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:	Cape Verde Standardized baseline for the Power Sector
Reference of proposed standardized baseline:	PSB0007
Name(s) of the Party or Parties to which the proposed standardized baseline applies:	Republic of Cape Verde
Name(s) of the proponent(s) of the proposed standardized baseline:	Ministério do Ambiente, Habitação e Ordenamento do Território (Ministry of Environment, Housing and Land Management), Cabo Verde Developed by Secretariat of the Ecowas Centre for Renewable Energy and Energy Efficiency (i.e. ECREEE) With assistance of UNFCCC CDM Regional Collaboration Centre in Lome, Togo In collaboration with Cape Verde Ministry of Tourism, Industry and Energy, national utility company Electra, and private renewable company Cabeolica.

History of the submission & assessment:	1) 28/11/2013: First submission was received • 03/12/2013: Initial assessment was finalized • 25/02/2014: First QA/QC assessment was finalised 2) 12/03/2014: Second submission was received • 29/05/2014: Second QA/QC assessment was finalised 3) 12/08/2014: Third submission was received • 18/09/2014: Third QA/QC assessment was finalised 4) 02/10/2014: Fourth submission received • 14/11/2014: Fourth QA/QC assessment and assessment report was finalized for data quality aspects and the submission was considered to be compliant with QA/QC guideline • 13/02/2015: The recommendation requiring further inputs from DNA was finalized and sent to DNA. 5) 03/06/2015: Fifth submission was received • It was agreed to recommend the draft SB to the Board for approval, after receiving agreement from DNA.
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"** **(b) The approach used by this proposed standardized baseline complied with the approaches referred to in the valid "Procedure for development, revision, clarification and update of standardized baselines":**	☒ Yes ☐ No ☐ N/A One or combination of the following approved approaches are applied: ☒ 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 energy industries sector, which includes electricity generation/consumption in Cape Verde.

3. The PSB applies to the following measures:

   (a) ☐ Fuel and feedstock switch;

   (b) ☒ Switch of technology with or without change of energy source (including energy efficiency improvement);

   (c) ☐ Methane destruction;

   (d) ☐ Methane avoidance.

4. Projects shall use the standardized baseline together with the approved methodologies where "Tool to calculate the emission factor for an electricity system" (version 4.0.0) (hereinafter referred as the tool), is referenced.

A.2. Description of the proposed standardized baseline

5. Key data parameters and data sources:

Key data parameters	Data sources
Total annual electricity generation	National utility company Electra, and private renewable company Cabeolica
Net calorific Values (NCVs) of fuels	Table 1.4 of Chapter 1 of Vol. 2 (Energy) of IPCC 2006 guidelines on National GHG Inventories.
Fuel emission factors	Table 1.4 of Chapter 1 of Vol. 2 (Energy) of IPCC 2006 guidelines on National GHG Inventories (at the lower limit of uncertainty at a 95 per cent confidence interval)
Number of hours low cost/must run sources on the margin;	National utility company Electra, and private renewable company Cabeolica
Total annual fuel consumption	National utility company Electra, and private renewable company Cabeolica
Capital cost of wind power plants, fuel oil based power plants and diesel based power plants in Cape Verde	A report prepared by Gesto Energy Solutions in 2011 which was adopted on 3 February 2012 by the Council of the Ministers of Cape Verde. The DNA provided the following supporting documents for the purpose of demonstrating additionality of wind projects (up to 15 MW) through barrier analysis: • an extract from the ECOWAS Renewable Energy Policy 2012 • an extract from the UNIDO request to GEF

	CEO for approval of the project "Promoting market-based development of small to medium-scale renewable energy systems in Cape Verde"

6. The PSB is developed for the purpose of determining 'Baseline emission factors' and positive list of renewable electricity generation technologies applicable for grid systems of the nine (9) inhabited islands of the Republic of Cape Verde. The emission factors and the positive list for each individual island i.e. for each independent grid system are derived using "Tool to calculate the emission factor for an electricity system" (version 04.0) (hereinafter referred as the tool) and "Guidelines for the establishment of sector specific standardized baselines" (version 2.0) (hereinafter referred as SB guidelines)

7. The approach from the SB guidelines is used for the determination of baseline emission factors and the positive lists for the grid systems of five islands of the Republic of Cape Verde: São Nicolau, Boavista, Maio, Fogo,and Brava

8. For the remaining four islands of the Republic of Cape Verde: Sal, Sao Vicente, Santo Antao, and Santiago, the tool is used to determine baseline emission factors1 while for the purpose of determining positive list, methodological approach is used i.e., using the provision of "Methodological tool: Demonstration of additionality of small-scale project activities" (previously known as Guidelines on the demonstration of additionality of small-scale project activities) prescribed in the methodologies AMS-I.D and AMS-I.F.

