sector sensitive sites.[11]

E. Environmentally sound management of PCBs in storage facilities

E1 Environmentally sound management of PCBs in storage facilities inclusive of (i) identification of and recommendations in report of candidate sites for facilities, taking into consideration factors such as geographical location relative to SME and sensitive site "clientele", vulnerability to climate, seismic and volcanic events, erosion, proximity to high-density areas, sensitive sites, such as schools, alternative uses of land, costs for land purchase, financing options, liability considerations, operational conditions of new site . This includes a system for monitoring of releases / verification of no-releases. (ii) selection of site(s) and EIS (iv) decision and application of decision regarding selection of interim storage site and facility construction.

E2: Best practices for PCB management in facilities, including (i) review of and, as required, improvements to licensing and operational permit provisions to ensure environmentally sound management of PCBs, including provisions for third-party inspection of facility, operational reviews, facility reporting relative to inventory received and transferred, facility decommissioning procedures and verification at end-of-life, and liability provisions

[11] Parastatals are already responsible for collection and disposal/destruction, as appropriate, of PCB wastes and waste-containing or contaminated equipment from public sensitive sites.

pertaining to operation and decommissioning at end-of-facility life, including associated site clean up.

F. Access to and utilization by SMEs and sensitive sites of government (e.g., parastatal; concession facilities) and/or other PCB storage facilities

F1: Inter-service agreements between government and parastatals, as required, to allow SME and private sensitive sites access to interim storage facilities.

Component 3: **Establishment and demonstration of a national coordinated comprehensive service system for PCB management (from generator to final destruction), via state and municipal pilots.**

Expected Outcomes

G. Comprehensive federally-coordinated service system for PCB management for SMEs and sensitive sites tested and in operation .

G1: PCB management system developed and tested via demonstration pilots in the State of Guanajuato and Municipality of Cuatitlán Izcalli (the latter located in the State of Mexico), inclusive of (i) coordination and formalized agreements between federal government and these entities (ii) workshop with international experts at project start-up to exchange information on experiences and lessons learned from other nations with government operated/assisted hazardous waste management systems (e.g., Denmark; Canada with representatives from provinces that manage hazardous wastes via provincial governments; and United States (states, such as California, and municipalities), (iii) development of an electronically maintained "networking" system to assist generators and service providers, (iv) examination of and, as warranted, implementation of, financing options for promoting pollution prevention via accelerated decommissioning and destruction of PCBs (e.g., holding account to permit installment payments by SMEs; pollution prevention fund, user fees, etc.). Costs for services, whether provided by the private sector or a mix of private sector and government concession services, would be born by the generators or "clients"[12] in keeping with the "polluter pays" principle. Financing options could potentially include some incentive subsidies. A description of the pilot concepts can be found in Annex 12.

G2: PCB management system refined and applied in State of Guanajuato and Municipality of Cuatitlán Izcalli, two other states and the Federal District. The refinement and application of the system would be inclusive of (i) training courses geared to and coordinated with industry associations for legal obligations, best practices identification of PCBs within in-use equipment; on-site handling, labeling and storage; options for temporary storage, decontamination and destruction (domestic and foreign). Coordinated with development and distribution of guidance kits under Component 4. (ii) identification of two additional candidate states and conclusion of agreements with the three states, Mexico D.F. and Cutatilan Izcalli for application of the system in these jurisdictions,

[12] Such costs would, in any case be borne by the generators; however, with this project, the costs to generators, principally SMEs, will be lower than at present owing to access to centralized services and scheduling that enables generators to share costs of hauling PCB wastes where there are several generators located in one area/region.

H. Environmentally sound destruction of PCBs.

H1: Upgrade/expand, as warranted by inventory and existing capacity of private licensed facilities, existing decontamination and/or destruction facilities by (i) assessment of decontamination servicing capacity in light of inventory as it pertains to SME and sensitive site and other generators; review of adequacy of existing servicing options and alternatives (inclusive of environmental and cost feasibility of establishment of decontamination services associated with or located near temporary storage facilities). Current permits will be reviewed and the potential cost of upgrade will born by the owners of the facilities.

H2: Access to destruction facilities ensured including by (i) assessment based upon site review of the PEMEX "Pajaritos" incinerator capacity and adequacy to determine its potential applicability for servicing a portion of generator inventory, e.g., in event that domestic capacity, deemed adequate during preparatory phase, is found to fall short, e.g., owing to changes in market dynamics.

H3: PCB disposal certification system implemented by (i) instituting operational permit requirement for third-party verification of domestic PCB licensed operators within the servicing industry (i.e., maintenance workers, haulers, temporary storage facility operators, whether public or private, and decontamination/destruction facilities, whether public or private.

H4: Environmentally sound destruction of 3.215 tons of PCBs (2006 SEMARAT official inventory), and of inventory identified and reported during first two years of project during pilot demonstrations and, subsequently, as part of system application within the pilot jurisdictions and two additional states and the Federal District of Mexico. National and international disposal options will be considered according to price and environmental criteria.

I. Improved monitoring of PCB movements (PCB "traceability")

I1: Protocol for transparent tracking of movements of PCBs (generator to disposal/destruction)developed and implemented, by (i) establishment of electronic accounting system that would be kept up-to-date to track and permit cross-checking of PCB inventory, inclusive of generator declarations, and manifests filed by maintenance workers (dielectric oils removed from in-use units); licensed transport operators, temporary storage facility operators (including port facilities), exporters, domestic and foreign decontamination, destruction facilities (ii) examination of utility of web-based declaration and manifest reporting as an option in addition to hard copy filing and, should recommendations find electronic reporting would be utilized by majority of SME and other generators, creation, testing and refinement of a web-based reporting system. Reporting would contribute to ongoing inventory refinement/updating as well as providing a protocol for tracing PCBs for improved certitude regarding the inventory and its final disposition. Mexico's Annual Certificate of Operation (Cédula de Operación Anual—COA), the instrument Mexico uses for collecting information from the federally-regulated industrial sector will be important in obtaining data, including for monitoring the project's success.

Component 4: **Awareness raising and communication**

Expected Outcomes

J. Effective communication and awareness-raising strategy implemented.

J1. Awareness raising campaign for SMEs and large enterprises inclusive of (i) development of training trainer and guidance materials for PCB best management practices (ii) development of outreach materials on legal obligations (iii) development of outreach materials on existing service options and associated costs, such as financing incentives, service providers (contact information for licensed providers, including maintenance workers; transport/exporting firms; decontamination and destruction, within Mexico and abroad); range of costs for different types of services, (iv) development and implementation of strategies for identification of target audience, effective dissemination of awareness raising materials, working in close association with industry associations, parastatals, state and municipal government (with testing of materials during pilots as linked to G1, and (v) survey of focus group to test and refine materials prior to nationwide dissemination as linked to G1.

Awareness raising campaign for sensitive site administrators, inclusive of development of outreach materials on legal obligations and reporting protocols (ii) development of informational materials on health concerns; (iii) guidance of best practices for identification, storage and removal of units (i.e., whom to call, where to report; what to do if waste units/materials found on site, etc.) and (iv) development and implementation for dissemination of materials, working in coordination with parastatals for development and dissemination of materials targeted to public sensitive sites. The materials to be developed for the awareness campaign in sensitive sites will make sure that the findings of baseline studies with gender perspectives, i.e. the different effect and health concerns that exist for both genders and other vulnerable populations.

Component 5: **Project management**

Outputs under this component would include the following:

- Creation of Project Steering Committee (PSC); Advisory Committee (AC)
- Engagement of national coordinator and administrative assistant.
- Inception meetings with PSC and AC and subsequent meetings of these groups.
- Annual work plan and budget development and project execution, inclusive of project public information monitoring and security arrangement.

Project indicators, risk and assumptions

28. The general Risk and risk mitigation measures are shown in the table below.

Risk		Risk Mitigation measure
SMEs cannot afford the replacement and destruction costs of PCB contaminated equipment.	H	Government will assess feasibility of establishing a financing mechanism for equipment replacement.
Proposed Service System for PCB Management does not manage to "match" supply with demand.	M	Raise awareness among generators and sensitive site holders of laws and regulations. Pilot projects at municipal and state levels in order to test and further refine system Publicly available data (PCB inventory)
Resistance from Civil Society to potential risks of PCB destruction in Mexico.	M	Awareness activities for civil society, and assurance that destruction is done according to BEP/BAT.
Insufficient buy-in from distribution companies.	L	CFE and LyFC will be invited to participate in the project steering committee and to participate actively in the project. SENER has already provided a letter during the preparatory phase to CFE, Mexico's largest electrical utility provider (80% coverage within country) inviting CFE participation in the project. The same applies to other main stakeholders like LyFC y PEMEX.

A more specific description of risks can be found in the Logical Framework matrix.

29. Project indicators are performance based as geared to capacity building and legal commitments in support of achievement of project goals and objectives. Indicators includes concrete achievements (legislation developed, inspections per year; inter-jurisdictional and inter-service agreements; rates of participation by SMEs, decommissioning and destruction of PCB contaminated equipment and materials and PCB wastes, development and distribution of courses and communications materials, concrete processes and mechanisms (such as escrow account for SMEs). As such, the indicators are verifiable against a baseline and keyed to targets. The indicators will be realized through policy, procedural technological and, potentially, market–based instruments.[13]

30. **Country ownership.** Mexico's commitment to environmentally sound PCB management has long been a national priority as evidenced by the following:

    a. Mexico was the first Latin American nation to ratify the Stockholm Convention.

[13] See Section II for indicators as set out in the project's Strategic Results Framework (SRF).

b. Environmentally sound management of PCBs and phase out are national priorities as detailed within its National Implementation Plan (NIP) for the Stockholm Convention, that was submitted to the Stockholm Convention Secretariat.

c. Mexico committed to "virtual elimination of PCBs to the environment" with the North American Commission for Environment (CEC)'s 1996 *North American Regional Action Plan on PCBs*. The commitment includes cessation of measurable releases to the environment and the phase-out of PCB uses for which release cannot be contained.

d. Mexico, a Party to the Basel Convention (ratified in 1991), has worked to promote development of domestic infrastructure for PCB decontamination and destruction to bolster export options for destruction.

e. Mexico has developed and implemented policy and regulatory reforms and capacity building activities in support of virtual elimination of PCBs and its commitments under international conventions. These include highlights noted below as summarized in Annex 7:

- Importation of PCBs was banned in 1988 under Article 142 of Mexico's General Law of Ecological Equilibrium and Environmental Protection (LGEEPA) of 28 January 1988.
- PCBs or wastes containing PCBS in concentrations of greater than 50 parts per million (ppm) are listed as hazardous under Article 31 of the General Law for the Prevention *and Management of Wastes (LGPGIR)* of 8 October 2003. The Regulation (Reglamento) of the LGPGIR issued 30 November 2006 establishes measures for integral management of Hazardous wastes (including PCBs). The law requires that enterprises handling hazardous wastes prepare Management Plans.
- PCB-specific handling, management and treatment/disposal is regulated by Technical Ecological *specific standard* developed by SEMARNAT. In 2000, SEMARNAT developed NOM-133-SEMARNAT-2000 for Protection of the Environment from PCBs—Specifics of PCB Management (*Protección Ambiental-Bifenilos Policlorados-Especificaciones de manejo),* which entered into force with its publication in Mexico's Diario *Oficial de la Federacion* (DOF) on 10 December 2001. The standard requires that PCB-contaminated equipment in storage prior to the norm be decontaminated or destroyed and PCB residues destroyed within one year (subsequently amended to 18 months) of the standard's publication date. PCB-containing equipment retired from use and PCBs removed from such equipment subsequent to the publication of NOM 133 are to be disposed of within nine months of their decommissioning. Phase-out and destruction is applicable to PCBs, and to equipment, materials and wastes contaminated with PCBs where concentrations exceed 50 ppm or 100 g/100 cm2. Similarly, contaminated containers and other materials that have been in direct contact with PCB wastes must be treated to < 50 ppm concentration or destroyed.
- NOM 133 requires the removal from service and decontamination/destruction by 2008 of all PCBs and PCB-contaminated equipment containing PCBs > 50 ppm from urban and rural facilities and sensitive sites (facilities where the presence of PCBs could pose a high risk to humans, such as hospitals, schools, etc.).

Sustainability

31. Improvement of a verifiable national inventory would provide greater certitude regarding Mexico's remaining tasks required to comply with the Stockholm Convention and enable it to better target and coordinate other project strategies for environmentally sound management and phase out of remaining PCB wastes and contaminated/PCB-containing equipment. Availability of statistically reliable data and facilitation of improved access to services by SMEs would enhance market predictability, hence sustainability for the PCB service industry, which is part of the "solution" to

PCB phase out in keeping with Basel and Stockholm convention provisions for wastes and national plans for economic and environmental sustainability. Emphasis on strategies geared to raising awareness, provision of training in support of PCB management capacity, including PCB identification, and engagement of SMEs and sensitive site generators including through facilitation of access to services at low costs as made possible by greater economies-of-scale are key aspects of sustainability given that 14 industrial sectors have yet to finish to report (comply) with Mexican law for declaring PCB inventory. The two pilot projects would demonstrate state and municipal-level ability to work as effective partners with the federal government on legislative enforcement, capacity building and facilitation of access by private generators to services so as to encourage PCB phase out from in-use equipment. They provide a pragmatic approach for testing, refining and implementing the system so that it can be replicated throughout the country, recognizing that domestic replicability is required for broad implementation.

32. SEMARNAT will consult with the Ministry of Finance (*Secretaría de Hacienda y Crédito Público*) regarding inclusion of a budget line item for hazardous waste management, which would be applicable to PCBs and provide financial sustainability of the system developed and applied by this project.

33. It is anticipated that lessons learned from the service-on-demand approach promoted by this project will be applicable to management of other toxic and hazardous substances in Mexico where disposal (engineered landfill, etc.) and/or destruction are required.

Replicability

34. This project is anticipated to be highly replicable with other nations globally and in Central American and South American regions as many are just now implementing their legal infrastructure and completing very initial national inventories under their respective NIPs (comparable to Mexico's partial national inventory in many instances). The procedures developed via this project for verification of inventory and PCB destruction (PCB traceability), for facilitating access to services, for strengthening capacity for enforcement at the federal and state levels, and for raising awareness should all be easily replicated by other countries with economies in transition and developing countries, especially in the sub-region, whether directed toward their larger generators (primarily electrical sector) or SME and sensitive site generators.

PART III : Management Arrangements

35. All activities relating to project execution in chapter II will be carried out in accordance with the guidelines and regulations of the United Nations Development Programme outlines in the UNDP Mexico National Execution Manual, version 4, March 2004 and its later updated versions. [14]

36. The project will be executed and implemented through the Secretariat of Environment and Natural Resources. (SEMARNAT). The actual project components will be directly implemented under the realm of Directorate of Integrated Management of Hazardous Materials and Activities (DGIMAR - Dirección de Gestión Integral de Materiales y Actividades Riesgosas). Though the responsibility for execution lies with SEMARNAT several project components will be implemented in close cooperation with other Ministries. Indeed the project success and sustainability relies heavily on a close cooperation between a number of ministries and institutions as well as private sector partners.

[14] Only UNDP may approve amendments, when necessary, to these norms. The UNDP office in Mexico is responsible for promptly advising all Manual users about new dispositions and revisions to the norms and procedures resulting from improved practices authorized by New York Headquarters. UNDP-México reserves the right to introduce improvement to the National Project Execution Manual to facilitate consultation by users. This procedure respects the integrity of the UNDP corporate norms now in force.

37. Of the Ministries the cooperation will be particularly close with Secretariat of Energy (SENER) for cooperation on PCB identification and control of safe practices with PCB equipment still in use and various stages between decommissioning and final disposal.

38. Overall, the management arrangement of this project is aiming at supporting the long-term needs for managing PCBs in Mexico and creating a solid and sustainable foundation for sound PCB management. The project management arrangements are shown in the schematic picture below.

Functions of participants

Ministry of Foreign Affairs (SRE): The Government of the United Mexican States has designated the Technical and Scientific Cooperation Directorate of the SRE as the official counterpart to UNDP. Its principal responsibilities are:

- As the entity responsible for technical cooperation in México, to act as the Mexican government's official counterpart to UNDP; specifically, and in accordance with the National Development Plan, to formalize approval of the project cooperation documents presented to UNDP by federal, state and private entities.
- If necessary, to make a written request to UNDP for reports on the project.
- To approve the annual audit plan for the project and, in accordance with UNDP norms and procedures, to convene an information and consultation meeting prior to the audit.
- If considered expedient, to attend at least one meeting a year a of the project's Executive Committee.
- As required, to participate in tripartite meetings or in any follow-up or reorientation sessions.

