

“Brazil - Establishment of PCB Management and Disposal Program” (BRA/08/G32)

MID-TERM EVALUATION REPORT



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ACRONYMS

ANEEL	National Electrical Energy Agency
AWP	Annual Work Plan
ANVISA	National Sanitary Control Agency
CONAMA	National Environmental Council
CONASQ	National Committee on Chemical Safety
ESM	Environmentally Sound Management System
ESSD	Environmentally and Socially Sustainable Development
FM	Financial Management
FMR	Financial Monitoring Report
FSP	Full size project
GEF	Global Environment Facility
GEF OFP	Global Environment Facility Operation Focal Point
GC	Gas chromatography
GOB	Government of Brazil
IBAMA	Brazilian Institute for Environment and Renewable Natural Resources
INMETRO	National Institute of Metrology
MAC	Maximum Allowable Concentration
MCT	Ministry of Science and Technology
MDIC	Ministry of Development, Industry and Commerce
MJ	Ministry of Justice
MME	Ministry of Mines and Energy
MMA	Ministry of Environment
MRE	Ministry of Foreign Affairs
MS	Ministry of Health
MTE	Mid-Term Evaluation
M&E	Monitoring and Evaluation
NGO	Non-governmental organization
NIP	National Implementation Plan
NPM	National Project Manager
PA	Project Assistant
PAC	Project Advisory Committee
OECD	Organization for Economic Co-operation and Development
OEMAs	State Environmental Agencies
PCB	Polychlorinated Biphenyls
PCDD	Polychlorinated Di-Benzo Dioxins
PCDF	Polychlorinated Di-Benzo Furans
PIR	Project Implementation Report
POPs	Persistent Organic Pollutants
PPM	Parts per million
QPR	Quarterly Project Review
RFFSA	Federal Railroad Network
SMCQ	Secretariat for Climate Change and Environmental Quality
SMEs	Small and Medium Enterprises
SPU	Federal Patrimony Secretary
TBD	To be determined
TOR	Terms of reference
UNDP CO	United Nations Development Program Country Office
USD	United States Dollar

1. EXECUTIVE SUMMARY

1. The essentials of the project to be evaluated are as follow:

PROJECT SUMMARY TABLE

Project title: Implementation of Phase I of a comprehensive PBC management system in the Hashemite Kingdom of Jordan.			
Country	Brazil	Start date	September 2009
GEF Project ID	00063774	End date	December 2013
UNDP Project ID	PIMS 3863		
Executing Agency	Ministry of Environment		
Total project resources	In kind (USD\$)	Cash (USD\$)	Total (USD\$)
GEF financing		4,700,000	4,700,000
Ministry of Environment	5,385,000		5,385,000
Private sector		6,005,000	6,005,000
Total (USD\$)	5,385,000	10,705,000	16,090,000

1.1 PROJECT DESCRIPTION

2. The project, “Brazil- Establishment of PCB Management and Disposal Program”, is a Global Environment Facility (GEF) funded full-size project (FSP). The funding for this project comes from GEF funds (USD\$ 4,700,000), and co-financing from the government (USD\$ 5,385,000) and the private sector (USD\$ 6,005,000) for a total budget of USD\$ 16,090,000. The project is executed under the United Nations Development Program (UNDP) in Brazil with the National Execution (NEX) modality, with the Ministry of Environmental (MMA) as the national executing agency. The project is planned for 5 years, starting in September 2009 and it is expected to be completed in December 2013.

3. The project objective is to enhance the capacity to manage and dispose of PCB waste in a sustainable manner and by extension to minimize the risk of PCB exposure to the population and the environment.

4. The project objective will be achieved through the following outcomes:

Outcome 1. Strengthening of legal, administrative and standardized procedures framework for the PCB management and disposal.

Outcome 2. Management of identified PCB oils and PCB contaminated waste and equipment in partnership with the private sector in a manner that minimizes human and environmental exposure.

Outcome 3. Environmentally sound storage and disposal of identified PCB waste by demonstration projects.

1.2 EVALUATION RATING TABLE

5. The following evaluation rating table best summarizes the evaluation results as follows:

Evaluation Ratings:			
1. Monitoring and Evaluation	rating	2. IA & EA Execution	rating
M&E design at entry	S	Quality of UNDP Implementation	S
M&E Plan Implementation	S	Quality of Execution - Executing Agency	MS
Overall quality of M&E	S	Overall quality of Implementation / Execution	MS
3. Assessment of Outcomes	rating	4. Sustainability	rating
Relevance	R	Financial resources:	ML
Effectiveness	S	Socio-political:	ML
Efficiency	MS	Institutional framework and governance:	ML
Overall Project Outcome Rating	S	Environmental :	ML
		Overall likelihood of sustainability:	ML

HS- Highly satisfactory (no shortcomings) , S- satisfactory (minor shortcomings), MS- moderately satisfactory, R- Relevant, ML- moderately likely (moderate risks), MU-moderately unlikely (significant risks)

1.3 CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

CONCLUSIONS

6. Project management has been done in a moderately satisfactory manner fulfilling all of the UNDP project guidelines and the utilization of monitoring and evaluation instruments. It is considered to be moderately satisfactory because the project as such is moving forward, but not at a rate that will lead to completion by the established or possible extended deadline.

7. The co financing commitment has been a total of 300% of the US\$ 11,390,000 planned and it is expected that with the demonstration projects and disposal alternatives this amount will increase even more.

8. The inventory is far from being completed and there is a need for the project management to enhance the electrical and industrial companies' commitment with the demonstration projects so that the inventory will be completed in a time effective manner by August 2014.

9. The project team with the support of the MMA needs to pick up the pace of the project development through the defining of the regional implementation projects and the follow up and monitoring of the inventories in each company.

RECOMMENDATIONS

10. **Recommendation 1.** The first and probably most important recommendation is the need to have the project deadline extended for one more year, from December 2013 to December 2014.

