



WEST AFRICAN POWER POOL
SYSTEME D'ECHANGES D'ENERGIE ELECTRIQUE OUEST AFRICAIN
General Secretariat / Secrétariat Général

**UPDATE OF THE WEST AFRICAN POWER POOL (WAPP)
GRID EMISSION FACTOR (GEF) STANDARDIZED BASELINE**

**MEETING TO REVIEW AND ADOPT THE PRELIMINARY
FEASIBILITY STUDY REPORT**

MEETING REPORT



October 27-28, 2020

I. INTRODUCTION

1. The West African Power Pool (WAPP) Secretariat organised via videoconference from October 27 to 28, 2020, a meeting of the WAPP Strategic Planning and Environmental Committee (SPEC).
2. This meeting was organised subsequent to the meeting of SPEC which was held on September 17, 2020 to kick-off the update of the WAPP Grid Emission Factor (GEF) Standardized Baseline (SB).
3. The Objective of the meeting was to review and validate the draft Feasibility Study Report for the WAPP GEF.
4. Members of the WAPP Engineering and Operating Committee (EOC) who are not represented on SPEC also took part.
5. The following Members from the respective WAPP Committees were present:
 - (a) SPEC :
 - CEB (Benin, Togo)
 - CI-ENERGIES (Côte d'Ivoire)
 - EDM-SA (Mali)
 - NIGELEC (Niger)
 - Senelec (Senegal)
 - SOGEM (Mali, Senegal and Mauritania)
 - SONABEL (Burkina Faso)
 - TCN (Nigeria)
 - (b) EOC :
 - CEET (Togo)
 - CENIT (Ghana)
 - NAWEC (La Gambie)
 - CIE (Côte d'Ivoire)
 - CENPOWER (Ghana)
 - EDSA (Sierra Leone)
 - KARPOWERSHIP (Ghana)
 - North South Power Co Ltd (Nigeria)
 - Paras Energy & Natural Resources Development Limited (Nigeria)
 - SBEE (Benin)
 - VRA (Ghana)
 - LEC (Liberia)
 - MAINSTREAM (Nigeria)
 - SAHARA POWER (Nigeria)
6. The Designated National Authority (DNA) from Côte d'Ivoire, Burkina Faso, Mali, Togo and Nigeria participated in the meeting.
7. The meeting was also attended by experts from the World Bank, the Regional Collaboration Centre (RCC) of the United Nations Framework Convention on Climate Change (UNFCCC) based in Lome, as well as the Consultant, Mr. Martin Burian.
8. The list of participants is attached as Annex A.

9. The welcome address was delivered by Mr. Siengui A. Ki, Secretary General of WAPP. Mr. Ki welcomed the participants to the meeting and thanked them for their positive response to the invitation as well as for taking time out of their busy schedules to examine the draft Feasibility Study Report within the framework of the update of the WAPP GEF SB. The Secretary General particularly thanked the representatives of the DNA for their support during the approval of the previous GEF by the UNFCCC Secretariat and looked forward to getting the same support in the approval of the GEF being updated. The Secretary General then recalled the importance of updating the regional GEF and highlighted the benefits that the countries of the sub-region, especially, WAPP member Utilities can ultimately derive from carbon financing. The Secretary General indicated that the finalised GEF SB shall be submitted to the decision-making bodies of WAPP for its approval. Finally, he thanked the World Bank and the RCC based in Lome for their assistance and wished the meeting successful deliberations.
10. The meeting was chaired by Mr. Apho MAIGA, Chairperson of the WAPP SPEC.
11. The following were appointed as Rapporteurs for the meeting
 - (a) English: Engr. Shehu Abba-Aliyu (TCN)
 - (b) French: Wend Panga Roger OUEDRAOGO (SONABEL)
12. The adopted Agenda is attached as Annex B.