SEMARNAT: SEMARNAT is the Executing Agency responsible for supporting the Project Coordinator and chair the Executive Committee in managing the project's resources so as to achieve the planned results. Its principal responsibilities are to:

- Make financial contributions to develop the project's activities and deposit them in the UNDP bank account.
- Participate, together with UNDP, in selecting the Project Coordinator.
- Designate a representative to act as a permanent liaison between UNDP, the Ministry of Foreign Affairs and the Project Coordinator, both in the Executive Committee and the Technical Committee, to ensure that the necessary inputs are available to execute the project.
- Provide the technical and administrative capacity to develop the project.
- Provide the technical support for the Regulation while gradually shifting the responsibility toward the permanent government structures.
- Check the project's plan and progress.
- In a letter to UNDP, provide the name and describe the functions of the person or persons authorized to deal with UNDP concerning the project's administrative and financial matters.
- In a letter to UNDP, provide the name and describe the functions of the person or persons authorized to sign the project's budget and/or substantive revisions made to it.

United Nations Development Programme (UNDP): UNDP is the world development network established by the United Nations with a mandate to promote development in countries and to connect them to the knowledge, experience and resources needed to help people achieve a better life. Its principal responsibilities are to:

- Designate a programme officer responsible for providing substantive and operational advice and to follow up and support the project's development activities.

- Administer the financial resources agreed in the revised work plan and approved by the project's Executive Committee, and inform the Executing Agency and the Executive Committee of its origin and destination.
- As agreed with the Executive Committee, advise the project on management decision making.
- Be part of the project's Executive Committee.
- Supervise and follow up every project activity requiring UNDP administrative support.
- Use national and international contact networks to assist the project's activities and establish synergies between projects in common areas and/or in other areas that would be of assistance when discussing and analyzing the project.
- As deemed necessary, use the project's resources to prepare external evaluations and audits and to monitor them.
- Provide technical advice to the project on including activities on transversal equality of gender and strengthening civil society participation. These specialized services will be provided on the condition that the costs will be totally recovered.

Project Coordinator: An expert on the subject will be appointed as the project's General Coordinator whose terms of reference will be published on the UNDP web page.

In close collaboration with the Environment and Energy Programme Officer, the project's Coordinator will be responsible for preparing reports for the Executive Committee and for donors.

Other relevant functions are to:

- Follow up on progress made on the tasks outlined in the work plan, as well as on a future mobilization of resources for the project's sustainability.
- Prepare, and monitor compliance with work plans (annual and quarterly).
- Prepare budgets (annual and quarterly).
- Negotiate with UNDP the inputs needed to develop the project.
- Revise the project's technical and administrative documents.
- Prepare technical, financial and progress reports (quarterly, annual and final).
- Inform the Executive Committee and the Technical Committee of the project's progress, problems and possible solutions adopted and/or recommendations on how to achieve its objectives.
- Prepare and present a project situation report at any meeting or meetings about the project.
- Supervise and ensure compliance with the work of the personnel contracted by UNDP according to the contractual criteria contained in the Execution Manual.
- Take minutes of Executive Committee and Technical Committee meetings and be a member of the latter.
- Provide the technical capacity needed to develop the project.

Steering Committee. The Steering Committee is the project's supervisory and decision making body that meets at least twice a year. It consists of:

- The UNDP Programme Officer or representative.
- A representative of SEMARNAT.
- The Project Coordinator.
- Representatives from other ministries including, but not limited to SENER, and Major PCB generator like CFE and LyFC.

Its principal functions are to:

- Monitor compliance with the project's objectives.
- Prepare, focus on, or redesign the project's strategy.
- Approve work plan and budget revisions.
- Monitor both the budget and the prompt delivery of financial, human and technical inputs to comply with the work plan.
- Ensure satisfactory compliance with UNDP norms and procedures.
- Convene ordinary meetings to consider the Technical Committee's proposals and recommendations, as well as the progress made by the project.
- Convene, if necessary, extraordinary meetings.
- Prepare, at least once a year, a substantial revision of the project document.

The Technical Committee: The Technical Committee is a technical advisory and consulting body whose main function is to ensure full and successful compliance with the project's objectives. The technical committee will have the participation of key industrial stakeholder of the project as well as representatives from civil society organizations particularly involved in hazardous waste and chemical safety issues and academia.

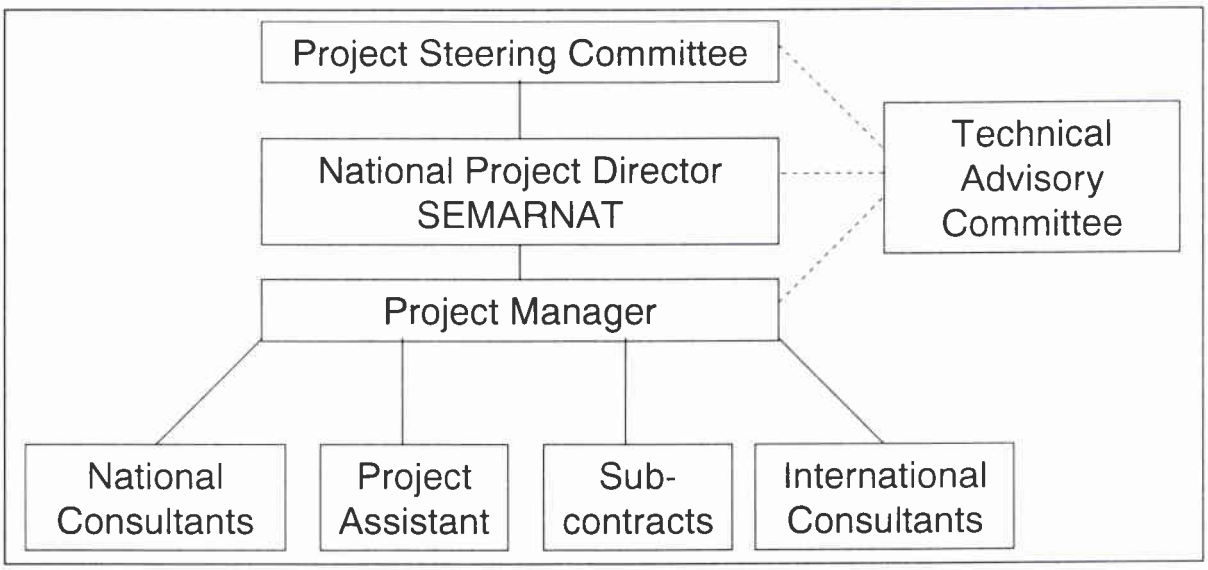
Its principal functions are to:

- Ensure the project provides good results.
- Guarantee that the parties involved will help to achieve the project's objectives and will adopt them.
- Support the project in the management of the knowledge within the framework of the activities stipulated in the work plan.
- Revise the work plan and progress reports to provide technical inputs and sound practices (national and international) that will help to meet the project's objectives.
- Revise the project's results and supplement them with each member's technical expertise.
- Identify consultants and experts on the theme, both national and international, for the implementation of the project.
- Analyze or, if necessary, solve problems concerning the project's progress to follow up on the work plan and comply with the performance indicators.
- Promote synergies between potential stakeholders, and mobilize resources to broaden the project's impact.

Note: to be more efficient and effective, the establishment of ad hoc thematic work groups with members of the Technical Committee is expected.

Structure of the project

39. The Project will be implemented under the UNDP National Execution modality (NEX) and will follow standard UNDP rules and procedures for project implementation. The following diagram shows the organigram for the project:



Administrative Arrangement

40. To administer the resources, UNDP will make its installed capacity available to the project, guaranteeing that their use is both transparent and prompt. The budget and work plan are given in Annexes B and C of this document. If modifications are made to this section, they must be considered and approved by the Steering Committee, and UNDP written approval must be requested.

41. It should be mentioned that any services provided to the project by UNDP will be in accordance with its internal guidelines and regulations.

42. The project will be financed by the GEF with a total amount of US$4,630,000. Government support for the project will be both in cash and in-kind for a total amount of (US$14,000,000).

43. As an Implementing Agency, UNDP earns a fee from the GEF upon approval of the project. The fee is used to cover the costs incurred by UNDP, both at Headquarters and in Country Office, in supporting project development and implementation (3%). The total fee that UNDP will receive is of US$138,900. The cost recovery for the administration of the project will be handled under the modality of the Implementation Support Services (ISS) based on UNDP's Universal Price List.

44. If payment is made in a currency other than United States dollars, its value will be determined by applying the United Nations operational exchange rate in force on the date of payment. If, before UNDP has used the total amount deposited, there is a change in the United Nations operational exchange rate, it will be adjusted in line with the value of the balance of unused funds. If this leads to a loss in the value of that balance, UNDP shall inform the donor with a view to determining whether the donor must provide additional funds. If these additional funds are not available, UNDP may reduce, suspend or cancel its assistance to the programme/project.

45. On the other hand, activities will also have to be adjusted to the cash funds available; also in this case, if there is a deficit because of the exchange rate, UNDP has the obligation to inform the

Executing Agency to determine whether it is necessary to transfer additional funds or simply to make budget changes.

46. If the event the project is suspended, reduced or cancelled, UNDP will return the unused funds at the United Nations operational exchange rate in force on the date they are returned; if there is an exchange rate loss, the deficit will be charged to the project.

47. In case of a surplus, the Steering Committee will decide how it is to be spent and what results are expected and will make the necessary work plan adjustments.

48. Because the Steering Committee will supervise and monitor the project based on a satisfactory and detailed work plan design, no unforeseen circumstances are expected that would imply administrative risks in its execution.

49. It is envisaged that, as the project proceeds, counterparts will be added as partners to implement it or as donors, and they may be either state governments or federal executive entities.

Commitments by UNDP and the Mexican government to provide support services

50. The support services required of UNDP will be provided in accordance with the conditions mentioned below.

51. The UNDP office in the country can provide the necessary support services and assistance requested, whether to prepare reports or make direct payments. In providing these services, UNDP Mexico will check whether the capacity of the designated institution has been increased to enable it to directly carry out these activities.

52. The UNDP country office , when asked to do so by the designated institution, may request support services for the programme or project, including:

- National and international technical support provided by the United Nations System.
- Project design and strategic planning.
- Project administration by making technical and financial follow-up available, with a results-based approach.
- Develop international, national and local international knowledge networks based on United Nations System experience.
- Select project personnel, assist in awarding contracts and suggest candidates (individuals or companies) for the project's substantive and administrative work.
- Acquire goods and services, in accordance with its procedures and policies.
- The acquisition of goods and services as well as contracting personnel for the project are both the responsibility of the Executing Agency. It is important to mention that the candidates for the posts of Coordinator and Administrative Assistant should be selected jointly by the Executing Agency and UNDP Mexico.

53. Should any demands or controversies arise concerning the provision of services by the UNDP office in the country, they will be dealt with according to this document's basic assistance model.

54. If there are changes in the need for support services while the project is in force, the project document will have to be revised as mutually agreed by the UNDP Resident Representative and the counterpart institution.

Audit

55. Auditing the project is an integral part of UNDP financial and administrative management within the framework of UNDP's accountability. The project will be audited to ensure that resources are administered in accordance with the financial regulations, the project document clauses and conditions, and the budget.

56. The project's budget should contemplate the resources needed to make the audit and/or to establish, at the beginning of its activities, whether the internal accounting section should be responsible for rendering accounts.

Special considerations

57. Publications, research and products that are generated as part of what is proposed is owned jointly by UNDP. Also, all print and electronic material which occurs as a result of this project must bear in a visible and similar size logos of UNDP and SEMARNAT and quote the full title of the project; giving credit for the GEF sponsorship and support agencies, consistent with the Steering Committee.

58. In addition, all the publications produced as a consequence of this document must include the following inscription:

The opinions, analyses and policy recommendations do not necessarily reflect the point of view of the United Nations Development Programme, of its Executive Board or of member states.

59. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent -- and separated from the GEF logo if possible.

PARRT IV: Security

60. It is UNDP's priority to ensure basic minimum conditions of security within the project operation, and the project offices must comply with security requirements and operational standards established by the United Nations Department of Safety and Security (UNDSS).

61. To achieve the above mentioned requirement, there will be regular meetings, workshops and training for project team and contracted personnel under the project in order to familiarize them with the regulations, procedures and training necessary to ensure compliance with such standards.

62. In consultation with the UNDSS, held on April 15, 2008, UNDP provides the following support:

    a) Services to strengthen project team's security through training courses via electronic means such as: 1) On-line basic security course, and b) advanced security in the field course.

b) In addition, to complement these trainings, UNDP provides project staff an induction session on security measures, current Operational Procedures (POV's), and brochure containing recommendations concerning specific issues. It is the responsibility of the Coordinating Unit that the personnel working on the project receive information that UNDSS develops.
c) UNDSS will review the facilities of the counterpart where project staff is based and issue recommendations to ensure compliance with MOSS
d) UNDSS in Mexico will provide recommendations and, if necessary, assessments of venues in which events will be carried out under the project.

63. It is important to mention that the staff recruited under the project will be locked in the offices of the counterpart (SEMARNAT). The measures of access control and security of these facilities follow those established by the counterpart and if additional measures should be taken, the project shall suggest such measures to the ministry.

64. The recommendations of the UNDSS review will be shared with the counterpart to reach agreement and guarantee the security of personnel to ensure compliance with MOSS. The resources necessary to implement these measures will be reviewed in the steering committee and will seek co-financing from the counterpart for such purposes. The project envisages an initial budget of $6,000 USD which could increase or decrease based on the assessment of UNDSS and the counterpart co-financing.

65. If the project requires renting office spaces outside CONAE facilities, the project shall seek spaces that comply with the security principles and requirements established by UNDP (Moss Compliance) and in accordance with the guidelines of CONAE. These criteria will be established under the terms of reference for office rental and will be an important factor for the determination of such spaces.

66. Finally, UNDP regularly circulates a memo to those geographic areas that are considered at greatest risk for project staff. Project staff that is intended to travel to, or be stationed in the areas that are in a high security phase (indicated by UNDSS), must complete the Advanced Course on Security the Field course, and request security clearance prior to travel or settling in.

PART VI: Monitoring and Evaluation Plan and Budget

67. Project monitoring and evaluation will be conducted in accordance with established GEF and UNDP procedures and will be provided by the project team, SEMARNAT, the UNDP Country Office (UNDP-CO) with support from UNDP-GEF. The Logical Framework Matrix in Section II, Part II provides performance and impact indicators for project implementation along with their corresponding means of verification. These form the basis on which the project's Monitoring and Evaluation system will be built. The following outlines the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff's M&E responsibilities. See also Annex II.

Learning, Knowledge Sharing and Communication Strategy

68. As a global knowledge network, UNDP promotes the sharing of experiences and lessons learned from the projects, so that they can be shared within countries and the rest of the international community to help people to build a better life.

69. The UNDP, in coordination with the implementation partners, will promote the systematization of experiences and dissemination of the products emerged from the project framework as a crosscutting activity in paralleled to the achievement of the outcome. These activities are included

in the annual work plan of the project and a percentage of its budget shall be allocated for this purpose.

70. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

    - The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics;
    - The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks which may benefit the project's implementation through lessons learned.

71. The project will also identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

72. Communication and awareness raising activities is a key component of this project and is expected to support all other components by creating awareness and incentives among SMEs to participate in the project, and through awareness raising activities among the populations on their risks and health concerns. The communication strategy will identify key stakeholders and appropriate channels of communications to reach targeted stakeholders. The total amount assigned for this component is $350,000 over 4 years.

73. The steering committee will define the communication strategy and review it regularly to promote the visibility of the lessons learned and best practices in the implementation of project activities. The steering committee will also determine the adjustments to the project budget to meet this goal.

74. As a part of the communication strategy, the project shall consider an initiation workshop of the project with key actors to introduce the scope of the project and its linkage with other programs. Likewise, completion of the first half of the project, there will be a series of activities to disseminate the progress made.

75. Similarly, UNDP and the Implementing partner shall participate in the promotion of these outcomes by taking advantage of the dissemination program of the United Nations, related events to the project and other common interest areas.

76. Finally, the PNUD will follow a policy of access to the information with respect to the project, respecting that the information which the implementation partner considers confidential.

