New Structure of Power Plant Sector in GAINS Europe

Unofficial presentation

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Update of the Gains Model structure

The structure of the GAINS Model is updated, time by time, with purpose of maintaining the performances of the Model at the highest possible level, with respect to representation of the several sectors and their characteristics.

According to the evolution of the sector technology, changes are made in the structure to properly reflect the characteristics of the sector, in terms of activity level, abatement technology, process, emission factors, to calculate emissions with the most appropriate level of accuracy.
The Power Plant Sector – structure (Gothenburg)

Power plants (public power and district heat plants, industrial CHP plants)

- **Existing**
  - Wet bottom boilers
  - Other boiler types

- **New**
  - Power & district heat plants: NEW

- **IGCC**
  - Integrated Gasification Combined Cycle (NEW)

- **Total** (energy balance)
  - Renewables
  - Hydro
  - Nuclear
  - ELE
  - Heat

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The Power Plant Sector – New structure

**Power Plants**

- **Existing**
  - Small Plants ( < 50 MWe)
  - Large Plants ( >50 MWe)
  - Other boiler types

- **New**
  - NEW_L: Large Plants (BC, HC fuel)
  - NEW: Other fuels
  - NEW_CCS: Other fuels

- **IGCC**
  - Integrated Gasification Combined Cycle

- **ENG**
  - Plants with internal combustion engines (HE, MD, GAS)

- **Total** (energy balance)
  - Renewables
  - Hydro
  - Nuclear
  - ELE
  - Heat

MOD = Modern power plants (supercritical, ultrasupercritical)
The Industrial Boilers – New structure

**Industrial Boilers**

- Small Boilers < 20 MWth
- Large Boilers > 20 MWth

**Solid Fuels**

**Other Fuels**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>IN_BO_CON</td>
<td>Industry, transformation sector, combustion in boilers</td>
</tr>
<tr>
<td>IN_BO_CHEM</td>
<td>Industry: chemical industry (combustion in boilers)</td>
</tr>
<tr>
<td>IN_BO_PAP</td>
<td>Industry: paper and pulp production (combustion in boilers)</td>
</tr>
<tr>
<td>IN_BO_OTH</td>
<td>Industry: other sectors; combustion of fossil fuels other than brown coal/lignite and hard coal</td>
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**Conclusions**

The new structure of the Power Plant sector (and the Industrial Boilers sector) in the GAINS Model will provide a more accurate emission calculations. Indeed, disaggregating the sector in sub-sectors, allows the assignment of the most appropriate emission factor to each combination subsector-fuel-technology.

The IIASA web site on GAINS Model

http://gains.iiasa.ac.at/