



Assessment Report for CDM proposed standardized baseline (Version 02.0)

(To be used by the UNFCCC secretariat in assessing the quality of a proposed standardized baseline only when requested by eligible DNAs.)

Title of proposed standardized baseline:	Grid Emission Factor for the Republic of Kenya
Reference of proposed standardized baseline:	PSB0055
Name(s) of the Party or Parties to which the proposed standardized baseline applies:	Republic of Kenya
Name(s) of the proponent(s) of the proposed standardized baseline:	CDM DNA: National Environment Management Authority (NEMA-Kenya)
History of the submission & assessment:	<p>1) 20/06/2020: First submission was received 10/07/2020: Initial assessment was finalized 15/09/2020: Its assessment was finalized</p> <p>2) 09/10/2020: Second submission was received 20/10/2020: Its assessment was finalized</p> <p>3) 02/11/2020: Third submission was received 16/11/2020: Its QA/QC assessment was finalized</p> <p>4) 17/11/2020: Assessment report is finalised</p>
<p>Conclusion:</p> <p>(a) The quality assurance and quality control system complied with the provisions and data quality objectives of the valid “Guidelines for quality assurance and quality control of data in the establishment of standardized baselines”</p> <p>(b) The approach used by this proposed standardized baseline complied with one of the approaches referred to in the valid “Procedure for development, revision, clarification and update of standardized baselines”:</p>	<p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> N/A</p> <p><input type="checkbox"/> One of the four approved approaches:</p> <p><input type="checkbox"/> The “Guidelines for the establishment of sector specific standardized baselines”;</p> <p><input type="checkbox"/> A methodological approach contained in an approved baseline and monitoring methodology;</p> <p><input checked="" type="checkbox"/> A methodological approach contained in an approved methodological tool;</p> <p><input type="checkbox"/> The “Guideline: Establishment of standardized baselines for afforestation and reforestation project activities under the CDM”.</p>
Date when the assessment report is completed:	17/11/2020

SECTION A. Summary of Proposed Standardized Baseline

A.1. Scope and application of the proposed standardized baseline

1. The proposed standardized baseline (PSB) is developed for
 - (a) Additionality demonstration;
 - (b) Baseline identification;
 - (c) Baseline emission estimation
2. The sector to which this PSB applies is energy sector, *which includes* determination of grid emission factor.
3. Projects shall use standardized baseline together with the approved methodological tool, Tool to calculate the emission factor for and electricity system, version 07.0 (hereinafter referred as 'the tool').

A.2. Description of the proposed standardized baseline

4. Key data parameters and data sources:

Key data parameters	Data sources
Fuel properties (NCV, emission factor)	For NCV: IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Vol.2, Chapter 1, Table 1.2 and Table 1.4 For EF: IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Vol.2, Chapter 1, Table 1.2 and Table 1.4
Fuel consumption	Fuel consumption data was recorded at respective plants and reported in the OR to the Kenya Power and Lighting Company PLC (Kenya Power) and Energy and Petroleum Regulatory Authority (EPRA). This information is submitted to National control centre data and Kenya Gazette on a yearly basis.
Electricity generation in the national grid	The electricity generation data on monthly basis was recorded by respective plants and reported to Kenya Electricity Generating Company PLC (KenGen). This information is submitted to National control centre data on a yearly basis.
Electricity imports/exports from Independent power producers, (Generation by IPPs)	The electricity generation data on monthly basis was recorded by respective plants and reported to KenGen. This information is submitted to National control centre data on a yearly basis.

5. The scope and coverage of the data:
 - (a) The PSB identifies, as part of the relevant electricity system:
 - (i) 18 Hydropower plants with individual power plant capacity ranging from 0.28 MW to 225 MW. The total installed capacity of all the hydropower plants is 825.70 MW;
 - (ii) 13 Thermal power plants including 2 operated on Kerosene, 10 operated on Heavy Fuel Oil and 1 operated on biomass. The individual power plant capacity ranges from 26 MW to 120 MW. The total installed capacity of all the thermal power plants is 834.67 MW;
 - (iii) 13 Geothermal power plants with individual power plant capacity ranging from 2.44 MW to 140.00 MW. The total installed capacity of all the geothermal power plants is 663.04 MW;
 - (iv) 4 Wind power plants with individual power plant capacity ranging from 5.10 MW to 310.00 MW. The total installed capacity of all the wind power plants is 335.50 MW;
 - (v) 1 biogas power plant with capacity of 2.00 MW; and
 - (vi) 1 solar PV power plant with capacity of 0.25 MW;
 - (b) The total installed capacity of the grid is 2659.15 MW;
 - (c) The data include key information of each power plant (name, technology, electricity generation, fuel type/consumption and commissioning data);
 - (d) The data represents Republic of Kenya;
 - (e) The data represent three years (2017, 2018 and 2019).
6. The DNA used a data template in accordance with the tool.
7. The development of the PSB includes only grid-connected power plants operated by Kenya Power and Independent power producers (IPP). The state operated Kenya Power owns 61% of the installed capacity while remaining is owned by IPPs.
8. As the total low-cost/must-run (LCMR) average from 2015 to 2019 is 83 per cent, since this is above 50 per cent, Simple adjusted operating margin (OM) method is applied to calculate OM emission factor (EF).
9. The data for 2019 is used to calculate built margin (BM) EF.