PART VI: Legal Context

77. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of the Republic of Mexico and the United Nations Development Programme, signed by the parties on February 23, 1961. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

78. The UNDP Resident Representative in Mexico is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

a) Revision of, or addition to, any of the annexes to the Project Document;
b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
d) Inclusion of additional annexes and attachments only as set out here in this Project Document

PART VII: UNDPs comparative advantage as GEF Implementing Agency for Investment Components

79. UNDP has a long track record with the implementation of investment projects related to the Sound Management of Chemicals. UNDP has for more than 15 years implemented investments projects financed by the Multilateral Fund for the implementation of the Montreal Protocol for a total value of more than 400 million US$. UNDP has additional experience with the energy sector through the Climate Change mitigation and adaptation portfolio. UNDP operates on the ground in 166 countries. Its annual programme delivery has been growing steadily since 2000 and reached US$4.3 billion in 2006, of which US$2.5 billion were spent for goods and services. UNDP has internally as well as externally access to a long list of highly qualified technical experts that have implemented many investment projects in the past.

80. UNDP is currently preparing and implementing PCB projects in LAC as well as other parts of the world. The majority of the projects include minor or larger investment components.

81. The PCB project for Mexico is not proposing any large direct PCB disposal investments with the GEF funds. Only minor upgrading in existing capacity will be undertaken with co-financing funds. The small GEF budget under project outcome H1-H3 will be used for assessing the appropriateness of the existing capacity and for ensuring highest environmental standards by project contracted disposal facilities. The project contracted facilities will be permitted by the government. Any potential upgrading / adjustment for obtaining full permits for existing capacity will be co-financed by the owner of the facility.

SECTION II : STRATEGIC RESULTS FRAMEWORK AND GEF

Table 1: Strategic results framework: Environmentally Sound Management and Destruction of PCBs in Mexico

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
GOAL	Minimize risks of exposure from PCBs to Mexicans, including vulnerable populations (e.g., school children and workers), and to the environment to enable Mexico, in line with its international obligations for PCBs under the Stockholm Convention, while promoting timely compliance with PCB management, including decommissioning, and destruction provisions within Mexico.				
Objective of the project: Strengthened capacity within Mexico for environmentally sound and safe PCB management and phase out, with a particular emphasis on government coordination and facilitation of services in support of environmentally sound PCB management & phase out by small-and-medium generators, and from sensitive sites.	Tons of PCBs destroyed (per compound), and mode of destruction (tons and cost/ton) Tons of PCBs phased out from use (per compound) (tons and cost per ton)	30,639 tons PCBs in Mexico PPG reported and estimated inventory 4,641 tons of PCBs at sensitive sites 9,591 SMEs 5,157 electrical utilities *(as derived from Preparatory Phase inventory: SMEs and sensitive sites figures estimated)*	Full reported waste inventory of 2007 (3.215 tons) destroyed; Project to put in place mechanisms for 100% destruction of Mexico PCBs in full statistically verified national PCB inventory by or before 2025	Database of certifications of destruction provided to SEMARNAT Increased no. of PROFEPA inspections Contrasting inventory results each year against inventory and mass balance Transparency of results (*e.g., generator/transport registrations & manifests, certificates related to PCB waste management*)	Government coordination of waste management services, especially for SMEs & Sensitive Sites. Because the project is pioneering in nature and taking into account that the system developed will be applicable to a complex situation, mid-course corrections and/or /adjustments regarding how coordination is approached and supported financially may be required. The key risk is that changes, adjustments could be viewed as problematic, when, in fact, flexibility in testing and revisions to the system, as required, should be anticipated and viewed as a feature of system development that will needed to promote success. Mexico will invite international experts to share

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
					experiences with public coordination of generator access to hazardous waste management services **RISK: low**
Component 1: Strengthened institutional capacity within Mexico's central and state governments for environmentally sound and safe management and destruction of PCBs	Development of proposed legislative/regulatory amendments to respond to NIP recommendations & preparatory phase legislative gap analysis (2009-2010 Consultation & awareness raising with stakeholders on proposed amendments (2009) Amendments forwarded to National Assembly (2009-10)	Gaps in legislation, including for SME holders of small quantities; for environmentally safe low-concentration PCB disposal and re-use of low-level PCB oils, e.g., in food processing facilities (permitted under current law as low-level PCB oils (< 50 ppm) not classified as hazardous waste) Inspections performed for 40% of large industry; none for SMEs	Comprehensive PCB legislation (2009-10)	Official Gazette (*diario oficial* http://dof.terra.com.mx/default.htm.=)	Legislative changes are contingent on approval by Chamber of Deputies, Senate and Presidential signature **Risk: low**

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
Component 1: Strengthened institutional capacity within Mexico's central and state governments for environmentally sound and safe management and destruction of PCBs project)	Increased no. of inspections each year of project	Inspections performed for 40% of large industry participating in voluntary program; none for SMEs	Inspection of 70% of large generators (principally electrical utilities, steel & petroleum sectors) by 2009) Progressive percentage increase in SME inspections each year of project, attaining 70% by 2011 within 3 project states and D.F.	PROFEPA inspectors & custom officials: training course completed Training trainers course with industry associations, for PCB identification & generator best practices and Training SEMARNAT managers in PCB tracking system developed: course completion Training operators and administrators in operations of transfer facilities (interim storage, packaging, transport, etc.): certification PROFEPA Records of inspections SEMARNAT annual inventory updates through life of project Number of company management plans & where provisions of plans are not met, number of prosecutions	Mexico will have to budget adequate funds each year to support staffing and resource requirements for inspections. **Risk: low to medium** PROFEPA's priority setting for inspections will need to include PCBs and adequate budgetary support. PROFEPA has indicated its commitment for PCB inspections and enforcement (using facility management plans as required, and, where not met, legal action). **Risk: low** Continued government support for favourable regulatory regime **Risk: Low**

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
Component 2 Safe regional and/or central interim PCB storage facilities established/upgraded (in particular, interim storage accessible to PCBs decommissioned from Small and Medium Enterprises	Inter-service agreements negotiated (e.g., to enable interim storage within government-owned facility(ies) ; Iinterim storage) facilities enhanced and/or constructed as required to address inventory capacity, with emphasis on SME inventory* ** As coordinated with electrical utilities regarding sensitive site and other units and PCB wastes that require treatment, decontamination and/or destruction/disposal* SME participation in system (2008-2011)	No coordinated service system exists for SMEs or other generators SMEs find it difficult to pay for existing services because of cost barriers; lack of technical capacity (disincentive to declare full inventory) Currently private sector has no access to use of services provided by parastatals (e.g., *incineration facility for hazardous wastes owned and operated by PEMEX)*	Inter-service agreements between government and parastatals in place by 2010 Guanajuato and Cuatitlán demonstration pilots completed with lessons learned report, including on interim storage experiences: EIA of existing storage facilities available is completed Transparent results of site sampling and analysis of a shortlist of potential sites Selection of a site or sites based on results of a transparent selection process Legal provisions and formalized agreements in place for access to facilities by private sector Enhancement/constr	Records of inter-service agreements EIA reports Website databases and reports Public consultation meetings on site selection process & subsequently on results Legislation Authorizations and operational permits of interim storage facilities SME generator declarations measured against inventory at interim storage facilities; survey responses from state municipalities National SME user surveys (system use; access) SME destruction certifications increase each year	SMEs and electrical utilities (owners of sensitive site equipment) are willing to participate and supportive of the project **Risk low** Discussions during mission and PPG activities indicate support from parastatals CFE, LyFC, and PEMEX, and strong interest from SMEs surveyed by Municipality of Cautitlán and Guanajuato. Interest is likely to be similar among SMEs (as associated with awareness raising regarding compliance). Provision of adequate budgetary support for maintenance of system over time (training; staffing; overhead, etc.) must be available, as applicable to jurisdictional levels and SMEs (.e.g., through waste handling fees; and via incentives, such as escrow account for SMEs make payment over time feasible, i.e., as condition of receipt of certification certificates after destruction is completed). *Principally, budgetary*

Project Strategy	Objectively verifiable indicators				
	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
			uction of interim storage or (inter-municipal/state transfer facilities) Environmentally sound authorized interim storage facilities for SME and sensitive site PCB inventories are adequate to capacity, in place and operating (by 2010-2011)		*support at State & municipal levels* Tracking systems and transparency of data populating the systems will be required for effective system operation and accountability (certitude). **Risk: Low (SEMARNAT commitment is high)** Estimating adequacy of interim storage is contingent upon cooperation from Mexico's largest utility, CFE, which services 80% of country. **Risk: medium to high.** PROFEPA inspections as applicable to parastatal facilities will be important. **Risk: Low.** *PROFEPA is committed to inspections but needs more staff for increased number of inspections* Electrical utilities allow project contractors assessing adequacy of facilities access to all of their storage facilities **Risk: Medium to high** Legislation allows for EIAs of existing and new facilities

Project Strategy	Objectively verifiable indicators				
	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
					Risk: Low Construction of interim storage facilities, if required, will need to take into account adequate public consultation. Opposition to construction can occur because of "NIMBY" syndrome: consultation with NGOs and CSOs and their engagement will be important aspect of outreach strategies. (*An important aspect of the system will be limitations on how long PCB wastes can remain in storage prior to destruction/disposal; essentially these will function as transfer stations for PCB wastes and contaminated waste equipment)* **Risk: Medium.** Distrust by public can be anticipated and mitigated through quality of outreach efforts and commitment to its implementation. The technology risk per se is low as best practices design guidance is readily available. Adequate oversight during monitoring and construction will be required to ensure contract specifications are

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
					met. **Risk: Medium to High**
Component 3 Establishment and demonstration of a nationally coordinated comprehensive service system for PCB management (from generator to final destruction) via state and municipal pilots.	Inter-jurisdictional agreements negotiated as required for waste management with States & Municipalities (2009) State-coordinated PCB managerial system pilots tested in a Mexican State (Guanajuato) and municipality (Cuautitlán Izcalli) (2010) State-coordinated system refined and applied in the pilot state of Guanajuato and two other states and in the municipality of Cuautitlán Izcalli) (2011) Destruction of PCB stocks from large generators as per SEMARNAT official inventory (by 2009) Decommissioning and destruction of in-use PCBs and equipment held by large generators, inclusive of sensitive sites (by nationally legislated deadline)	Adequacy of interim storage and destruction services is not well characterized (taking into account location of facilities relative to transport options, costs as these affect client base of service providers) NIMBY syndrome has affected service provision (i.e., as applicable to a licensed destruction facility in NW Mexico) Large generators lack confidence in some destruction firms based on past experiences Most SMEs are not aware/using services Government & service providers require improved & verifiable inventory	Persons hired from private sector, as required by system (e.g., administrators; concessionaires) Workshop with international experts held (lessons learned from government involvement in hazardous waste management) Participation by SMEs is in compliance with Mexican law and Stockholm provisions for destruction 100% of sensitive site and SME equipment has been decommissioned 100% of PCB-contaminated waste 100% destruction of 2006 inventory (large generators) by 2009 Percentage decrease	Destruction certificates, generator and transport manifests; use of Escrow funds by SMEs Continuous reduction each year of PCBs and equipment at sensitive sites (of total inventory, 25% reduction achieved each year over 4 four years with 100 % decommissioning by legal deadline or 2012, whichever comes first	Legal amendments are anticipated to extend deadline for destruction of in-service PCBs held by SMEs Legislation is adequate regarding reporting provisions (who reports; what must be reported, how and when, etc.) **Risk: low to medium**: political lobbying pressure could weaken intent to have comprehensive legislation Range of verification tools will depend to some extent on legislation and regulatory tools developed during course of project Generators comply with surveys, self reporting and provision of legislated requirements **Risk: low** as the project should provide financial incentives given that they must meet legal provisions already in place for disposition of PCB wastes or risk punitive damages.

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
	Decommissioning and destruction of in-use PCBs and equipment held by SME generators.	for SMEs and sensitive sites to perform their roles (administration; service delivery) and, in case of private sector, to determine economic viability, which will also serve clients through enhanced cost-efficiencies.	toward 100% destruction of PCBs in storage and in service within the candidate states and D.F.		Financing mechanisms to provide incentives for generators (in particular for SMEs relative to instalment payments for services) and with respect to financial incentives for accelerated decommissioning to promote pollution prevention will be explored; financial institutions will need to be able to enforce contracts and manage risks for any options that may be implemented **.Risk: Medium to high**
Outcome 4 Communication outreach strategy developed and implemented to improve societal engagement, in particular SME generators and those responsible for/involved with sensitive site management. Project beneficiaries, including for co financing.	Communications Outreach strategy developed and implemented (e.g., purpose of and access to system. (to SMEs, and also to parastatals, service industry, NGOs, jurisdictions) (2008-2011) Consultation mechanisms developed and implemented (generators; jurisdictions; service providers; NGOs and civil society, including education sector; where service facilities exist or	SME entities not engaged to date and low awareness of PCB legal provisions; weak technical capacity and financial barriers prevent timely compliance with Mexican law No national outreach strategy with SME's or parastatals exists Public does not understand risks, exposure pathways associated with	Target groups identified: 2009 Initial outreach on project purpose during development phase to stakeholders, especially SMEs and sensitive sites (2008-9) SME-specific outreach strategy developed and implemented (2008) General public: outreach strategy developed and implemented (2010-	Feed back surveys from target groups throughout course of project (e.g., SMEs, schools and hospitals) Consultation mechanism in place Number consultations held Media coverage Communications and outreach financing	A strategy will need to be developed and applied early in project start up phase for outreach to the public and media on nature of project, beneficiaries (including public and workers via reduced risk of exposure). The technological advances and legislative safeguards to reduce risk of PCB exposure posed by destruction/disposal options in Mexico as contrasted to status quo will need to be conveyed to media, NGOs and CSOs, and municipalities where infrastructure for destruction/disposal is or will

Project Strategy	Objectively verifiable indicators				
	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
	are contemplated)	PCBs Decision makers have low awareness of need for more comprehensive PCB legislation; lowto medium awareness of need for hazardous waste management budget Experience within Mexico with NIMBY syndrome indicates new infrastructure could face opposition.	2011) Decision makers: outreach strategy developed and implemented (2009-2010) Outreach and consultation strategy relative to service construction/improvements relative to improved health and safety		be located. Experiences with State-coordinated toxic and hazardous waste management (e.g., Denmark) will be important to take into consideration. **Risk: Medium** NGOs and media need to be educated beyond press release communications, especially in the benefits the project will provide as contrasted to the *status quo*. Accountability requires that results of monitoring be transparent and public and in place beyond the life of the project activity, including as supported by legislation (e.g., regulatory requirements for transport and facility registration and generator manifests; transparent databases, etc project. It will be important to impart to senior ministry officials how the system (and lessons learned from its application) could subsequently be adapted to and inform environmentally sound management of a wide range

Project Strategy	Objectively verifiable indicators				
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
					of toxic and hazardous wastes in Mexico (and have applicability to other developing countries). Relevant stakeholders and target groups are interested in participating and cooperating in the design, development and implementation of the project
Outcome 5 Project management (Learning, evaluation, and adaptive management increased)	Mechanisms and processes in place for improved inter-ministerial information sharing Process in place and budgeting formula and supports for public PCB coordination servicing, including beyond project life Evaluation tools developed and tested Training needs identified and budgeted for, including beyond life of project Trianing PIU unit	Process for information sharing between SEMARNAT and PROFEPA needs to be improved and made more transparent Budgeting processes to support PCB waste management coordination need to be determined Formal mechanisms & processes for coordination & tracking needed.	Training of key administrative staff, generators and other stakeholders on timely basis Lessons learned as part of M&E reports	Project advisory and steering committees established Assessments and feedback surveys to inform lessons learned (government; generators; NGOs, etc.)	Monitoring and evaluation activities planned under the project are fully supported and implemented Mexico is moving toward an increasingly transparent governance model, including as affected by SEMARNAT and PROFEPA. This will support adaptive management so long as senior managers (including political levels) recognize the need for financial support and inter-ministerial cooperation and transparency.

SECTION III : Total Budget and Workplan

Total Budget

	Project Preparation*	Project	Agency Fee	Total
GEF	195.000	4.630.000	482.500	5.307.500
Co-financing	110.000	14.060.000		14.170.000
Total	305.000	18.690.000	482.500	19.477.500

Signed Project Co-financing

Sources of Co-financing	Type of Co-financing	Amount
Project Government Contribution (SEMARNAT	In-kind	1.080.000
Project Government Contribution (SEMARNAT and SENER – including CFE, LyFC and PEMEX)	Cash	13.000.000
Municipality of Cuatitlan and Guanajuato state government	In-kind and cash	70.000
Private Sector	In-kind	10.000
GEF agency (UNDP)	In-kind	10.000
Total co-financing	10.810.000	14.170.000

Real project co-finance is expected to be higher, but private sector confirmed co-finance is low in the table given complexity of meeting directly with the high number of geographically dispersed SMEs and sensitive site entities. Co-finance from CFE and LyFC is considered Government Co-finance in the table. Co-finance from large private sector industry is currently being negotiated.

