



# Green Industry

## **UNIDO/GEF POPs projects -Recent Highlights –**

**Sunday, 28<sup>th</sup> April 2013**

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# UNIDO on Environmental Management





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# PCB final disposal options

- Incineration in hazardous waste incinerators and cement kilns
- Solvent extraction
- Non-combustion technologies
  - Chemical dechlorination (Na, Ka based...)
  - Hydrothermal oxidization
  - Plasma melting
- Combination of the above options



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# Reframing PCB non-combustion technologies

- Traditional option -> Combustion
- Barriers for developing countries
  1. No substitute transformers if they have to be off-line for a long time for treatment
  2. No budget for replacing PCB contaminated equipment and oil
- Non-combustion technologies offer
  1. On-line or on-site treatment
  2. Cleaned equipment and oil are reusable
- Therefore, a resource-efficient and practical option for developing countries





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# UNIDO's achievements in Macedonia

- Non-combustion technologies in Macedonia
  - Stationary process
  - Batch process
  - Without metal sodium used
- Treatment of 150 tons of PCB contaminated equipment and oil completed in Macedonia





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# UNIDO's achievements in the Philippines

- Non-combustion technologies in the Philippines
  - Stationary process
  - Batch process
  - With metal sodium used









# Non-Com POPs Facility Overview

- Total plant capacity is 750 tons per year
- 10 batches of low level PCBs ranging from (40 – 5,700 mg/kg) were treated to less than 2 ppm; average capacity is about 2,400 kg of PCB
- 1 batch of 128 kg of high level PCBs (Askarel) (450,000 mg/kg Aroclor 1260) treated to less than 2 ppm PCBs
- Destruction of PCBs in 17 tons of low level PCBs and 0.128 tons of high level PCBs
- Decontamination of 4.5 tons of PCBs containing- equipment to less than 10 ug/100 cm<sup>2</sup>
- A total of 21.6 tons of PCB wastes (oil and PCB-containing metals) were treated





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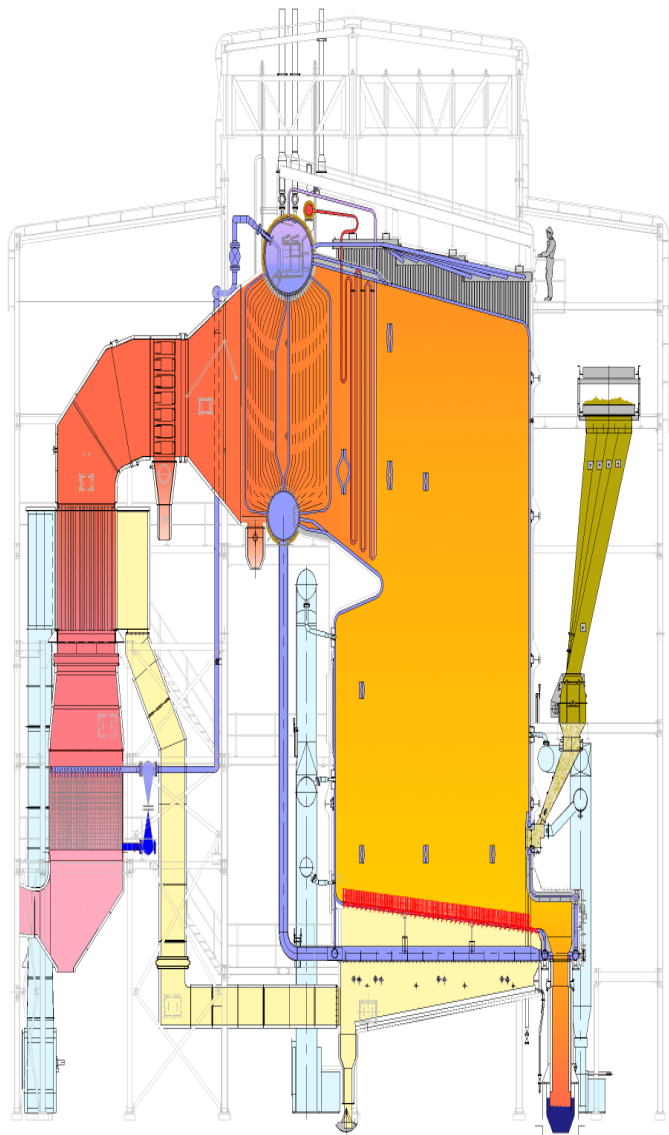
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# UNIDO's achievements in Mongolia

- Non-combustion technologies in Mongolia
  - Mobile unit
  - Continuous process
  - Without metal sodium used
- Treatment of 40 tons of PCB contaminated equipment and oil in Mongolia
- The treatment of the rest in progress



