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 of Mauritius
Reference of proposed standardized baseline:	PSB0008
Name(s) of the Party or Parties to which the proposed standardized baseline applies:	Republic of Mauritius
Name(s) of the proponent(s) of the proposed standardized baseline:	Designated national authority (DNA) of Mauritius
History of the submission & assessment:	1) 13/11/2013: first submission was received • 15/11/2013: findings of the Secretariat's evaluation pertaining to the completeness at the stage of initial assessment were provided to the DNA 2) 03/12/2013: second submission was received • 04/12/2013: initial assessment was finalized and the proposed standardized baseline (PSB) was uploaded on the UNFCCC website. • 23/01/2014: findings of the Secretariat's evaluation pertinent to the quality assurance/quality control (QA/QC) findings were raised in accordance with the requirements of "Guidelines for quality assurance and quality control of data used in the establishment of standardized baselines" (QA/QC guideline) were provided to the DNA. 3) 18/02/2014: third submission was received • 26/03/2014: findings of the Secretariat's evaluation pertinent to the quality assurance/quality control (QA/QC) were provided to the DNA. 4) 28/04/2015: fourth submission was received • 12/05/2015: findings of the Secretariat's evaluation pertinent to quality assurance/quality control (QA/QC) were provided to the DNA. 5) 16/06/2015: fifth submission was received • 28/09/2015: its assessment was finalized for quality aspects and the submission was considered to be in compliance with the QA/QC guidelines, and therefore all QA/QC findings were closed.

Conclusion:	
(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"	☒ Yes ☐ No ☐ N/A
(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":	☒ Yes ☐ No Using one approved approach: ☐ The "Guidelines for the establishment of sector specific standardized baselines"; ☐ A methodological approach contained in an approved baseline and monitoring methodology; ☒ A methodological approach contained in an approved methodological tool "Tool to calculate the emission factor for an electricity system" (version 04.0.0); ☐ The "Guideline: Establishment of standardized baselines for afforestation and reforestation project activities under the CDM".
Date when the assessment report is completed:	08/12/2015

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. This PSB applies to the energy industries sector, which includes electricity generation/ consumption in the island of Mauritius, the most populated island of the Republic of Mauritius.

3. Projects shall use the standardized baseline together with the approved methodologies where the "Tool to calculate the emission factor for an electricity system" (version 04.0.0) (hereinafter referred to as "the tool") is referenced.

A.2. Description of the proposed standardized baseline

4. Key data parameters and data sources:

Key data parameters	Data sources
Net calorific values (NCV) of fuel	2006 IPCC default values
Fuel consumption	Statistics Mauritius (Digest of Energy and Water Statistics) for 2012, 2013 & Central Electricity Board (CEB) data based on individual power plant information
Electricity generation in the national grid	Statistics Mauritius (Digest of Energy and Water Statistics) 2012, 2013 & Central Electricity Board (CEB) data based on individual power plant information

5. The scope and coverage of the data:

   (a) The PSB identifies, as part of the relevant electricity system 29 different power units including hydro power units, photovoltaic, units using coal, HFO, diesel, bagasse, landfill gas and kerosene.

   (b) The data include key information of each facility (name, capacity, technology, electricity generation, fuel type/consumption, commission date)

   (c) The data represent all regions in the island of Mauritius.

   (d) The fuel consumption and electricity generation data represent three years (2012, 2013 and 2014).

   (e) The data of renewable electricity represents five years (2010~2014)

6. The DNA uses a data template in accordance with the approved tool.

7. The PSB includes only grid connected power plants.

8. The PSB does not take into account electricity import as there is no electricity import.

9. As the total low-cost/must-run (LCMR) average from 2010 to 2014 is 17.7% (i.e. below 50%), simple OM method is applied.

10. For information not obtained against a specific parameter for individual plants, the data for net calorific values and emission factors were determined by the use of a conservative approach as per the “Guidelines for quality assurance and quality control of data used in the establishment of standardized baselines” using 2006 IPCC default values.

SECTION B. Summary of Assessment

B.1. Assessment process

11. 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); and ii) to ensure that the PSB complies with the requirements of the tool.

12. 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.