9. The scope and coverage of the data for the submission:

   (a) The national utility company Electra, and private renewable company Cabeolica maintains complete and up-to-date information and operation data of individual power plants, including name, region, power generation, fuel type/consumption for all the nine islands of Cape Verde.

10. In addition to scope and coverage mentioned under paragraph 7 (a) above, for islands using approach provided in the grid tool, data vintage required is three successive years of data for each power plant (2010, 2011 and 2012):

   (a) For Operating Margin (OM) calculation for those four islands which uses approach provided in grid tool the low cost/must run plants constitute 3 to 16 per cent of total electricity generation, which is less than 50 per cent of the grid generation for each island during the five most recent years (2008 – 2012), thus the Simple OM method is selected;

   (b) The Build Margin (BM) is calculated using the data for power plants that comprises 43 to 78 per cent of generation for each island.

11. The relevant electricity system for each island is the local electricity grid which covers the particular island. The islands are not interconnected with each other to form a single grid system.

[1] The tool is used in the case of Sal, Sao Vicente, Santo Antao, and Santiago Islands mainly because of the limitation of the application of the SB guidelines for example in the case of Sal, Sao Vicente share of renewable technologies produce aggregately more than 20 per cent of the total output of the grid system thus the application of the guidelines would result into a baseline emission factor of zero and the non-additionality of prospective renewable electricity generation technologies. In the case of other two islands (i.e. Santo Antao, and Santiago), SB guidelines was not applicable since all historical energy output data from all the power plants as required per the SB guidelines are not available. The tool was used as it is possible to conservatively determine baseline emission factor even in the cases where data from some power plants are missing.

12. The DNA uses a data template approved by the UNFCCC secretariat for the five islands which used SB guidelines approach. For the remaining four islands which uses approach provided in grid tool the DNA uses data template in accordance with the approved tool.

SECTION B. Summary of Assessment

B.1. Assessment process

13. 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", version 1.0 (hereinafter referred to as QA/QC guidelines); and (ii) to ensure that PSB complies with the selected approaches.

14. A desk review was performed on the below mentioned data/information submitted as part of PSB.

15. 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) Review of the additional documents and/or responses provided by DNA;

    (e) Resolution of clarifications requested

    (f) Conclusion of the final assessment report

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

    (a) First submission dated 28/11/2013 which was successful in the initial assessment included:

        (i) PSB form (F-CDM-PSB), version 1.0 dated 28/11/2013;

        (ii) Evidence related to 'Total annual electricity generation', 'Total annual fuel consumption' and 'Number of hours low cost/must run sources on the margin' for year 2010 to 2012 from 'Cabeolica' and 'Electra' in PDF for all nine (9) islands;

        (iii) Excel files for all nine (9) islands containing (i) supporting data related to 'NCVs of fuels' and 'Fuel emission factors', (ii) demonstration of the additionality and (iii) calculation of grid emission factor, version 1.0 dated 6th November 2013 (submitted as 'confidential files');

    (b) Assessment findings were communicated to the DNA on 25/02/2014, in response to which the DNA submitted the revised documents and additional relevant documents;

    (c) Second submission dated 12/03/2014 included:

        (i) Response to assessment findings;

        (ii) Revised PSB form, version 2.0 dated 11/03/2014;

(iii) Letter from Electra dated 11/03/2014providing evidence related value of density of diesel used in the submission along with the certificate from the supplier dated 23th December 2010 (submitted as 'confidential files');

(iv) Data template dated 11/03/2014 used by the DNA to collect the data for development of PSB;

(v) Additional evidence related to electricity generation data for year 2010, 2011 and 2012 from Electra (submitted as 'confidential files');

(vi) Excel files for all nine (9) islands containing (i) supporting data related to 'NCVs of fuels' and 'Fuel emission factors', (ii) demonstration of the additionality and (iii) calculation of grid emission factor, version 2.0 dated 11/03/2014 (submitted as 'confidential files');

(d) Assessment findings were communicated to the DNA on 29/05/2014, in response to which the DNA submitted the revised documents and additional relevant documents;

(e) Third submission dated 12/08/2014 included:

(i) Response to assessment findings;

(ii) Revised PSB form, version 3.0 dated 08/08/2014;

(iii) Excel files containing (i) supporting data related to 'NCVs of fuels' and 'Fuel emission factors', (ii) demonstration of the additionality and (iii) calculation of grid emission factor, version 3.0 dated 10th July 2014 for five (5) islands namely São Nicolau, Boavista, Maio, Fogo, and Brava;

(iv) Excel files containing calculation of grid emission factor, version 1.0 dated 12/08/2014 for four (4) islands namely Sal, Sao Vicente, Santiago and Santo Antão;