11. **Recommendation 2.** Even though the technical coordinator selection process is underway and the consultant to be hired should assume this position as soon as possible and in coordination with the National Coordinator immediately.

12. **Recommendation 3.** The MMA as an institution needs to be more aggressive in the completion of the project activities that will lead to the fulfillment of the expected outputs. It is understandable that there may be institutional procedures that take time, but when possible these should be supported by the technical coordinator to move forward.

13. **Recommendation 4.** The four demonstration projects: one for contaminated site, and the three regional PCB management practices and disposal should have clearly defined objectives and there should be a strong awareness approach to the stakeholders for their involvement.

14. **Recommendation 5.** The project team should evaluate the existing work plan and update it with planned and pending activities and realistic completion dates in line with the year extension that has been recommended by this evaluation.

15. **Recommendation 6.** The capacity building with the national laboratories and their upgrading with uniform PCB testing methods for certification by IMETRO should be a priority.

16. **Recommendation 7.** The use of the Dexsil L2000 PCB/Chloride Analyzer should be researched as a possible field testing method for the PCB samples taken from potentially contaminated transformers and oil. Dexsil is the only supplier of this type of equipment in the world.

17. **Recommendation 8.** Training sessions on the scope and responsibilities of the soon to be approved regulation should be completed with the electrical and industrial companies, as well as the regulating institutions: MMA, IBAMA, OEMA, Ministry of Health, Occupational Health, Ministry of Mines and Energy and ANEEL.

18. **Recommendation 9.** The project budget needs to be reviewed and possibly some adjustments will be required to move funds to components 2 and 3 to support pending activities.

19. **Recommendation 10.** The regional teams created for the implementation of the PCB management practice demonstrations will need to work closely with the National and Technical Coordinators and working group 2 in the planning and formulation of activities to be completed: inventory, management practices and disposal/treatment.

LESSONS LEARNED

20. **Lesson 1.** Although the MMA capacity assessment for the project management was done in the PPG phase, there was a delay in the project start due to an institutional re-structuring that could not be avoided. This is something that can happen at any time during the project implementation and the necessary changes in the work plan schedule should be made to recuperate some of the time lost.

21. **Lesson 2.** The listing and evaluation of the stakeholders during the PPG process is important to be able to start awareness raising activities at this point and the defining of services that will be needed during the project implementation phase.

22. **Lesson 3.** Many times the electrical companies are not aware that the replacement of PCB contaminated equipment is not part of the project co-financing. The activities that the stakeholder does to identify, store, handle and eliminated equipment is the co-financing, but the equipment replacement is not considered.

23. **Lesson 4.** In most of the PCB projects in the world the terms of reference for the consultants that will be needed to complete activities are similar. There should be a data base that is available to executing agencies for their reference and insight.

2. INTRODUCTION: EVALUATION SCOPE AND METHODOLOGY

2.1 PURPOSE OF THE EVALUATION

24. According to GEF and UNDP evaluation policies, mid-term evaluations are required for GEF funded FSPs, and in fulfillment of this requirement a mid-term evaluation (MTE) was a planned activity of the monitoring and evaluation plan of the Brazilian PCB Project. The UNDP Brazil office initiated this mid-term evaluation near the mid-point of the project's planned five-year implementation period.

25. The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives:

- a. to monitor and evaluate results and impacts;
- b. to provide basis for decision making on necessary changes and improvements;
- c. to promote accountability for resource use;
- d. to document, provide feedback and disseminate the lessons learned.

2.2 SCOPE OF THE EVALUATION AND METHODOLOGY

26. The scope of the mid-term evaluation includes the reviewing of the actual performance and progress towards results of the project against the planned project activities and outputs, based on standard evaluation criteria: relevance, efficiency, effectiveness, results and sustainability.

27. The MTE assess the project results based on expected outcomes and objectives, as well as any unanticipated results. The evaluation identifies relevant lessons for other similar project in the future in Brazil and in other parts of the world, along with providing recommendations for the remaining implementation period.

28. The evaluation, in addition to assessing the main GEF evaluation criteria, provides the required ratings of key elements of project design and implementation. Further, the evaluation will, when possible and relevant assess the project in the context of the key GEF operational principles such as country-drivenness, and stakeholder ownership.

29. The evaluation methodology was based on a participatory mixed-methods approach, which included three primary elements: a) desk review of project documentation and other relevant documents; b) interviews with key project participants and stakeholders.

30. The evaluation is based on evaluative evidence from the start of the project implementation, September 2009 to December 2013 and includes an assessment of issues prior to approval, such the project development process, overall design, risk assessment and monitoring and evaluation planning. The desk review was begun in July 2013, and the evaluation mission was carried out from August 5th to 9th, 2013. The list of stakeholders interviewed is included as Annex 2 to this evaluation report.

3. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

3.1 PROJECT DESCRIPTION AND OBJECTIVE

31. This project was started in September 2009 and has duration of 5 years making December 2013 as the termination date.

32. Brazil ratified the Stockholm Convention on Persistent Organic Pollutants (POPs) in 2004. The Technical Assistance of the Climate Change and Environmental Quality Secretary of the Ministry of Environment (MMA) is presently working on the completion of the Brazilian National Implementation Plan (NIP) with UNEP. The necessary environmentally sound management undertaken and the proper disposal of these PCBs is an identified priority.

33. The Ministry of Environment (MMA) of Brazil with the UNDP CO developed the project document, “Brazil- Establishment of PCB Management and Disposal Program” for the materializing of its compliance with the Stockholm Convention and the minimization of the environmental and health risks.

34. According to the project document the objective is the enhancement of the country capacity to manage and dispose of PCB waste in a sustainable manner and by extension minimize the risk of PCB exposure to the population and the environment.

