## CALL FOR INPUT

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**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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|---|---|---|---|---|
| | Generic Comment | - | Following generic comments are made:<br>1. Due to merger of two tools (#5 and #7), this tool has potentially become very complex, especially differentiating between project activity as production source and consumption source.<br>2. There are several considerations of circumstances of countries such as ‘surplus grid’ or ‘deficit grid’ that has an impact on what is displaced by renewable energy plant, whether existing plants only or combinations of existing and futuristic plants.<br>3. Under wheeling mechanism of electricity, grid is used by a renewable energy project activity just as a medium of transfer of electricity from point of generation to a specific point of use and grid is not the user. Such plants, although grid connected, should not be considered in calculation of operating margin. | |
| 1 | 5.1 Step 1 | Para 18<br><br>This may include electricity generation and consumption sources that occur in the project scenario and/or in the baseline scenario. | Edit | This may include electricity generation and consumption **of** sources that occur in the project scenario and/or in the baseline scenario. |

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| 2 | 5.2 Step 2 | Para 20<br>Scenario A: The electricity is consumed from or fed into the electricity system only;<br>Scenario B: The electricity is consumed from or avoids power generation by a fossil-fuel fired captive power plant only; or<br>Scenario C: A combination of scenario A and B, i.e., the electricity is consumed from or fed into the electricity system (the source is a production source) **and** consumed from or avoids power generation by a fossil-fuel fired captive power plant.(it is a consumption source) | The language is too complex and the description of scenario C in red is not correct. It states that the article 6.4 project can simultaneously be a production source and a consumption source.<br>By introducing the concept of Captive Power Plant **system** (that include both the power generation unit as well as the consumers), the language can be very much simplified. See Figure 1 in the Appendix below. | Scenario A: The electricity is ~~consumed from or fed into an~~ **exchanged** with an electricity system only;<br>Scenario B: The electricity is ~~consumed from or avoids~~ **exchanged with a** ~~power generation by a~~ fossil-fuel fired captive power plant **system** only; or<br>Scenario C: A combination of scenario A and B, i.e., ~~the electricity is consumed from or fed into an electricity system and consumed from or avoids power generation by a fossil-fuel fired captive power plant~~. The electricity is consumed from (the A6.4 project is a consumption source)**or** generated for (the A6.4 project is a production source) an electricity system **and** a CPP system |
| 3 | 5.2 step 2 | Para 21 (b)<br>This applies, for example:<br>(i) If, at all times during the monitored period, the total electricity demand at the site of the captive power plant(s) is larger than the electricity generation capacity of the captive power plant(s) both in the project scenario and the baseline scenario; or<br>(ii) If the captive power plant is operated continuously (apart from maintenance) and feeds any excess electricity into the electricity system, because the revenues for feeding electricity into the electricity system are above the plant operation costs; or<br>(iii) If the captive power plant is centrally dispatched and the dispatch of the captive power plant is thus outside the control of the activity participants. | | (i) If the project/baseline is a production source and at all times during the monitored period, the total electricity demand of the captive power plant(s) **system** (the system includes the generation and the consumption part of the CPP) is larger than its generation capacity both in the project scenario and the baseline scenario. Any amount of electricity provided by the project/baseline equipment to the CPP system will lead to the CPP providing the same amount of electricity to the electricity system; or<br>(ii) If the captive power plant in operation, it always operates at its maximum possible capacity and feeds any excess electricity into the electricity system, because the revenues for feeding electricity into the electricity system are above the plant operation costs; or<br>(iii) If the project is a consumption source, the production capacity of the CPP system is lower than the demand in both project and baseline scenario |