# Demonstration of BAT and BEP



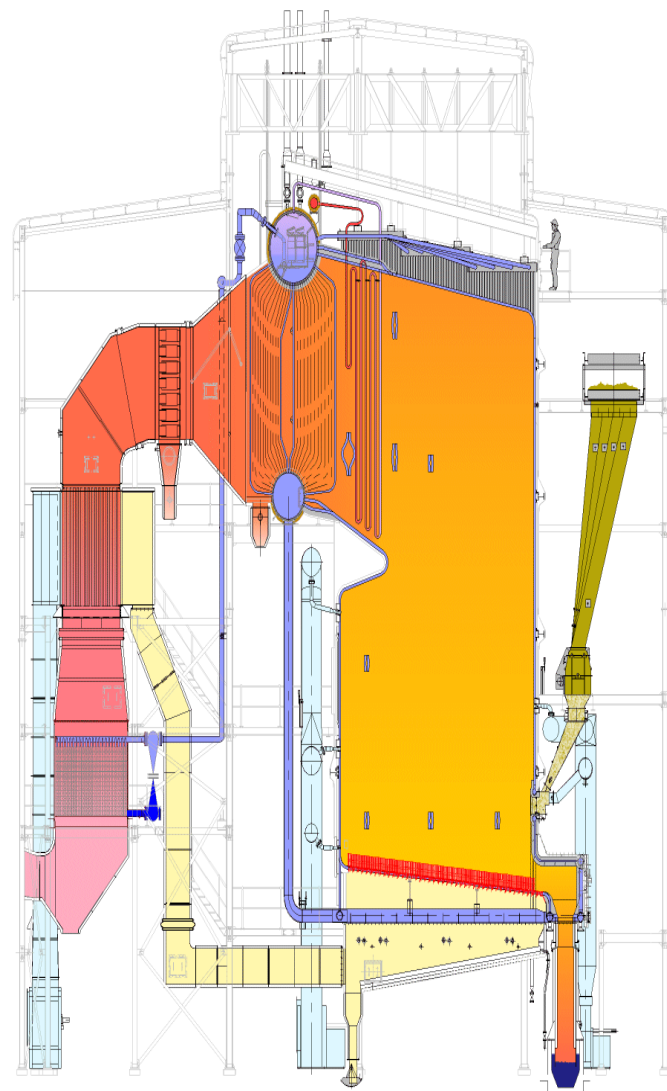
## PRIORITY SOURCE CATEGORIES

- ❖ Fossil fuel-fired utilities and industrial boilers
- ❖ Incineration of wastes including co-incineration of wastes (medical, municipal, hazardous, sewage sludge);
- ❖ Open burning
- ❖ Metallurgical processes (sintering process in iron and steel industry, secondary zinc, secondary aluminum, and secondary copper production) .



## ***Fossil-fuel fired utilities and industrial boilers***

- *Special types of fuels* used in the region
- Explores *energy efficiency*
- *Synergy* between reduction of **UP-POPs**, **greenhouse gas** emissions and other pollutants including **Hg**
- *Pilot-demonstration* cases
- *Technology transfer and investment*