35. The project objective is planned to be accomplished through the implementation of these three main components:

1. Strengthening of legal, administrative and standardized procedures framework for the PCB management and disposal.

2. Management of identified PCB oils and PCB contaminated waste and equipment in partnership with the private sector in a manner that minimizes human and environmental exposure.

3. Environmentally sound storage and disposal of identified PCB waste by demonstration projects.

36. The immediate objectives of the project at its start were: a) development of terms of reference for local and international experts; b) conformation of the Project Advisory Committee (PAC); c) the establishment of awareness raising efforts among the electrical sector stakeholders and the ME.

3.2 PROBLEMS THAT THE PROJECT SOUGHT TO ADDRESS

37. Brazil’s industrial development started in the late sixties with the importing of transformers and capacitors. In 1982 it was estimated by the Brazilian Committee for the Electrical Industry (COBEI) that from 1945 to 1981 a total of 21,000 tons of PCB transformer fluids and 5,000 tons of PCB capacitor fluid was imported.

38. There has not been a detailed inventory done, but as of 1982 Electrobras, the former holding of electric power generation companies in Brazil, estimated that a total of 100,000 tons of PCB containing equipment was imported during the industrial development stages.

39. Owners of PCB oils and equipment containing or contaminated with PCBs are obligated to register their inventories with the pertinent environmental and regulatory agencies. There has not been an inventory done to verify the information that should be reported.

40. At the present time there are three companies in Brazil that are licensed to incinerate PCB oils and a company is licensed for the disposal of PCB contaminated solids. PCBs can also be exported for the environmentally sound destruction.

41. Brazil does not have proper regulations for the environmentally sound management of PCB contaminated equipment, oils and waste. This implies needs for improvement in the safe handling, interim storages and disposal alternatives.

3.3 BASELINE INDICATORS

42. Legislation/regulation for the environmentally sound management of PCBs and the corresponding institutional capacity to monitor and control compliance are established, approved by CONAMA , in consultation and validated by the stakeholders.

43. A comprehensive inventory of PCB contaminated equipment, oils and waste with the proper labeling and a data base to maintain updated monitoring and control is established.

44. Guidance and internationally accepted standards for the environmentally sound management of PCB contaminated equipment, oils and waste are developed and electrical generation, distribution companies and private industry are trained and monitored for their implementation.

45. A qualification system for analysis laboratories developed and INMETRO certification of analytical procedures for PCB testing.

46. Brazilian PCB treatment and destruction facilities upgraded to comply with international and national standards .

47. A national PCB management and elimination plan developed with corresponding individual company plans monitored and controlled by the regulating entities (IBAMA/OEMA).

48. Awareness raising and training program implemented country wide for the knowledge of the environmentally sound management of PCBs guidelines and regulations.

49. Demonstration projects to validate PCB environmentally sound management guidelines and disposal/treatment planning and implementation among the existing energy generation, distribution and private industry companies.

50. National PCB disposal and treatment options working under the national standards for hazardous waste management and economically viable services for the stakeholders.

3.4 MAIN STAKEHOLDERS

Project Stakeholders

A. Public institutions

Number	Name
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1	Ministry of Environment (MMA)
2	Ministry of Mines and Energy (MME)
3	Ministry of Science and Technology (MCT)
4	Ministry of Health (MS)
5	Brazilian Institute for Environment and Renewable Natural Resources (IBAMA)
6	State Environmental Agencies (OEMAS)
7	Brazilian Health Surveillance Agency (ANVISA)
8	National Electrical Energy Agency (ANEEL)

B. Public and Private Companies

Number	Name	Role
1	AES ELECTROPAULO	Electrical sector company
2	LIGHT	Electrical sector company
3	FURNAS	Electrical sector company
4	COPEL	Electrical sector company
5	CELESC	Electrical sector company
6	CEEE	Electrical sector company
7.	CEMIG	Electrical sector company
8.	CPFL	Electrical sector company
9.	CHESF	Electrical sector company
10.	CEB	Electrical sector company
11.	ELETROSUL	Electrical sector company
12.	HAZTEC	Industrial Incinerator
13.	CETREL	Industrial Incinerator
14.	TECORI	Decontamination Treatment facility
15.	WPA	Decontamination Treatment facility

C. Private Laboratories

Number	Name
1	ANALAB
2	LABOIL
3	DIAGNO
4	LORENCINI
5	BRASTRAFO
6	ACS LABORATORIOS
7	MGM

3.5 EXPECTED RESULTS

51. The project is expected to establish a PCB management and disposal program for Brazil. In order to obtain this objective a legislation/regulation will need to be approved by CONAMA and implemented and monitored by the regulatory institutions, MMA, IBAMA and OEMAs.

52 The necessary technical guidelines for an environmentally sound management system (EMS) for PCBs will respond to the requirements established in the regulation approved by CONAMA.

53. One of the most important results is the completion of a National PCB Inventory with the information from all of the electrical generation, distribution and private industry that may have PCB contaminated equipment, oils, and waste. The inventory information should be updated regularly and monitored and controlled by the MMA for the fulfillment of the National PCB Elimination Plan to be developed.

54. The existing national analytical capacity needs to be enhanced with the uniformity of PCB analysis standards that should be maintained in the laboratories. The INMETRO as national authority will certify the quality of the laboratories.

55. Demonstration projects will be done to illustrate the proper methodology to be implemented for the remediation of one contaminated site and the examples of proper environmentally sound management of PCBs in generation and distribution companies in the northern, middle and southern regions of the country. These last three demonstration projects will be used for the training and follow up of PCB inventories, management (storage, handling) and final disposal or treatment.

56. The awareness raising of the need to find a national solution to the PCB contaminated equipment, oils and waste elimination with the existing national incineration and decontamination capacity through incentives for the service providers and the PCB owners.