13. A desk review was performed on the following data/information submitted as part of the PSB:

    (a) Second submission dated 03/12/2013 which was successful in the initial assessment included:

        (i) Grid emission factor of Mauritius 2012;

        (ii) Proposed standardized baseline form (F-CDM-PSB);

        (iii) Calculation sheet;

    (b) Assessment findings were communicated to the DNA on 23/01/2014, in response to which the DNA submitted the revised calculation and additional relevant documents;

    (c) Third submission, addressing the secretariat's finding, dated 18/02/2014 included:

        (i) Calculation sheet GEF of Mauritius;

        (ii) Note on Data Quality Assurance and Quality Control

        (iii) Grid emission factor for Mauritius Calculations

    (d) Assessment findings were communicated to the DNA on 26/03/2014, in response to which the DNA submitted the revised calculation and additional relevant documents;

    (e) Fourth submission, addressing the secretariat's finding, dated 28/04/2015 included:

        (i) Central Electricity Board Certification Letter;

        (ii) Comments related to the updated submission

        (iii) Grid emission factor for Mauritius Calculations

        (iv) Revised form (F-CDM-PSB) for GEF Mauritius;

    (f) The submission was considered to be compliant with the QA/QC guideline, and therefore all QA/QC findings were closed. During preparation of the recommendation, further inputs were required and additional information was submitted through fifth submission;

(g) Fifth submission dated 16/06/2015, addressing the secretariat's findings during recommendation stage included:

(i) Comments related to updated submission;

B.2. Assessment opinion:

14. In accordance with the QA/QC guidelines, the secretariat concluded that the all the following requirements were met by this PSB:

(a) QC system (resource/procedure) was implemented to check the data quality before/during/or after data collection. All primary data come directly from Central Electricity Board, which is the official source of electricity-related data in Mauritius. Central Electricity board has internal system for data quality control and quality assurance system. The data are obtained through calibrated meter and verified internally at the production department of the CEB. The data are also circulated and checked by other CEB departments on monthly basis to produce a Generation progress report and operation report. The independent power producers submit their data to the CEB as part of their obligation under the Power purchase agreements;

(b) QC activities were clearly documented in the QC report. The aggregated data received from Central Electricity Board were counter checked and verified by Statistics Mauritius. QA/QC procedures were conducted by Statistics Mauritius in accordance with United Nations Manual Series F No29 on Energy Statistics and international recommendation for energy statistics;

(c) All relevant documents and data were available for assessment;

(d) The data key sources were Central Electricity Board and the power plant operators, which collected credible data in accordance with their national standards and procedures. Further information sources for fuel properties are the International Panel on Climate Change (IPCC);

(e) The data scope was comprehensive enough to produce a "true and fair" representative standardized baseline in the particular sector;

(f) The key data and information are consistently presented;

(g) The data vintage (three years) was met as per the provisions of the "Tool to calculate the emission factor for an electricity system" (version 04.0.0);

(h) The assumptions and conservative approaches for data processing and calculations were justified. The lower confidence interval range of the emission factors of the fuels was used and no emissions attributed to the electricity imports, as the tool requires. The fuel NCVs taken from IPCC 2006 Guidelines are a relevant assumption;

(i) There were no confidential data but the data file would be presented in an aggregated form.

15. 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.

16. The secretariat concluded that the PSB complied with the approach of the tool.

Appendix 1. Findings and resolutions

CL No.	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
1	As per paragraph 12 of the "Guidelines for QA/QC of data used in the establishment of standardized baseline", the DNAs should develop a QA/QC system that outlines QA/QC activities, processes, schedule and responsibilities. Therefore the DNA should provide information on the QA/QC system that was implemented to assure itself of the quality of data and information included in the proposed standardized baseline with respect to this submission. It is not expected to keep documented QA/QC system, however, the principles established to implement the general provisions and data quality objectives of "Guidelines for QA/QC of data used in the establishment of standardized baseline" should be known and followed.	General provisions and data quality objectives of "Guidelines for QA/QC of data used in the establishment of standardized baseline"	A separate report has been attached to the calculations of the standardized baseline that demonstrates how the DNA has adopted the principles to implement the general provisions and data quality objectives of "Guidelines for QA/QC of data used in the establishment of standardized baseline".	Closed
2	As per provided reference to the document " Energy and water statistics – 2012" (page 3, section 2.3 electricity generation) the total electricity power generation was 2,796 GWh from which fossil fuel based electricity generation 2,218 GWh around 79%, while the remaining 21% (578 GWh) were from renewable sources, mostly bagasse. At the same time the submission (page 6 of "Calculating the grid emission factor of Mauritius") states that the total electricity generation of the Mauritian Grid in 2012 was 2,495.5 GWh in which fossil fuel based power generation was	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	Additional text (in red) has been placed in the text (footnote 4 on page 7) to explain the differences. Also, the calculations have been updated using the publicly available statistical data (reference in footnote 3 on page 7) published in	Closed