SECTION B. Summary of Assessment

B.1. Assessment process

10. The purpose of assessment conducted by the secretariat is: i) to ensure that the QA/QC system implemented by the DNA complies with the provisions and data quality objectives of the "Guidelines for quality assurance and quality control of data used in the establishment of standardized baselines" (hereinafter referred to as QA/QC guidelines); ii) to ensure that the PSB complies with one of the approved approaches.
11. The assessment consisted of the following:
 - (a) Review of the documents submitted,

- (b) Identification of issues (assessment findings) and draft of the assessment “findings and resolution” note,
 - (c) Communication of assessment findings with DNA and request for their resolution and response,
 - (d) Direct communication with DNA,
 - (e) Review of the additional documents and/or responses provided by DNA,
 - (f) Closing the findings,
 - (g) Conclusion of the assessment report.
12. A desk review was performed on the following data/information submitted as part of the PSB.
- (a) First submission dated 20/06/2020 which was successful in the initial assessment included:
 - (i) PSB form (CDM-PSB-FORM), version 1.0 dated 20/06/2020;
 - (ii) Excel sheet containing calculation of grid emission factor of Kenyan grid;
 - (iii) Excel sheet containing base data such as records of power generation, fuel consumption for vintage period;
 - (iv) QC report dated 22/06/2020;
 - (v) Other supporting document including copy of development of a power generation and transmission master plan for Kenya, schedule of tariffs, copy of email explaining the methodology to estimate fuel consumption of each power plant using power generation data.
 - (b) Assessment findings were communicated to the DNA on 15/09/2020.
 - (c) Second submission dated 09/10/2020 included:
 - (i) Responses to the findings;
 - (ii) Revised excel sheet containing emission factor calculations;
 - (iii) Corrected excel file that contains base data; and
 - (iv) Revised CDM-PSB-FORM.
 - (d) Assessment findings were communicated to the DNA on 20/10/2020.
 - (e) Third submission dated 02/11/2020 included:
 - (i) Responses to the findings;
 - (ii) Revised excel sheet containing emission factor calculations; and
 - (iii) Revised CDM-PSB-FORM.
 - (f) The additional submissions clarified all issues raised by the secretariat and QA/QC assessment was finalized on 17/11/2020.

B.2. Assessment opinion:

13. In accordance with the QA/QC guidelines, the secretariat concluded that the all following requirements were met by this PSB:
 - (a) QC system was implemented to check the data quality before/during/or after data collection. All primary data come directly from the Kenya Power. The information regarding electricity generation and fuel consumption is monitored on a monthly basis by individual power plants. The data is archived and maintained at Kenya Power in such a way that allow for the reproduction of the calculation of the emission factor of the grid;
 - (b) QC activities were clearly documented in the QC report. Data templates were presented to the power sector through which the required data for the grid emission factor calculation is maintained and submitted to Kenya Power and then to the DNA to facilitate further transparency and quality control;
 - (c) All relevant documents and data were available for assessment. The data used in the calculation are available at the Kenya Power;
 - (d) The data scope was comprehensive enough to produce a “true and fair” representative standardized baseline in the particular sector;
 - (e) The key data and information are consistently presented;
 - (f) The data vintage (three years) was met as per the provisions of the tool;
 - (g) The assumptions and conservative approaches for data processing and calculations were justified;
14. The details of issues (assessment findings) identified by the secretariat and the responses provided by the DNA are provided in Appendix 1 to this document.
15. The secretariat concluded that the PSB complied with the approach of the tool.

Appendix 1. Findings and resolutions

CL No	Request for Clarification (CL)					Reference to general provisions of guidelines on quality assurance and quality control of data used for sector-specific standardized baselines	Responses and corrective actions of DNA	Conclusion (open/closed)
1	Inconsistencies are observed in fuel consumption data for following power plants while cross-checking the data reported against the reference provided. The inconsistencies affect the calculation of operating margin (OM) EF.					Para 15 (c) and Para 15 (f)	The DNA has made corrections to the fuel consumption records in-line with the base records provided in excel file “Kenya GEF SB_base data” and re-calculated the OM EF.	The DNA has corrected the inconsistencies in fuel consumption data for identified plants. The data provided in the revised version of the excel file and CDM-PSB-FORM is same as verified from excel file “Kenya GEF
Power Plant	Fuel consumption amount provided as in worksheet “SIMPLE_OM_GRID_ADJ_DATA” of excel file “Kenya SB table”	Reference cell	Fuel consumption amount verified from worksheet “Power Plants” of excel file “Kenya GEF SB_base data”	Reference cell				
Fuel consumption discrepancy for 2017								
Kipevu III Diesel	38,092,740.00	G64	38,002,043.00	U44				
Muhoroni Gas Turbines II	63,000.00	G65	59,814.92	U45				
Muhoroni Gas Turbines I	34,086,823.67	G66	34,027,008.75	U46				
Fuel consumption discrepancy for 2018								
Kipevu III Diesel	107,547,090.00	G77	107,291,025.50	U65				
Fuel consumption discrepancy for 2019								
Kipevu III Diesel	122,599,260.00	G88	122,307,357.00	U86				
Muhoroni Gas Turbines II	3,780,000.00	G89	3,779,187.30	U87				