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| 4 | 5.2 Step 2 | Para 22 (b)<br>The implementation of the Article 6.4 activity is clearly demonstrated to only affect the quantity of electricity that is generated in the captive power plant(s) and does not affect the quantity of electricity consumed from or fed into the electricity system. This applies, for example:<br>(i) If a fixed quantity of electricity is purchased from the electricity system due to physical transmission constraints, such as a limited to the project leading to the reduction of the electricity received from the electricity system as capacity of the transformer that provides electricity to the relevant source; or<br>(ii) If, at all times during the monitored period, the total electricity demand at the site of the captive power plant(s) is larger than the quantity of the electricity that can physically be supplied by the electricity system both in the project scenario and in the baseline scenario. | (i) is correct if the project does not exchange electricity with the electricity system, but only with the CPP system. This example does not prevent the implementation of the project not to affect the electricity system. The CPP system can provide electricity the electricity from the CPP can be displaced by the electricity from the electricity system. | The project/baseline is a production source. The electricity generation capacity of the CPP system plus the capacity of the project/baseline is lower than the CPP demand in both project and baseline scenario. Any amount of electricity sent by the project/baseline equipment to the Electricity System and not to the CPP system will lead to the same amount of electricity send by the Electricity System to the CPP system: this is wheeling through the Electricity System.<br>The project is a consumption source. The operational capacity of the CPP system is higher than the CPP demand plus the project demand in the project scenario. It is attractive to run the CPP at its maximum capacity. Any amount of electricity consumed by the project from the Electricity System will lead to the CPP sending the same amount of electricity to the Electricity system: this is wheeling through the Electricity system.<br>See the diagram in Appendix (Fig. 1) |
| | | | | |
| 5 | 5.3. Step 3: Identify the relevant electricity system(s) | Paragraph 26: Activity participants shall delineate the project electricity system and any connected electricity system(s) and document the geographical [extent] [boundary] of the project electricity system and any connected electricity system transparently. | The use of [boundary] is probably more appropriate as this terminology is consistent with the concept of project boundary, | Activity participants shall delineate the project electricity system and any connected electricity system(s) and document the geographical boundary of the project electricity system and any connected electricity system transparently. |
| 6 | 5.3 Step 3 | Para 29 (b)<br>(iii) If the cumulative hours in which the conditions in sub-paragraph (ii) are met account for no more than 10% of the hours within the assessment period, it is determined that no transmission constraint exists. | | If the cumulative hours in which the conditions in sub-paragraph (ii) are met account for ~~no~~ **90 % or more** ~~than 10%~~ of the hours within the assessment period, it is determined that no transmission constraint exist |

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| 7 | 5.3. Step 3: Identify the relevant electricity system(s) | Paragraph 29 (c): The transmission capacity of the transmission line(s) between the two independent dispatch centres is more than 10 per cent of the installed power generation capacity the independent dispatch centres which is smaller. | The sentence is incomplete. | Paragraph 29 (c): The transmission capacity of the transmission line(s) between the two independent dispatch centres is more than 10 per cent of the installed power generation capacity **of** the independent dispatch centres which is smaller. |
| 8 | 5.3 Step 3 | Example 8<br>For example, if two transmission lines are operated between two independent dispatch centres, and each has a maximum load capacity of 100 MW, then count the number of hours during which the total operating capacity of these two lines is higher than 150 MW. If the number of hours exceeds 876 for an even year and 878 for a leap year, it shall be considered that no transmission constraints exist between the two independent dispatch centres in that year. | There is an editorial mistake changing the meaning of the requirement. | **Example 8 of step 3**<br>If the number of hours during which the total operating capacity of the line is **higher than 150 exceeds 876** for an even year and 878 for a leap year, it shall be considered that ~~**no**~~ transmission constraints exist between the two independent dispatch centres in that year. Otherwise, no transmission constraint exist. |
| 9 | 5.4 Step 4 | Para 33<br>Activity participants shall determine and justify, for each electricity generation or consumption source s, whether Case 1 or Case 2 applies. This determination shall be based on the specific circumstances of the Article 6.4 activity and its corresponding baseline. | This does not depend on the source but on whether we are dealing with project or baseline related emissions as stated in para 32 | ~~Activity participants shall determine and justify~~, For each electricity generation or consumption source s, Case 1 applies for project related emissions ~~or~~ **and** Case 2 applies for baseline related emissions. ~~This determination shall be based on the specific circumstances of the Article 6.4 activity and its corresponding baseline.~~ |