II. OUTCOMES OF THE MEETING

13. The RCC Lome made a presentation on the Procedures for Updating Standardized Baselines. The presentation highlighted all the stages required to update the GEF SB and the remaining stages that are left to submit the SB package to the UNFCCC Secretariat for approval. The following main stages were indicated by the presentation:
 - (a) Development of the power sector-specific data template;
 - (b) Identification and engagement of the stakeholders that will provide the required data;
 - (c) Preparation of the supplementary documentation;
 - (d) Preparation of the "Proposed standardized baseline submission form";
 - (e) Preparation of the Quality Assurance and Quality Control Report;
 - (f) Public consultation;
 - (g) Contracting of a Designated Operational Entity (DOE) to obtain the "Assessment Report";
 - (h) Issuance of the Letter of Approval (LoA) by the DNAs and;
 - (i) Submission of the package to the UNFCCC Secretariat.
14. The presentation of RCC is attached as Annex C.
15. The Consultant in charge of the GEF's update also made a presentation on the draft Feasibility Study Report. The presentation depicted, among others, the steps that were taken to evaluate the preliminary updated GEF that included:
 - 15.1 Step 1: Identify the relevant electricity systems;
 - 15.2 Step 2: Choose whether to include off-grid power plants in the network (optional);
 - 15.3 Step 3: Select a method to determine the Operating Margin (OM);
 - 15.4 Step 4: Calculate the OM emission factor according to the selected method;
 - 15.5 Step 5: Calculate the Build Margin (BM) emission factor;
 - 15.6 Step 6: Calculate the Combined Margin (CM) emission factor.

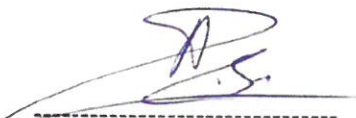
16. The presentation of the Consultant is attached also as Annex C.
17. From the presentations, the following was noted:
- 17.1. The electricity systems that were taken into account were those of ECOWAS Member States that were interconnected as at 2019 namely Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, Senegal and Togo;
 - 17.2. All the data needed for the calculation of the OM, BM and the CM were collected from 273 power plants/units which were connected to the grid. Out of these power plants, 245 were fossil-fuel based;
 - 17.3. The only outstanding data to be collected is from two (2#) power plants/units, one in Niger and the second one in Nigeria;
 - 17.4. The Consultant used UNFCCC's Tool 7 to evaluate the updated preliminary GEF;
 - 17.5. The deadline for the submission of the final SB package to the UNFCCC Secretariat is December 15, 2020. The UNFCCC shall then perform a completeness check and shall, within 60 days, either approve the GEF or request corrective action or clarifications;
18. From the discussions that followed the presentations, the meeting concurred on the following:
- 18.1. The WAPP Member Utilities were requested to validate their respective data indicated in the draft Feasibility Study Report by October 30, 2020 and to transmit any reactions to Mawufemo Modjinou (mmodjinou@ecowapp.org) with copy to Bernard Hessou (bhessou@ecowapp.org) and Martin Burian (martin.burian@mailbox.org). Beyond this date, the data shall be considered as validated;
 - 18.2. The WAPP Secretariat shall arrange for bilateral discussions to be held for data collection on CALABAR power plant in Nigeria and SONICAR power plant in Niger by the Consultant regarding the remaining data so that they can be taken into account in the preliminary GEF calculation;
 - 18.3. Data from Sierra Leone, Liberia and Guinea shall be collected and incorporated in the GEF SB upon commissioning of the CLSG line;
 - 18.4. RCC Lome shall accelerate the coordination in obtaining the LoAs from the DNAs given that the GEF SB final package has to be submitted to the UNFCCC by December 15, 2020;
 - 18.5. The preliminary estimated value for the updated WAPP GEF is 0.601 tCO₂/MWh. It shall be assumed that the Final GEF value shall be within $\pm 8\%$ of the evaluated preliminary estimated GEF value instead of $\pm 15\%$.
19. In conclusion, the participants adopted the Feasibility Study Report subject to the integration of the relevant comments made during the meeting. The Consultant confirmed that the Final Report indicating the preliminary GEF shall be submitted by November 3, 2020.

III. ACKNOWLEDGEMENTS

20. The participants commended the Consultant for the quality of the work done.
21. The participants reaffirmed their commitment to collaborate for a rapid conclusion of the Study.
22. The meeting expressed its sincere thanks and appreciation to the World Bank, the RCC and the UNFCCC for their support in the implementation of WAPP priority programme in general and the Climate Market Program in particular.
23. The meeting also thanked the WAPP Secretariat for the coordination work on the study as well as the organisation of the meeting.