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	Muhoroni Gas Turbines I	17,463,600.00	G90	17,463,247.20	U88			SB_base data". CL is closed.															
	The DNA is requested to correct these inconsistencies in the fuel consumption records in-line with the base records provided in excel file "Kenya GEF SB_base data" and re-calculate the OM EF.																						
2	<p>Inconsistencies are observed in electricity generation and fuel consumption records for following power plants while cross-checking the data reported against the reference provided. The inconsistencies affect the calculation of build margin (BM) EF.</p> <ul style="list-style-type: none"> i) Kipevu III Diesel plant; ii) Muhoroni Gas Turbines II; and iii) Muhoroni Gas Turbines I <p>Inconsistencies in electricity generation data</p> <table border="1"> <thead> <tr> <th>Power plant</th> <th>Electricity generation as provided in worksheet "BUILD_MARGIN_DATA" in excel file "Kenya SB table"</th> <th>Reference cell</th> <th>Electricity generation as verified from worksheet "KPLC Data" and "KPLC Data1" in excel file "Kenya GEF SB base data"</th> <th>Reference cell</th> </tr> </thead> <tbody> <tr> <td>Kipevu III Diesel</td> <td>583,806.00</td> <td>C60</td> <td>489,657.00</td> <td>H20 of KPLC data</td> </tr> <tr> <td>Muhoroni Gas Turbines II</td> <td>12,000.00</td> <td>C74</td> <td>11,997.42</td> <td>F7 of KPLC data1</td> </tr> </tbody> </table>					Power plant	Electricity generation as provided in worksheet "BUILD_MARGIN_DATA" in excel file "Kenya SB table"	Reference cell	Electricity generation as verified from worksheet "KPLC Data" and "KPLC Data1" in excel file "Kenya GEF SB base data"	Reference cell	Kipevu III Diesel	583,806.00	C60	489,657.00	H20 of KPLC data	Muhoroni Gas Turbines II	12,000.00	C74	11,997.42	F7 of KPLC data1	Para 15 (c) and Para 15 (f)	The DNA has made corrections to the electricity generation data in-line with the base records provided in excel file "Kenya GEF SB_base data" for the power plants Muhoroni Gas Turbines II and Muhorono	The DNA has corrected the inconsistencies in electricity generation data and fuel consumption data for identified plants. The data provided in the revised version of the excel file "Kenya_GEF_SB" and CDM-PSB-
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	Muhoroni Gas Turbines I	55,440.00	C77	55,438.88	F6 of KPLC data1		<p>Gas Turbines I.</p> <p>The DNA has made corrections to the fuel consumption data in-line with the base records provided in excel file “Kenya GEF SB_base data”</p> <p>The BM EF has been recalculated.</p> <p>Corrections have been</p>	<p>FORM is same as verified from excel file “Kenya GEF SB_base data”.</p> <p>Since the fuel consumption is back-calculated using the electricity generation amount, the DNA has also corrected the electricity generation data reported in the source file “Kenya</p>																				
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			<p>made to the electricity generation data for the Kipevu III plant in line with the clarification request.</p> <p>Further, inconsistencies in fuel consumption data for the Kipevu III Diesel plant have been corrected. Fuel consumption data is now reflected as:</p>	<p>GEF SB_base data” and accordingly revised the excel file “Kenya_GEF_SB” and CDM-PSB-FORM.</p> <p>It is also confirmed that the OM, BM and CM values as reported in CDM-PSB-FORM are consistent with the one reported in the excel file</p>

CL No	Request for Clarification (CL)	Reference to general provisions of guidelines on quality assurance and quality control of data used for sector-specific standardized baselines	Responses and corrective actions of DNA	Conclusion (open/closed)
			107,291,026 for year 2017; (Cell U44), 122,307,357 for year 2018 (Cell U65) and 102,583,142 for 2019 (Cell U 86). The BM and OM have been recalculated.	“Kenya_GEF_SB”. CL is closed.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	27 May 2013	Initial publication
02.0	01 June 2015	Modified in order to take into account the Board's decision and improve clarity and consistency

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