**Document reference number and title:**
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| 10 | 5.4. Step 4: Determine whether applying a higher or lower value for the emissions from electricity generation or consumption is more conservative | Paragraph 35: Where either Case 1 or Case 2 applies to all electricity generation and consumption source *s* and throughout the time covered by a monitoring period of the Article 6.4 activity, activity participants shall identify the relevant case and apply it consistently in the determination of the emission factor. This approach may also be applied where one of the two cases makes up less than [1 per cent] [X per cent] of the amount of electricity generation and/or consumption compared to the other case | Calculating different OM and BM for baseline and project emissions within the same project activity may place undue burden on activity participants. | |
| 11 | 5.7.1.1.1. Consideration of power plants or units | Paragraph 48: For simplicity, the subsequent sections only refer to power units. Whether power units or power plants shall be considered in the calculation depends on the operational roles of the power units at the site of the power plant. Power units should be considered separately in the calculation if any features that are relevant for the calculation differ among them, such as their fuel type, efficiency or must-run status (e.g., if the power plant includes a mix of must-run and non-must-run units). Otherwise, several power units may be aggregated into one power plant and considered together in the calculation. | No two power units may in practice have exactly the same operational efficiencies. Hence providing some typical technology specific efficiency ranges as the basis for aggregating several power units into one power plant would be a helpful guidance. This issue is of particular significance for calculating dispatch data analysis OM and simple adjusted OM. | |

**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

| Item | Section no. (as indicated in the document) | Paragraph/Table/Figure no. (as indicated in the document) | Comment (including justification for change) | Proposed change (including proposed text) |
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| 12 | 5.7.1.1.2. Treatment of electricity imports and exports | Paragraph 49: Any net electricity imports from a connected electricity system to the project electricity system during the relevant period shall be treated as a power unit *p* supplying electricity to the *electricity system*. The emission factor for such net electricity imports shall be determined for the period (e.g., hour *h* for the dispatch data OM, or relevant period *t* for other methods) using one of the following options: | The language is a bit imprecise here. | Any net electricity imports from a connected electricity system to the project electricity system during the relevant period shall be treated as a power unit *p* supplying electricity to the project electricity system. The emission factor for such net electricity imports shall be determined for the period (e.g., hour *h* for the dispatch data OM, or relevant period *t* for other methods) using one of the following options: |
| 13 | 5.7.1.1.2. Treatment of electricity imports and exports | Paragraph 49 (a): Determine the emission factor for the exporting electricity system as the combined margin emission factor of the electricity system as per this section (section 5.7.1); | The language here is confusing. What is meant by exporting electricity system? Specially given the definitions in paragraph 31, reproduced below.<br>"For the purpose of this methodological tool, the reference system is the project electricity system. Hence electricity transfers from a connected electricity systems to the project electricity system are defined as electricity imports while electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports." | Determine the emission factor for the ~~exporting~~ connected electricity system as the combined margin emission factor of the electricity system as per this section (section 5.7.1); |

**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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| 14 | 5.7.1.1.3 General requirements for determining CO2 emission factors of power units | Equation 1 | The descriptions of the variables are not fully readable.<br>Under wheeling mechanism of electricity grid is used by a renewable energy project activity just as a medium of transfer of electricity from point of generation to a specific point of use and grid is not the user. Such plants, although grid connected, should not be considered in calculation of operating margin. | We propose to insert a footnote that the electricity supplied via wheeling should not be accounted for the calculation of OM. |
| 15 | 5.7.1.1.3 | Equation 2<br>$EF_{EL,p,t} = EF_{CO2,p,i,t} \times 3.6 / \eta_{p,t}$<br>$EF_{CO2,p,i,t}$ = Average CO2 emission factor of fuel type i used in power unit p in period t (t CO2/GJ) | i cannot be at the right side of the equation and not at the left side. There is no need to identify the fuel with the letter i. | $EF_{EL,p,t} = EF_{CO2,p,\not{i},t} \times 3.6 / \eta_{p,t}$<br>$EF_{CO2,p,\not{i},t}$ = Average CO2 emission factor of **the** fuel ~~type i~~ used in power unit p in period t (t CO2/GJ) |

