Grid emission factor and RCC St. George’s support

GEF-UNEP ENERGY FOR SUSTAINABLE DEVELOPMENT IN CARIBBEAN BUILDINGS (ESD) PROJECT

SECOND MEETING OF THE REGIONAL COORDINATION COMMITTEE (RCC)
BUCCAMEND BAY RESORT, ST. VINCENT AND THE GRENADINES
12-13 OCTOBER 2015
OUTLINE

- Regional Collaboration Centre (RCC) St. George’s
- What is the Grid Emission Factor (GEF)
- GEFs in the Caribbean
- Remarks
RCC St. George’s

The RCCs are designed to help under-represented regions increase their attractiveness and potential for CDM, by building their capacity and reducing the risk for investors. These centres are intended to support the identification of CDM projects, provide assistance for the design of such projects, address issues identified by validators, and offer opportunities to reduce transaction costs.
RCC St. George’s
RCC St. George’s

- Support at different stage in project cycle
  - Prior Consideration
  - Project design document (PDD)
  - CER Issuance

- To prepare the Sustainable Development Co-benefit (SDC) Report
- To prepare and update monitoring reports

- Support in Standardized Baseline Cycle
  - Proposed SB
  - Preparing Submission
  - Validating Submission
What is a grid emission factor?

Measure of CO2 emissions intensity per unit of electricity generation in the grid system (tCO2/MWh)

How is a GEF calculated?

- “Tool to calculate the emission factor for an electricity system”, or
- “Guidelines for the establishment of sector specific standardized baselines”
## Approved SSC Methodologies

<table>
<thead>
<tr>
<th>Methodological Tools</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool for the demonstration and assessment of additionality</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Combined tool to identify the baseline scenario and demonstrate additionality</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Tool to calculate project or leakage CO2 emissions from fossil fuel combustion</td>
<td>Submit comments</td>
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<tr>
<td>Emissions from solid waste disposal sites</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Tool to calculate baseline, project and/or leakage emissions from electricity consumption</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Project emissions from flaring</td>
<td>Submit comments</td>
</tr>
<tr>
<td><strong>Tool to calculate the emission factor for an electricity system</strong></td>
<td>Submit comments</td>
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<tr>
<td>Tool to determine the mass flow of a greenhouse gas in a gaseous stream</td>
<td>Submit comments</td>
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<tr>
<td>Tool to determine the baseline efficiency of thermal or electric energy generation systems</td>
<td>Submit comments</td>
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<tr>
<td>Tool to determine the remaining lifetime of equipment</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period</td>
<td>Submit comments</td>
</tr>
<tr>
<td>Project and leakage emissions from transportation of freight</td>
<td>Submit comments</td>
</tr>
</tbody>
</table>
This table is to be repeated as per the number of power generating plants

<table>
<thead>
<tr>
<th>Site data</th>
<th>Unit or information</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
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</thead>
<tbody>
<tr>
<td>Plant Name</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year of construction</td>
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<tr>
<td>Contact Information (primary data provider)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Name of technology used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of Fuel 1 consumed</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Net electricity Production</td>
<td>MWh</td>
<td></td>
<td></td>
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<tr>
<td>Amount of fuel 1 consumed</td>
<td>m³</td>
<td></td>
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<tr>
<td>Net Calorific Value of fuel 1</td>
<td>Gj/ton (if available)</td>
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<td></td>
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<tr>
<td>Emission factor of fuel 1</td>
<td>tCO2/ Gj (if available)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
GEF-SB Proposal Submission

- Data Delivery Protocol
- Quality Control (QC) Report
  (credibility, Transparency & traceability)
- CDM proposed standardized baseline form
- GEF-Excel sheet
  “Tool to calculate the emission factor for an electricity system”,
## GEF – RCC St. George’s support

<table>
<thead>
<tr>
<th>Country</th>
<th>GEF, tCO2/MWh (CDM projects) *</th>
<th>GEF, tCO2/MWh (RCC St. George’s) **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua &amp; Barbuda</td>
<td>-</td>
<td>In progress</td>
</tr>
<tr>
<td>Bahamas</td>
<td>0.723 (CDM 5620)</td>
<td>-</td>
</tr>
<tr>
<td>Belize</td>
<td>-</td>
<td>0.2278 (PSB0006)</td>
</tr>
<tr>
<td>Grenada</td>
<td>-</td>
<td>0.585 (PSB0023)</td>
</tr>
<tr>
<td>Guyana</td>
<td>0.948 (CDM 1458)</td>
<td>In progress</td>
</tr>
<tr>
<td>Jamaica</td>
<td>0.834 (CDM 0239)</td>
<td>Data gathering</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>-</td>
<td>In progress (data collection)</td>
</tr>
<tr>
<td>St Vincent &amp; the Grenadines</td>
<td>-</td>
<td>0.7309 (PSB0021)</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>0.666 (CDM 9358)</td>
<td>In progress (Internship)</td>
</tr>
</tbody>
</table>