Total Budget and Work Plan

Award ID:	00059701
Award Title:	PIMS 3692 MEX FSP PCB Management
Business Unit:	MEX
Project Title:	PIMS 3692 MEX FSP Environmentally Sound Management and Destruction of PCBs in Mexico
Project ID: PIMS no.	3692
Implementing Partner (Executing Agency)	SEMARNAT

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
OUTCOME 1: Strengthened institutional capacity within Mexico's Central and State Governments for Environmentally Sound Management and Destruction of PCBs	SEMARNAT	62000	GEF	71200	International Consultant	20,000	15,000	0	0	35,000	A B
				71300	Local Consultant	60,000	75,000	75,000	35,000	245,000	C D E
				72100	Contractual services	70,000	90,000	90,000	70,000	320,000	F
				71600	Travel	10,000	15,000	15,000	10,000	50,000	
				72300	Materials & Goods	40,000	70,000	40,000	30,000	180,000	
					Total outcome 1	**200,000**	**265,000**	**220,000**	**145,000**	**830,000**	
OUTCOME 2: Safe Central and regional PCB interim storage facilities established / upgraded.		62000	GEF	71200	International Consultants	6,000	15,000	0	0	21,000	G
				71300	Local consultants	50,000	100,000	100,000	70,000	320,000	H I
				71600	Travel	5,000	10,000	10,000	4,000	29,000	
					Total Outcome 2	**61,000**	**125,000**	**110,000**	**74,000**	**370,000**	
OUTCOME 3: Establishment and demonstration of a national coordinated comprehensive service system for PCB Management via state and municipal pilots.		62000	GEF	71200	International Consultant	14,000	14,000	14,000	7,000	49,000	J
				71300	Local Consultant	80,000	100,000	100,000	100,000	380,000	K L
				72100	Contractual services	200,000	400,000	750,000	600,000	1,950,000	M N
				72300	Materials & Goods	40,000	50,000	50,000	30,000	170,000	
				71600	Travel	30,000	40,000	40,000	21,000	131,000	
					Total Outcome 3	**364,000**	**604,000**	**954,000**	**758,000**	**2,680,000**	
OUTCOME 4: Awareness raising and communication		62000	GEF	71200	International consultant	0	15,000	0	25,000	40,000	O
				71300	Local Consultant	24,000	20,000	0	0	44,000	P
				72100	Contractual services	50,000	75,000	75,000	50,000	250,000	Q
				74100	Professional Services	4,000	4,000	4,000	4,000	16,000	R
					Total Outcome 4	**78,000**	**114,000**	**79,000**	**79,000**	**350,000**	

OUTCOME 5: Project Management		**62000**	**GEF**	71300	Local Consultant	100,000	100,000	100,000	100,000	400,000	S T
					Total Outcome 5	**100,000**	**100,000**	**100,000**	**100,000**	**400,000**	
					PROJECT TOTAL	**803,000**	**1,208,000**	**1,463,000**	**1,156,000**	**4,630,000**	

Budget notes:

Note	Type	Description
A	International expert	Component A1: Legislative Review and Proposal
B	International expert	Component B2: Inspectors training
C	Local Consultant	Component A1: Legislative Review and Proposal
D	Local Consultant	Component B2: Inspectors training
E	Local Consultant	Component B3: Improved Administrative Systems
F	Contractual Services	Component C1 and C2: Refined PCB inventory, and Material Flow Balance
G	International expert	Component E1 & E2: Environmentally Sound Management of PCBs in storage facilities, and best practices for PCB management
H	Local Consultant	Component D1: Enhancement of Existing interim storage facilities
I	Local Consultant	Component E1, E2 & F1: Environmentally Sound Management of PCBs in storage facilities, and best practices for PCB management. Inter service Agreement prepared.
J	International expert	Component G1 & G2: PCB management System Developed, tested, refined and further applied.
K	Local Consultant	Components G1, G2, H4 & I1: PCB management System Developed, tested, refined and further applied. Destruction of official PCB stock. Protocol for Transparent Tracking.
L	Local Consultant	Components H1, H2 & H3: Upgrade Destruction Facilities, Assessment of Existing Facilities, and PCBs Disposal Certification System.
M	Contractual Services	Components G1 & G2: Feasibility Study on Management Costs
N	Contractual Services	Component G1, G2 and H3: Pilot projects of Management System and partial destruction of official PCB stock.
O	International expert	Mid-term and Final Independent Project Evaluation
P	Local Consultant	Development of M&E system, Baseline and update agreed monitoring variables
Q	Contractual Services	Awareness Raising and Communication sub-contract
R	Professional services	National Execution(NEX) audits
S	Local Consultant	Project Manager
T	Local Consultant	Project Assistant

Summary of Funds

Summary of Funds:

GEF		803,000	1,208,000	1,463,000	1,156,000	4,630,000
Government		4,000,000	3,000,000	4,000,000	3,000,000	14,000,000
Local Governments		20,000	20,000	20,000	0	60,000

TOTAL		4,823,000	4,228,000	5,483,000	4,156,000	18,690,000

Budget per Component

#	Outputs per Component	Total Cost
	Component 1. Strengthened Institutional Capacities	830.000
A1	Legislative Review & proposal	50.000
B1	Inspectors Training	120.000
B2	Improved Administrative System	160.000
C1	Refined Inventory	450.000
C2	Material Flow Balance	50.000
	Component 2. Interim Storage Facilities	370.000
D1	Enhancement of existing facilities	150.000
E1	ESM of PCBs in Storage facilities	150.000
E2	Best Practices of Storage facilities	20.000
F1	Inter Services Agreements	50.000
	Component 3. Service System for PCBs Management	2,680.000
G1	Management System Development and Test (Pilots)	1.050.000
G2	Management System Refined and Further Applied	800.000
H1	Upgrade Destruction Facilities	50.000
H2	Assessment of Existing Destruction Facilities	100.000
H3	PCBs Disposal Certification System	30.000
H4	Destruction of Official Stock	600.000
I1	Protocol for Transparent Tracking	50.000
	Component 4. Awareness Raising and Communication	350.000
J1	Awareness Raising Campaign	250.000
	Monitoring and Evaluation	100,000
	Component 5. Project Management	400.000
	Project Management	400.000
	Total	4.630.000

Work Plan timetable: PCB management and destruction in Mexico

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
Global management activities																	
	Project endorsed (signatures)																
	Hire management team members: Project Manager, administrative assistants; other national & international consultants																
	Inception Meeting (Project Team: UNDP; government counterparts; consultants; GEF Regional Coordinator, as appropriate; co-financing partners)																
	Establish Project Steering and Advisory Committees																
	Project Steering Committee Meetings																
National management activities																	
	Establish MOUs with local governments and other partners & national structures (Project Steering Committee—PSC)																
	Formal endorsements																
	Establish national Project Management Structure																
	Develop and approve annual work plan and budgets																
Component 1: Strengthened institutional capacity within Mexico's central and state governments for environmentally sound and safe management and destruction of PCBs																	
	Hire international expert in environmental & chemicals law & national legislative expert																
	Legislative amendments needed* *Gap *analysis as informed by preparatory report on legal barriers & NIP recommendations & inclusive of examination of State and municipal authority for PCB management*)																
	Report recommendations & model legislation and/or regulations																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Government Capacity Building workshop: PCB management best practices (assembling & producing/translating materials; logistics; 2-day workshop)																
	Development and/or amendment of legislation: submission to National Assembly																
	Consultations on legislative & regulatory harmonization; new /amended legislation proposed																
	Feasibility Study																
	PCB congener analysis: split samples for analysis and results comparison																
	Co-financing and other options for laboratory upgrade																
	Rapid Assay training trainer course preparation & delivery: PROFEPA environmental inspectors, auditors & customs; generators & service providers; academia & NGOs *Course materials, 2-day seminar; 3 days in field x 4 courses*																
	Rapid Assay training trainer course preparation & delivery: State & municipal pilots																
	Training trainers for PROFEPA & customs officials on PCB collection and sample preparation techniques for more complex PCB congener analysis: course materials & delivery																
	Issue RFP & Engage national PCB inventory consultant																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Diagnostic of PROFEPA & SEMARNAT coordination and information sharing approaches: barriers & opportunities for information sharing and harmonization (e.g., reporting leaks/spills; movement of PCB wastes; results of environmental audit, inspection & inventory results, transparency with public, etc.)																
	Report recommendations for enhanced information sharing and protocols between PROFEPA and SEMARNAT																
	Implementation of PROFEPA-SEMARNAT information sharing report recommendations, as appropriate.																
	Development of refined national PCB inventory (statistical verification of reported inventories & estimates via site visits with screening samples; reporting)																
	Inventory report; inventory posted on SEMARNAT site.																
Component 2: Safe central and regional interim PCB storage facilities established/upgraded (emphasis on SME and sensitive site access)																	
	Issue RFP and engage technical consultant																
	Characterization of existing facilities (Parastatal, assuming agreement can be reached re: site adequacy for utility stocks to be decommissioned; adequacy for remaining PCBs as decommissioned)																
	Report: Storage construction requirements (space & location adequacy of Preparatory Phase sites proposed (including as informed by national inventory, hauling costs, union considerations, liability; Mexican legislation, etc.)																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Further site survey if required beyond Preparatory Phase proposed sites (2 sites)																
	Obtain necessary permits, etc. to undertake necessary site tests (hydrological; etc.) re: interim storage: *as applicable to the two sites proposed for regional/centralized storage during preparatory phase*																
	Site sampling (surface, aquifer hydrology; seismic, soils, vegetation, etc.) & application of criteria (inclusive of criteria developed during Preparatory Phase).																
	Assess waste fleet adequacy & options (whether existing two firms licensed are adequate for private generators; hauling costs as part of overall delivery; options available and recommendations)																
	Report on top candidate sites: results of tests; costing for site purchase, preparation of site; operation & maintenance, risk assessment and cost-benefit (status quo vs. new and/or enhanced facility(ies)																
	Presentation to PSC																
	Public consultation on candidate sites and proposed facility upgrades/new facilities design; other options as feasible																
	Government site selection; legal arrangements re: ownership and operation of site; liability, etc.																
	Issuance of government contract for facility(ies) construction																
	Construction / upgrade / modification																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Training operators																
Component 3: Establishment and demonstration of a nationally coordinated comprehensive service system for PCB management (from generator to final destruction) via state and municipal pilots																	
	Issue RFP and engage consultant																
	Assessment report (Adequacy of current managerial capacity, including as informed by Preparatory phase products & legislative diagnostic)																
	Report: Options for SME destruction certification (warranty) pegged to full payment by generators & assessment of and recommendations for sustainable financial mechanisms for PCB management (loan facility for replacement of decommissioned units owned by parastatals and SMEs, etc.). Liability and service contracting options.																
	Creation of escrow or custodial account (or other option as proposed) for SMEs; exploration and determination of entity that will manage account on behalf of Mexico government																
	Development of Service-on-Demand PCB managerial service model for SMEs (identification, repackaging, labelling, transport; storage; decontamination & end-of-life, service contracts & insurance)																
	Inter-service agreements: options for destruction of electrical parastatal, PEMEX PCB stocks & options for extension of private sector requests for disposal via a government authority (obsolete & decommissioned)**																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Inter-jurisdictional agreements (Federal-state-municipal)																
	Development of PCB traceability tool (as applicable to parastatals, large and SME generators/holders; sensitive sites; service industry; contaminated sites)																
	Study on capacity building options for PCBs (as part of overall) toxic and hazardous waste management by States and municipalities (waste management planning; resources required; coordination required as part of PCB service delivery)																
	Formalize agreement for pilot with Guanajuato State for PCB access to services and destruction of PCBs held by municipalities; sensitive sites; large & SME generators as applicable to generators in the State																
	Technical pilot development, inclusive of Consultation meetings with State and municipal officials, stakeholders (generators; NGOs, media, etc.) ;																
	Implement Queretaro pilot, inclusive of interim and final Lessons Learned report with recommendations																
	Lessons learned report																
	Refinements to system																
	Implementation at national scale																
	Security measures instituted, as required, for in-ise storage facilities																
	Destruction of stocks in existing inventory at Project start up (reported stocks)																
	Destruction of Guanajuato stocks, as determined by pilot																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Destruction of decommissioned industry stocks (*predicated upon extension in law now under discussion*)																
	Destruction of SME and sensitive sites (*predicated upon extension in law now under discussion*)																
Component 4: Awareness raising and communication																	
	Engage communications consultant																
	Develop/update outreach master lists for sensitive site PCB holders; SME private generators reporting & associations; large generators; service industry lists (including maintenance sector); State & municipal contacts; service industry, internal ministry managers, etc.																
	Develop national outreach strategies for target groups, including for conveying timely information on legislative requirements; interactive site for use by generators making service inquiries (coordinated with and assisting to implement the PCB tracking protocol); links to national SEMARNAT inventories; POPs NIP site, international best practices on PCBs, convention sites, etc.)																
	Establish outreach website for project, inclusive of internal ministry communications; stakeholders generally; & as geared to specific target audiences (SMEs; sensitive site holders; associations; States & municipalities, etc																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Develop website & hardcopy materials as tailored to target outreach groups. Populate website and links.																
	Distribute materials as per outreach strategies (start-up information announcing program; subsequent follow-as per strategy)																
	Develop, disseminate survey to users regarding ease of use; utility of information; produce summary of findings and recommendations for refining/improving communications																
	Refine strategy & revise communication products as warranted to respond to comments and in light of guidance from PSC, CTA.																
	Queretaro pilot outreach																
Component 5: Project Management																	
	Project Management																
	Project monitoring & reporting: IR; Annual Project Report; Project Implementation Review (PIR); Quarterly Progress Reports; Thematic Reports; Project Terminal Report (*CTA in conjunction with UNDP-GEF team*)																
	M&E: annual meeting; CTA preparation & submission of APR; Preparation to UNDP-CO &UNDP GEF																
	M&E independent mid-term and final evaluations																

	Activities	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16
	Tool developed for tracking co-financing for PCB destruction (during and after life of project); implementation of tool																

SECTION IV: ADDITIONAL INFORMATION

PART I : Other agreements

Endorsement letter and Co-finance letters will be attached will be forwarded in separate document due to the size of the letters.

PART II : Organigram of Project

82. Please see Section 1, Part III – Management arrangements, where a clear description of the Management structures and an organigram is included.

PART III : Terms of References for key project staff and main sub-contracts

83. ToRs for the Project manager can be found in Annex 13 of this document. The other TORs will be developed during the project implementation.

PART IV: Stakeholder Involvement Plan

84. The stakeholders in the project will be a cross section of Mexican society (see Annex 9). SEMARNAT will coordinate the project and chair a PCB Management Project Steering Committee (PSC). Other ministries relevant to different project activities, such as Mexico's ministries of finance, health, interior, trade, and foreign affairs, would included in the project steering committee and representatives from the electrical generating sector parastatals and Greenpeace and CATA. In addition, representatives from other key industrial sectors, other NGO and civil society organizations, and local government considered for, or which are already hosting central storage, decontamination and/or PCB destruction facilities are will be closely consulted.
85. International donors and partners who provide financial and/or technical support to the project will also be invited to sit as full participants on the PSC.
86. Representatives from the NGO community. (Greenpeace Mexico, CEMDA, CATA, etc will be invited to participate.
87. Apart from the global environmental benefits, the final beneficiaries of the project will be the Mexican people and their environment.

Annexes

Annex 1 : Mexico PCB mass balance

Source	Sector	Transformers	% by sector	Total Tons PCB waste material (contaminated transformers and PCB content of waste , including oils)	Tons PCB oils (as fraction of total tons material)
Total estimated PCB transformer wastes and PCB oils to be destroyed/disposed				28,399 ***(29,889*** *PPG est. based on reconciliation of manifests and voluntary reports; PROFEPA records)*	**6271**
Contaminants destroyed				14,587	**4084**
SEMARNAT 2006 inventory (*total of 359 enterprises reporting Inventory does not include reporting by state, via PROFEPA's voluntary audit program for toxic & hazardous wastes , or for in-use equipment; or liquid PCB wastes)*	Luz y Fuerza del Centro (LyFC)			1085	304
	Comisión Federal de Electricidad CFE) & others [1]			477	134
	PROFEPA			20	6
	Private industry			1428	400
	Subtotal SEMARNAT inventory			**3010** ***(4,500*** *PPG est. based on reconciliation of manifests and voluntary reports; PROFEPA records)*	**843** **(1260)**
Private Sector *(Estimated within in-use equipment)* Industries shown consume 50% of Mexico's Industrial energy (PPG:SENER)	**Industry**				
	*	1781	40	2650	742
	Chemical	609	75	1286	360
	Iron & Steel	400	40	1080	302
	Paper & Cellulose	368	54	699	196
	Automotive	252	50	666	186
	Sugar refining	110	37	410	115
	Municipal SMEs[2]			2800	784
	Subtotal private sector (estimated)			**9591**	**2685**
Sensitive sites (Estimated)	CONAGUA[3]			3000	840
	Food (Beverages)	155	36	201	56
	Food (Other)[4]			200	56
	Hospitals[5]	2069		1240	347
				4641	**1299**
Other estimations	LyFC[6]			300	84
	CFE[6]			1257	352
	PROFEPA[7]			3600	1008
				5157	**1444**
Contaminated Soil				6000	

Total estimated PCB transformer wastes and PCB oils since use began in Mexico				42,986 **(44,476)**	

Source : UNDP. *Desarrollo del Balance de Materiales Y Refinamineto de Inventario de PCBs Reporte 2 Producto Complemento del Inventario Producto Balance de Materiales Borrador Final*. Prepared by Laura Beltrán García. 9 July 2007.