(v) A report on calculation of grid emission factor dated July 2014 giving details related to methodology being followed for calculation of emission factor, for four (4) islands namely Sal, Sao Vicente, Santiago and Santo Antão;

(vi) Extract from the report from 'Gesto Energy Solutions' prepared in 2011 supporting the evidence related to capital investment cost of wind power plants, fuel oil based power plants and diesel based power plants in Cape Verde;

(f) Assessment findings were communicated to the DNA on 18/09/2014, in response to which the DNA submitted the revised documents and additional relevant documents;

(g) Fourth submission dated 02/10/2014 included:

(i) Response to assessment findings;

(ii) Revised PSB form, version 4.0 dated 30/09/2014;

(iii) QC report by DNA dated 30/09/2014 (in word and PDF);

(iv) Evidence related to 'Total annual electricity generation', 'Total annual fuel consumption' and 'Number of hours low cost/must run sources on the margin' for year 2008 and 2009 from 'Cabeolica' and 'Electra' in PDF for four (4) islands namely Sal, Sao Vicente, Santiago and Santo Antão;

(v) Excel files containing (i) supporting data related to 'NCVs of fuels' and 'Fuel emission factors', (ii) demonstration of the additionality and (iii) calculation of

grid emission factor, version 4.0 dated 30/09/2014 for five (5) islands namely São Nicolau, Boavista, Maio, Fogo, and Brava;

(vi) Excel files containing calculation of grid emission factor, version 2.0 dated 30th September 2014 for two (2) islands namely Santiago and Santo Antão;

(vii) Extract of ' ECOWAS Renewable Energy Policy prepared in September 2012, supporting the barriers related to penetration of renewable energy technologies in Cape Verde;

(viii) A request from UNIDO to GEF dated 21/02/2012, for approval of the project "Promoting market-based development of small to medium-scale renewable energy systems in Cape Verde", supporting the barriers related to penetration of renewable energy technologies in Cape Verde;

(h) Fifth submission dated 03/06/2015 included:

(i) Response to draft recommendation issues together with revised PSB form, version 5.0 dated 01/06/2015;

(ii) Excel files version 3.0 dated 01/06/2015, containing revised data related to electricity generation for islands Sal, Sao Vicente, San Tiago and Santo Antao;

(iii) Excel files version 3.0 dated 01/06/2015, containing corrected data on generation from fossil fuel plants for island Brava;

(i) Review of these additional submissions clarified all issues raised at the recommendation stage.

B.2. Assessment opinion

17. In accordance with the QA/QC guidelines, the secretariat concluded that the all 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:

(i) Data about power plant's fuel consumption is obtained by the national utility company Electra, and private renewable company Cabeolica;

(ii) All data collected as part of monitoring will be archived electronically and will be maintained for at least 5 years by the DNA;

(iii) The national utility company Electra is a government agency which coordinates the operation of the generation, transmission and distribution in each island in Cape Verde;

(iv) The national utility company Electra, and private renewable company Cabeolica keeps accurate records of:

a. Each plant / unit to the grid connected generation;

b. Plants included in the build margin and the operating margin;

(v) The data will be presented in such a way that allow for the reproduction of the calculation of the emission factor of build and operating margins of the grid;

(vi) Electra has 24/7 monitoring system. Generation information is transmitted to Electra by the respective power generating company in real time;

(vii) There is a standard format for generator companies and distributors to report to Electra;

(viii) Electra and Cabeolica publishes its reports per year;

(ix) Therefore, it can be concluded that a QC system was implemented in accordance with QA/QC guidelines;

(b) QC activities were clearly documented in the submitted QC report prepared by the DNA of Cape Verde in consultation with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE);

(c) Consultation process was clearly documented:

(i) Stakeholder consultation approach was taken by the DNA to assess the quality of the data management system;

(ii) The data related 'Total annual electricity generation', 'Total annual fuel consumption' was made available publicly though Electra website (http://www.electra.cv/) and the stakeholder could provide comments/ suggestions to Electra though this web site;

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

(e) The data key sources were government authorities, which collected credible data in accordance with their national standards and procedures;

(f) The data scope was comprehensive enough to produce "true and fair" representative SB in the particular sector;

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

(h) The data coverage (3 years) and data currentness requirements were complied with as per the provisions of the "Standard for data coverage and validity of standardized baselines";

(i) There were no confidential data but the calculation of emission factor based on the data was submitted as confidential.

18. 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.

19. The secretariat concludes that (a) the additionality for the renewable energy technologies presented in the PSB is in accordance with the provisions of the SB guidelines and small-scale additionality tool and are sufficiently demonstrated, (b) the emission factors derived using grid tool (i.e., OM, BM and CM) and using SB guidelines presented in the PSB are correctly calculated in accordance with the applicability and the provisions of grid tool and the SB guidelines respectively.