**Document reference number and title:**
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| 16 | 5.7.1.1.3 | Para 53<br>Where biomass or biomass-derived fuels are consumed by a power unit p, use for Case 1 the higher value within a plausible range of emission factors, assuming that the biomass is not renewable, and use for Case 2 an emission factor of zero.<br>Para 54<br>Where hydrogen or hydrogen-derived fuels are consumed by a power unit p, use for Case 1 the higher value within a plausible range of emission factors, assuming that the hydrogen would be produced from fossil fuels without carbon capture and storage, and use for Case 2 an emission factor of zero. | This eliminate a broad range of methodologies that could possibly come with requirement to address the issue of environmental integrity foreseen while ensuring we do not miss opportunities to incentivize good mitigation projects | Para 53:<br>Where biomass or biomass-derived fuels are consumed by a power unit p, use for Case 1 the **default values for fNRB as per the "TOOL33: Default values for common parameters ,"** ~~higher value within a plausible range of emission factors, assuming~~ if it can be established that the biomass is not renewable, and for Case 2 **use the** default **emission factors for fNRB. as per the "TOOL33: Default values for common parameters ," if it can be established that the biomass is not renewable**, or use an emission factor of zero.<br>Para 54<br>Where hydrogen or hydrogen-derived fuels are consumed by a power unit p, use for Case 1 the higher value within a plausible range of emission factors, assuming that the hydrogen would be produced from fossil fuels without carbon capture and storage, and for Case 2, **the methodology either develop an approach to establish that the hydrogen is green and did not lead to leakage** or use an emission factor of zero. |
| 17 | 5.7.1.2. Sub step a: Determination of the OM emission factor | Table 3<br>Power units in the electricity system are dispatched in a certain order | **Dispatch is an optimization problem, not a fixed sequence.**<br>Under normal conditions, system operators dispatch generation broadly following this order to meet demand at least cost. In practice, dispatch **does not always strictly follow one fixed sequence**, because several factors intervene such as technical constraints, security and stability requirements, hydro and storage optimization, market design and rules, out-of-merit dispatch. | Power units in the electricity system are dispatched in a certain order **subject to technical, spatial, temporal, and security constraints.** |

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| 18 | 5.7.1.2. Sub step a: Determination of the OM emission factor | *Selected texts* from Table 3: Applicability conditions (other than data availability) and associated uncertainty for different methods to determine the OM emissions factor<br><br>Dispatch data OM: Associated method uncertainty ±[x] %<br><br>Simple OM: *Applicability condition for* Case 2: (i) The electricity system operates for less than [X][100] hours per year solely based on renewable, nuclear, and/or storage power units or (ii) the share of electricity generation from renewable and nuclear power units is not larger than [X] percent<br><br>Simple OM: Associated method uncertainty ±[x] %<br><br>Simple adjusted OM: Associated method uncertainty ±[x] %<br><br>Average OM: Associated method uncertainty ±[x] % | It is advisable that the tool provides a clear step-wise procedure on how to apply the IPCC guidance on combining uncertainties to determine one common uncertainty value for each of these OM estimation methods. | |
| 19 | 5.7.1.2.2. Method (b): Simple OM | Equation 6, *the definition of the parameter* EGt : Net electricity generated and delivered to the *electricity* by all power units serving the system, not including must-run power units, in period *t* (MWh) | There seems to be a typo. The word system is missing after "electricity." | EGt : Net electricity generated and delivered to the electricity ***system*** by all power units serving the system, not including must-run power units, in period t (MWh) |

**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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| 20 | 5.7.1.2.3. Method (c): Simple adjusted OM | Paragraph 81: The simple adjusted OM emission factor may only be applied where the necessary data is available. It may be applied to both Case 1 and Case 2 and to any type of electricity generation or consumption source (including to intermittent and non-intermittent electricity generation sources and electricity consumption sources depending or not depending on intermittent generation). | This paragraph is inconsistent with the text of paragraph 83, reproduced below. Only Option 1 (simple adjusted OM based on hourly data) of Options 1 and 2 (simple adjusted OM based on annual data) of the Simple adjusted OM is applicable for all cases, not both options.<br><br>Paragraph 83: "Option 1 may be applied in all situations. Option 2 shall only be applied to non-intermittent electricity generation sources or electricity consumption sources not depending on intermittent generation." | |