[1] National Implementaiton Plan Inventory, July 2007.

[2] As estimated based on out-of-service equipment only for the two food and metal manufacturing sectors.

[3] Estimated based on data obtained from the Municipality of Cuatitlán Izcalli as applied to other municpalities.

[4] This category includes other facilities within the food processing sector, including refigerated foods.

[5] Assumes that only 20% of the total number of transformers contain PCBs.

[6] Estimate based on transformers still in use.

[7] ***Estimate extrapolates from a sample of environmental audit reports to PROFEPA by parastatals and the private sector.***

Annex II
Monitoring and Evaluation Plan

Environmentally Sound Management and

Destruction of PCBs in Mexico

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the Project Team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The Logical Framework Matrix in Annex 1 provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built.

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

1. MONITORING AND REPORTING

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team with support from UNDP/GEF. A Project Inception Workshop will be to be held within the first three months of the project implementation with the full project team, relevant government counterparts, key counterparts and UNDP. A Project Steering Committee including the government, UNDP, industry and NGO representatives will be constituted at project inception and will meet quarterly to review project progress, provide strategic guidance, and approve annual work plans and budgets.

Day to day monitoring of implementation progress will be the responsibility of the Project Manager and National Project Director, who will be assisted by a Monitoring and Evaluation expert serving part time. The Monitoring and evaluation expert will develop a project Monitoring and Evaluation system. This will be validated by the government after which baseline data will be compiled. The project will conduct diagnostic study to establish baseline. This diagnostic will incorporate gender perspective given the difference in risks and health concerns that both gender faces. This baseline will be the bench mark against which progress of the project will be monitored. It is foreseen that the baseline will include both project output indicators as well as indicators for measuring actual PCB risk reduction. The last could include restricted sampling and analysis or epidemical studies/data collection.

The Project Steering Committee will be instrumental for monitoring project progress as well as changes in selected risk reduction indicators. The project team will report to the Project Steering Committee against the agreed indicators at each meeting of the PSC.

A Mid-Term review of the project will be conducted by a project independent expert and nominated government officials. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify correction course if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned on project design, implementation and management.

The information and outreach material developed particularly lessons learned sections will also to some

extent provide tools for evaluation. These sections will be partly based on review and evaluation findings and their wide distribution will provide feed-back, further providing data on the impacts of the project.

A two person team of national and international independent evaluators, strengthened with government appointed experts will conduct a terminal evaluation with a lessons-learned section for wide distribution to other countries planning similar PCB disposal and replacement projects. The Final Evaluation will take place three months prior to the Terminal Tripartite Review meeting, and will focus on the same issues as the mid-term evaluation, but will concentrate on the wider impacts of the project activities. The final evaluation will also review the sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation shall also provide recommendations for follow-up activities.

Financial Monitoring

Financial monitoring and adherence to adopted yearly budgets will be controlled through annual project audits. These audits will be done as per standard procedures for Nationally Executed projects as in force for UNDP CO in Mexico.

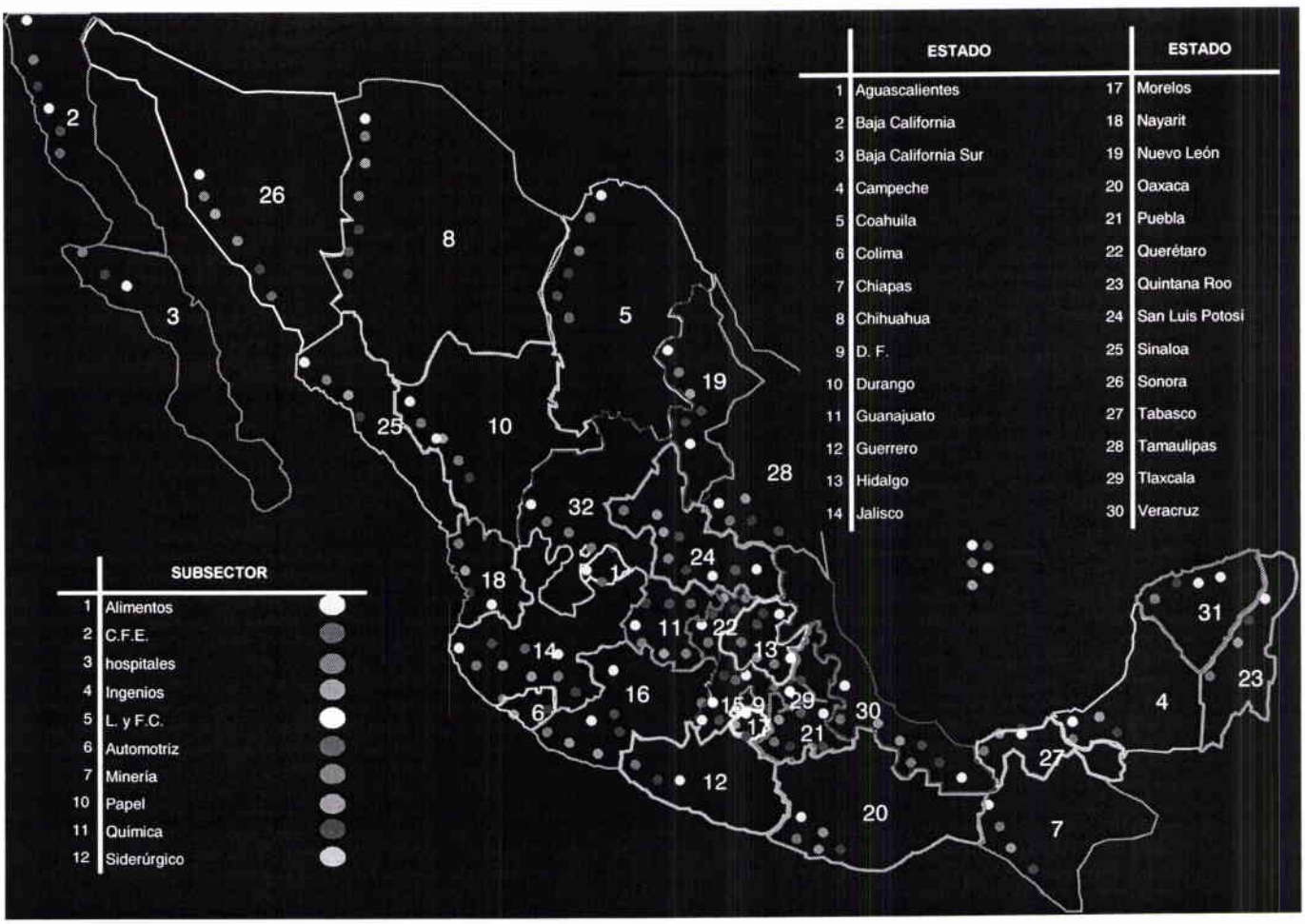
The financial audits will in addition to ensure adherence to bidding and other procedures, emphasize the the cost –effectiveness of the action undertaken. The financial audits will further validate the input utilization or '"budget-delivery" which may to a certain degree be used for monitoring the implementation efficiency or speed of the project.

The Monitoring and Evaluation plan and budget can be found in the table below. As the PIF did not include a separate Monitoring and Evaluation component the expenses are budgeted under Project Component 4.

Type of M&E activity	Lead responsible party in bold	Budget (indicative)	Time frame
Inception Report	**Project Implementation Team**	None	At the beginning of project implementation
Development of M&E system	**Project team**, government executing agency	20,000	At the beginning of project implementation
Baseline and update agreed monitoring variables	**Project team**, M&E expert, Project Steering Committee	24,000	First quarter of project implementation.
Project Implementation Review (PIR)	The Government, **Implementing Agency (IA) Country Office**, National Executing Agency, Project Team, IA Task Manager, and Target Groups	None	Every year, at latest by July of that year
Implementing Agency (IA) annual reports	The Government, IA Country Office, National Executing Agency, **Project Team**, IA Task manager, and Target Groups	None	Every year
Frequent Progress reports	**Project Manager**	None	To be determined by Executing Agency
Mid-term evaluation	Government, **IA Country office**	15.000	Approximately 18 months from inception workshop.
Terminal Evaluation,	Project team, **IA headquarters and**	25,000	At the end of project

including lessons learned	**Task Manager**, IA Country Office, National Executing Agency		implementation
Terminal Report	IA Country Office, IA Task Manager, **Project Team**	None	At least one month before the end of the project
Audit	National Executing Agency, **IA Country Office**, Project Team	16,000 (total for project duration)	Yearly
Total		**100.000 US$**	

Annex 3: PCB generators sources by state



Source : UNDP. Desarrollo del Balance de Materiales Y Refinamineto de Inventario de PCBs. Reporte 2. Producto : Complemento del Inventario. Producto : Balance de Materiales. Borrador Final. Prepared by Laura Beltrán García. 9 July 2007.

Annex 4: PCB fraction within PCB-containing transformers (examples)

62 % de masa de sólidos

PARTE	% MASA	MASA [kg]
tanque	27	843
lámina	19	619
cable	7	235
Conectores	1	21
sólidos	7.7	245
aislante	0.4	14
aceite dielectrico	38	1,200

38 % de masa de líquidos

PARTE	% MASA	MASA [kg]
aceite dielectrico	38	1,200

72 % de masa de sólidos

PARTE	% MASA	MASA [kg]
tanque	31	1,554
lámina	23	1,142
cable	9	434
Conectores	1	39
sólidos	9.0	452
aislante	0.5	26
aceite dielectrico	28	1,400

28 % de masa de líquidos

PARTE	% MASA	MASA [kg]
aceite dielectrico	28	1,400

Annex 5: NIP PCB priorities

Mexico's National Implemntation Plan for Persistent Organic Pollutants:
Priorities for PCB management and destruction

1	Reliable and statistically verified inventory of equipment in storage and in use, which was originally manufactured with PCBs and an estimation of costs and time required for dismantling electrical equipment. *Inventario confiable y estadísticamente verificable de equipos almacenados y en operación que contienen de origen en su fabricación BPC's y estimación de los costos y tiempos requeridos para su desincorporación*
2	Reliable and statistically verified inventory equipment in storage and in use which were contaminated during maintenance operations with PCB and an estimation of costs and time required for dismantling electrical equipment. *Inventario confiable y estadísticamente verificable de equipos almacenados y en operación que fueron contaminados de BPC's en operaciones de mantenimiento y estimación de los costos y tiempos requeridos para su desincorporación.*
3	Review of NOM-133 –SEMARNAT-2000 and, as required, revisions to ensure it is in conformity with the NIP Plan of Action *NOM-133-SEMARNAT-2000 revisada y en su caso reformada de conformidad con las necesidades del plan de acción.*
4	An informational outreach program to raise awareness of provisions of the law and associated regulations. *Campañas de difusión de la normatividad dirigida a los sujetos regulados informándolos de sus obligaciones legales.*
5	***Development of Mexican standards for sampling, extraction and analysis of PCBs in contaminated dielectric oils and contaminated materials (as an extension of NOM-133).*** *Norma(s) Mexicana(s) formuladas para el muestreo, extracción y análisis de BPC's en aceites dieléctricos y materiales contaminados (como subsidiaria de la NOM-133)*
6	Strengthened capacity for environmental inspection of PCBs. *Las capacidades de inspección sobre COP estan fortalecidas*
7	\PRONAME monitoring stations that monitor PCBs. Estaciones del PRONAME en operación que miden BPC
8	Enhanced capacity undertaken in a cost-effective manner for life-cycle management of PCB waste equipment and materials. *Capacidad de manejo Integral de equipos y materiales con BPC's, costo eficiente.*
9	Licensing of firms that service electrical equipment containing PCBs and their registration as service providers for management of dangerous wastes. *Empresas que ofrecen mantenimiento a equipos eléctricos que contienen BPC's y que estén registradas como prestadoras de servicios de manejo de residuos peligrosos.*
10	Firms that provide services of management of hazardous wastes should present a verifiable certificate of environmental management *Empresas prestadoras de servicios de manejo de residuos peligrosos de BPC's que presenten algún certificado de gestión ambiental verificable.*
11	Creation of a committee and partners network to facilitate implementation of the NIP actions. *Comité de Seguimiento y Red de Aliados para facilitar el cumplimento del plan de acción*
12	Development and execution of Management plans *Planes de manejo terminado y en ejecución*
13	Technical guides Developed, communicated and applied *Guías técnicas desarrolladas, difundidas y aplicadas*
14	Guides for government management developed, communicated and applied *Instructivos sobre trámites administrativos desarrollados, difundidos y aplicados*

15	Trained and committed personnel in the PCBs management plans execution *Personal capacitado e involucrado en la ejecución de planes de manejo de BPC*
16	Inventory of PCB contaminated sites *Inventario de sitios con BPC*
17	National program for Integral management of PCBs contaminated sites *Programa Nacional para el Manejo Integral de Sitios Contaminados*
18	Criteria and guide for pollution prevention of sites with PCBs *Criterios y guía para prevenir la contaminación de sitios con BPC*
19	Criteria for the integral management of contaminated sites remediation projects *Criterios para la evaluacion integral de proyectos de remediacion de sitios contaminados*
20	Elements for creation and operation of an environmental fund for PCBs contaminated sites remediation *Elementos para creacion y operacion de un fondo ambiental para la remediacion de sitios contaminados*

Annex 6: Project consistency with Mexican national plan priorities.

The project is consistent with Mexico's National Implementation Plan for Persistent Organic Pollutants, *National Development Plan 2007-2012, United Nations Common Country Assessment (CCA), the United Nations Development Assistance Framework and the World Bank's* Country Assistance Strategy for Mexico,as discussed below:

- *National Implementation Plan for Persistent Organic Pollutants*: The project will advance and/or implement NIP priorities 1-10 and 13-25 (see Annex 5), including as applicable to development of a nationally verifiable inventory of PCBs, comprehensive legislation, strengthened capacity for its enforcement, outreach to raise awareness of provisions of the law, training and certification provisions for service providers (See Annex 5).
- *National Development Plan 2007-2012*.[15] These objectives include promotion of development that is in harmony with nature and the environment; increased citizen confidence in Mexico's institutions (which would be effected in this project by a full, field-verified national inventory, a more complete PCB waste tracking process, improved institutional capacity, (as realized in the project through improvements to legislation, information sharing between SEMARNAT and PROFEPA and SEMARNAT and SENER), and decentralization (i.e., the federally coordinated process will be developed in close consultation with different government jurisdictions taking into consideration their legislative authority and resources for toxic waste management).
- *Common Country* Assessment (CCA): The project would contribute to alleviation of adverse health and environmental effects associated with pollution. Mexico's Common Country Assessment observes that some sectors of Mexico's population and those living in poverty suffer disproportionately from adverse effects of toxic and hazardous wastes. Urban and semi-urban areas are most affected by adverse health effects associated with toxic wastes, including as related to inadequate infrastructure. The project's emphasis on improving access to adequate infrastructure and improved PCB traceability would improve chemical management in support of risk reduction. The project's emphasis on pilots and initial implementation focuses on safe management and destruction of PCBs within industrialized, high-density population states and municipalities that have significant reported and estimated PCB inventories.
- *United Nations Development Assistance Framework (UNDAF) 2008-2012 plan and World Bank Country Assistance Strategy*: State facilitation of access to PCB services as targeted principally to small and medium enterprises (SMEs) and sensitive sites, while helping to accomplish the project's primary objective of reducing risk of exposure to workers and the general population and to the environment, should assist smaller private sector generators to realize cost efficiencies in PCB management, consistent with Mexico's emphasis on sustainable development and further integration of Mexico's SMEs.[16] Additionally, the project will explore development of financial incentives geared toward pollution prevention, e.g., to support substitution of PCB contaminated transformers.[17] This project embraces the national plan's implementation approach to solving waste management problems through its emphasis on national-scale coordination of PCB management (including improved coordination among federal institutions) in consultation with and involving society as a whole. Given the support for the Mexico's development plan within Mexico's Country Assistant Strategy (CAS), and the World Bank's emphasis on improvements to

[15] Mexico is in the process of developing its UNDP Common Country Assessment report and UNDAF situational analysis.
[16] SMEs may represent three quarters of Mexico's total employment. Within key electrical consuming sectors they represent a high fraction of companies, e.g., within the chemical sector INEGI statistics for 1993 indicate that 93 of 100 facilities are small and medium enterprises that employ 47% of the sector's workers. Mexico's emphasis on SME integration is also cited with the UNDAF situational analysis and the Country Assistance Strategy with the World Bank.
[17] Any financial incentives would be predicated upon promotion of pollution prevention and/or cleaner industry, hence predicated upon an environmental, as opposed to a trade. Care will be taken in the project to ensure that any financial incentives that may be developed are not in conflict with provisions of NAFTA, WTO and other trade agreements to which Mexico is a Party.

waste management infrastructure, there is also an opportunity for additional co-financing or leveraged financing developed during the project in addition to the co-financing outlined in this proposal.

