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 São Tomé and Príncipe**
Reference of proposed standardized baseline:	PSB0009
Name(s) of the Party or Parties to which the proposed standardized baseline applies:	São Tomé and Príncipe
Name(s) of the proponent(s) of the proposed standardized baseline:	The Designated National Authority (DNA) of the Democratic Republic of São Tomé and Príncipe
History of the submission & assessment:	1) 29/11/2013: first submission was received • 10/12/2013: initial assessment was finalized and the proposed standardized baseline (PSB) was uploaded on the UNFCCC website. • 12/02/2014: 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" (version 2.0) (QA/QC guideline). 2) 28/08/2014: second submission was received • 19/09/2014: further inputs from the DNA were requested to fully address the issues related to the data quality. 3) 05/11/2015: third submissions were received • 08/12/2015: additional submissions were considered to be compliant with the approach used to develop the PSB ("Tool to calculate the emission factor for an electricity system" (version 04.0.0)). The submission was sufficient to prepare a final recommendation. • 02/02/2016: The draft standardized baseline (DSB) was sent to the DNA, which agreed to recommend the DSB to the Board for approval.

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 One of the four approved approaches: ☐ 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:	05/02/2016

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 São Tomé in the Democratic Republic of São Tomé and Príncipe.

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
Fuel properties (NCV, emission factor)	Table 1.2 and 1.4 of Chapter 1 of Vol.2 (Energy) of the IPCC Guidelines on National GHG Inventories (IPCC, 1996)
Fuel consumption	The Water and electricity company of the Government of the Democratic Republic of Sao Tome and Principe, EMAE.
Electricity generation in the national grid	The Water and electricity company of the Government of the Democratic Republic of Sao Tome and Principe, EMAE.
Electricity imports/exports	The Water and electricity company of the Government of the Democratic Republic of Sao Tome and Principe, EMAE.

5. The scope and coverage of the data:

   (a) The PSB identifies, as part of the relevant electricity system:

      (i) 3 hydropower plants

      (ii) 21 diesel powered plants

      (iii) no imports or exports with any other electricity system;

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

   (c) The data represent all regions in the country

   (d) The data represent three years (2012, 2013 and 2014).

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

7. The development of the PSB includes only grid-connected power plants.

8. As the total low-cost/must-run (LCMR) average from 2010 to 2014 is 8.73% (i.e. below 50%), simple OM method is applied.

9. Data vintage of 2012-2014 is used for OM calculation and the data for 2014 is used for BM calculation.

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

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 29/11/2013 included:

        (i) São Tomé and Príncipe grid emission factor standardized baseline report;

        (ii) Proposed standardized baseline form (F-CDM-PSB v1.0);

        (iii) Calculation sheet;

    (b) Assessment findings were communicated to the DNA on 12/02/2014, in response to which the DNA submitted the revised calculation and additional relevant documents;

    (c) Second submission dated 28/08/2014 in responding to the secretariat's finding, included:

        (i) Certification letter on fuel consumption data

        (ii) Updated São Tomé and Príncipe grid emission factor standardized baseline report;

        (iii) PSB finding and resolutions;

        (iv) Revised calculation sheet;

    (d) Assessment findings were communicated to the DNA on 19/09/2014, in response to which the DNA submitted the revised calculation and additional relevant documents;

    (e) Third submission dated 05/11/2015, addressing the secretariat's finding included:

        (i) Updated São Tomé and Príncipe grid emission factor standardized baseline report;

        (ii) Updated data for the year 2012-2014;

        (iii) Quality control report;

        (iv) Calculation sheet;

    (f) The additional submissions were sufficient to prepare a final recommendation.

B.2. Assessment opinion:

13. 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 EMAE, state's Water and Electricity Company (EMAE) of São Tomé and Principe. The information regarding plants performance (electricity generation, fuel consumption) is monitored continuously by EMAE and Grupo F.I.S.I. plant operators and periodically transmitted to EMAE Direçao de Electricidade. The data will be archived and maintained 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 GEF calculation and renewal may be maintained and submitted to DNA to facilitate further transparency and quality control. UNEP RISOE has also verified the data collection process of the EMAE through interviews and review of records;

(c) All relevant documents and data were available for assessment. The data used in the calculation were verifiable by third party as they are available at EMAE office;

(d) The data key sources were EMAE and the power plant operators. Further information sources for fuel properties are the Intergovernmental 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;