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
CL 1 to 6 are raised based on initial submission dated 28th November 2013				
1	**Data Template:** It is noted that the DNA has developed standardized baseline for additionality demonstration and baseline identification using the 'Guidelines for the establishment of sector specific standardized baselines'. As per para 8 (b) of the 'Procedure for the submission and consideration of standardized baselines' version 02 (applicable at the of SB submission for Cape Verde), which is reproduced below for quick reference *"All additional documentation supporting the submission (e.g. relevant data, documentation, statistics, studies, etc.), where applicable. Data used to establish the proposed baseline shall be provided in a sector-specific data template published by the secretariat on the UNFCCC CDM website. If no applicable data template is available on the UNFCCC CDM website at the time of the DNA's submission of the proposed standardized baseline, the proponent of the standardized baseline shall propose a sector-*	General provisions, sector-specific data templates para 13 and 14 of the QA/QC Guidelines	The data templates, which were used for collecting the data used to establish the standardized baseline is submitted. Please refers to the excel file "CL1_Cape Verde SB energy template_20140311.xlsx"	Closed. Note: - Data template needs to be uploaded on SB website.

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
	specific data template for its publication, or, if applicable, request the revision or clarification of a published data template in accordance with the modalities in appendix 1of this procedure" The DNA either needs to use the approved data templates or use the existing data templates for collecting the data from power plants. However no data template for power sector is approved yet. The DNA is requested to submit the data templates which were used for collecting the data for determination of standardized baseline. The secretariat as per 'Procedure for the submission and consideration of standardized baselines' version 02.0 will in parallel review the data templates and follow the procedure in order to approve the same.			
2	**Calculation of cost of electricity generation for Boavista:** The submission under footnote 7 mentions that no data related to electricity generation and fuel consumption is available for Boavista island for period 2010 to 2012 and therefore to be conservative, 'the highest cost of generation among all the islands is applied in case of Boavista'. However according to the excel sheet (named as '20131106 SB Cape Verde (Boavista) – final.xlsx') for Boavista, it is noted that	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	The calculation of cost of electricity generation for Boavista island is revised and now using 'the highest cost of generation among all islands' as mentioned under footnote 7. Please see the revised attached calculation spreadsheet "CL4-5_SB Cape Verde (Boavista)_20140311.xlsx". It is also noted that only 2012 cost of electricity data are used, as resulting from	Closed. The cost of generation for Boavista 29.07 CVE/kWh which is highest among all the islands for 2012.

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
	the missing value for cost of generation was estimated based on average of maximum cost of generation for year 2011 and 2012 for the remaining islands; which is a different approach compared to one mentioned under footnote 7 of the submission. The DNA is requested to clarify the correct procedure followed for estimation of cost of generation for Boavista island and accordingly revise the submission.		response to CL No. 5	The DNA has used capital investment cost instead of cost of generation for demonstrating the additionality in the revised submission.
3	**Density of fuel:** The submission on proposed standardized baseline (CDM-PSB) for 'Cape Verde Standardized baseline for the Power Sector, dated 28th November 2013, version 1.0' on page 17/21 mentions that for the purpose of calculations, the fuel consumption is converted into tons using the default IPCC value for diesel density 0.832 kg/l, however we failed to see such value is reported in Energy Chapter (Vol 2) of IPCC (1996 or 2006). The DNA is requested to provide the source of the information including table, chapter number and publication year of reference source along with web-link (if available) and if required to revise the submission.	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	Since it was not possible to find any reference for the value of diesel density used in the original submission (i.e. 0.832 kg/l), we inquired the national utility company Electra. They informed us by email (see attached file "CL3_Electra_diesel density.pdf") that the diesel has a density of 0.859 kg/l. We believe the provided value is very conservative also considering that the IEA reference value for diesel is 0.844 kg/l (see attached file "CL3_IEA_unti_Conversion_20140311.pdf"). Excel spreadsheets have been revised accordingly. Please see attached revised excel spreadsheets (revised cell in orange): - CL4-5_SB Cape Verde (Boavista)_20140311.xlsx - CL4-5_SB Cape Verde	Closed. The density of diesel (0.859 kg/l) used in the submission is referred from the test report provided by the supplier. The submission is revised to reflect the 0.859 kg/l as density of diesel.