Specific priorities within the United Nations Development Assistance Framework (UNDAF) 2008-2012 plan with which this project is consistent are discussed below:

Priority 1: Reduce poverty and inequality through promotion of economically competitive and sustainable development that supports equality among all actors and generates decent jobs without putting the environment at risk.

The project's emphasis on a State-coordinated system and outreach to assist SMEs by raising raise awareness and providing training on best practices for PCB management and destruction aligns very well with the UNDAF framework's support for activities in support of Priority 1, as geared to improved integration of SMEs within Mexico's rapidly industrializing economy (1.2. 3.), UNDAF's promotion of producer responsibility (1.1.5), of financial mechanisms that support institutional capacity in a manner consistent with sustainable management of energy and natural resources (1.1.2), industry competency (1.2.2) As well, the project will contribute to workers' health through education and training that reduces their risk of worker exposure to PCBs, i.e., as accomplished through prevention of contamination of PCB units, and retirement of those that are found to contain PCBs, including through provision of assistance with collection and packaging materials on an "on demand" basis.

Priority 3: Guarantee the enjoyment of a healthy and productive environment, conservation of the nation's natural inheritance now and for the future, as well as ensuring participation in development that is based on sustainable and equitable use of natural resources.

The projects' components related to institutional strengthening, inclusive of legislation, support for realization of Mexico's international commitments to environmental agreements, strengthening capacity of urban and rural municipalities, including with regard to protection of water and basic health (3.1.6) and strengthening capacity for management of wastes (3.1.7).

Multi-Year Funding Framework (MYFF): This project is consistent with the Country Office programming priorities for the period 2004-2007. The project goals and objectives are supportive of Goal 3 "Energy and Environment for Sustainable Development" and service line 3.6 "National/Sectoral policy and planning to control emissions of ozone-depleting substances and *persistent organic pollutants*".

Annex 7 : Mexico's legal framework, gaps and inconsistency

The General Law of Ecological Equilibrium and Environmental Protection (*Ley General del Equilibrio Ecológico y la Protección al Ambiente— LGEEPA*) mandates SEMARNAT, a cabinet-level agency, with primary responsibility for carrying out environmental laws and regulations on the federal level. Under the law, SEMARNAT is also responsible for enforcing environmental laws in the states which have not yet enacted environmental laws.[18]

SEMARNAT's oversight and enforcement of the laws and standards concerning the environment apply to renewable and non-renewable natural resources and the protection of the environment; protection, restoration, and conservation of natural resources and environmental welfare to ensure the adequate development of health and general well being of the population; establishment of technical ecological standards or norms (*NOMS*) for the preservation and restoration of environmental ecosystems, use of natural resources including aquatic flora and fauna, wastewater, and environmentally safe management of hazardous materials and non-hazardous waste, air pollution, and noise; and granting of contracts, licenses, permits, and authorizations in the areas of air, water, forestry, ecology, fishery, mining, exploitation of flora and fauna, beaches, and other marine zones. The Ecology Law amendment of 1996 gives SEMARNAT the authority to issue enforceable limits on industrial stack emissions and motor vehicle emissions by region, area or zone (metropolitan areas and cities), and to formulate and apply programs to reduce air pollution.

State roles and responsibilities

The Ecology Law states that SEMARNAT is responsible for enforcing environmental laws in the states which have not yet enacted environmental laws.[19] The Ecology Act or LGEEPA provides that authority for the following (with respect to matters covered by this report) is delegated to the states: establishment, regulation, administration and oversight of protected natural reserves as provided by local law, with the participation of municipal governments (Art. 7. V.); and the regulation of systems for collection, transport, storage, handling, treatment and final disposal of solid and industrial waste considered non-hazardous (Art. 7. VI).

States, municipalities and the Federal District (*Distrito Federal*) are responsible under the Ecology Law (Article 112-III) for the regulation, administration and enforcement of sources within their jurisdiction not otherwise regulated at the federal level. This includes inspection and enforcement and monitoring air quality.

PCB-specific legislation

Mexico's existing legislative framework for PCB management and destruction is summarized below:

- Importation of PCBs was banned in 1988 under Article 142 of Mexico's General Law of Ecological Equilibrium and Environmental Protection (*Ley General del Equilibrio Ecológico y Protección al Ambiente—LGEEPA)* of 28 January 1988.
- PCBs or wastes containing PCBS in concentrations of > 50 parts per million (ppm) are listed PCB wastes under its Hazardous Waste standard (NOM-052-ECOL-1994) of Mexico's General Law for Prevention and Management of Wastes (*Ley General para la Prevención y Gestión Integral de los Residuos)* and are therefore subject to all hazardous waste requirements. This law requires that enterprises handling hazardous wastes prepare Management Plans, for which enforcement is supported by Mexico's state governments.

[18] LGEEPA, Transitory Provisions, Article 3 and 5, DO, January 28, 1988.
[19] LGEEPA, Transitory Provisions, Article 3 and 5, DO, January 28, 1988.

- PCB-specific handling, management and treatment/disposal is regulated by Technical Ecological norms (standards) developed by SEMARNAT. In 2000, SEMARNAT developed *NOM-133-SEMARNAT-2000* for Protection of the Environment from PCBs—Specifics of PCB Management (*Protección Ambiental-Bifenilos Policlorados-Especificaciones de manejo)*. NOM-133 entered into force with its publication in Mexico's Diario *Oficial de la Federacion* (DOF) on 10 December 2001. It requires that PCB-contaminated equipment *in storage* prior to the norm be decontaminated or destroyed and PCB residues destroyed within one year of the standard's publication date (subsequently amended to 18 months). PCB-containing equipment retired from use and PCBs removed from such equipment subsequent to the publication of NOM 133 are to be disposed of within nine months of their decommissioning. Phase-out and destruction is applicable to PCBs, and to equipment, materials and wastes contaminated with PCBs where concentrations exceed 50 ppm or 100 g/100 cm2. Similarly, contaminated containers and other materials that have been in direct contact with PCB wastes must be treated to < 50 ppm concentration or destroyed.
- Other provisions of NOM-133-SEMARNAT-2000 require PCB generators/possessors that store PCB wastes containing > 50 ppm to:
    - Register as a Hazardous Waste Generator with SEMARNAT using form SEMARNAT-07-0004;
    - *Submit a PCB inventory to SEMARNAT within three months of the standard's promulgation, and present a plan for decommissioning PCB materials within six months of the standard's effective date;*
    - Report annually to SEMARNAT by 31 January of each year their in-use equipment containing PCBs, as well as PCB waste residues, decommissioned equipment containing or contaminated by PCBs and equipment that was decontaminated during the past year;
    - Store PCB wastes and PCB-contaminated equipment on-site prior to treatment, decontamination or destruction within storage facilities that comply with site and facility design criteria;
    - Conduct their own inspections;
    - Maintain a log of movement in and out of storage of PCB equipment, PCB electrical equipment, PCB-contaminated equipment, PCB waste and PCB hazardous waste, including shipping manifests, total amounts of PCB shipped to disposal, destruction dates and reports of related activities;
    - Develop a contingency plan and keep appropriate equipment for emergencies;
    - Notify SEMARNAT of PCB spills and accidents; and
    - Keep records of controls, clean-ups and notifications to SEMARNAT in case of spills or accidents.
- NOM 133 requires the removal from service and decontamination/destruction by 2008 of all PCBs and PCB-contaminated equipment containing PCBs > 50 ppm from urban and rural facilities and sensitive sites (facilities where the presence of PCBs could pose a high risk to humans, such as hospitals, schools, etc.). Mexico's SEMARNAT will be reviewing the norm in 2008, inclusive of considering whether to extend the deadline for destruction by various generator entities, consistent with a recommendation to this effect in Mexico's National Implementation Plan (NIP) for Persistent Organic Pollutants. Suggestions have included advancing the deadline to 31 December 2012 for all generators with the exception of those operating PCB-containing or contaminated generators in food processing and animal feed processes. The potential change would not adversely affect the project, which emphasizes processes for facilitating PCB decommissioning in an environmentally sound manner as consistent with Mexican legislation and the Stockholm Convention.

Gaps in PCB legislation

A number of legal gaps were identified during the preparatory project phase as noted below:

- *Transformer ownership:* Mexican law lacks clarity regarding ownership of electrical equipment used by municipalities and within large residential complexes. While it appears that utilities own these, ambiguities in the law need to be addressed.
- *Definitions key to PCB management services:* Definitions need to be developed within Mexican law of what constitutes a "service provider" and a "generator" for PCBs.
- *Registration of maintenance companies*: Mexico's NOM 133 would require modification to require registration by SEMARNAT of maintenance companies that service in-use electrical equipment and oblige them to report quantities of PCBs removed from equipment (to enhance PCB "traceability" within the Mexico inventory). This change would also need to be incorporated in the LGPGIR and its Regulation.
- *Reporting of leaks and spills from sensitive sites:* PROFEPA is authorized under law to inspect a contaminated or sensitive site only as a response to a formal citizen complaint. Reports or complaints from sensitive site administrators are typically sent to the generator (CFE or ClyF) as the owners of the equipment, rather than to PROFEPA. Where PROFEPA finds equipment in storage at a generator facility to be leaking as a result of a citizen complaint, it can take a sample to send to a certified lab to verify the concentration. However, citizen initiated complaints or notification to PROFEPA of leaking equipment are rare. Since 1994, Mexico has undertaken one case to prosecute improper disposal of PCBs based on a complaint against an exporter who failed to collect PCBs waiting in port for export.
- *SEMARNAT does not report to PROFEPA the conditions of operational permits* (certification requirements) it issues to treatment and destruction companies, which could assist PROFEPA with its environmental inspections.
- *Verification of PCB content of oils within equipment before recovery* of such oils from retired equipment is not required under Mexican law. (. Were this done, it would be easier to verify that the quantities and concentration of liquids removed by the service provider and reported are consistent with quantities and concentrations reported by the generator prior to transport.)
- *Municipal PCB inventory and reporting of spills and leaks of equipment (whether owned by parastatals or the municipality).* PROFEPA has no direct communications with municipalities under Mexican law. Therefore, Mexico's Ministry of State of the Interior will be included in PROFEPA's voluntary reporting effort for inventory reporting in 2008.
- *State and municipal participation in coordination of access to PCB management and destruction services:* Mexico's *Reglamento de la Ley General para la Prevención y Gestión Integral de los Residuos* stipulates in articles 12 and 13 that States and municipalities cannot carry out functions relating to materials regulated by international treaties to which Mexico is a Party. This issue will be addressed early within the project as part of Mexico's review of PCB legislation (led by SEMARNAT as the regulatory agency).

Annex 8 : PROFEPA voluntary environmental audit program

PROFEPA has had a voluntary programme in place for PCB inspection and validation in support of Mexican standards since 2003. Its inspection programme responds to a Presidential goal. PROFEPA conducts visual inspections every two or three months of generator sites (i.e., those generators voluntarily reporting to Mexico's inventory). However, owing to lack of sufficient inspection personal , PROFEPA has been able to inspect only 40% of participants (60 of the 150 generators that self-reported PCBs to Mexico's inventory.

Inspectors use the published SEMARNAT preliminary inventory (as posted by SEMARNAT on its official website) for verifying quantities and elimination of PCBs, which generators self-report.PROFEPA's voluntary program includes 3000 participating public and private sector entities as per the table below (current as of May 2007). Based on review of 2% of audits filed to the inventory estimates that 15% or 350 of the 3000 enterprises have PCBs. Collectively, the total PCBs estimated via the PROFEPA voluntary program additional to those that are reported in the official SEMARNAT inventory are 3,600 tons. [20]

		TOTAL
Industries participating	58%	2930
Commercial enterprises	13%	667
Service sector	29%	1504
Classification by size		
Mirco	24%	1211
Small	24%	1236
Medium	26%	1334
Large	26%	1320
Participating organizations		5101
Certified organizations		2099
PEMEX installations	630	
PEMEX certified installations	405	
CFE installations	419	
CFE certified installations	69	
Parastatals participating		**1484**
Parastatals certified		**567**
Municipal procesess participating	192	
Municipalities	80	
States	29	
Certified municipalities	8	
Municipal processes certified	10	
Municipalities certified		

As regards percent of a sector participating in the program, PROFEPA reports the following:

Capitals of States within Mexico	50%
Automotive industry	100 %
Cement industry	100%
Beer industry	100 %
Acumuladores production	97%
Detergents	90%
Steel	95%

[20] The calculations were extrapolated from analysis of reports filed by 64 enteprises, which had a total of 15,800 liters of PCBs, equivalent to 20.5 tons. These PCBs do not show up in the official SEMARNAT inventory.

Pharmaceutical	60%

Annex 9 : Stakeholder profile

PROJECT LEAD AND KEY FEDERAL GOVERNMENT PARTNERS

SEMARNAT is supported by five decentralized administrative departments: the National Institute of Ecology (*Instituto Nacional de Ecologia—INE*); the Mexican Institute of Water Technology (*Instituto Mexicano de Teconologia del Agua—IMTA*); the National Water Commission (*Comisión Nacional del Agua—CNA)*; the Federal Environmental Attorney General (*Procuraduría Federal de Protección al Ambiente— PROFEPA*); and the National Commission of Protected Areas (*Comisión Nacional de Areas Naturales Protegidas—CONANP*).

PROFEPA, created in 1992, is in charge of enforcing the law and is responsible for investigations and inspections of facilities, environmental audits, and presides over administrative appeals by companies that have been sanctioned for failure to comply with the law. PROFEPA reporting violations of the law to the *Ministerio Público Federal* (Federal Prosecuting Attorney), which is in charge of the prosecution of environmental crimes.

SEMARNAT will be working closely with PROFEPA the Ministry of Energy (*Ministerio de Energía—SENER*), which has oversight for the electrical utility parastatals (CFE and ClyF) and PEMEX. These three entities, collectively, have represented the majority of Mexico's high-concentration PCB inventory historically (of which the majority of obsolete stocks have been destroyed). They all have some remaining obsolete PCB inventory and it is expected that with the full national inventory some more may be identified.

During the PPG phase, meetings between SEMARNAT, the project lead, and SENER staff (deputy ministerial level) with UNDP participation were held to discuss project specifics, including the potential for and constraints associated with financial incentives to support pollution prevention as accomplished by equipment substitution. This participation of senior-level officials is indicative of the level of support that exists for this project.

SEMARNAT will also coordinate its work involving municipalities (pilot project) with Mexico's Ministry of the Interior.

It will work closely with the Ministry of Health on development of those aspects of best practices guidance targeted at occupational health and safety.

PARASTATAL ELECTRICAL UTILITIES

Their participation will be important as owners of sensitive site equipment and with respect to potential use of interim storage facilities and also with respect to contaminated sites (given the some storage facilities may have been in use since before PCBs were regulated and when best practices were not well developed).

CFE, which supplies electricity to 80% of Mexico's territory, has 693,742 transformers in use, distributed in municipalities within 31 States. The majority of CFE's industrial and residential customers are located in the states of Jalisco, Veracruz, Michoacan, Puebla, Guanajuato, and Nuevo León.