**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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| 21 | 5.7.1.2.3. Method (c): Simple adjusted OM | Paragraph 85 (b):<br><br>The parameters *Sh* (*0 when the electricity system operates solely on renewable, nuclear, and/or storage power units, 1 otherwise*) and λ *y* (*the fraction of time over a year when the electricity solely operates on renewable, nuclear, and/or storage power units*) shall be determined differently, depending on which of the two cases applies, as follows:<br><br>(b) Where Case 2 applies, this shall refer to the fraction of time when solely the following type of power units operate: hydro, solar, wind, tidal, wave, geothermal, nuclear, biomass or biomass-derived fuels, hydrogen or hydrogen-derived fuels, and any type of storage power units. | The text is inconsistent with paragraph 83 (reproduced below), which mandates exclusion of intermittent sources of electricity.<br><br>Paragraph 83: "Option 1 may be applied in all situations. Option 2 shall only be applied to non-intermittent electricity generation sources or electricity consumption sources not depending on intermittent generation." | |

**Document reference number and title:**

**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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| 22 | 5.7.1.2.4. Method (d): Average OM | Paragraph 88:<br>The average OM emission factor (*EFOM,av,y*) shall be calculated as the generation-weighted average emission factor of all power units serving the electricity system, using the same approaches as for the simple OM, but also including must-run power units in all equations. | The text in paragraph 88 is inconsistent with paragraph 87 (a) (reproduced below), which excludes intermittent sources of electricity in the calculation of average OM. The definition of must run power units in the tool (para 59 (b)) includes intermittent electricity sources, such as wind or solar power plants.<br><br>87. The average OM method shall only be applied where the necessary data is available. Moreover, it shall only be applied:<br>(a) To non-intermittent electricity generation sources and electricity consumption sources not depending on intermittent generation | |
| 23 | 5.7.1.3. Sub-step b: Determination of the BM emission factor (EFBM,y) | Para 92<br>Equation 10 and 11<br>(a) For a concurrent reference period:<br>$EF_{BM,y} = \sum_{p} EG_{p,t} \times EF_{EL,p,t} / \sum_{p} EG_{pt}$<br>(a) For a historical reference period:<br>$EF_{BM,y} = \{\sum_{p} EG_{p,t} \times EF_{EL,p,t} / \sum_{p} EG_{p,t}$<br>$\} \times [1 - F_{BM} \times (x - r)]$<br>P = Power units included in the build margin | y is explicitly at the left side of the equation and not at the right side. | It is suggested to add one more ∑ in the beginning to calculate power unit emissions for historical years depending upon the years for which the data is available *t* can be assigned values e.g. ∑ has a range from t=y-m to y-n for which data is available. |
| 24 | 5.7.1.3. Sub-step b: Determination of the BM emission factor (EFBM,y) | Paragraph 93.<br>For Case 1, a value of zero shall apply to the parameter *FBM,(likely annual decrease in BM emission factor)* as a simplified and reasonably conservative approach. For Case 2, a value of [X] shall be applied.<br>*Note: the MEP intends to conduct further analysis on the value to be used for FBM.* | | |

**Document reference number and title:**
**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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| 25 | 5.7.1.4 | Para 99<br>The CM emissions factor shall be calculated as follows:<br>$EF_{CM,t} = EF_{OM,t} \times w_{OM} + EF_{BM,t} \times w_{BM}$ | Replace t with y<br>**:** the signification of t vary from one formula to another<br>In this formula, y should replace t, $EF_{BM,t}$ should be $EF_{BM,\mathbf{y}}$<br>$EF_{OM,\mathbf{y}}$ will be equal to $EF_{OM,t}$ | The CM emissions factor shall be calculated as follows:<br>$EF_{CM,y} = EF_{OM,y} \times w_{OM} + EF_{BM,y} \times w_{BM}$ |