Done via videoconference, this day of October 28, 2020

**FOR: Chairperson of
WAPP SPEC**



Apho Maïga
Directeur Technique
SOGEM

**FOR: WAPP General
Secretariat**



Momodou A.K. Njie
Director PIPES

**FOR: World Bank
(WB)**



Sandhya Srinivasan
Climate Change Specialist

FOR: Consultant



Martin Burian
Consultant

ANNEX A

LIST OF PARTICIPANTS



WEST AFRICAN POWER POOL GRID EMISSION FACTOR (GEF) STANDARDIZED BASELINE:

MEETING VALIDATE WAPP GEF FS REPORT TO UPDATE GEF, OCTOBER 27 – 28, 2020

PROJET DE MISE À JOUR DU NIVEAU DE RÉFÉRENCE NORMALISÉ DU FACTEUR D'ÉMISSION DU RÉSEAU
ÉLECTRIQUE (FER) DE L'EEEOA : RÉUNION DE VALIDATION, 27-28 OCTOBRE 2020

VIDEOCONFERENCE, OCTOBER 27-28, 2020

LIST OF PARTICIPANTS/LISTE DES PARTICIPANTS

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ANNEX B

ADOPTED AGENDA



WEST AFRICAN POWER POOL
SYSTEME D'ECHANGES D'ENERGIE ELECTRIQUE OUEST AFRICAIN
General Secretariat / Secrétariat Général

**WEST AFRICAN POWER POOL GRID EMISSION FACTOR (GEF)
STANDARDIZED BASELINE UPDATE PROJECT**

FEASIBILITY STUDY REPORT REVIEW AND ADOPTION MEETING

October 27-28, 2020 (Video Conference (VC))

Draft Agenda

Cotonou Time		October 27, 2020
14:30 – 15:00		Connection of Participants to the VC
15:00 – 15:10		Opening Address by the WAPP Secretary General
15:10 – 15:20		Introduction of Participants and Appointment of Rapporteurs
15:20 – 16:00		Presentation on the GEF Update Approach by RCC (10 min) ➤ Discussions (30 min)
16:00 – 17:00		Presentation on the Feasibility Study Report by the Consultant (30 min) ➤ Discussions (30 min)
17:00 – 17:10		Closing Remarks
Cotonou Time		October 28, 2020
10:00 – 16:00		Preparation of Meeting Report (Offline)
16:00 – 16:50		Consideration and Adoption of the Draft Report
16:50 – 17:00		Closing Remarks

NB: Cotonou Time = GMT +1; Washington DC Time= Cotonou Time – 5

Annex C: PowerPoint Presentations

(Please find it attached)

Procedure for updating standardized baselines

Regional Collaboration Center Lome (RCC Lome)

October 27-28, 2020

Procedure for updating standardized baselines

Procédure de mise à jour des lignes de base normalisées

1 Read the Procedure for the
*“Development, revision, clarification
and update of standardized baselines”*

2 Develop the sector-specific data
template

3 Identify and engage the organizations
that will provide the required data

4 Prepare the supplementary
documentation

5 Prepare of the “Approved
standardized baseline update request
form”

1. Lecture de la procedure pour le
“Développement, la revision, la
clarification et la mise a jour du Niveau
de Référence Normalisé ”

2. Développer le le modèle de données
spécifiques au secteur

3. Identifier et engager les qui
fourniront les données exigées

4. Preparer la documentation
complementaire

5. Preparer le formulaire de mise a jour
du Niveau de Référence Normalisé
demandé

Procedure for updating standardized baselines

Procédure de mise à jour des lignes de base normalisées

6 Prepare the Quality Assurance and
Quality Control (QA/QC) report

6. Préparer le rapport d'Assurance
Qualité/Contrôle Qualité (AQ/CQ)

7 Conduct a public consultation

7. Conduire une consultation publique

8 Contract a designated operational
entity (DOE) to obtain the "Assessment
Report"

8. Recruter une Entité Operationnelle
Désignée (EOD) pour préparer le
"rapport d'évaluation"

9 Issue Letter of Approval (LoA)

9. Délivrer les lettres d'Approbation (LA)

10 Submit the package to the
Secretariat

10. Soumettre le dossier au Secretariat
de la CCNUCC

Thank you

Merci

THE UPDATE OF THE WEST AFRICAN POWER POOL (WAPP) GRID EMISSION FACTOR (GEF)

MARTIN BURIAN

27TH OCTOBER 2020

METHODOLOGY

- Use of the UNFCCC Tool 7: 'Tool to calculate the emission factor of an electricity system'
- Kick-off meeting
- Data collection
 - ❖ Individual conference calls with WAPP members
 - ❖ Data collection templates
 - ❖ Submission of data to WAPP
- West African power system includes utilities / IPPs which are not member to WAPP
 - ❖ Some instances, WAPP members could supply data
 - ❖ Data provided by grid operators
 - ❖ Nigeria and Ghana -> data provided by the regulators
- Fairly complete data set in a very short time period