States with the highest number of CFE transformers		
State	**Number of Transformers**	**Proportion CFE total transformers (%)**
NUEVO LEON	68,064	9.8
BAJA CALIFORNIA	67,661	9.7
TAMAULIPAS	51,608	7.4
JALISCO	47,992	6.9
SONORA	44,283	6.3
SINALOA	44,191	6.3
GUANAJUATO	44,017	6.3

CFE contracts out for maintenance of its transformers. Decommissioned equipment and PCB wastes and waste materials are stored in several centralized warehouses owned and maintained by CFE. Some dielectric oils that could contain PCBs are also stored at smaller local warehouses located at electrical installations and substations. CFE has its own inventory process and is now in the process of verifying quantities of PCB wastes in its warehouses and in-use equipment.

LUZ Y FUERZA DEL CENTRO Potential transformer equipment and electrical energy distribution by state as of 31 December 2005				
State	Transformer Distribution	Capacity (Megavolts-amperes)	Substation distribution	Substation capacity (Megavolts -amperes)
DISTRITO FEDERAL	39,707.0	3,806.0	48.0	5,745.0
HIDALGO	9,944.0	556.1	15.0	1,003.0
MEXICO	38,661.0	2,992,841.0	58.0	5,607.5
MORELOS	2,603.0	162.0	3.0	260.0
PUEBLA	N/D	N/D	2.0	60.0
TOTAL	**90,915.0**	**2,997,365.1**	**126.0**	**12,675.5**

LyFC serves 2, 974,953 consumers. It supplies energy to Mexico City, the Federal District and portions of the surrounding states of surrounding sates of Puebla, Mexico, Morelos, and Hidalgo. LyFC has 90,915 transformers, of which 43% are located in the Federal District and 42% in the State of Mexico. There are approximately 2,482 transformers per each of the 16 municipalities in the Federal District. The average number for the 11 municipalities in Hidalgo State is 521, and for Mexico State's 83 municipalities. LyFC performs its own decommissioning and maintenance of its equipment.

PEMEX (*Petróleos Mexicanos*) is an important stakeholder both because of inventory (e.g., electrical equipment used to power its refinery processes) and the potential for use of its "*Pajaritos*" incinerator to destroy high-concentration PCBs (e.g., if warranted based on Mexico's full national inventory and indication that licensed facilities alone do not offer sufficient capacity).

PRIVATE SECTOR INDUSTRY

The project emphasis with regard to private sector generator participation is on improving access to services, recognizing that SMES are the least capable among Mexican private sector of utilizing existing services.

Below is a brief overview of key industrial associations that were consulted during the preparatory phase and which agreed to participate in the project and, in some instances, to provide in kind support.

ANIQ* Chemical Industry Association (*Asociación de la Industria Química*). www://aniq.org.mx

ANIQ represents the following subsectors:

- Adhesives and Labels
- Acids, Sales and Inorganic oxides
- Alkyli, chlorine and soda
- Fertilizers and agrochemicals
- Distributors and representative of chemical products
- Service industry
- Specialty chemicals
- Pharmaceutical chemicals
- Artificial and synthetic fibres
- Lubricants, additives and specialty chemicals
- Pigments and dyes
- Chemical products used in construction
- Water treatment chemicals

ANIQ's mission is to promote sustainable development and global competitiveness of Mexico's chemical sector in harmony with society and the environment, as supported by ethnical actions dialogue and through special services, consultation, information sharing, capacity building and outreach.

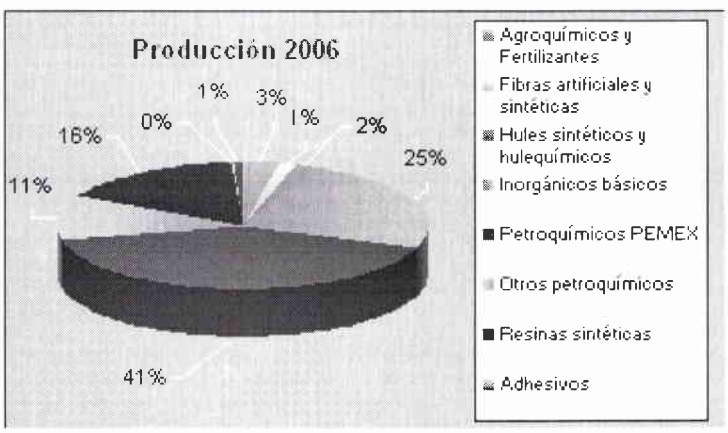
Mexican chemical production was worth $16.7 billion to the nation's economy in 2006.
There are more than 350 firms operating more than 400 production facilities, primarily in Veracruz, Edo de Mexico, Distrito Federal, Nuevo Leon and Tamaulipas. Two-thirds of Mexican chemical production depends upon PEMEX, which has over 300 registered companies.

Production and consumption figures from the ANIQ site are shown below:

PRODUCCIÓN (Toneladas)

SECTOR	2006	2005	% 05/04
Agroquímicos y Fertilizantes	573,912	555,366	3.3
Fibras artificiales y sintéticas	286,943	409,334	-29.9
Hules sintéticos y hulequímicos	313,968	287,602	9.2
Inorgánicos básicos	4,887,063	4,481,794	9.0
Petroquímicos PEMEX	7,930,681	7,789,438	1.8
Otros petroquímicos	2,134,873	2,155,243	-0.9
Resinas sintéticas	3,212,006	3,343,566	-3.9
Adhesivos	76,954	73,493	4.7
Pigmentos y Colorantes	160,518	166,611	-3.7
TOTAL	**19,576,918**	**19,262,447**	**1.6**

Source: ANIQ. http://www.aniq.org.mx/aniq/Estadisticas.asp

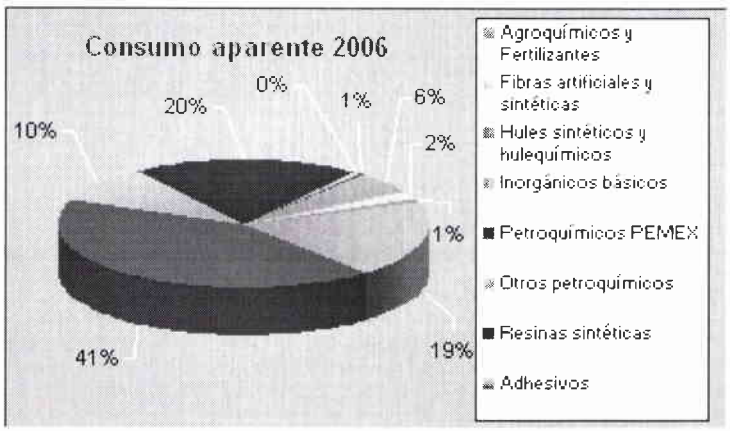


Source: ANIQ. http://www.aniq.org.mx/aniq/Estadisticas.asp

CONSUMO APARENTE (Toneladas)

SECTOR	2006	2005	% 05/04
Agroquímicos y Fertilizantes	1,317,066	1,420,289	-7.3
Fibras artificiales y sintéticas	397,089	403,491	-1.6
Hules sintéticos y hulequímicos	238,644	291,388	-18.1
Inorgánicos básicos	4,411,371	3,759,640	17.3
Petroquímicos PEMEX	9,766,964	9,655,394	1.2
Otros petroquímicos	2,234,693	2,407,140	-7.2
Resinas sintéticas	4,574,493	4,441,568	3.0
Adhesivos	107,162	103,214	3.8
Pigmentos y Colorantes	133,655	128,425	4.1
TOTAL:	23,182,137	22,610,499	**2.5**

Source: ANIQ. http://www.aniq.org.mx/aniq/Estadisticas.asp

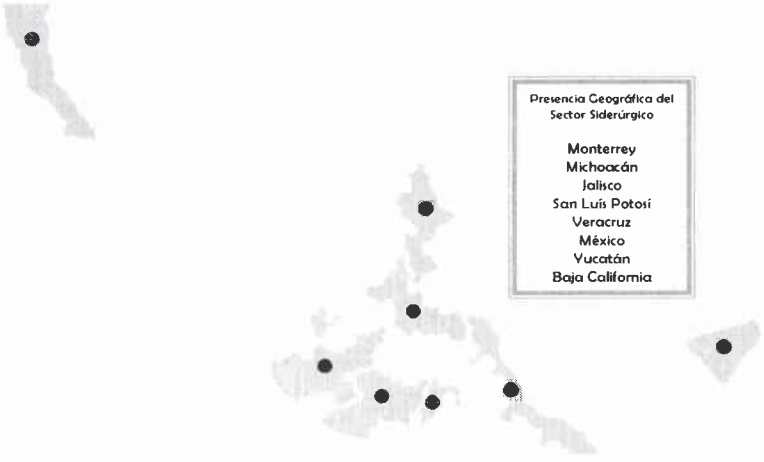


Source: ANIQ. http://www.aniq.org.mx/aniq/Estadisticas.asp

CAINTRA* **Chamber of Industrial Transformation** (*Cámara de la Industria de la Transformación*). http:/www.caintra.com/ .
CAINTRA represents Small and Medium enterprises in Monterrey, the capital of Nuevo Leon State in northwestern Mexico and the country's most populous city after Mexico City, as well as a highly industrialized (hence energy consuming) state. The country's steel sector in concentrated in Monterrey, which also has important auto parts, cement, glass, and beer industries, among others.

CAINA * **National chamber of Sugar and Alcohol industries** (*Camára Nacional de la Industry Azucarera y Alcoholera*)
As of 2001, Mexico had 61 sugar cane mills situated in 12 Mexican states: Tabasco, San Luis in 2005 was the the 7th largest producer of sugar globally. The sector supports an estimated 2.2 million Mexicans, including 300,000 direct jobs (cane cutters, seasonal field workers, factory workers, etc.) In September of 2001, Mexico expropriated 27 mills, which account for about 50 % of domestic sugar production, as part of an industry sector reorganization and restructuring aimed at modernizing the industry. The industry is energy intensive: Mexico's sugar milling process in 2005 used an average of 7.85 litres heavy fuel oil /ton of sugar cane crushed.

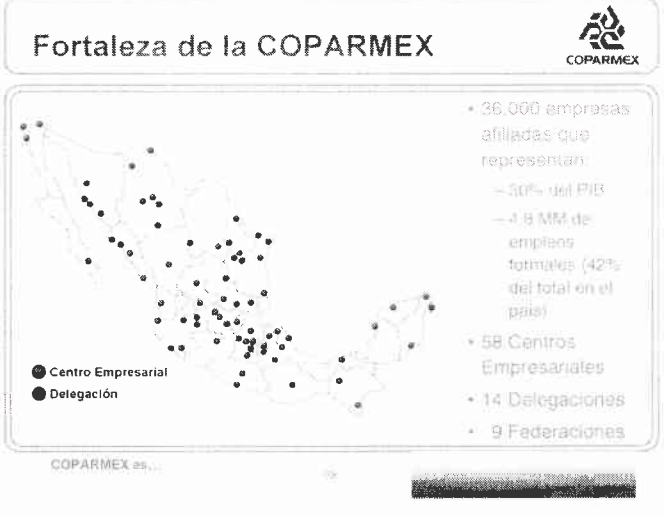
CANACERO* Mexican Iron and Steel Producers Association (*Cámara Nacional de la Industria del Hierro y del Acero*). Amores 338 Col. Del Valle C.P. 03100, Tel. (01 55) 5448 8160 Fax. (01 55) 5687 0517. http://www.canacero.org.mx/
Mexico's steel industry, which produces many hard goods that are critical to Mexico's economy, contributes 2.1% to Mexico's gross domestic product (9.1% of industry's overall contribution to the GDP), generates 53,700 direct jobs and 550,000 indirect jobs. The sector consumes 7.4% of the country's electricity (30.5% of the country's total natural gas reserves). The location of Mexico's 17 key steel sector facilities within Mexico is shown below:



Source: UNDP. *Desarrollo del balance de materiales y refinamiente de Inventorio de PCBs*. Prepapred for UNDP by Ing. L. Lauara Beltrán Garcia. July 2007.

COPARMEX* Confedración Patronal de la República Mexicana. www.COPARMEX.org.mx
COPARMEX represents 36,000 companies which, collectively account for 4.8 million employees or 42% of all employment in Mexico. Collectively, these companies contribute 30% to Mexico's Gross Domestic Product (GDP). Members include both large and SME private sector businesses.

COPARMEX is active in training and outreach programs to its members. It has established a COPRMAEX university and, with respect to decentralization, operates a *Programa de Desrorallo Regional* or Development Training Program targeted to SMEs.



PILOT PARTNERSHIPS

The State of Guanajuato will participate in a project pilot during the FSP to assist with testing of a State coordinated PCB management and destruction system, development and testing of outreach materials to different stakeholder constituencies (including sensitive sites) and development and testing of

capacity building related training materials and courses. The State would work directly with SEMARNAT on the pilot. Guanajuanto is a good candidate State for a pilot for a number of reasons, including the following:

- The federal government has agreements with the state transferring authority for environmental implementation of federal law as applicable to forestry (the first decentralization agreement applicable to the environment within Mexico) and, more recently, for toxic and hazardous waste management. (Mexico's decentralization process in the environmental sector is recognized by the World Bank to be one of the most successful such processes globally.) As a result, the State already has some experience with environmental inspection, having put in place an inspection program for the tanneries sector. This expertise can now be expanded to include environmental inspection of facilities that have or are likely to have PCB wastes and/or equipment containing or contaminated by PCBs.
- The State, in turn, has decentralized some of its environmental activities to the municipal level, where municipalities have developed capacity for oversight and implementation.
- President Calderón has publicly announced his commitment to support the **Municipality of Salamanca** with clean up of past contamination (e.g., from the petrochemical sector and heavy industry operating there). This provides a second municipal level pilot experience in addition to that noted below for Cuatitlán.
- Guanajuato has at the state level an Institute of Ecology authorized to administrator and regulate generators and a Procaduria that conducts audits and inspections. Thus it has state-level regulatory and inspection counterparts to those of the federal government. This is significant for the pilot because the State can work more effectively on outreach to private sector firms, including SMEs.
- The State and its municipalities hold elections at the same time as the federal government. The current government will be in power throughout the duration of the FSP implementation.
- Key objectives with Guanajuato State's Government Plan 2006-2012 include a clean environment, sustainable development and air quality.
- The State is a highly industrialized state that has more than 40,000 CFE transformers (6.3% of all CFE transformers)
- CFE has a major centralized temporary storage facility for its PCB waste oils, decommissioned electrical equipment (including transformers potentially contaminated with PCBs)
- PEMEX operates oil refineries in Guanajuato.
- The agricultural sector in the State includes large holdings which are supplied by energy moderated by 16,000 transformers (as determined by a survey of registered wells). The wells are regulated by the State Authority of Water, incuding type of equipment and capacity. Water is pumped to fields over a distance of 700 metres, which requires large generating capacity, hence larger transformers. The information available from the State, from CFE and from the State Authority will inform Mexico's inventory regarding transformer capacity in agriculture and the potential for PCB contamination (as linked to size, age of equipment, etc.).

The Municipality of Cuautitlán Izcalli, located 45 minutes northwest of Mexico City, with a population of 800,000, is commited to partnering on pilots during the FSP to assist with testing of a State coordinated, facilitated system, outreach materials, and capacity building related training as geared to SMEs, the general public and municipal authorities. The municipality is a good candidate for a pilot for the following reasons:

- The municipality is already cooperating with SEMARNAT and UNDP assist with inventory verification.
- As one of largest municipalities in the State of Mexico, Cuatitlán has a significant number of larger private sector industries, as well as SMEs, and also sensitive sites (256 schools; 4 small

and 1 large hospital). It also has rural areas, so would provide a good case for inventory strengthening and improvements relative to verification procedures, as well as a good test case for a federally-coordinated servicing system for PCB management and destruction as implemented at the municipal level.

- A number of industrial SMEs polled by the municipality about their interest in participating in the project regarding best practices training for management and destruction of PCB-containing equipment have expressed interest in participating in a pilot.
- The municipality receives power from ClyF, hence a pilot would provide information on the ground relative to the "other" parastatal, as a counterpoint to the Guanajuato State pilot. It is one of the youngest municipalities in Mexico (34 years); hence the age of equipment, if already "old" be informative.
- The municipal council remains in office for three years of the project life hence there would be continuity (the last election occurring in the late summer of 2006)
- A particular municipal concern is drinking water safety regarding its 53 or so wells that receive power moderated by transformers located, in many instances, a few meters from the wells.