**Document reference number and title:**

**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

| Item | Section no. (as indicated in the document) | Paragraph/Table/Figure no. (as indicated in the document) | Comment (including justification for change) | Proposed change (including proposed text) |
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| 26 | 5.7.1.4. Sub step c: Dtermine the CM emission factor | *Texts taken from* Table 4: Default values for $W_{OM}$ and $W_{BM}$<br><br>$W_{OM}$ for intermittant electricity source: [0.5]<br><br>Uncertainty in $W_{OM}$ for intermittant electricity source: [X]<br><br>$W_{BM}$ for intermittant electricity source: [0.5]<br><br>Uncertainty in $W_{BM}$ for intermittant electricity source: [X]<br><br>$W_{OM}$ for non- intermittant electricity source: [0.25]<br><br>Uncertainty in $W_{OM}$ for non- intermittant electricity source: [X]<br><br>$W_{BM}$ for non- intermittant electricity source: [0.75]<br><br>Uncertainty in $W_{BM}$ for non-ntermittant electricity source: [X]<br><br>Note: *The MEP would like to seek comments from stakeholders on the values of weighting in the table above.* | See table 1 in the Appendix below:<br><br>Whether OM or BM is displaced depends on the type of grid and baseline scenario. Whether grid is surplus or deficit and what would happen in the absence of the incentive instrument? Would still an investment occur (BM)? Or not (OM). Also, what should be weights between OM and BM for pure energy efficiency projects? | See table 1 in the Appendix below |

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**A6.4-MEP010-A01: Draft Methodological tool: Emissions from electricity generation and/or consumption (version 01.0)**

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|---|---|---|---|---|
| 27 | 5.8.1 | Para 110<br>Equation 14<br>In other cases, the CO2 emission factor for electricity generation is calculated by allocating the fuel consumption between electricity and heat generation, as follows:<br>$EF_{BE/PE/LE,p,t} = [\sum (FC_{i,p,t} \times NCV_{i,t}) - HG_{p,t} / \eta_{boiler}] \times EF_{CO2,p,t} \;/ EG_{p,t}$ | This equation is not correct. It makes the assumption that the quantity of heat co-generated has the same value as equal amount of heat produced from fuel combustion in a boiler, which is not correct as the 2 amounts of heat do not has the same exergy.<br>**Two heat flows with the same energy but different temperatures are not equivalent, because high-temperature heat can be converted into much more useful heat or work, while low-temperature heat cannot.**<br>Suppose you burn fuel and get **100 units of heat at high temperature.** You can use that heat to run a heat pump and obtain **300 units of useful low-temperature heat** (COP = 3)<br>But if you start with **100 units of low-temperature heat, y**ou get **100 units of useful heat** — no amplification possible<br>Same fuel. Same energy quantity. **Very different outcomes.** | This is conservative for project emissions but not for baseline emissions |

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|---|---|---|---|---|
| 28 | 6. Monitoring methodology | *Texts from* Data parameter table 9:<br><br>*Data/parameter*: Average net energy conversion efficiency of power unit p in the project electricity system in period t.<br><br>Use either:<br>Documented manufacturer's specifications (if the efficiency of the plant is not significantly increased through retrofits or rehabilitations); or<br>For power plants connected to the electricity system: data from the<br>utility, the dispatch centre or official records if it can be deemed reliable;<br>or<br>[62 per cent] as the default value for Case 1 and [30 per cent] as the default value for Case 2 | A more conservative approach would be 30 percent as the default value for Case 1, and 62 percent as the default value for Case 2. | *Texts from* Data parameter table 9:<br><br>*Data/parameter*: Average net energy conversion efficiency of power unit p in the project electricity system in period t.<br><br>Use either:<br>Documented manufacturer's specifications (if the efficiency of the plant is not significantly increased through retrofits or rehabilitations); or<br>For power plants connected to the electricity system: data from the<br>utility, the dispatch centre or official records if it can be deemed reliable;<br>or<br>30 per cent as the default value for Case 1 and 62 per cent as the default value for Case 2 |