CLEAN DEVELOPMENT MECHANISM

TOOL07

Methodological tool

Tool to calculate the emission factor for an electricity system

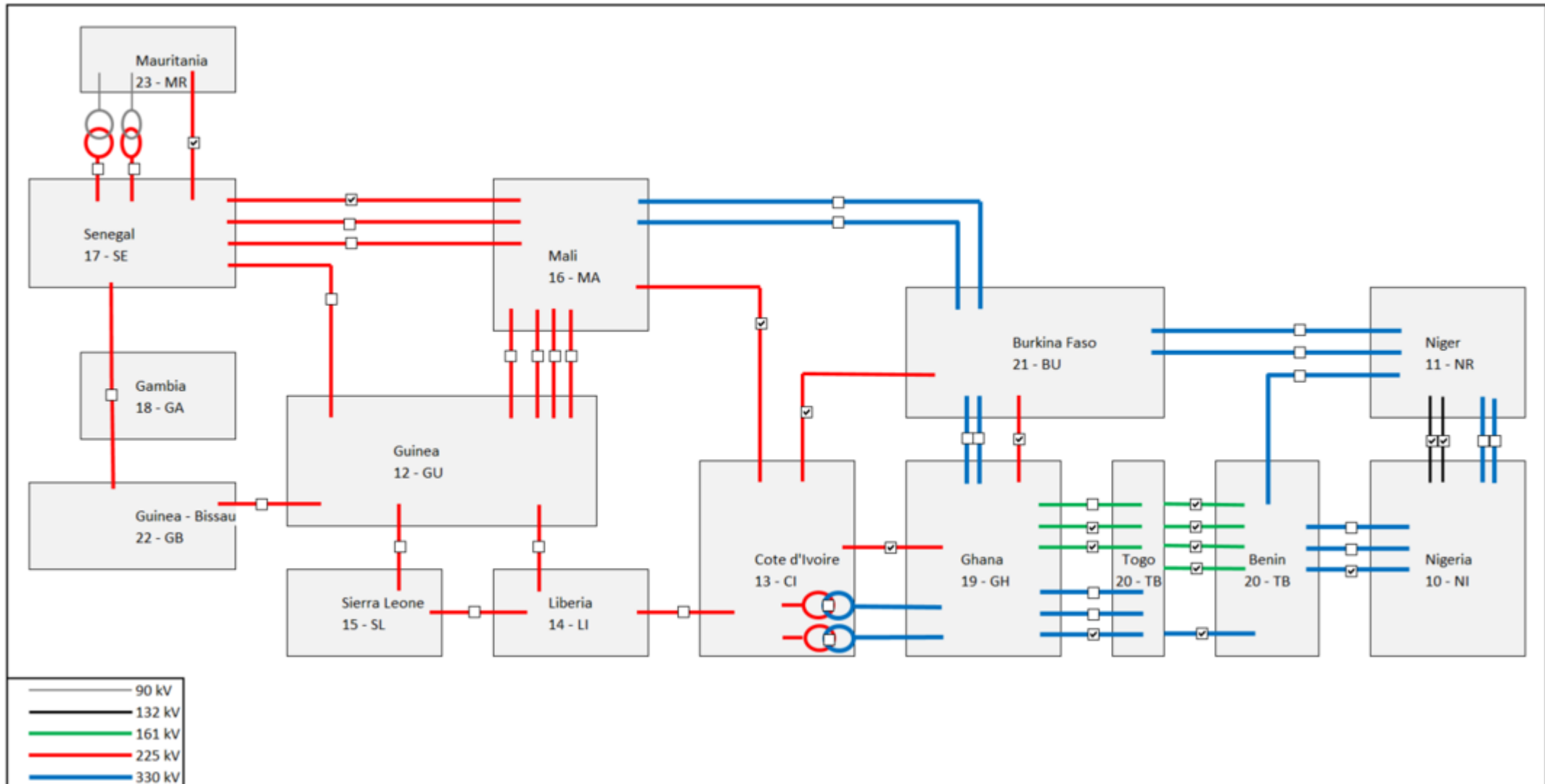
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United Nations
Framework Convention on
Climate Change