4. FINDINGS

4.1 PROJECT DESIGN/FORMULATION

4.1.1. PROJECT CONCEPT/DESIGN, RELEVANCE AND STRATEGY

57. After having reviewed the available documentation and the interviews carried out during the mission, it can be concluded that during the project design phase the main stakeholders contributed to the concept and design of the project. This was done through workshops where the project was presented and discussed.

58. The project is a complement to the development of the National Implementation Plan (NIP) presently being developed in response to Brazil's commitment to the Stockholm Convention.

59. The analysis of the Project Results Framework concludes the following:

Project objective

- a. The project main objective was correctly formulated in response to Brazil's need to establish a PCB environmentally sound management to regulate, identify, handle, store and implement final disposal/treatment to the PCBs.
- b. The baseline information and indicators are well formulated and complete in regard to the project. There is under risks and assumptions that indicate that PCB owners could object to the establishing of firm phase-out deadlines. This evaluation identified during the interview process that this is definitely an issue to be worked on closely by the project team with each of the electrical generating and distributing companies. The companies do not understand completely how the inventory should be completed and are worried that they will not be able to identify all of their potentially contaminated equipment and be able to meet the 2025 deadline for PCB elimination.

Component 1- Strengthening of legal, administrative and standardized procedures framework for the PCB management and disposal.

- a. The proposed regulation to be developed was completed under a participatory process, with the integration of members of the electrical public and private sectors. The regulation is presently in the final revision for approval in CONAMA, but has the general approval of the stakeholders as a result of the participatory process utilized for its formulation. This evaluation would like to emphasize on the benefits that this type of involvement of the stakeholders has in the general project implementation.
- b. The development of the PCB National Inventory, labeling of the PCB contaminated equipment and the monitoring of this inventory with a data base has yet to be completed. If this process is not pushed forward with the involvement of the project team with each individual company, in the follow up of their inventory process, there is a risk that the inventory will be partial and the contaminated equipment, oils and waste elimination needs will be under estimated.
- c. The inventories in the companies are slow and it was determined that the electrical generation and distribution companies are still not totally committed to the completion of the inventory, due to a gap in their understanding of the methodology to be applied in the inventory process.
- d. The guidance and standards for PCB management have been well developed by the technical consultant and there have been training sessions for the transfer of knowledge.

Component 2- Management of identified PCB oils and PCB contaminated waste and equipment in partnership with the private sector in a manner that minimizes human and environmental exposure.

- a. The existing national laboratories were evaluated and the analytical capacity for PCB testing determined. The need to uniform the methods and standards used for PCB analysis was identified.
- b. The need to initiate and complete certification process for the laboratories in the area of PCB analysis was identified and it will be addressed with the participation of INMETRO as certifier.
- c. This evaluation has identified a need to implement the use of a field screening test to be able to group the different possible levels of PCB contamination: under 50 ppm, 50 to 500 ppm and above 500 ppm. This evaluation suggests the use of the L2000 analyzer (Dexsil) be considered as an alternative to direct gas chromatographic testing of all samples.
- d. The training of the electrical sector companies in PCB environmentally sound management has been completed successfully through the development of training session in the different regions. There is a need to go one step forward with this training, with the use of the demonstration projects in the electrical companies identified in each of the three regions (north, middle and south), to illustrate and demonstrate on site how the PCB environmentally sound management systems are implemented.
- e. The development of the national PCB management and phase out plan is still pending completion. It is suggested that the PCB management and phase out plans for each individual company that is a potential PCB owner be elaborated in coordination with the project team. The sum of all of these plans will be the information needed to complete the national commitment.
- f. The development of an awareness raising program to ensure country wide knowledge of standards, regulations and practices needs to be implemented more actively. The proposed demonstration projects in the three regions will be facilitating this process greatly. The planning and monitoring of the three groups that will work in the regional demonstration projects is important to give the project a push forward in its implementation.

Component 3- Environmentally sound

- a. This component has not been worked on and it is expected that it will start shortly. This evaluation will recommend that the project be extended until December 2014, in order to have the inventory finished by August 2014 and disposal in the remaining part of the year. The demonstration projects need to be started as soon as possible so that the inventory will be completed and the demonstration of environmentally sound management fully implemented in the second semester of 2014.

4.1.2 STAKEHOLDER PARTICIPATION

- 60. The electrical sector companies and the private industries have been involved in the project with the elaboration of the regulation soon to be approved.
- 61. There has been a positive participation on the part of institutions such as the Ministry of Mines and Energy (MME), Ministry of Science and Technology (MCT), and the Ministry of Health (MS) as well as the IBAMA in the development of the PCB regulation.
- 62. The electrical sector companies need to be more active in their implementation of the PCB inventory and request guidance when needed. In this topic they have a less participatory attitude due to a misunderstanding of the scope and methodology of the inventory process.

4.1.3. REPLICATION APPROACH

63. The project outcomes and outputs are in line with most PCB projects that are being developed world wide, with the exception that Brazil has resources such analytical capacity, elimination and treatment installations that most other countries presently implementing PCB management projects do not have.

64. The most important aspect for all PCB management and disposal projects is to have a regulatory framework in place or in the process of being approved and implemented during the project execution. This important element along with the development of institutional capacities for monitoring and controlling of regulation compliance is key to the ESM sustainability.

4.1.4 UNDP COMPARATIVE ADVANTAGE

65. UNDP has implemented many PCB management and disposal projects in other parts of Latin America. The experience gained in these projects concerning risks, successes and failures, as well as unforeseen consequences has been very valuable. In Brazil this knowledge in the UNDP CO and the UNDP Regional Technical office has played an important part in the positive results obtained in the current project.

4.1.5 COST EFFECTIVENESS

66. When evaluating the project cost-effectiveness at this point in its development; reference should be made to positive results that have been obtained as part of the fulfillment of outcomes for components 1 and 2.

67. Outcomes for component 1 are the development of a regulation that is pending final approval by CONAMA, awareness raising and training activities for guidance and standards in the environmentally sound management of PCBs.