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

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.	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 Table 3 "Emission Factor (tCO2/MWh) and CO2 emissions of each power plant", emission factor of Bobo Forro 1 in 2010 is 3.3240 (tCO2/MWh), while emission factors of other diesel power plants are around 0.6 to 0.7 (tCO2/MWh). Please check the raw data and provide additional explanation.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	The values used for estimating the emission factor of Bobo Forro 1 in 2010 can be found in the following document: Empresa de Água e Electricidade, Government of Sao Tome and Principe, *Relatório e Contas – Exercício de 2009*, 2010 The document – EMAE's Annual Report for 2010 – has been duly audited as per the information gathered by the author. The author suggests using **Option A2 of the Simple OM method** to estimate the emission factor of the power plant in question, as a conservative approach. The first power units of Bobo Forro 1 date back to 2008. These were, namely: • MGO SACM • GESAN 1 • GESAN 2 • Caterpillar 1 • Caterpillar 2 The electricity supply from Bobo Forro 1 in 2010 came from one or more of these units. All of these units are no longer	**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
			supplying electricity to the grid, and have been replaced by the group of 7 power units, whose installation started in 2011. As per the annual reports, the latter started to supply electricity to the grid in 2012. In 2011, no electricity was supplied from Bobo Forro 1. Applying Option A2 of the Simple OM method, we would obtain an emission factor of: EF, el = (0.0726 (tCO2/GJ) x 3.6) / 0.395 (-) = **0.6617 tCO2/MWh** The default efficiency factor for the power plant is assumed to be: Oil > Open Cycle > New units (after 2000) > 39.5%	
2	The calculation of the grid emission factor relies on the primary data from the Water and Electricity Company. A confirmation letter from the Water and Electricity Company indicating the power plants used for 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	A confirmation letter from EMAE indicating the power plants used for the calculation and the authenticity of the data is submitted.	**Closed**
3 **(New on 19 Sep. 2014)**	Please elaborate on the public consultation process conducted for the proposed standardized baseline (e.g. when, how, with whom, issues	Transparency as per paragraph 15 (j) of the QA/QC guidelines: DNAs are expected to conduct a public consultation on the	A QA/QC report has been developed in line with version 2.0 of the Guideline "Quality assurance and quality control of data used in the establishment of standardized baselines" and submitted together with this response. Please see file "Sao Tome_GEF SBL_QA-QC report_OCT 2015".	**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
	were raised, ways these issues have been addressed etc)	matters related to proposed standardized baselines and prepare a report that includes: (i) the objectives of public consultation; (ii) processes followed for public consultation; (iii) participants who attended the public consultation; (iv) a summary of the comments provided by stakeholders/experts; and (v) how comments were taken into account.	The QA/QC report address – inter alia - the issue of how transparency was ensured during the SBL development.	
4 **(New on 19 Sep. 2014)**	Table 1 "List of power plants connected to the main electricity system of the island of Sao Tome" indicates "Y" or "N" for the column "Connected". Please clarify the meaning of "Connected" and also explain how it is considered in the calculation of OM. In particular, the following data is not clear: - "N" is shown for Bobô-Fôrro 1 in 2010, but the electricity generation data (192 MWh) in 2010 is used	Conservativeness as per paragraph 15 (h) of the QA/QC guidelines.	Few months after the receipt of this second request for clarification, electricity generation and fuel consumption data for the years 2013 and 2014 became available. The DNA, in consultation with the Regional Collaboration Centre of Lome', decided to update the GEF calculation using 2012-2014 vintage data, which is in line with the Standard "Determining coverage of data and validity of standardized baselines" requiring the use of the most recent data available. The updated recalculation is submitted together with this response, including GEF calculation report and supporting evidence. Please see the following attached files: • GEF2012-2014_STP_updated.xlsx • Sao Tome_GEF SBL_calculation report_OCT	**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
	for OM calculation. - "Y" is shown for S. Tomé Pielstick in 2010 and "N" for the same unit in 2011 and 2012. However, it is not clear whether the 2010 data was considered in OM calculation and 2011-2012 was not considered.		2015.pdf • EMAE RAPPORT 2010_excerto.pdf • EMAE RAPPORT 2011_excerto.pdf • EMAE RAPPORT 2012_excerto.pdf • EMAE RAPPORT 2013_excerto.pdf • EMAE RAPPORT 2014_excerto.pdf In occasion of the recalculation, and after consultation with EMAE, it has been clarified which plants are connected to the grid. Please see Table 1 in the file "Sao Tome_GEF SBL_calculation report_OCT 2015.pdf" and the worksheet "Electricity system" in the excel file "GEF2012-2014_STP_updated.xlsx".	
5 **(New on 19 Sep. 2014)**	According to Table 2 "Table 2. Disaggregated data for all power units connected to the main electricity system of the island of São Tomé in São Tomé and Príncipe in 2012" of the spreadsheet, all five units of Santo Amaro plant (i.e. HIMSEN # 1 to # 5) have the same commissioning date. However, HIMSEN # 2 was included for BM calculation without any justification, although inclusion of any other units could also results in exceeding 20%. Inclusion of HIMSEN #5 which has	Conservativeness as per paragraph 15 (h) of the QA/QC guidelines.	As explained above, the DNA, in consultation with the Regional Collaboration Centre of Lome', decided to update the GEF calculation using 2012-2014 vintage data. The calculation of the BM EF in the updated calculation considers Bobo Forro I and Santo Amaro plants as one single power unit, which is in line with the Tool requirements being made of several identical power units (i.e. with the same capacity, age and efficiency). Together, contributes to over 68% of electricity generation in 2014. That is because no disaggregated data of fuel consumption per unit is available. Therefore the update calculation indirectly addresses the issue raised.	**Closed**

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	the lowest emission factor seems to be most conservative. Please explain.			

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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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