STEP 1: IDENTIFY THE RELEVANT ELECTRICITY SYSTEM

Figure-1:-Current-and-planned-Transmission-Line-Design-Capacities-in-West-Africa



STEP 1: IDENTIFY THE RELEVANT ELECTRICITY SYSTEM

- Current regional scope identical to the GEF submission in 2017, but...
- Tie line / substations Cote d'Ivoire to Liberia and Sierra Leone will be commissioned in 12/2020!
- Tie line connecting Sierra Leone to Guinea may be commissioned in June 2021
- Conclusions
 - ❖ Up to three additional countries to be covered;
 - ❖ UNFCCC / RCC clarified that additional countries may be added, once commissioned
 - ❖ Proceed with data collection for Guinea, Liberia and Sierra Leone

STEP 2: CHOOSE WHETHER TO INCLUDE OFF-GRID PLANTS

- May add only little to GEF and very data intensive
- Not included in initial submission

STEP 3: CHOOSE SELECT A METHOD TO DETERMINE THE OM

- Definition of Low-Cost/Must-Runs / Non Low-Cost/Must-Runs
- Determination of Low Cost/Must Run Share

Table 1: Determination of the Low-Cost/Must-Run Share					
Year	2015	2016	2017	2018	2019
Total electricity generation	60,834,173	60,758,196	65,493,873	68,496,601	72,269,270
Average annual electricity generation in five years	➡ 65,570,423				
Generation from low-cost/must-run power units	16,491,003	18,428,577	18,624,162	19,206,991	22,426,798
Average generation from total grid generation	➡ 19,035,506				
Low-Cost/Must-Run Resource share	29.03%				
Applicability of Simple OM or Average OM	Simple OM				