68. The evaluation of the existing laboratories to determine the analytical capacity for PCB testing has been an outcome completed under component 2. The standardizing of PCB testing methodologies and the certification process with IMETRO are two results that contribute to the outcomes proposed for component 2.

4.1.6 LINKAGES PROJECT AND OTHER ACTIVITIES WITHIN THE SECTOR

69. The project is part of Brazils efforts through its regulations to monitor the generation and disposal of POPs waste, as well as the result of the “Portaria Interministerial (MIC/MI/MME) 0019”, an act which prohibits the production, use and commerce of PCBs in the country.

70. The National Implementation Plan (NIP) for the Stockholm Convention is under development and this project is in line with the priorities and actions that have been established.

4.1.7 MANAGEMENT ARRANGEMENTS

71. The project management arrangements are as planned in the project document. Meetings with the UNDP officer, the former Technical Coordinator and the Project Director and National Coordinator indicate that there have been delays in the project implementation due to the existing management arrangements. An example of this is the approval of terms of reference due to MMA procedures that need to be fulfilled. It is suggested that possibly a simplified procedure could be developed to expedite this process.

72. This evaluation identifies that although there have been important efforts made by the National and Technical Coordinators to implement project activities, there have been delays in the actual putting into

operation of these activities on the part of the Ministry of Environment (MMA). There are many justifiable reasons for this, but one of the most important is the over load of work that the MMA and its National Coordinator have with other work responsibilities. In spite of the interest on the part of the MMA and the National Coordinator in project implementation, the support that the Technical Coordinator can give in the operational elements of the project implementation to move forward at a faster pace needs to be improved.

73. The project management will need to revise its planning and setting of deadlines for activities that need to be completed and that have been delayed for different reasons. It will be recommended that dates be established for important tasks to be completed such as the national inventory, establishments of the four demonstration projects (contaminated site and environmentally sound management and disposal of PCBs). The completion of these pending outputs will be a step forward in the increasing of the project's momentum.

4.2 PROJECT IMPLEMENTATION

4.2.1. ADAPTIVE MANAGEMENT

74. When evaluating the project's adaptive management the following considerations were made: the project design, objectives, outcomes and outputs were well prepared. There have not been important changes in the environmental and development objectives during the project implementation up to this midterm evaluation. There is a need for adaptive management to be implemented with the re-arranging of the budget by outcomes, where the components activities have been completed and others need to be enhanced with more funding.

4.2.2. PARTNERSHIP ARRANGEMENTS

75. The Ministry of Environment (MMA) will partnership with the Brazilian Institute for Environment and Natural Resources (IBAMA) and the State Environmental Agencies (OEMAs) for the monitoring and control of the regulation compliance once it has been approved. The OEMAs will be trained by the project on the proper PCB environmentally sound management guidelines for their inspection work.

4.2.3. MONITORING AND EVALUATION

76. After having reviewed the corresponding PIR, APR, and Risk management documentation it can be concluded that the project has had an active participation of the project technical and national coordinators and the project UNDP counterpart in completing the monitoring and evaluation activities. The results of the information in these monitoring tools coincides with this evaluation's findings of delays in project work plan implementation and the need to increase the project's momentum to complete pending activities, mainly the inventory and the demonstration projects.

4.2.4 FINANCIAL MANAGEMENT

77. The financial management is done through the Project Management Unit (UPG) in MMA under UNDP budgetary controls. The disbursement vs. budget, as provided by the Technical Coordinator showed that 18.1% of the total project budget has been disbursed. This means that there is approximately 81.9% left for the last 4 months of this project operation. Component 3 could need more funds, since it is the implementation of the four demonstration projects. The budget execution should be revised, especially since this evaluation will recommend a 1 year extension of this project, until December 2014.

78. The limited amount of budget disbursement is a direct response to the slow impulse of project activities by the project coordination and also because of the positive response to co-financing received from the stakeholders. Many of private companies and the government officials have participated in project activities using their own resources.

Table 1. Project budget vs expenditures

Component	Budget USD \$	Expenditure to date	%
Component 1	634,000.00	221,665.97	22.9
Component 2	1,671,000.00	447,922.76	31.9
Component 3	807,000.00	0	0
Component 4	1,076,000.00	0	0
Component 5	512,000.00	182,242.27	29.3
Total	4,700,000.00	851,183.10	18.1

Source: “Brazil- Establishment of PCB Management and Disposal Program”, project technical coordinator. UNDP.

79. The co-financing control of commitment against the project document planned is also controlled by the Technical Coordinator and the UNDP counterpart. The co-financing figures demonstrate that from the total of US\$ 11,390,000 planned in the project document, a total of USD 36,727,269 has been committed for a total of approximately 300%.

80. The private sector has been very responsive and their co-financing reported is very good and surpasses the originally planned by this sector. The government has not yet accounted for its in-kind co-financing to the date of this mid-term evaluation. It is expected that with the completion of the demonstration projects the co-financing from both government and private sector will increase significantly.

Table 2. Project co-financing committed vs actual results at mid-term evaluation point

Source: United Nations Development Program (UNDP) Country Office- Brazil.

4.2.5. MANAGEMENT AND COORDINATION

81. The project management has been diligent in the use of the monitoring tools and the information that has been given was shown to be in line with the project development. During the project progress, there was evidence that the stakeholders were involved, but the project development as a whole has not been what was expected in the original planning.

82. There was a delay at the project start and during the implementation process the pace has been slow. The reasons for this not moving forward in the fulfillment of activities, in part are due to the dedication of resources to the formulation of the proposed regulation, but also because of the need to have more efficient planning and monitoring of the stakeholders progress in activities being developed, example the inventory.

83. In general the project implementation on the part of the MMA has been slow, and this evaluation will recommend that this will need to be improved in order to meet the expected project outputs and outcomes.