Annex 10: Transformer recovery costs (decontaminated scrap)

More than a half of the cost of decontamination of a unit can potentially be recovered through sale of non-PCB containing scrap materials following decontamination. The example below shows costs of recovered scrap as contrasted against decontamination and replacement costs for a 300-kVA transformer. The cost estimate for copper shown in the table is conservative based on the current global market for this metal. Preparatory phase interviews suggest that SMEs typically pay more than two times as much for decontamination of transformers as do larger generators (e.g., USD $12,240/transformer decontaminated versus USD $5,712 paid by larger generators for the decontamination of the same transformer), the difference attributable to ability of larger generators, which have greater volume of waste equipment, to negotiate better unit prices for decontamination and destruction.

Recovered material (recyclable)			**$** pesos/kg	**Scrap sales** $ pesos MN	**Scrap sales** $USD	**Decontamination cost**	**New transformer cost** $USD
Material	**Kilograms (kg)**	**% of total transformer weight**					
Steel	85	4.53	0.9	76.5			
Copper	440	23.4	70	30,800			
Magnets	875	46.54	0.9	787.5			
Containers, tubing, parts	480	25.53	0.9	432			
Total	**1880**	**100**		**$32,096.00**	**$2,942.37**	**$5,712- $12,240**	**$7,400**

Source: ASESCOR, 2007.

Cost comparison: Export destruction costs versus decontamination (USD/Kg)				
	Export costs			**Decontamination costs**
Transformer wastes	**Treatment**	**Transport**	**Total**	
Transformers and solids	1.00	2.90	**3.90**	**1.50**
Liquids	0.80	2.90	**3.70**	
Capacitors and condensors	1.40	2.90	**4.30**	**1.50**

Source: ASESCOR, 2007.

Annex 11 : Mexico PCB interim storage and destruction facilities

Mexican facilities authorized for interim storage of PCBs								
Authorization No.	**Company**	**Address**	**State**	**Municipality**	**Type of waste residue**	**Capacity**	**Units**	**Permit date of issue and period in force**
17-18-PS-IV-07-97	SEM-TREDI, S.A. DE C.V.	LOPE DE VEGA NO. 117-802, COL. CHAPULTEPEC MORALES TEL: 52554510, E-MAIL: WWW.SEMTREDI.COM.MX	D.F.	N/D	N/D	N/D	N/D	Indefinite
9-3-PS-VI-12-94	CHEMEL, S.A. DE C.V.	INSURGENTES SUR NO.1480 12 PISO, COL.INSURGENTES MIXCOAC, C.P. 03230	D.F.	N/D	N/D	N/D	N/D	Indefinite
9-11B-PS-I-12-98	RESIDUOS INDUSTRIALES MULTIQUIM, S.A. DE C.V.	INGENIEROS MILITARES NO. 105, COL. LOMAS DESOTELO, C.P. 11200	D.F.	N/D	N/D	N/D	N/D	Indefinite
9-3-PS-VI-11-94	ECOLOGÍA LABORATORIOS Y CONSULTORES DE MÉXICO S.A. DE C.V.	DIVISIÓN DEL NORTE NO. 126, COL. DEL VALLE, C.P. 03100	D.F.	N/D	N/D	N/D	N/D	Indefinite
15-104B-PS-I-23-99	ABB SISTEMAS, S.A. DE C.V	HENRY FORD NO. 4, ESQUINA VÍA GUSTAVO BAZ FRACC. INDUSTRIAL SAN NICOLÁS, C.P. 45030, TEL: 5328-1400	MÉXICO	TLALNEPANTLA	N/D	N/D	N/D	Indefinite

Mexican facilities authorized for interim storage of PCBs								
Authorization No.	**Company**	**Address**	**State**	**Municipality**	**Type of waste residue**	**Capacity**	**Units**	**Permit date of issue and period in force**
27-04-PS-II-07D-01	RESIDUOS INDUSTRIALES MULTIQUIM, S.A. DE C.V.	CARRETERA VILLAHERMOSA CÁRDENAS KM. 2.6, COLONIA RANCHERÍA ANACLETO CANABAL 3RA. SECCIÓN, C.P. 86280, TEL: (01-993) 16-49-81 Y FAX: 316-25-38, E-MAIL: RIMSAVSA@TAB1.TELMEX.NET.MX	TABASCO	CENTRO	N/D	161.33	Tons/Year	Indefinite
27-04-PS-II-04D-01	PROMOTORA AMBIENTAL DEL SURESTE, S.A. DE C.V.	CARRETERA VILLAHERMOSACÁRDENAS KM. 2.6, RANCHERÍA ANACLETO CANABAL 3RA. SECCION, C.P.86280, TEL: (01993) 37-92-10 FAX: 337-92-11	TABASCO	CENTRO	N/D	40	Tons/Year	Indefinite
27-04-PS-II-05D-01	SAINT MARTI CONSTRUCCIONES, S.A. DE C.V.	AV. MARIO BROWN PERALTA NO. 221, COLONIA ATAST6A DE SERRA, C.P.86100, TEL: (01-993)51-22-52 Y FAX 351-54-88	TABASCO	VILLAHERMOSA CENTRO	N/D	3005.33	Tons/Year	Indefinite
2-4-PS-VI-07-2004	COMPAÑIA MEXICANA DE IMPERMEABILIZANTES, S.A. DE C.V.	CALLE 9 Y ALIVIO NORTE S/N, FRACC. CIUDAD INDUSTRIAL NUEVA TIJUANA, C.P. 22540, TEL. 662333-57	BAJA CALIFORNIA	TIJUANA	Solvents; Residual thinner lacquer; commercial	259 Tons/Yr	288.00 Litres	22-11-2004 (5 years from issuance)

Mexican facilities authorized for interim storage of PCBs								
Authorization No.	**Company**	**Address**	**State**	**Municipality**	**Type of waste residue**	**Capacity**	**Units**	**Permit date of issue and period in force**
					mineral spirits (gas, naphta, tolene, xylene) ; mineral spirits			

National facilities authorized to treat PCB-contaminated equipment						
Company	**State**	**Permit authorization Number**	**Permit date of issue**	**Period permit in force**	**Authorized capacity (Tons/Year)**	**Wastes treated and treatment proceses authorized**
Desechos Biológicos e Industriales, S.A. de C.V.	Estado de México	15-109-PS-V23-2002 Renovación Oficio No. DGMIC. 710/00 2909	2 December 2002	5	2,000	Decontamination of transformers, capacitors, ballast and switches immersed in dielectric oils, hydraulic accessories and pumps that have come in contact with >50 ppm. Thermal unit, distillation unit, drying unit and autoclave; waste materials such as paper, cardboard and wood are destroyed; used solvent is distilled and recovered.
S.D. Myers de México, S.A. de C.V.	Estado de México	15-104-PS-V-09-2003 Renovación Oficio No, DGGIMAR.710/01489	12 May 2003	5	1,200	Treatment of PCB liquids and solids (paper, wood, etc.) with PCB concentrations of up to 980,907 ppm, by means of the process of catalytic dechlorination using denominated mobile Base Catalyzed Decomposition (BCD) system.
S.D. Myers de México, S.A. de C.V.	Estado de México	15-14-PS-V-55-2006 Oficio No, DGGIMAR.710/005329	26 July 2006	5	1,775	Decontamination of transformers, electric capacitors, switches and similar equipment containing PCBs up to 10,000 ppm, by means of drainage, decontamination using solvent and distillation of the mixture solvents – PCB oils; wood, cloth, paper is crushed for its shipment to treatment for thermal oxidation. Metallic decontaminated parts are recycled for foundry use; Distillation lines are treated in the BCD process to contain PCB liquids.
S.D. Myers de México, S.A. de C.V.	Estado de México	15-14-PS-V-13-1995 Oficio No.DOO.DGNA-2074	18 May 1995	No definida	No Definida	*In situ* decontamination of oils from PCB-contaminated transformers with PCB concentrations up to 2,233 ppm.

National facilities authorized to treat PCB-contaminated equipment						
Company	**State**	**Permit authorization Number**	**Permit date of issue**	**Period permit in force**	**Authorized capacity (Tons/Year)**	**Wastes treated and treatment proceses authorized**
Sem Tredi, S.A. de C.V.	Guanajuato	11-27-PS-V-03-2002 Renovación Oficio No. DGMIC.710/002911	2 December 2002.	5	2,000	Treatment of transformers, capacitors and balasts containing > 50 ppm PCB concentrations via drainage *in situ* dismantlement, decontamination using 3 autoclaves, dismantlement of core, shipment of carcasses, recovery of steel, copper for recycling. Ceramic materials, paper, cardboard, plastics and wood are sent to final disposition according to their characteristics; Recovered PCB oils and residuals are exported for incineration.
Sistemas Integrales en el Manejo de Residuos Industriales, S. de R.L.	Hidalgo	13-63-PS-VII-01-2001 (Renovación) Oficio No. DGGIMAR.710/006831	5 October 2006 (renewed)	Not defined	35 Tons/day	Residual solids and liquids that contaminated with PCBs up to 25 000 ppm .
Saro de México, S.A. de C.V.	Tabasco	27-4-PS-V-38-2006 Oficio No.DGGIMAR.710/002462	3 April 2006	5	175	Chemical-biological degradation of *in situ* liquids contaminated with PCBs using designated ECOSAFE system. Treatment performed in mobile units.

National facilities authorized to treat PCB-contaminated equipment						
Company	**State**	**Permit authorization Number**	**Permit date of issue**	**Period permit in force**	**Authorized capacity (Tons/Year)**	**Wastes treated and treatment proceses authorized**
Ferropack, S.A. de C.V.	Nuevo León	*Out of Service as of July 2007*			2400	Treatment of PCB-contaminated liquids up to 1,000,000 ppm, used oils, using a gasification process.

Enterprises authorized by SEMARNAT to collect and export PCB wastes and PCB-containing/contaminated wastes.						
Enterprise	**Receiving Country**	**Collection and/or Exporting Company**	**Authorization Number**	**Date permit issued**	**Date permit in force**	**Residuals treated and treatment proccess**
ABB Service GmbH	Germany	ABB Sistemas S.A. de C.V.	15-104-PS-I-11-2005 Oficio No. DGGIMAR.710/0 03382	12 July 2005	5	Authorized to collect and transport PCB-contaminated liquids, as well as to dismantle, re-package and store containers and equipment that contained/were contaminated with PCBs for export and destruction in overseas facilities.
ARG	Spain	Chemel, S.A. de C.V.	9-3-PS-VI-12-94 Oficio No. AOO.P.-11228	14 December 1994	Indefinite	Authorized to collect and transport PCB-contaminated liquids, as well as to dismantle, re-package and store containers and equipment that contained/were contaminated with PCBs for export and destruction in overseas facilities.
TREDI	France	Sem-Tredi, S.A.	11-27-PS-I-01-2004 DGGIMAR.710/0 00513	19 February 2004	5	Authorized to collect and transport PCB-contaminated liquids, as well as to dismantle, re-package and store containers and equipment that contained/were contaminated with PCBs for export and destruction in overseas facilities.
		Residuos Industriales Multiquim, S.A. de C.V.	15-33-PS-I-13-2003 (renovación) Oficio	29 October 2003	5	Authorized to collect and transport PCB-contaminated liquids, as well as to dismantle, re-package and store containers and equipment that contained/were contaminated with PCBs for export and destruction in overseas facilities.
		Sistemas Integrales en el Manejo de Residuos, S.	13-63-PS-I-72-2006 Oficio No. DGGIMAR.710/0	4 September 2006	5	Authorized to collect and transport PCB-contaminated liquids, as well as to dismantle, re-package and store containers and equipment that contained/were contaminated with PCBs for export and destruction in

Enterprises authorized by SEMARNAT to collect and export PCB wastes and PCB-containing/contaminated wastes.						
Enterprise	**Receiving Country**	Collection and/or Exporting Company	Authorization Number	**Date permit issued**	**Date permit in force**	**Residuals treated and treatment processs**
		de R.L.	06200			overseas facilities.

Annex 12 - Pilot Projects Concept

Objective.
To test, to demonstrate and to evaluate a management system for elimination and destruction of PCBs, at a reasonable scale, in a State and in a Municipality that are representative of the Country

Methodology.
Proposed conceptual methodology includes the following activities.

1) Intergovernmental agreements: These are required for the collaboration between SEMARNAT, possibly CFE, Guanajuato State and the respective municipalities; in the case of Cuautitlán, agreement will also be required to incorporate government of the State of Mexico. Project committee created.

2) Government Capacities assessment: This will be first step I order to know the capacities and the disposition State/Municipality government will commit for project development. As part of this assessment, training needs will be determined and a project team will be created. Local Secretaries involved will be Ecology, Services, Health and the Environment Attorney.

3) Training workshop Government: In a first collaborative workshop objectives and methodology will be agreed at. This workshop will be at the highest possible level, incorporating personnel from the above Secretaries plus federal and municipal (mainly cities) authorities

4) Training the Trainers: In a second workshop, trainers will be trained for the different aspects of project, mainly on sampling and analytical techniques for the inventory development.

5) Inventory development: PCBs Inventory will be developed mainly from SMEs, and Sensible Sites, although large enterprises like PEMEX and CFE will al so be surveyed. The idea is to sample approximately 20% of all transformers in the State of Guanajuato and 40% of those of Cuautitlán. Storage and treatment facilities will also be inventoried.

6) Elimination Program Development: This will be developed for a 4 year period with actions to be taken more strongly during first year. The program will include:
    - diagnostic,
    - equipment destruction and replacement cost,
    - Electronic monitoring of inventory and mass balance.
    - Search of co-financing options
    - Program may include a fund raising Account ("trust fund") creation

7) Awareness and Communication campaign: An awareness campaign will be initiated from beginning of Pilot, mainly directed to SMEs through their local associations and chambers and to Municipalities through the government of the State. Focus will be on fulfilment of Stockholm convention and Standard 133.

8) Elimination Options Testing: Different elimination management options will be tested, with real enterprises. These will be documented as "Study Cases" for information. 75 Ton of PCBs contaminated materials will be the sample for Guanajuato and 25 Ton in the case of Cuautitlán, in both cases for "critical" locations of materials.

9) SMEs and Sensitive Sites Collection Campaign: A collection campaign of transformers and contaminated equipment will be launched once the inventory is known and alternatives are assessed.

These will be taken to a "temporary" storage site (which can be of CFE) from which they will wait for their destruction.

10) Technical Guide : A guide will be elaborated with the experience gained and the "Study Cases", which showed the methods followed, problems encountered and solutions to them; this will be directed to other municipalities and States in México.

11) Evaluation workshop: A final project evaluation workshop will be organized to present the results and the program to follow up with PCBs elimination

Annex 13: Terms of Reference for the Project Manager

Terms of Reference
National Project Manager

The Government of Mexico ratified the Stockholm Convention on Persistent Organic Pollutants on 10 February 2003. For planning appropriate action in the field of controlling POPs substances and releases as well as fulfilling the reporting requirements of the Convention, Morocco submitted its National Implementation Plan (NIP) on POPs on 12.February 2008.

The management of PCBs, PCB containing equipment as well as PCB contaminated soils, was considered as a priority area of action in the POPs National Implementation Plan.

Consequently, the Government applied for GEF assistance for developing the project "Environmentally sound management and destruction of PCBs in Mexico" through UNDP.

The project includes the following components

Component 1.	***Strengthened institutional capacity within Mexico's Central and State governments for environmentally sound and safe management and destruction of PCBs***
Component 2.	***Safe central and regional interim PCB storage facilities established / upgraded (in particular interim storage for PCBs decommissioned from Small and Medium Enterprises and sensitive sites).***
Component 3.	***Establishment and demonstration of a national coordinated comprehensive service system for PCB management (from generator to final destruction), via state and municipal pilots.***
Component 4.	***Awareness raising and communication***
Component 5.	***Project Management***

Services required:

Reporting directly to the National Project Director, a Project Manager will be recruited for the entire implementation period of the project.

As per UNDP guidelines in force the Project Manager is responsible for

- Timely implementation of the workplan as endorsed by the PSC.
- General and financial administration.
- Work planning, scheduling and project progress reporting.
- Ensuring M&E activities are fed back in project planning.
- Writing of Terms of Reference for project consults.
- Tendering of contractual services
- Monitoring and the quality control, particularly on safety, of input from consultants and subcontractors providing assistance to the project.
- Tendering for international services

The Project Manager shall coordinate the contracting of all consultants and sub-contracts and monitor their performance.

Duration of assignment: 4 years

Qualifications:

- A degree in Management, Engineering, physical sciences or economics;
- Thorough knowledge of legislation and management of hazardous waste
- Knowledge of industrial sized power equipment and their management desirable.
- Minimum of five years post qualification experience at mid-management level
- Knowledge of the Stockholm Convention and Persistent Organic Pollutants highly desirable;
- Experience in the management of Environmental issues desirable;
- Must be fully IT literate.
- Working knowledge of Spanish and English