- Simple OM applicable -> consider only non low-cost/must-runs

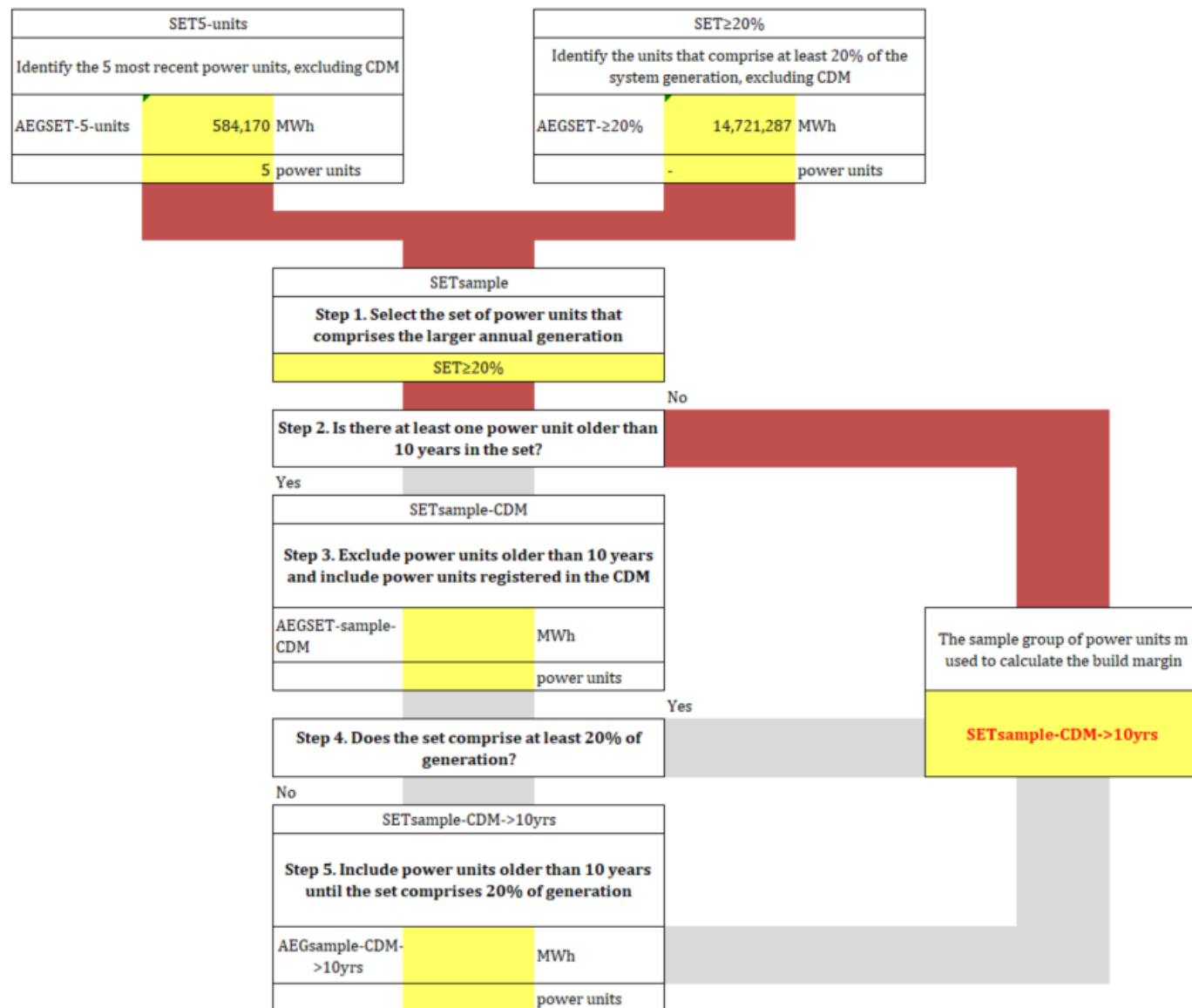
STEP 4: CALCULATE OPERATING MARGIN EF

- High data demands
- Simple OM Approach

Table 3: Calculation of the Simple OM	
2017 Electricity Generation (in MWh)	26,870,520
EF _{grid,OMsimple, 2017} (in tCO ₂)	0.5048
2018 Electricity Generation (in MWh)	29,003,432
EF _{grid, OMsimple, 2018} (in tCO ₂)	0.5736
2019 Electricity Generation (in MWh)	28,359,369
EF _{grid, OMsimple, 2015/16}	0.6113
Operating Margin Emission Factor(t-CO ₂ /MWh)	0.5644

GEF DEVELOPMENT

- Step 5: Identify the Group of Power Units in the BM



STEP 6: CALCULATE BUILD MARGIN

➤ STEP 6: Calculate Build Margin EF

Table 4: Determination of the Built Margin Emission Factor	
Number of Power Units	73
BM Generation 2019 (in MWh)	14,721,287
BM Emissions 2019 (in tCO2)	9,375,849
Built Margin Emission Factor (in tCO2/MWh)	0.6369

Table 8: Calculation of the Build Margin for 2019						
No.	Name of Power Unit	Date Commissioned		Generation (in MWh)	Emissions (in tCO2)	Share of Generation
		Year	Month			
6	Maria-Gleta 1	2019	8	252,306	312,975	0.3%
28	AGGREKO THERMIQUE (location)	2019	6	149,549	103,944	0.6%
59	Cenpower GT1	2019	6	58,763	49,718	0.6%
...
271	Dapaong	2014		262	219	18.8%
2	MARIA-GLETA CAI Decomissione	2013			-	18.8%
33	Ciprel 4	2013		749,159	188,009	19.8%
40	Aggreko 3	2013		389,822	103,151	20.4%

STEP 7: CALCULATE COMBINED MARGIN EF

- Combination of BM + OM

Table 5: Summary of the Emission Factor for the West African Power System			
OM Emission Factor (in t-CO ₂ /MWh)	0.5644		
BM Emission Factor (in t-CO ₂ /MWh)	0.6369		
	Weight of the OM	Weight of the BM	CM Emission Factor (in t-CO ₂ /MWh)
Wind and solar power generation project activities for the first crediting period and for subsequent crediting periods	0.75	0.25	0.5825
All other projects for the first crediting period	0.5	0.5	0.6006
All other projects for the second and third crediting period	0.25	0.75	0.6188

- Expiring GEF (0.5/0.5): 0.562

DATA QUALITY

- Data on 273 power plants /units, more complete than the previous submission
 - ❖ IPPs
 - ❖ Power plants that were connected to MV / LV grid

- 245 fossil fuel based power units
 - ❖ 240 power units with data on fuel consumption (98%)
 - ❖ 40 power units with data on net calorific value / LHV on primary fuel
 - ❖ 22 power units with data on secondary fuel
 - ❖ 11 power units with net calorific value on secondary fuel

VALIDATION & NEXT STEPS

- Final value will change during review & validation process
- Suggestion – conditional validation, final value +/-15% of current value
- WAPP members / consultant
 - ❖ Close existing data gaps
 - ❖ Review correctness and completeness of GEF data set
- Pursue data collection from Liberia, Sierra Leone and Guinea
- Submission for validation

Thank you for your Attention!

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