4.3 PROJECT RESULTS

4.3.1. OVERALL RESULTS

84. The overall results with regard to the attainment of the planned objectives is presented in the following table that evaluates all of the components by outcomes.

Table 3. Status of objective / outcome delivery as per measurable indicators

OBJECTIVE	MEASURABLE INDICATORS FROM PROJECT LOGFRAME	END-OF-PROJECT TARGET	STATUS OF DELIVERY*	RATING
Objective: To enhance the capacity to manage and dispose of PCB waste in a sustainable manner and by extension to minimize the risk of PCB exposure to the population and the environment.	1. Comprehensive government PCB management program.	1. Comprehensive and integrated legislation and government PCB programs.	1. Completed- legislation presented to Legislative Assembly and regulation is pending approval By CONAMA.	Highly satisfactory
	2. Sustainable private sector infrastructure for PCB management.	2. Private sector PCB management infrastructure with capacity to deal with Brazil's PCBs safely and in a timely fashion.	2. Completed- PCB environmentally sound management guidelines were completed and training given to stakeholders.	Highly satisfactory
Component 1: Strengthening of legal, administrative and standardized procedures framework for the PCB management and disposal.	1. Development of proposed legislative/regulatory amendments to respond to legislative gap analysis.	1. Comprehensive PCB legislation and Federal-State PCB Conformity Program established to ensure uniformity.	1. Completed and pending approval by CONAMA	Highly satisfactory

	2. Consultation and awareness raising with the stakeholders and the public on proposed amendments.	2. Stakeholders fully supporting PCB management plan.	2. Awareness raising completed, but still needs to be enhanced with individual follow up with the electrical sector companies for them to be fully supportive of the PCB management plan.	Satisfactory
	3. Inventory development and equipment labeling.	3. Inventory software developed and inventory data entry smoothly continuing, labeling of equipment established.	3. The inventory is yet to be completed and there are still electrical sector companies not totally clear on the methodology to be used and their ability to complete it. The inventory should have a fixed date for its completion and a follow up by the project coordination on the inventory process in each company.	Moderately satisfactory
		4. Full set of guidelines standards developed.	Completed	Satisfactory
	4. Guidance and standards for PCB management.		4. Completed and training given.	Satisfactory
Component 2: Management of identified PCB oils and PCB contaminated waste and equipment in partnership with the private sector in a manner that minimizes human and environmental exposure.	1. Development of a nationwide qualification system for analysis laboratories and PCB treatment facilities.	1-2 . Laboratories certified to standards to for PCB analysis for inventory, management and compliance control.	1. Pending- Laboratories have been evaluated by national Consultant. The process to make all PCB analysis procedures Uniform among the laboratories is pending.	Satisfactory
	2. Development of quality standards and certification system for analytical laboratories.		2. Pending- The laboratories need to uniform their PCB analysis Procedures to be able to apply for certification to IMETRO:	?

	3. Review of the existing best available technologies and standards for PCB waste treatment and Brazil's currently operating facilities; upgrading of Brazil's facilities when needed.	3. PCB treatment and destruction facilities with capacity to meet demand and complying with national standards.	3. Completed.	Satisfactory
	4. Development of a comprehensive list of technical stakeholders and their roles in the PWMDS.	4. All appropriate stakeholders contacted and in agreement with national PCB management plan.	4. Pending. Awareness raising with the PCB disposal and treatment companies needs to be developed to commit them with the PCB management plan.	Pending
	5. Development of a national PCB management training program and transfer to the private sector.	5. Government staff and private sector trained in PCB management.	5. Completed	Satisfactory
	6. Development of a PCB management and phase-out plan and accompanying guidance documents.	6. Management plan and guidance documents published.	6. On going. The proposed National Management Plan Guidance document has been developed. Training in how to Formulate the individual PCB Management plans in the electrical sector companies is still pending. This involves the planning of the inventory, storage and disposal/treatment by each of the PCB owners.	Satisfactory
	7. Development of awareness raising program to ensure country-wide knowledge of standards, regulations and	7. All of PCB owners committed to phase-out plan and legislation/regulation.	7. The stakeholders have participated in the elaboration of the regulation that is pending approval in CONAMA, but they electrical sector companies are still worried about their ability to commit to the inventory and phase out plan to be developed.	Moderately satisfactory

	practices.			
Component 3: Environmentally sound storage and disposal of identified PCB waste by demonstration projects.	1. Successfully testing of the revised standards and regulations according to international practices; Testing of PCB disposal options environmentally suitability and economic viability for both pure and low-contaminated PCB waste (disposal of approximately 100 tons of PCB equipment).	1. At least three demonstration projects of PCB equipment decommissioning and treatment/destruction. 2. One fully compliant PCB storage site established by PCB owners for viewing, training and verification of standards.	Pending.	Pending

4.3.2. RELEVANCE ANALYSIS

85. The project outcomes and expected outputs are well designed and allow for the stakeholders to achieve the capacity building they need for the environmentally sound management of PCBs and their disposal in Brazil.

86. The consolidation of the project coordination (Technical Coordinator and National Coordinator) into a working group has taken some time, and now this process will begin again because the previous Technical Coordinator left the project in July 2013. A new Technical Coordinator is in the process of being selected.

87. At the start up of the project there was a delay of almost 1 year while the MMA designated the staff for the project coordination. This has caused that project to be behind in the time left for the completion of the activities.

88. In rating the project relevance with regard to its relation to GEF local area main objectives and national and regional development priorities this evaluation would give it a **satisfactory** result. On a national level the project needs to be given more priority or an increase of work pace on the part of the MMA.

