DNA Perspective for the Calculation of Grid Emission Factor (GEF) in Phnom Penh

Presented by
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Ministry of Environment, Cambodia
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Development for the Phnom Penh electricity grid emission factors

- Organise the study meeting inviting relevant stakeholders in order to collect updated information
- Consult with IGES experts to revise the current grid emission factors
- Draft the paper to reflect updated information
- Organise the study meeting with DNA members and present the result of updates
- Consult with IGES experts to follow the latest discussion at the CDM EB regarding DNA published grid emission factors
Tool to calculate the emission factor for an electricity system (concept)

\[
EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}
\]
\[
(w_{OM} + w_{BM} = 1)
\]

- **Combined Margin (OM) (EF\(_{grid,CM,y}\))**
- **Operating Margin (OM) (EF\(_{grid,OM,y}\))**
- **Build Margin (BM) (EF\(_{grid,BM,y}\))**

the emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity

the emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity
Options chosen for the Phonon Penh Grid GEF calculation in the tool (1)

**Step 1**
Identify the relevant electricity systems

Collecting data from The Electricity Authority of Cambodia (EAC) and Électricité du Cambodge (EDC) who is the biggest supplier in Cambodia

**Step 2**
Choose whether to include off-grid power plants in the project electricity system (optional)

Option I: Only grid power plants are included in the calculation

**Step 3**
Select the method to determine the operating margin (OM) Quotation

(a) Simple OM

Ex ante option: A 3-year generation-weighted average
Options chosen for the Phonon Penh Grid GEF calculation in the tool (2)

Step 4: Calculate the operating margin emission factor according to the selected method

Option A: Based on the net electricity generation and a CO2 emission factor of each power unit

- Option A1. Electricity Generation Fuel Consumption
- Option A2. Electricity Generation Fuel Type
- Option A3. Electricity Generation

Step 5: Identify the group of power units to be included in the build margin (BM)

b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Option 1: Ex ante for 1st Crediting Period

Step 6: Calculate the build margin emission factor

Step 7: Calculate the combined margin (CM) emissions factor
# How to collect data of the Phnom Penh Grid System

The Phnom Penh Grid System status in the Baseline Report

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**Data source**

The Electricity Authority of Cambodia (EAC) : [http://www.eac.gov.kh/](http://www.eac.gov.kh/) Report on power sector of the Kingdom of Cambodia

Électricité du Cambodge (EDC)
Step 7: Calculate the combined margin (CM) emissions factor

\[ EF_{\text{grid,CM},y} = EF_{\text{grid,OM},y} \times w_{\text{OM}} + EF_{\text{grid,BM},y} \times w_{\text{BM}} \]

\( (w_{\text{OM}} + w_{\text{BM}} = 1) \)

<Weights>
(a) 0.75:0.25 \((w_{\text{OM}} : w_{\text{BM}}) \Rightarrow \text{Wind and solar power}\)
(b) 0.5:0.5 \((w_{\text{OM}} + w_{\text{BM}}) \Rightarrow \text{Others}\)
* (b) will be changed to 0.25:0.75 for the 2\(^{nd}\) / 3\(^{rd}\) crediting period

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DNA Perspective on GEF

• Problem in the calculation of GEF for the grids in other areas, which rely on import electricity from other countries.

• It is needed to update GEF; to do so, capacity building is required.

• Development of country-wide GEF will be useful in developing CDM.

• Cambodia needs to strengthen its technical capacities and financial support in the near future.
Thank you for your attention!
Please see website:
www.camclimate.org.kh
www.iges.or.jp