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
			(Brava)_20140311.xlsx - CL4-5_SB Cape Verde (Fogo)_20140311.xlsx - CL4-5_SB Cape Verde (Maio)_20140311.xlsx - CL4-5_SB Cape Verde (Sal)_20140311.xlsx - CL4-5_SB Cape Verde (Santiago)_20140311.xlsx - CL4-5_SB Cape Verde (Santo Antao)_20140311.xlsx - CL4-5_SB Cape Verde (Sao Nicolau)_20140311.xlsx - CL4-5_SB Cape Verde (São Vicente)_20140311.xlsx The submission is also revised accordingly (please see files "PSB form_cape verde_v.6_201403011_tracked change.doc" and ""PSB form_cape verde_v.6_201403011_clean.pdf")	
4	**Mismatch of data:** Following issues were observed while cross checking the electricity generation data as contained in Electra report for year 2010, 2011 and 2012 for all the islands except Boavista and 'Boavista Power Plant data.pdf' document for Boavista against	Documentation provisions, data quality for use of secondary data, data traceability	(a) Electricity generation data for all the islands have been taken from the table "Consumos referidos à produção (Gross electrical consumption)" in the Electra reports. Specifically, from: - page 21 of the file "CL4_Electra 2010	Closed. The electricity generation data for all power plants on all islands as

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
	the data reported in the excel sheets under work book 'primary data energy&cost'. (a) The electricity generation data for all the islands except Brava is not matching with the data reported in the excel sheets under work book 'primary data energy&cost', for example in case of Santiago island for year 2010 power plant 'Praia' has produced 23103.492 MWh as per page 16 of Electra report while the excel file mentions 23400.55 MWh. (b) In case of Santiago island data from Assomadda (std Catarina), Rib da Barca (std Catarina), Tarrafal and S.Cruz power plant for year 2010 to 2012 is not included in the excel sheet while calculating the baseline emission factor and additionality threshold. (c) In case of Santiago, Sao Vicente, Sal and Santo Antao islands electricity generation data from wind power plant for year 2010 is not included in the excel sheet for calculation while same for year 2011 and 2012 is included. (d) In case of Boavista the excel file includes 3083.00 MWh as generation from wind power plant however no source of this information is provided.	paragraph 11 (a) to (k) and paragraph 25 of the QA/QC Guidelines	page16-21_20140311.pdf" (file attached) - page 21 of the file "CL4_Electra 2011 page16-21_20140311.pdf" (file attached); and - page 23 of the file "CL4_Electra 2012 page20-25_20140311.pdf" (file attached). The tables report data on net electricity supplied to grid after deduction of electricity used for internal consumption and desalinization plants. Data has been checked and revised where necessary. Please see attached revised excel spreadsheets (revised cell in orange): - CL4-5_SB Cape Verde (Boavista)_20140311.xlsx - CL4-5_SB Cape Verde (Brava)_20140311.xlsx - CL4-5_SB Cape Verde (Fogo)_20140311.xlsx - CL4-5_SB Cape Verde (Maio)_20140311.xlsx - CL4-5_SB Cape Verde (Sal)_20140311.xlsx - CL4-5_SB Cape Verde (Santiago)_20140311.xlsx - CL4-5_SB Cape Verde (Santo Antao)_20140311.xlsx - CL4-5_SB Cape Verde (Sao	provided in the excel sheets under work book 'primary data energy&cost' is matching with the following data sources (1) Electra reports, Table "Consumos referidos à produção (Gross electrical consumption)" for data related to diesel / fuel oil plants for year 2010, 2011, and 2012 (2) Electra reports, Table "Produção por central e tipo de equipamento" for data related to solar

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
	The DNA is requested to clarify the data mismatch and where required through the revisions of the excel sheets.		Nicolau)_20140311.xlsx - CL4-5_SB Cape Verde (São Vicente)_20140311.xlsx (b) Data from Assomadda (std Catarina), Rib da Barca (std Catarina), Tarrafal and S.Cruz power plant for year 2010 to 2012 in Santiago island have been included in the excel sheet for the calculation of the baseline emission factor. Please see attached revised file (newly added data highlighted in yellow) "CL4-5_SB Cape Verde (Santiago)_20140311.xlsx" (c) Electricity generation data from wind power plant in São Vicente and Sal islands for the year 2010 are included in the excel spreadsheets. Please see attached revised files: - CL4-5_SB Cape Verde (Sal)_20140311.xlsx - CL4-5_SB Cape Verde (São Vicente)_20140311.xlsx It is noted that in Santo Antao and Santiago islands, no electricity has been generated in 2010, as also reported at page 16 of the 2010 Electra report (please see attached file "CL4_Electra 2010 page16-21_20140311.pdf") (d) The wind power generation value of 3,083.00 MWh for Boavista island in 2012 is sourced from Cabeolica 2012 report, which	plants for year 2010, 2011, and 2012 (3) Cabeolica reports for data related to wind plants for year 2011 and 2012.