4.3.3. EFFECTIVENESS AND EFFICIENCY ANALYSIS

89. The project objective and several of the outcomes set out in the project document have been achieved up to this mid-term evaluation in a **satisfactory effective** manner. The overall evaluation of the achievement of the project objectives and outcomes would have to be a **moderately satisfactory efficient**, because there is still an important activity of component 2, the national inventory, that needs to be completed and the project deadline is December 2013. This is one of the reasons why an extension will be recommended, but the inventory should be completed no later than August 2014. The demonstration projects from component 3 need to begin to be implemented before the end of this year 2013.

90. The project budget and its duration may have been planned in a cost-effective manner, but due to management and coordination delays, mentioned before, this has not been the end result at the time of this evaluation. A great deal of time has been lost without important project activities being implemented; these delays need to be recuperated with planning and effective actions in regard to the pending activities.

91. The logical framework was well designed and has been efficient in the project implementation as a guideline for the work to be developed. The risks identified in the project document were **satisfactory** and at the time of this evaluation were present in the electrical company stakeholders. It will be project team responsibility to mitigate the PCB holders' resistance to meeting of aggressive PCB phase-out targets.

92. The project has experienced a setback in its efficiency due to the amount of time that passed before the actual start of activities and the completion of pending ones. The reasons for this delay have already been addressed in this document, but it does contribute to the evaluation's rating of the project efficiency as **moderately satisfactory**.

93. The stakeholders have been involved in the preparing of infrastructure and training and have contributed with an extremely high amount of co-financing, above 300% of the original amount committed at the time of the project document presentation. This is a positive aspect of the project and identifies the stakeholder's commitment to the fulfillment of the objectives and expected outcomes.

4.3.4. COUNTRY OWNERSHIP

94. The government, through the MMA, has expressed its interest in the project and the need to guarantee the sustainability of PCB management once the project has been concluded. PCB management is one of the priorities defined in the National Implementation Plan (NIP) under development and its commitment to the Stockholm Convention. The country ownership could be rated as **satisfactory**.

4.3.5. MAINSTREAMING

95. The MMA is well aware of the need to implement environmentally sound management of PCBs and in doing so has made an important effort in awareness raising among the electrical sector companies who potentially have PCBs. The MMA as the environmental regulating authority, along with the IBAMA and the corresponding OEMAs, have also included this issue in their inventory of industrial waste. The mainstreaming of PCB management could be evaluated as **satisfactory**.

4.3.6. SUSTAINABILITY

96. The sustainability of this project once the GEF funding has ended will depend on the following aspects.

a. That the MMA and their monitoring and controlling bodies (IBAMA and OEMAs) develop a coherent and efficient information data base for the PCB inventory and their disposal.

b. The regulation presently under review and pending approval by CONAMA needs to be enforced by the regulating institutions so that the environmental management system that is required by the PCB owners be implemented continuously until the contaminated equipment, oils and waste have been disposed of or treated accordingly.

c. The existing disposal/treatment alternatives installations need to be committed with the National PCB Management Plan and its Elimination Plan, in such a manner that these services are economically viable for the electrical sector and private industries that need to eliminate PCBs.

4.3.7. PROJECT IMPACT

97. The project has obtained important results, such as the soon to be approved regulation, that once validated and implemented will produce a positive impact on the minimization of PCB exposure to health and the environment.

98. Another important impact will be the upgrading of the national analytical capacity for PCB testing and the certification of existing laboratories for this purpose.

99. There is still a need to increase the commitment of the electrical sector companies to the phase-out elimination plan to have a positive impact on their operations in regard to PCB management.

5. CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

5.1. CONCLUSIONS

100. The conclusions and recommendations that will be discussed in this mid-term evaluation (MTE) are the result of the review of all project documents, PIR, APR, AWP, project document, project outputs, inception report and logical framework, as well as the information collected from the interviews held during the mission to Brazil.

101. The project design was well elaborated and the proposed objective, outcomes and outputs are in line with the national sectoral and development priorities.

102. Project management has been done in a moderately satisfactory manner although it has fulfilled all of the UNDP project guidelines and the utilization of the monitoring and evaluation instruments: APR and PIR as well as the use of a risk management evaluation periodically. It is concluded that the project management is moderately satisfactory because the project as such is moving forward with the completion of some of the outputs, but at a rate that will definitely not lead to the completion of the established deadline. There is a need to be more aggressive on the part of the Technical Coordinator and the National Coordinator in the planning and completion of important pending activities such as the inventory and the demonstration projects.

103. The co-financing commitment on the part of the private sector has been extremely good with an approximate 300% of the original amount already completed. The government co-financing commitment has yet to be accounted for by the MMA.

104. In general it can be concluded that the project is being implemented in a moderately satisfactory manner and that there is a need to have a strong commitment from the electrical and industrial companies to complete the inventory in a time effective manner, by August 2014. The establishment of the demonstration projects, in particular, the three that will be for PCB management and disposal practices will be a means of accelerating the inventory and implementation of management guidelines in the three regions (north, middle and south). It is expected that with these demonstration projects in three electrical sector companies, the other companies in the region will move forward in a more guided and controlled manner by the project team.

105. Once the inventory has been completed in each of the electrical sector companies and the individual elimination plans are established the project team can move forward in proposing a planned National Elimination Plan and move towards the elimination of the 1000 tons that has been set as a project output.

106. The project team will need to work closely with the PCB treatment and disposal facilities that exist in Brazil to make them aware of the need for their services as part of the project priorities. Their services must be a economically viable solution to the elimination of PCBs in response to

an increase in the demand for these services by PCB owners. In the past these services were extremely expensive and PCB contaminated equipment and oils were exported for final disposal. The exporting of PCBs cannot be prohibited, but if the existing national alternatives are more cost effective there will not be a need to export.

5.2. RECOMMENDATIONS

After having reviewed all of the documents, completed individual and collective interviews during the mission to Brazil the following recommendations are formulated:

107. **Recommendation 1.** The first and probably most important recommendation is the need to have the project deadline extended for one more year, from December 2013 to December 2014. This new date should also be evaluated further on in the year 2014, as the inventory should be completed by August 2014. The progress in the demonstration projects will also be an indicator of a need to extend this project beyond December 2014. The project is presently programmed to end in December 2013, with an inventory that is far from being completed by this date.

