CDM: Recommendation Form for Small Scale Methodologies (version 01)

(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)

Date of SSC WG meeting:	11–14 January 2011, SSC WG 29
Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):	Revision of AMS-I.D's classification for intermittent and non-dispatchable nature of power generation activities and related combined margin calculation
Indicative methodology to which your submission relates (refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable.	AMS-I.D "Grid connected renewable electricity generation"
Name of the authors of the query:	Gustavo de Melo Ribeiro Institution: EQAO gustavo.ribeiro@eqao.com.br focalpoint@eqao.com.br

Summary of the query:

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from PP:

Regarding the calculation of the combined margin emission factor and the most appropriate weights values for operating margin (OM) and build margin (BM), the methodology AMS I. D. refers to the "Tool to calculate the emission factor for an electricity system" (page 16, Step 7) which establishes:

*"• Wind and solar power generation project activities: w_{OM} = 0.75 and w_{BM} = 0.25 (**owing to their intermittent and non-dispatchable nature)** for the first crediting period and for subsequent crediting periods;*

*• All other projects: w_{OM} = 0.5 and w_{BM} = 0.5 for the first crediting period , and w_{OM} = 0.25 and w_{BM} = 0.75 for the second and third crediting period, **unless otherwise specified in the approved methodology** which refers to this tool."*

Considering the intermittent and non-dispatchable nature of run-of-river Small Hydroelectrical Power (run-of-river SHP) plant and the low predictability of project output of this kind, characteristic also acknowledge and considered by AMS-I.D at paragraph 15:

*"(...).**hydro**, solar, wind, geothermal, wave and tidal plants where power generation **can vary significantly from year to year, due to natural variations in the availability of the renewable source** (e.g., varying rainfall, wind speed or solar radiation (...)".*

It seems necessary to revise the methodology improving its coherence. In order to do so, the default values used for wind and solar power generation should be extended to hydro (run-of-river SHP), geothermal, wave and tidal power generation project activities. Therefore to properly adequate the methodology AMS I. D. "Grid connected renewable electricity generation" we propose the inclusion of a footnote referring to paragraph 12 (a):

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system[7]'."

"[7]For hydro (run-of-river Small Hydroelectrical Power), solar, wind, geothermal, wave and tidal power generation project activities under the present methodology the following CM and BM weights should be use: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods."

In the specific case of hydro power generation a type limitation becomes necessary since hydropower plants with storage reservoir are not subject to river flows variability as run-of-river SHP plants. Evidence demonstrating intermittent and non-dispatchable nature (similar to wind power plants) of run-of-river small hydropower plants can be supplied if necessary.

Recommendation by the SSC WG:

Please use the space below to provide amendments/change (in your expert view, if necessary).

Please refer to paragraph 14 of the meeting report of the SSC WG 29 <http://cdm.unfccc.int/Panels/ssc_wg>.

Answer to authors of query by the SSC WG:

Please use the space below to provide answer to the authors of the above query.

The small-scale working group of the CDM Executive Board would like to thank the author for the submission.

The SSC WG agreed to clarify that the intention of the paragraph in AMS-I.D that states "In the specific case of retrofit/capacity addition in hydro, solar, wind, geothermal, wave and tidal plants where power generation can vary significantly from year to year, due to natural variations in the availability of the renewable source (e.g. varying rainfall, wind speed or solar radiation)…" is in the context of determining baseline for capacity addition/retrofit project activities and not related to determining weights of calculating combined margin (i.e. OM and BM).

Based on the information provided in the submission, the SSC WG agreed that it is not possible to conclude that for run-of-the-river small hydro electrical generation units the impact on the grid (such as deferring investments in building power plants and therefore related to the Build Margin) is the same as for wind/solar units. It should be noted that there is a firm energy associated with the hydro plants, reflecting a more significant impact over the build margin.

However, the issue of considering the revision of weights for specific project activities on the basis of intermittency/seasonality should be part of a revision of the "Tool to calculate the emission factor for an electricity system" and not under the scope of a revision of AMS-I.D.