# Appendix

**Figure 1: Illustration of the concept of CPP conceived as a system**

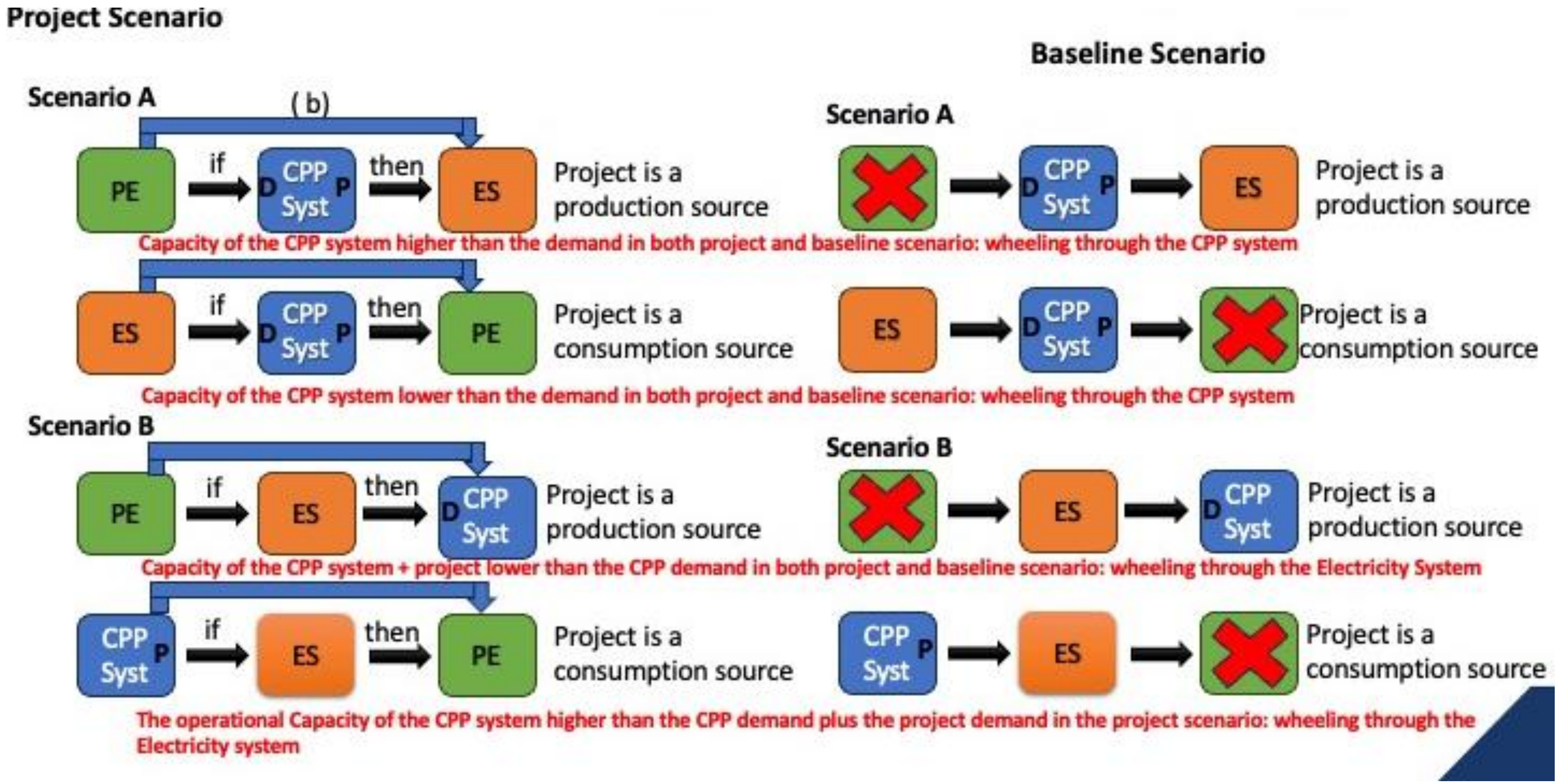

**Table 1: Default values for $w_{OM}$ and $w_{BM}$**

| Conditions | Justification | $w_{OM}$ | | $w_{BM}$ | |
|---|---|---|---|---|---|
| | | **Mean** | **Uncertainty** | **Mean** | **Uncertainty** |
| 1a. Deficit electricity grid with deficit in base load and peak load without significant instituional and/or investment barriers | In a fully deficit electricity grid (base load and peak load) where base load and peak load demand exceeds base load and peak load supply, and where investment climate is encouraging with a good economic activity in the country, we propose that more weight be given to BM than OM. This would be a realistic approach given that in a deficit grid the Art 6.4 project activity is less likely to displace existing plants but future investments. The situation needs to be monitored if the grid becomes surplus grid in future to be able to change the weights (See 2a scenario). | 0.25 | [X] | 0.75 | [X] |
| 1a. Deficit electricity grid with deficit in peak load without significant instituional and/or investment barriers | In a partially deficit electricity grid (peak load only) where peak load demand exceeds peak load supply, and where is investment climate is encouraging with a good economic activity in the country, we propose that weight of BM is higher than OM, but to a lesser extent than case 1a. This is because Art 6.4 project activity may displace some existing plants during base load period in addition to future investments. The situation needs to be monitored if the grid becomes surplus grid in future to be able to change the weights (See 2a scenario). | 0.40 | [X] | 0.60 | [X] |
| 1c. Deficit electricity grid with significant instituional and/or investment barriers | In a deficit electricity grid that suffers from significant instituional and/or investment barriers, we propose that the OM weight be 0.75 and the BM weight be 0.25. This would be a realistic approach given that Art 6.4 project activity is less likely to displace future investments, and it is likely that existing energy mix would continue to supply and due to deficit, consumer would have used high carbon intensive off-grid means to satisfy the demand. The situation needs to be monitored if the grid becomes surplus grid in future to be able to change the weights (See 2a scenario).