* https://cdm.unfccc.int/Projects/projsearch.html
** https://cdm.unfccc.int/methodologies/standard_base/new/sb8_index.html
Methodology

Small Scale

https://cdm.unfccc.int/Reference/Documents/AnnexII/English/annexII.pdf

A. Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts

B. Type (ii) project activities: energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatt hours per year
## AMS-II.E. Energy efficiency and fuel switching measures for buildings

<table>
<thead>
<tr>
<th>Typical project(s)</th>
<th>Installation of, or replacement or retrofit of, existing equipment with energy efficiency (e.g. efficient appliances, better insulation) and optional fuel switching (e.g. switch from oil to gas) measures in residential, commercial or institutional buildings.</th>
</tr>
</thead>
</table>
| **Type of GHG emissions mitigation action**                                      | - Energy efficiency.  
                                   | Electricity and/or fuel savings through energy efficiency improvement. Optionally, use of less-carbon-intensive fuel.                                                                                   |
| **Important conditions under which the methodology is applicable**              | - Energy use within the project boundary shall be directly measured;  
                                   | - The impact of the implemented measures (improvements in energy efficiency) can be clearly distinguished from changes in energy use due to other variables not influenced by the project. |
| **Important parameters**                                                        | At validation:  
                                   | - Energy use of buildings before the project implementation;  
                                   | - If grid electricity is consumed: grid emission factor (can also be monitored ex post).                                                                                                               |
|                                                                                 | Monitored:  
                                   | - Specifications of the equipment replaced or retrofitted (only for replacement or retrofit projects);  
                                   | - Energy use of buildings after the project implementation.                                                                                                                                            |
Methodology

BASELINE SCENARIO
Use of less-efficient and/or more-carbon-intensive equipment in buildings.

PROJECT SCENARIO
Use of more-efficient and/or less-carbon-intensive equipment in buildings.
Project activity installed about 600,000 CFLs (100W and 60W incandescent light bulbs with self-ballasted CFL 350,000 -20W and 250,000 -12W respectively)
GEF – Example project activity (Meth. AMS II J)

The emission reduction for the year

\[ ER_y = NES_y \times EF_{CO2,ELEC,y} \]

= 56,400 MWh x 0.7309 tCO2/MWh

= 41,200 tCO2 / year
GEF-Benefits

- Facilitate reporting
  - National Communications
  - Mitigation and Adaptation Strategies
  - Intended National Determined Contribution (INDC)
GEF-Benefits

- Facilitate revenue generation
  - Sale of CER
    - Climate Neutral (22 September 2015)
      - [http://www.climateneutralnow.org/SitePages/Home.aspx](http://www.climateneutralnow.org/SitePages/Home.aspx)
    - Carbon Market
      - $56,400 MWh x 0.7309 tCO2/MWh
      - = 41,200 tCO2 / year

Possible Revenue generation
USD$5/tCO2

=41,200 tCO2 x USD$5/tCO2 = 206,000 USD$/year
GEF-Benefits

Go Climate Neutral Now!
Online platform for voluntary cancellation of certified emission reductions (CERs)

5486: Bundled 9.00 MW Wind Power Gen...
Wind turbines generate electricity using the power of the wind, reducing the amount of fossil fuels.
From USD 2.75
View

5461: Fatima N2O Abatement Project
These projects convert N2O (nitrous oxide) into substances with no or lower global warming potential.
From USD 2.25
View

697: 6 MW Renewable energy generation...
Biomass energy projects generate heat and/or electricity by combusting organic matter like wood.
From USD 3.00
View
Remarks

1. Accurate GEF values supports (part of) the **decision making process** to achieve renewable energy targets under country or regional plans by
   - **Selecting** type/size of interventions based on emission reductions

2. GEF is used to calculate the emission reduction from **renewable energy**

3. GEF is also used to estimate carbon reductions for any type of intervention that **reduces electricity consumption** e.g. energy efficiency

4. RCC St George’s provides **in-kind assistance** to regional stakeholders in
   - Carbon accounting for electricity sector interventions; e.g. renewable energy and energy efficiency technologies
   - Estimating/updating GEFs
THANK YOU!

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