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			was included in the original submission. The relevant page from the Cabeolica report is attached again to this response (please see file "CL4_Cabeolica-2012_20140311.pdf") The submission is also revised accordingly (please see files "PSB form_cape verde_v.6_201403011_tracked change.doc" and ""PSB form_cape verde_v.6_201403011_clean.pdf")	
5	**Currentness of the data used for cost of generation:** It is understood from the submission that the DNA has estimated the benchmark cost of electricity generation using three years of historical average data based on fuel costs. It is not clear how the benchmark derived using historical fuel cost data would reflect the current economic and technological practices in the power generation sector in the islands, for example the relative competitiveness of different power generation technologies could sensitive to different factors that are specific to different technologies and scale e.g., capital cost, projected fuel cost, discount factor etc. The DNA is requested to refer to paragraph 11 (e) of QA/QC guidelines on the requirements related to the	Documentation provisions, data quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	The estimation of the benchmark cost of electricity generation has been revised by using only 2012 data on fuel costs. This revision is considered to meet the requirement related to the currentness of data as per para 11 (e) of QA/QC guidelines. It is here reiterated that data on cost of generation are highly confidential data from the Agency of Economic Regulation, and are not intended for public disclosure. It is also confirmed that the provided data were the latest available at the time of the submission of the proposed SB. Calculation spreadsheets and SB form have been revised accordingly. Please see the following attached files: - PSB form_cape verde_v.6_20140311.doc	Closed. It is verified from the excel sheets containing calculations of benchmark cost of generation that only cost of fuel in year 2012 is considered for the calculations. The submission has been revised accordingly. Note: The DNA has used capital

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
	currentness of data and may consider revising the submission accordingly.		- CL4-5_SB Cape Verde (Boavista)_20140311.xlsx - CL4-5_SB Cape Verde (Brava)_20140311.xlsx - CL4-5_SB Cape Verde (Fogo)_20140311.xlsx - CL4-5_SB Cape Verde (Maio)_20140311.xlsx - CL4-5_SB Cape Verde (Sal)_20140311.xlsx - CL4-5_SB Cape Verde (Santiago)_20140311.xlsx - CL4-5_SB Cape Verde (Santo Antao)_20140311.xlsx - CL4-5_SB Cape Verde (Sao Nicolau)_20140311.xlsx - CL4-5_SB Cape Verde (São Vicente)_20140311.xlsx The submission is also revised accordingly (please see files "PSB form_cape verde_v.6_201403011_tracked change.doc" and ""PSB form_cape verde_v.6_201403011_clean.pdf")	investment cost instead of cost of generation for demonstrating the additionality in the revised submission.
6	**Information sources:** Although the DNA has mentioned the sources of the data used for calculations related to baseline emission factor and additionality	Documentation provisions, data	Sources of data for the calculation of the baseline emission factor and the additionality thresholds have been included in the excel	Closed. The DNA has

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	threshold for each island and also provided a soft copy of the same, it would be useful if the sources are also cited on the corresponding data cells in the respective excel files for example sources for data on cost of generation, electricity production, installed capacity, fuel consumption etc. are referred in respective cells. This will help to expedite data review/validation against the cited sources.	quality for use of secondary data, data traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	spreadsheets.	mentioned the sources of the data used for calculations related to baseline emission factor and additionality threshold for each island in the respective excel sheets. Issue related to missing information source in the revised submission is raised below under CL10.
CL 7 to 11 are raised based on submission dated 8th August 2014				
7	**Data quality control:** The information regarding QC procedure implemented by the DNA for collecting the data used in the proposed submission is not provided. The DNA may consider providing such information in	Quality control paragraph 22 of the QA/QC Guidelines	A QC report is developed including the required information and submitted to the secretariat. Please see attached file: - "QC report by DNA of Cape Verde_20140930.docx"	Closed. The QC report submitted by the DNA is prepared in

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	the QC report in accordance with applicable version of QA/QC guidelines i.e. as per Appendix 2 of the QA/QC guidelines version 1.0.			accordance with Appendix 2 of the QA/QC guidelines version 1.0.
8	**Number of islands considered for SB developed using SB guidelines:** It is not clear to how many islands the standardized baseline developed using SB guidelines (approach under section A of the proposed submission). On page 6 of 30; it mentions that Seven (5) of the nine (9) inhabited islands of the Republic of Cape Verde were considered in the proposed submission, while providing list of only five (5) islands. Similarly information provided on page 8 and 9 of 30 it mentions that seven (7) islands were considered in the proposed submission, which is contradictory with earlier information. The DNA is requested to provide correct number of islands which were considered for development developed using SB guidelines.	Editorial	The SB proposal has been revised and number inconsistency resolved. It has been clarified throughout section A of the form that the number of islands applying the SB Guidelines is five (5). The revised SB proposal is submitted in both tracked-changes and clean versions.	Closed. No inconsistency related to number islands is observed in the revised submission. The submission mentions that approach in SB guidelines is applied for 5 (five) islands for calculation of grid emission factor and demonstration of additionality, while approach in grid tool is applied for remaining 4 (four)