108. **Recommendation 2.** The former technical coordinator left the project in July 2013 and the replacement selection is presently being completed. The new technical coordinator will need to work closely with the National Coordinator in the follow up of planning and activity completion deadlines. Hopefully this will be a positive factor in the project progress being more aggressive and moving forward with the pending activities and outputs.

109. **Recommendation 3.** The MMA needs to be more aggressive in the completion of project activities that will lead to the fulfillment of the expected outputs. An example of this is the national PCB inventory. The electrical companies need to be made aware of their commitment to the project and their responsibility that will be in the soon to be approved regulation. The project team needs to work closely with the largest electrical sector companies in the development of the demonstration projects in the three regions (north, middle, and south). These projects will be a means of enhancing the PCB owner's commitment to the project and the completion of the inventory, the implementation of PCB management and the final disposal of their contaminated equipment, oils and waste.

110. **Recommendation 4.** The demonstration projects: one for a contaminated site, and three for PCB management practices should have clearly defined objectives and the stakeholders should be involved in the corresponding planning. The three PCB management demonstrations should be under the responsibility of Working group 2- PCB Management-Technical. For the execution of these PCB demonstration projects a team for each of the regions (northern, middle and southern) should be created with one electrical engineer, one chemical engineer and at least two last year chemistry students for the field testing for each one of the three sites. There will be a total of three teams implementing and training on PCB management practices.

For the contaminated site project it is suggested that CETSB be contacted in its role as Stockholm Convention Regional Center for the establishment of a service agreement in this topic as they have a great deal of experience in remediation risk analysis methodology. The

coordination of the demonstration projects teams should be done by the Technical Coordinator in close coordination with the National Coordinator.

111. **Recommendation 5.** The project team should develop a revised work plan with the pending activities planned with realistic completion dates in line with the year extension that has been recommended for the project completion. This work plan should be monitored by the Technical Coordinator and the National Coordinator, and if more assistance is needed for the plan completion the corresponding national consultants should be contracted.

112. **Recommendation 6.** The capacity building with the national laboratories to upgrade them to uniform PCB testing methods and certification by IMETRO should be completed as soon as possible.

113. **Recommendation 7.** The electrical companies have suggested that they need a form of field testing that will allow them to identify PCB content at least in three groups (less than 50 ppm, 50 ppm to 500 ppm and above 500 ppm). The use of the Dexsil L2000 PCB/Chloride Analyzer is a recommendable option that will allow for the companies to do their own screening of oils samples. Of course this screening process calls for properly trained field personnel in the sample taking and a chemical professional who operates the equipment. This will allow the companies to reduce the amount of oil samples that will need to go to gas chromatography analysis. The demonstration projects in each region should provide training in the use of this analyzer.

114. **Recommendation 8.** Training for the implementation of the soon to be approved PCB regulation should be given to electrical and industrial companies who are potential PCB owners, but also to the regulating authorities that will doing the monitoring and control of its compliance, such as MMA, IBAMA, OEMAs, Ministry of Health, Occupation Health, Ministry of Mines and Energy, and ANEEL.

115. **Recommendation 9.** The project should be reviewed to evaluate the possibility of moving some unused funds from components whose activities are almost completed to other ones that will need more resources for their completion. It seems that the components that will need more funds are components 2 for the inventory and 3 for the demonstration projects.

116. **Recommendation 10.** One of the results of the demonstration projects should be an inventory completion plan with dates and designated responsibilities for each of the electrical sector companies in each region. Each of the regional teams created for PCB management demonstration should work closely with the companies for the formulation and completion of this inventory plan. Once this is done the elimination plan can also be developed with the companies in accordance with their budget projections.

5.3. LESSONS LEARNED

117. **Lesson 1.** This project was delayed in its start up for almost one year due to the MMA's internal re-structuring and the definition of the project National Coordinator and the staff that would support this initiative. This is something that can happen at any time during the project implementation and the necessary changes in the work plan schedule should be made to recuperate some of the time lost.

118. **Lesson 2.** Brazil is a country that has all of the existing factors for a PCB management project: a well organized electrical sector, national analytical capacity, federal and state regulating entities (MMA, IBAMA, OEMAs) and elimination and treatment companies operating in the country. During the PPG process all of these stakeholders should be made aware of the project and the market potential that the different services available will have during its implementation. The reason for this is so that they work along with the project in preparing the necessary conditions for their services: example, improving of laboratory methods and economically viable elimination and treatment alternatives.

119. **Lesson 3.** The electrical sector is not aware that co-financing does not include within the inventory cost the replacement of the PCB contaminated equipment. The inventory only includes the identification, PCB testing, labeling and tracking system. The inventory cost and the replacement investment is responsibility of the PCB owners. The government is responsible for the controlling and monitoring of the inventory completion, PCB management, and the compliance of the soon to be approved PCB regulation by the existing PCB owners.

120. **Lesson 4.** The development of terms of reference for the different consultants that a PCB project requires is a process that is similar in most of the projects being implemented in the world. There should be a data base or reference site where national coordinators can identify the type of consultants that will be needed and the professional profile that they should have. This would save a lot of time.

121. **Lesson 5.** In many countries the executing agency has staff that besides the implementing of the PCB project has an overload of other responsibilities to complete. Experience demonstrates that the creating of a project team or technical commission with the consultants that the project requires is helpful in the formulating of activities and following up on programmed deadlines.

6. ANNEXES

Annex 1- Mid-term Evaluation terms of reference

Annex 2- List of persons interviewed

Annex 3- List of documents reviewed

Annex 4- Questionnaire used for interviews

Annex 5- Evaluation Consultant Agreement Form