

PCB

MANAGEMENT
in the power sector



WORLD BANK GROUP

PCBs MANAGEMENT IN THE POWER SECTOR PROJECT (P122540)

Project Budget

7,238,900 USD

Grant Donor – GEF

2,538,900 USD

Co-Financing Partners

Ministry of Environment: 2,495,000 USD
Electricite du Liban: 2,205,000 USD

Implementing Agency

World Bank

Executing Agency

Ministry of Environment

PCBs MANAGEMENT IN THE POWER SECTOR PROJECT

Grant Agreement

16/2/2015

Grant Approval

Decree Nb. 1552 dated 12/3/2015

Project Duration

5 years

Project Start Date

1 May 2015

INSTITUTIONAL CONTEXT



OBJECTIVES

The project objective is to dispose of high risk PCBs and improve the inventory management of transformers in the power sector in an environmentally sound manner.

BENEFICIARIES

Direct beneficiaries of the project include EDL and concessions employees, and the population living in the areas surrounding the power plants, substations and storage sites, which are exposed to the risk of contamination via air, water and food chain.



PROJECT DESCRIPTION

Given the risk associated with high content PCB equipment and the priorities set by the Stockholm convention to eliminate PCB from Lebanon by 2025, this project will take action to:

- Conduct a full national inventory of the PCB contaminated transformers in the power sector
- Dispose of PCB contaminated equipment, waste and soil
- Provide capacity building to stakeholders for an improved PCB management in the future.



PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

Component 1: PCB National Inventory (2017-2018)

- Surveyed **22,559** transformers (distribution, production, transmission) all over Lebanon (90% of Lebanon);
 - *Visited, Sampled, Screened, Lab Tested, Labelled*
- Contaminated Transformers: **1129 + 4 Drums**

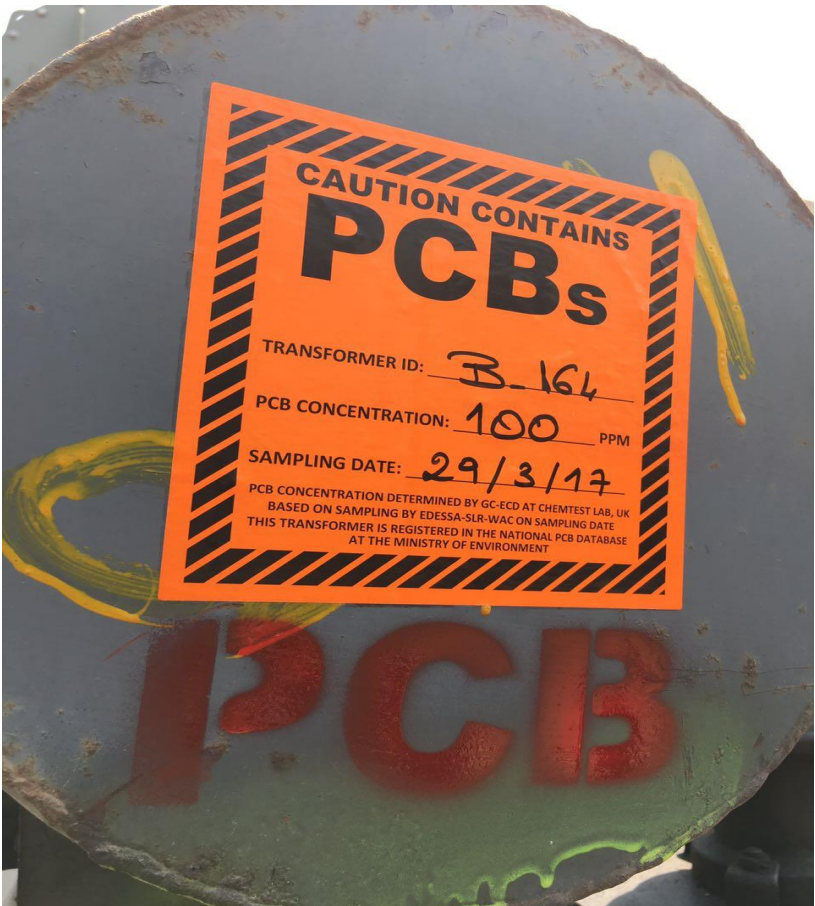
PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

	Nb of Transformers (>50 ppm)	Weight (kg) – Oil and metal
EDL	670	950,117
Qadisha Concession	328	419,229
Zahleh Concession	86	104,235
Jbeil Concession	25	29,085
Aley Concession	5	5,545
Nahr Ibrahim Concession	2	180
Zahrani Refinery	6	1880
Litani Authority - Storage	2	1,315
Lebanese Army - Storage	5	7,830
EDL and Concessions	1129	1,519,416

PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)



PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)



PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

Waste and chemicals





Final Report
Action Plan and Inventory of
PCB Equipment in the Power Sector

Prepared for
The Ministry of Environment



December 1, 2018





Waste and chemicals

دليل إجراء و تنفيذ
الجرد للمعدات الملوثة
بالبيفينيل المتعدد الكلور (PCB)