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				islands for calculation of grid emission factor only.
9	**Cost of generation:** For islands Boavista, Brava, Fogo, Maio and Sao Nicolau it is not clear how the cost of generation (CVE/kWh) mentioned in the excel work book 'BEF' is relevant for the proposed submission, e.g. in case of Boavista island value contained in 'cell Q9'of the work book 'BEF', as the submission on page 9 of 30 mentioned that barrier analysis using capital investment cost is used for additionality demonstration. The DNA is requested to provide data that is relevant for additionality demonstration.	Documentation provisions, data quality for use of secondary data, data relevance, traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	The information on cost of generation (CVE/kWh) that are not relevant to the proposed submission have been deleted from the following excel spreadsheets, which are attached: - SB Cape Verde (Sao Nicolau)_20140930.xlsx - SB Cape Verde (Maio)_20140930.xlsx - SB Cape Verde (Fogo)_20140930.xlsx - SB Cape Verde (Brava)_20140930.xlsx - SB Cape Verde (Boavista)_20140930.xlsx	Closed. The irrelevant information on cost of generation is removed from the revised excel sheets for islands Boavista, Brava, Fogo, Maio and Sao Nicolau.
10	**Information sources:** 1. Although the DNA has cited the source of the data used to calculate share of the total grid generation of low cost/must run for previous five years (2008-2012) for islands Sal, Sao Vicente, Santo Antao and Santiago for the corresponding data cells in the	Documentation provisions, data quality for use of secondary data, data relevance, credibility,	1 . Copies of relevant tables from ELECTRA report for the years 2008 and 2009 are submitted. Please see attached files: - Electra 2008 table.pdf - Electra 2009 table.pdf Relevant values for Sal, Sao Vicente, Santiago	Closed. 1. In case of islands, Sal, Sao Vicente, Santo Antao and Santiago, the

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	respective excel files. However it is requested to provide a copy of relevant table from 'Electra report for 2008 and 2009'. 2. The DNA is requested to provide source of capital investment cost of diesel/fuel oil plants to justify the claim by DNA that capital investment costs of wind power plants in Cape Verde are estimated to be on average more than double than those of baseline diesel/fuel oil power plants as mentioned on page 11 of 30 of the proposed submission. 3. It is noted that the submission uses 'Financial and Economic barriers' in terms of capital investment cost of wind power plants for demonstrating the additionality; however the claim by the DNA needs to be supported with the credible data/reports for example the submission on page 10 of 30 mentions that *'Financial institutions (in the region and outside) generally perceive renewable energy technologies as unreliable and lacking long-time viability. For smaller projects (e.g. up to 15 MW) suitable to the size of Cape Verde as a country (then the small islands), it is extremely difficult to mobilise risk capital for its development such as conducting the feasibility studies, undertaking*	traceability paragraph 11 (a) to (k) of the QA/QC Guidelines	and Santo Antao are highlighted in red. In case of Sal and Sao Vicente a perfect match is observed between the values input in the GEF calculation spreadsheets and those in Electra reports. In case of Santiago and Santo Antao, a small difference is observed and the GEF spreadsheet is revised accordingly (attached file: Grid EF calculation_Tool_Santiago_and_Santo Antao_v2_20140930.xlsx) and submitted; nevertheless the results with regard to total electricity generation/must run-low cost resources ratio do not change. 2. An extract from the Plano Energético Renovável de Cabo Verde (Renewable Energy Plan of Cape Verde) is submitted. Please see attached file: Extract Plano Energético Renovável page 108.pdf Table 7.9 in the extract show the total investment cost (Euro/kW) for fuel oil and diesel power plant, respectively 1,000 Euro/kW and 800 Euro/kW. 3. The following document are submitted in support to the statement at page 10 of the SB proposal: i. an extract from the ECOWAS Renewable Energy Policy 2012 (attached file:	electricity generation values for year 2008 and 2009 used for the calculation of percentage of low cost must run plants are matched with the Electra report for 2008 and 2009. The revised excel file in case of Santo Antao and Santiago, where small mismatch in the electricity generation values is observed, is also provided by the DNA.

