

# Morocco

## On the way to sound management of PCBs

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### **Inventories**

The inventory of PCBs in Morocco has been a tedious task because of the large number of transformers located throughout the national territory and the difficulty of accessing these devices, in particular the capacitors.

In order to determine as accurately as possible the existence of equipment contaminated with PCBs, Morocco has, since 2001, undertaken three inventories of PCB equipment in 2001, 2004 and 2007 respectively.

The inventories follow a precise pyramid approach, going from the manufacturers to the customers (holders), systematically identifying holders and validating data through site visits. Inventory forms have been made available to all partners.

The approach was as follows:

1. All manufacturers of transformers or their subsidiaries (Transfo Morocco, Nexans Energy Transformer, etc.) were asked to provide a list of customers who had bought a device that contained PCBs.
2. The main users of transformers, and thus the principal holders of potentially PCB-contaminated equipment, were contacted. These included the National Office for Drinking Water, the National Electricity Office, the national Moroccan phosphates company, the National Airport Office, the National Port Agency, the National Radio television Company, the Public Water and Electricity Distribution Company, delegated supply companies, thermal power stations and the Air Force.
3. The board of directors was invited at the level of the Ministry of Interior to centralize information and allow close monitoring of the inventory.
4. Systematic visits were made to customers that were declared by authorities or the National Electricity Office.
5. Service providers offering transformer maintenance and analysis of dielectric oil were contacted for information on their customers.

In 2007, preliminary analyses were carried out on 200 samples collected nationally from transformers which were suspected to be contaminated with PCBs. About 30% of the transformers in use were found to be contaminated with PCBs (> 50ppm). These results were confirmed by laboratory analysis within maintenance contracts (electrical performance, oil level in transformers, changing characteristics of the oil, etc.).

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### Follow-up activities

The National Implementation Plan (NIP) of Morocco includes the environmentally sound management and disposal of PCBs as a national priority.

In order to do so, Morocco has sought financial support from the Global Environment Facility (GEF) for the implementation of a PCB management and disposal programme aimed at strengthening the regulatory framework and the national capacity on management and disposal of PCBs and the establishment of local infrastructure for the dismantling of equipment and the decontamination of oils and materials for reuse.

### Project Components

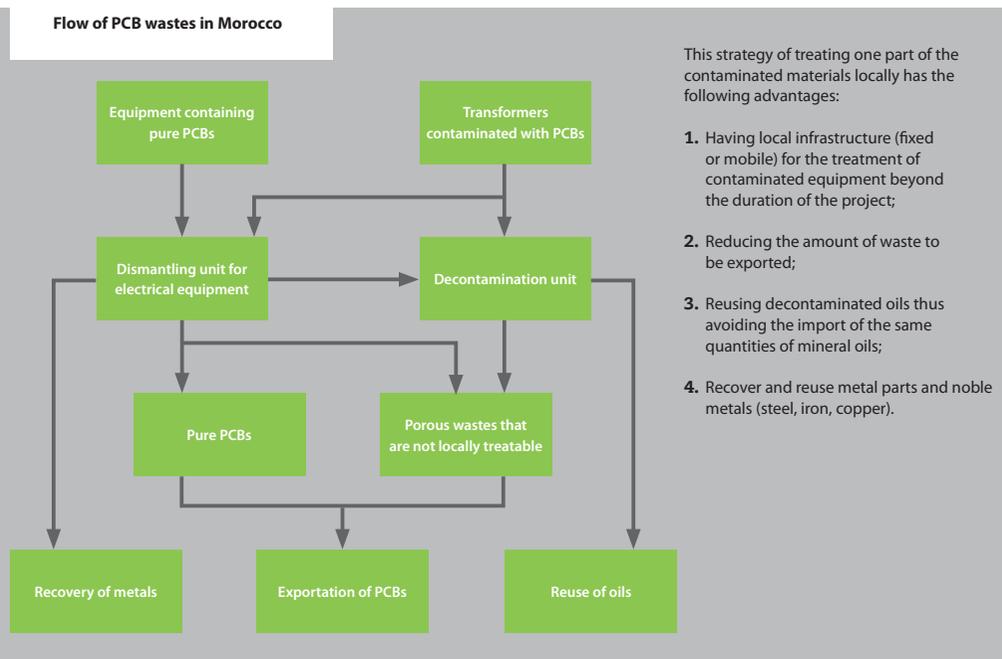
The analysis of the situation in Morocco revealed the presence of two kinds of PCBs equipment:

- Equipment containing pure PCBs;
- Transformers containing PCB-contaminated mineral oils.

As a result, the project is divided into two pillars implemented simultaneously by the Department of Environment in collaboration with the United Nations Development Programme (pillar I) and the United Nations Industrial Development Organization (pillar II).

### Project strategy

As shown in the diagram below, the strategy of the project consists of exporting pure PCBs for their environmentally sound disposal at specialized treatment plants, and of dismantling and decontaminating equipment and oils contaminated with PCBs locally in order to recover and reuse materials.



### Expected project results

Components	Expected results
<b>PILLAR I</b>	
<b>1. Strengthening the legal, policy and administrative framework for the management and disposal of PCBs</b>	<ol style="list-style-type: none"> <li>1.1. The legal and administrative framework for PCBs are put in place (commissioning of PCBs in use, regulation on PCBs approved);</li> <li>1.2. Guidelines and norms related to managing PCBs throughout their life cycle are approved and communicated to interested entities;</li> <li>1.3. Limit values for releases into the environment and limit values in food are studied</li> <li>1.4. Responsible entities and the private sector are convinced of the urgency of eliminating PCB and the population is sensitized concerning risks of PCB; and published;</li> </ol>
	<ol style="list-style-type: none"> <li>2.1. The capacity of secure management of PCBs equipment during maintenance and handling is consolidated;</li> <li>2.2. The capacity of identifying PCB sources in equipment in use or imported is reinforced;</li> </ol>
<b>2. Secure management at the level of holders of PCBs and identification of other sources of PCBs</b>	<ol style="list-style-type: none"> <li>3.1. Risks during the phase of replacement of PCB equipment are dominated;</li> <li>3.2. Procedures for secure dismantlement of transformers are established;</li> <li>3.3. PCB equipment is dismantled and the PCB wastes exported for environmentally sound disposal;</li> </ol>
<b>3. Environmentally sound replacement and emptying of equipment containing pure PCBs</b>	
<b>PILLAR II</b>	
<b>1. Identification of PCB contaminated transformers</b>	<ol style="list-style-type: none"> <li>1.1. Partners for the analysis and sampling campaign are identified;</li> <li>1.2. Standard methods for analysis are established;</li> <li>1.3. Samples are collected and analysed (1,500 per year);</li> </ol>
<b>2. Environmentally sound treatment of contaminated equipment</b>	<ol style="list-style-type: none"> <li>2.1. A unit for treatment of contaminated oils is operational;</li> </ol>
<b>3. Dismantling of transformers at the end of life and recovery of metals</b>	<ol style="list-style-type: none"> <li>3.1. A unit for dismantling of transformers and recovery of metals is established.</li> </ol>

Morocco is keen on sharing its experience and expertise with other countries in order to promote information exchange and to contribute towards the environmentally sound management of PCB equipment and wastes.

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