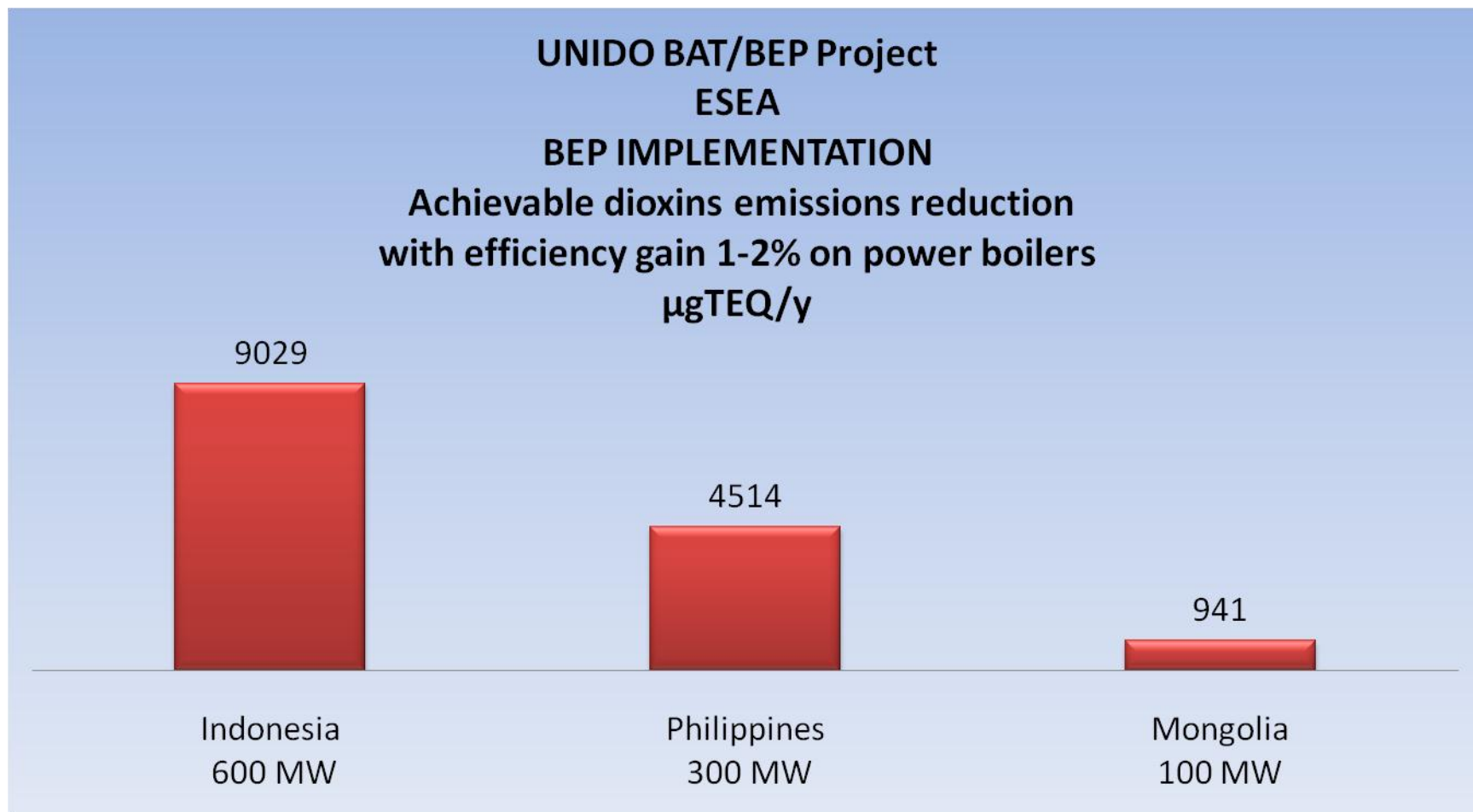


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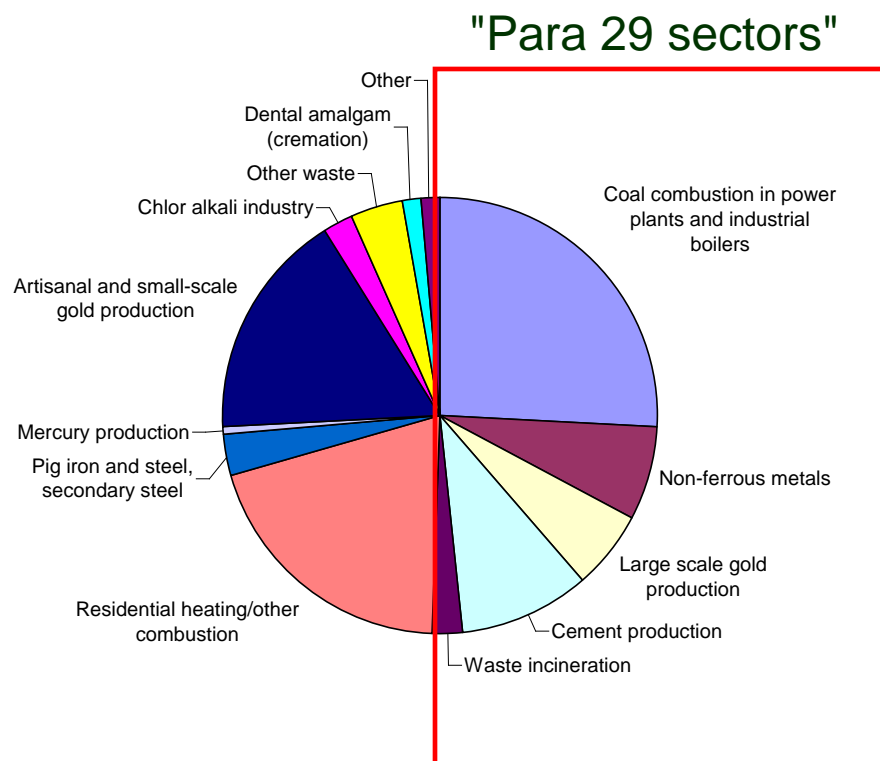
# Dioxin Reduction on Pilot facilities





## Synergy: SC and Hg Conventions

- coal-fired power plants and industrial boilers;
- industrial metal production (focus on non-ferrous smelters)
- waste incineration;
- cement production factories.
- about 45% of global anthropogenic emissions





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**Thank you for your  
attention!**

<http://www.unido.org/POPs>



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