<br><br>To apply these weights, activity participants must substantiate that due to the presence of significant institutional and/or investment barrier there would be very low incentive to invest to generate the amount of electricity of the project in the absence of carbon finance incentive because it is a key driver for the decision to invest or not invest.<br><br>Some examples of instituional/investment barriers that can be prohibitive for investments in new power plants in an electricity grid are provided below.<br><br>• High curtailment risk for renewable energy projects<br>• A below cost tariff | 0.75 | [X] | 0.25 | [X] |

| | | | | | |
|---|---|---|---|---|---|
| | • High WACC<br>• High foreign currency risk | | | | |
| 2a. Surplus electricity grid without any significant instituional and/or investment barriers | For a suplus electricity grid (baseload and peak load) that does not suffer from any significant instituional and/or investment barriers, we propose the equal weight for OM and BM. This would be realistic, given that Art 6.4 project activity is likely to displace existing plants and competing future investments in the same proportion. New capacity additions to meet increasing demand to the grid also does not face any major institutional and/or investment barrier.<br><br>Some markers for a surplus electricity grid without any significant instituional/investment barriers are provided below:<br><br>• Long term enforcebale PPA<br>• Credit-worthy and guaranteed offtaker<br>• Firm evacuation capability<br>• Low curtailment risk for renewable energy projects<br>• Stable regulatory environment<br>• Low foreign currency risk | 0.5 | [X] | 0.5 | [X] |
| 3.Pure energy efficiency projects (Art 6.4 project activity on consumer side) | We propose that 100% of the weight of OM for pure energy efficiency projects only on ex-post basis. Greenfield or brownfield EE projects generate emission reductions (project emissions – baseline emissions) solely from reduction of consumption on energy received in that year/hour. This approach is more realistic (although may appear to be a bit less conservative) at any given time emissions from a pure energy efficiciency projects only depends on the operational power plants of a grid. BM has no role when it comes to emission factor for EE projects. | 1 | [X] | 0 | [X] |