The SSC WG will forward the issues to the attention of the Meth Panel if the following additional information to the SSC WG are provided:

- A definition of run-of-the-river hydro plant (despatchable/intermittent vs. non-despatchable/non-intermittent) would be required;
- Further elaboration about the impact on the grid by run-of-the-river hydro vs. wind/solar project activities, justifying that the same OM/BM weights could be applied for all these cases.

Answer to authors of query by the Methodologies Panel:

Please use the space below to provide answer to the authors of the above query.

In reference to the size of the projects, the project participant proposed a solution limited to small scale projects. However, it should be noted that the "Tool to calculate the emission factor for an electricity system" clearly specifies (see Guidance on selecting alternative weights section) that the size of the project can't be used to justify alternative weights, as the impact of many small scale projects is the same of one large scale project. Therefore, the proposal can't be assessed with the limitation to small scale projects.

The availability of some renewable energy sources varies over time. However, the extent of the variation varies between the sources and between specific plants. For example, wind and photovoltaic power plants generally do not allow influencing the amount of electricity that is produced over time, whereas biomass and hydro power plants may allow to shift power production to varying extents (depending on the storage capacity for water or biomass). Plants that have the possibility to shift power production tend to have a higher impact on the build margin compared to plants which do not allow influencing when power is generated. For example, a hydro power plant with a very small reservoir, covering a few hours of electricity generation, could shift power production towards the peak hours of electricity demand and produce less power during hours of less electricity demand. This could reduce the need to construct other power generation capacity in the grid.

Another difference between hydro power plants and wind or photovoltaic power plants, is that in many cases hydro power plants are able (with high confidence) to produce, at least for part of their capacity, electricity continuously (except for maintenance). This means that this "base load" component can replace the construction of other "base load" power plants in the grid and that the build margin is affected by the plants. To what extent a hydro power plant contributes to such "base load" can also be influenced in the design of the plant. For example, the load factor of wind and solar power plant is typically not affected by the installed capacity of the plant, while for the hydro power plants (especially for run-of-river hydro plants) the choice of the installed capacity influences the load factor. Therefore, it is unlikely that the availability and predictability of the energy source (i.e. water flow) over the year will not be taken into account during the project plant's capacity definition. For example, for the specific case of Pesqueiro SHPP, the PDD refers to the Electrobras's run-of-river projects definition: "the projects where the river's dry season flow rate is the same or higher than the minimum required for the turbines". This suggests that the plant will also operate during the dry season to some extent and thus have a significant BM effect. In other cases, small hydro power plants may not be able to produce electricity during a longer period of the year. If this period of the year coincides with the overall peak in electricity demand in the grid, it is likely that the plant does not significantly contribute to the BM, but is rather of a similar nature than wind and photovoltaic plants. In other cases, a small hydro power plant may not be able to shift power production to any significant extent and may not produce electricity at all during a dry season. If there is also significant electricity demand in the dry season, then the hydro power plant could have a similar effect on the BM and OM as wind power plants. This may in particular apply to run-of-river hydro power plants that are designed to work without a reservoir and that face a dry season where no power is produced.

For the specific case of Pesqueiro SHPP, the reservoir allows, according to information provided by the project participants, to work almost five hours with the maximum energy output. This means that the plant can shift its output to the peak hours.

Based on reasons mentioned above, the Methodologies Panel recommends not to revise the "Tool to calculate the emission factor for an electricity system", as no general conclusion can be drawn which applies to all run-of-river hydro power plants. However, hydro power plants may have different impacts on the share of the BM and OM depending on the specific circumstances, and a change to the ratio of OM/BM weights may be proposed for individual project activities through a deviation request.

Signed by the Chair, Mr. Peer Stiansen
Date: 14/01/2011

Signed by the Vice-Chair, Mr. Hugh Sealy
Date: 14/01/2011

Information to be completed by the secretariat	
SSC-Submission number	SSC_486
Date when the form was received at UNFCCC secretariat	14 January 2011
Date of transmission to the EB	14 January 2011
Date of posting in the UNFCCC CDM web site	14 January 2011