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	measurements on-site', however there is no supporting document provided.		Extract_2012_ecowas-renewable-energy-policy-erep_ecreee.pdf). Section 3.7 in the extract focuses on barriers that RE faces in the ECOWAS region, including Cape Verde; and ii. an extract from the UNIDO request to GEF CEO for approval of the project "Promoting market-based development of small to medium-scale renewable energy systems in Cape Verde" (attached file: UNIDO_GEF_Approval_Request.pdf). At pages 8 to 10 of the document, financial, regulatory, technical, information and awareness barrier to the development of small and medium RE projects are summarized. Please see yellow highlighted paragraphs for info relevant to financial institutions and the banking sector.	2. The DNA has provided extract of 'Plano Energético Renovável de Cabo Verde' (Renewable Energy Plan of Cape Verde) report which under table 7.4 mentions the capital investment cost for wind power projects and under table 7.9 mentions for fuel oil and diesel power plants. 3. The DNA provided following evidence in

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				support of its claim for additionality demonstration; i) an extract from the ECOWAS Renewable Energy Policy 2012 and, ii) an extract from the UNIDO request to GEF CEO for approval of the project 'Promoting market-based development of small to medium-scale renewable energy systems in Cape Verde' to demonstrate 'Financial and

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				Economic barriers'.
11	**Selection of island for a particular approach:** It is noted from the proposed submission that islands Boavista, Brava, Fogo, Maio and Sao Nicolau from Cape Verde are using SB guidelines approach while remaining islands Sal, Sao Vicente, Santo Antao and Santiago are using grid tool approach for development grid emission factor. However the criterion for selection of an island for a particular approach is not clear in the proposed submission. The DNA is requested to provide this criterion in order to justify the selection of the approach for a particular island in terms of conservativeness and consistency.	Documentation provisions, data quality for use of secondary data, data relevance, consistency paragraph 11 (a) to (k) of the QA/QC Guidelines	The Republic of Cape Verde has chosen to revise its original submission in order to apply the tool to four islands, out of the nine islands in Cape Verde, due to the following reasons: 1. Sal and Sao Vicente islands were revised in order to address issue 2 on the determination of the Baseline Emission Factor raised by the Secretariat during the second submission. It was observed that the applicability of the guidelines was limited by the fact that renewable technologies produce aggregately about the 23-24% of the output Oi of the power sector in each island. By applying the guidelines, this situation would have resulted into a baseline emission factor of zero and the non-additionality of wind technology in Sal and Sao Vicente islands, which does not reflect the real situation, when wind technologies do face barriers (e.g. as depicted in table 2 below, capital investment costs Euro/kW of wind power is double those of conventional fossil fuels), and fossil fuels still represents the major source for electricity generation contributing to a grid emission factor (GEF) that is far more than zero, as	Closed. The justification provided by the DNA for selection of a particular approach for a particular island i.e. either using an approach provided in SB guidelines or in grid tool is noted.

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			demonstrated by the GEF calculated in line with the tool (see page 24 below). Therefore, considering the limitation of the guidelines with reflecting the real country situation and the unjustified negative impact on both additionality demonstration and baseline emission factor determination, which would have discouraged the development of CDM project activities and POA in the islands, it has been decided to select Sal and Sao Vicente islands for tool approach for the standardisation of the GEF. 2. Santiago and Santo Antao islands were revised following issue 3 raised by the Secretariat during the second submission. Such issue was raised on the calculation method of the cumulative plant output for the specific cases of Santo Antao and Santiago, where the baseline emission factor could not be determined in line with the requirements of guidelines (i.e. based on the last three years cumulative output) since 3 years data were not available for each plant due to decommissioning/commissioning during the triennium. At the time of preparation of the third submission the two remaining options were assessed: a) using one year data instead of three or b) applying the tool. Option a was	

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			found to be the less preferred option since complete information on generation output of all the plants currently connected to the grid was not available for a given year. Option b, on the other hand, was found to be the method that could provide a more accurate estimation of the carbon intensity of the current grid. Therefore, considering the limitations of the guidelines and the possibility to select the method that could better reflect the carbon intensity of the grid in the above mentioned islands, it has been decided to select Santo Antao and Santiago islands for tool approach for the standardisation of the GEF. 3. In Cape Verde, each of the 9 islands has its own grid that is not interconnected with the others, and will not be interconnected in future; hence, the islands should be regarded as independent electricity systems. Guidelines or tool approach has been selected in order to address the issues raised by the Secretariat and to reflect, in a more realistic way, the baseline emission factor of each island. Therefore, there is no lack of consistency if different approaches (guidelines or tool) are selected for different islands; each grid is treated consistently from the point of view of	

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			the selected approach. Moreover, the guideline and tool approaches have been applied consistently throughout the submission. 4. Conservativeness has been ensured within each selected approach. Any comparison in term of conservativeness between guidelines and tool is not applicable, considering that the two approaches follow different methods for the determination of the baseline emission factor that are both valid.	

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Document information

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