CL No.	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
	1,921.7 GWh accounting for 77% of the total grid electricity generation and renewable energy source represented 573.8 GWh accounting for 23 % of total grid electricity generation. The differences of the provided figures should be justified and it should be clarified which parameters (and why) are representative and should be used (and have been used) for the calculation of the grid emission factor?		the Digest of Energy and Water Statistics – 2012. This publication provides a consistent data set for the period 2003 to 2012. As has been explained in the report (footnote 4, pg. 7), the difference is due to two factors: (1) the data should be for island of Mauritius only (and not for the total for the Republic of Mauritius, which includes electricity generation for the island of Rodrigues); and (2) there is a fraction of power generated by IPPs from coal and bagasse that is used internally (for the production of raw sugar, refining and production of alcohol), and which is not exported to the national grid. It is reiterated here that the standardized baseline is	

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			proposed for the island of Mauritius.	
3	Table 8 Electricity generation by source of energy, 2011-2012 of the "Energy and water statistics – 2012" (excel file) shows that the electricity generation from renewable energy sources in 2011 was 20.2%, whereas the Table 1.2 Share of low cost/must run renewable electricity in the national electricity grid of Mauritius demonstrates that the share was 22.5%. The reasons for the discrepancy should be explained. If the data from the reference source "Energy and water statistics – 2012" are not the basis for the submission this should be clarified and alternative data source provided.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	This is the same explanation as for CL No.2. Using the approach shown in footnote 4, page 7, Table 1.2 has been updated using the time series given in the Digest of Water and Energy Statistics – 2012.	Closed
4	The same differences are observed between the reported 27.4% of renewable electricity generation in 2010 in the submission and the Table 7 - Electricity production by source of energy, 2010-2011 of the "Energy and water statistics – 2011" (excel file) where the share of renewable power is 24.3%. Justifiable explanation should be provided regarding the differences.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	This is the same explanation as for CL No.2. The response of the DNA is similar as for CL No 3.	Closed
5	Figures for 2009 and 2008 were not found in the referred documents. The same should be traceable and clearly identified from the reference source of data including title of the source, table and page number.	Documentation provisions, data quality for use of secondary data, data traceability	This has been rectified by providing updated and traceable documents, while noting that the same differences would be	Closed

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		paragraph 11 (a) to (k) of the QA/QC Guidelines	identified as per CL No.2, 3 and 4. A consistent time series for the period 2003 to 2012 is covered in the Digest of Energy and Water Statistics – 2012. Consequently, the EFOM has been updated and the standardized baseline recalculated in Table 1.8 (page 13).	
6	Data parameters for fuel consumption and electricity delivered to grid in table 1.3 could not be traced back to the data source. The data source of the information should be submitted.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	This has been corrected using the consistent time series data that is provided in Table 3.3 (for electricity generated) and Table 3.7 (for fuel input) in the Digest of Energy and Water Statistics – 2012.	Closed
7	Calculations should be transparently presented in the submission as they should be easily reproduced. References to data used in the calculations should be provided.	Documentation provisions, data quality for use of secondary data, data traceability	Where practicable and necessary, this has been amended as can be seen to the changes made in Annex 1 of the report (in red). For	Closed

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		paragraph 11 (a) to (k) of the QA/QC Guidelines	instance, new Tables 1.5 and 1.6 (page 10) have been added to show the calculations for EF_{OM}. For EF BM, a column has been added in Table 1.7 (page 11) to show the fuel consumption data for power units. The full calculation is shown on page 11. In order to facilitate the reproduction of the calculations, the DNA has also customized an Excel Spreadsheet to carry out the calculations. In effect, transparency is provided by the calculations provided in Annex 1 of the main report as well as the customized Excel worksheet.	

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			In addition, the DNA will carry out training on the standardized baseline for public and private institutions, and academia as soon as same has been validated.	
8	For BM calculations, it is stated in page 12 of the submission that "*Statistics for the generation of individual power plants or power units are not detailed in publicly available national statistics – i.e. from Statistics Mauritius. Generation data to calculate the build margin emission factor was therefore sought from the Central Electricity Board. In particular, Mr Shamshir Mukoon, Corporate Planning and Research Manager, Central Electricity Board, Curepipe, Mauritius (Phone: +230 5250 2226)*." A confirmation letter from the CEB indicating the power plants used for BM calculation and the authenticity of the data needs to be provided.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	The letter of confirmation from the CEB has been provided.	Closed

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Document information

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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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