أعد
لوزارة البيئة



كانون الأول ٢٠١٨

PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

Component 2: Disposal of PCB Contaminated Equipment and Waste – Phase 1 (2016-2017)

- Drained, Packed, Labeled, Disposed: **91 TONNES**
- Out-of-service; 17 Transformers, 606 Capacitors
- Disposed in Tredi / France (2016)
- Destruction and Efficiency Report (2017)

PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)



PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

Component 2: Disposal of PCB Contaminated Equipment and Waste – Phase 2 (2019-2020)

- Drain, Pack, Label, Dispose: **235 TONNES**
- Out-of-service; 212 Transformers from Bauchrieh Storage Site
- Dispose in Tredi / France (expected 2019)
- Destruction and Efficiency Report (expected 2020)

PROJECT COMPONENTS (GEF FUNDED ACTIVITIES)

Component 3: Capacity building and project management

- Establishment of a **Project Management Unit (PMU)** within MOE;
- Monitoring of **indicators** and reporting on project performance;
- **Training and capacity building** of MOE, MoEW, EDL, concessions, and other stakeholders (e.g. customs administration, on site workers technicians etc.) on sustainable management of PCB equipment and storage



PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)

Site Investigation and Assessment of Bauchrieh Storage & Maintenance Site



PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)



PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)



No.	Location on site	PCB (mg/kg)
1	Close to the well	170
2	Lose material close to the well	90
3	Next to the filter	125
4	Inside the workshop	52
5	Top soil constituted of pine ash + oil	45
6	Drilling in the middle of the storage site	22
7	Deeper than Sample 6	27
8	Ash + oil from the left side of the storage site	186
9	Drilling of the left side of the storage site	54
10	Drilling in the right side of the storage site	16
11	Right side of the storage site	376

PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)

- Soil samples were all sent directly to the Central Laboratory of EnBW Kraftwerke AG for analysis
- **German standard DIN 38414-S20:** “German standard methods for the examination of water, waste water and sludge - Sludge and sediments (group S) - Determination of six selected polychlorinated biphenyls by gas chromatography (S 20)” was followed
- 6 specific congeners analyzed are **PCB 28, PCB 52, PCB 101, PCB 138, PCB 153 and PCB 180**
- Detection level was <0.005 mg/kg for each congener and <0.15 mg/kg for total PCB

PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)



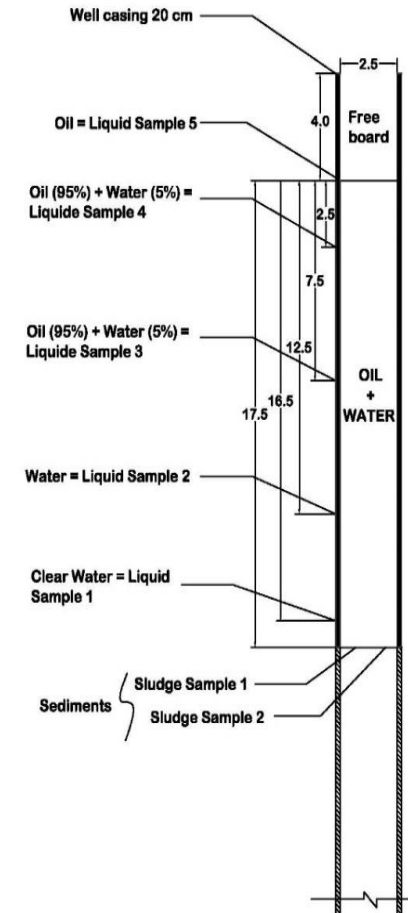
Sample	Depth (m) below ground level	PCB (mg/kg)
Liquid Sample 3 (Oil + with water)	11.5	2,224
Liquid Sample 1 (water)	20.5	7,370
Sediment 1	21.5	1,741
Sediment 2	21.5	1,196

PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)

Water phase

- **EN ISO 6468** “Water quality - Determination of certain organochlorine insecticides, polychlorinated biphenyls and chlorobenzenes - gas chromatographic method after liquid-liquid extraction (ISO 6468:1996)”
- The detection level was $<0.1 \mu\text{g/L}$ for each congener and $< 3 \mu\text{g/L}$ for total PCB

Sediments phase (sludge) - Same as soil



PROJECT COMPONENTS (MoE FUNDED ACTIVITIES)

Oil phase

- Samples were analyzed by GC/EDC by the Central Laboratory of EnBW Kraftwerke AG, Karlsruhe, Germany
- European standard **EN 12766-1** “Methods of test for petroleum and its products. Petroleum products and used oils. Determination of PCBs and related products. Separation and determination of selected PCB congeners by gas chromatography (GC) using an electron capture detector (ECD)”
- 6 specific congeners analyzed are **PCB 28, PCB 52, PCB 101, PCB 138, PCB 153 and PCB 180**
- Detection level was 0.1 mg/kg for each congener and 3 mg/kg for total PCB

THANK YOU

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