Quality Control (QC) report

Sectoral scope	Energy industries (renewable - / non-renewable sources)
Name of DNA	DNA of Cape Verde
Primary person for the QC report	Mr. Jansenio Delgado
Contact info of the contact person	Jdelgado@ecreee.org +238 260 4630
Implementation date of QC procedures	January 2013 - 3 years from approval of this SB

Please describe how the QC procedures were implemented

The DNA of Cape Verde has designated the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) to be responsible for this standardized baseline development and maintenance. ECREEE acts on DNA's behalf in this case, whilst keeping the DNA office duly informed along the process of developing and maintaining this standardized baseline. ECREEE is directly involved in the communication with UNFCCC under the official designation of the CDM DNA office of Cape Verde.

The DNA or ECREEE sends a request to Electra, ARE to ask them for providing the data required for the standardized baseline including the grid emission factor calculations. This data request constitutes on its own a data delivery protocol, as described by the most recent EB procedures and regulations.

The data are collected according to a specified data format (the sectoral specific template has been submitted to the secretariat). In other words, for each generation facility, Electra and ARE should provide:
1. the amount of electricity sent to the power grid/distribution network,
2. fuel consumption per type of fuel as well as the NCV of each fuel where needed.
3. The data request also contains information on the units in which the data should be reported, as well as the data vintage (period of time when data are reported).

Further instructions concerning the collection of the raw data and its processing are generally not necessary, because Electra and government bodies already have in place their solid internal QC/QA procedures as described below. For the Island of Boavista, data are collected from the ARE or where relevant, the Ministry of Tourism, Industry and Energy – MTIE may be requested to obtain the data from the plant directly.
All raw data is provided and submitted by the individual power plants in the form of reports to Electra head office, then later Electra sends to the government bodies and at the same time, Electra publishes the annual reports with all of the data and information. Cabeolica publishes its own annual reports independently.

The data collection process for each parameter is described below:
1 . Electricity generation and delivered to the grid data is measured using calibrated and certified meters located at each plant. Like in other countries, those meters are used for metering the electricity supplied to the grid.
For the case of Cabeolica and Electric Wind, these meter readings are the basis for settling the payment that each generation facility receives from Electra. The installed meters should have a minimum accuracy class 2.0 and are calibrated regularly in accordance with the relevant national regulations and requirements set out by national utility. The data on electricity generation and supply to the grid is produced by Electra continuously and regularly reported to ARE and/or MTIE through official reporting lines/processes.
2. Fuel consumption data is measured using scales (fuel oil and diesel). All meters are certified as per the relevant Cape Verde national standards and those requirements set by Electra. The annual consumption is established by taking inventory at the beginning and end of each year and the fuel purchase data throughout the year (for all types of fuels). The values are produced by Electra on a monthly basis and annual values are aggregated.
3. The NCVs for the fuel used in each power plant are taken directly from the fuel supplier. As a small island country, there are no specialized labs involved in doing regular testing of the NCVs. However, it is considered that supplier data is of highest quality.

The raw data for these parameters are screened internally and aggregated annual basis for the purpose of this standardized baseline. They are available also on monthly basis. While the monthly reports are of preliminary nature because they do not reflect any of the reviews and corrections performed by Electra, the annual reports by

Electra involves a thorough review of the entire data set for consistency and accuracy.
The data received from Electra or MTIE of Cape Verde is further reviewed by DNA through ECREEE as the designated body and its highly competent energy experts. The data is compared against data from previous years, which are also shown in Electra annual reports published online.
In case, in the process of review, any inconsistencies are identified, e.g. typos, too high or too low efficiency of electricity generation, etc., further clarifications are requested from Electra/MTIE. If necessary, power plants may be contacted directly to provide clarifications.
In case no errors, inconsistencies and problems are identified, these data sets will be used for the standardized baseline. In case of errors, inconsistencies and problems, the data set will be used only after careful review and clearance by Electra/MTIE with a confirmation that such identified issues are resolved.
As ECREEE is working on behalf/closely with the DNA office, the entire process is involving the DNA office by keeping the DNA in copy and the DNA office may provide input and guidance at any time during this process.

Please specify how the credibility of the data sources was checked.

The data source is Electra/Cabeolica/MTIE. These are national utility/government bodies and independent bodies or private company and these are the only bodies in Cape Verde that have the mandate to possesses full, complete, accurate and traceable information on the operation of the power sector in the country.
Where Electra/Cabeolica/MTIE is mentioned together, it mainly refers to Electra as this is the body directly dealing with the national data. When MTIE is mentioned, it is mainly to deal with missing data for example from Boa Vista since MTIE is in a position to request such data in case of errors or missing values upon request by ECREEE. It is expected that under normal and usual situations, the data sets provided by Electra can be of highest quality and do not contain any errors of significant nature.

Please specify how the accuracy of the data was checked.

The accuracy of the data is checked at two levels:
First, Electra, Cabeolica and MTIE (in case of Boavista data) checks the data received from the individual plants for consistency and accuracy. It must be noted that the level of accuracy for fuel consumption and electricity generation data is very high because these data are used as a basis for commercial transactions between companies and are confirmed by invoices, before they are submitted to government bodies. These data are also used for economic regulation by the regulatory agency.
The data on NCV has also high level of accuracy because they are provided by fuel suppliers and such values are of critical importance to the daily operation of the power plants and therefore it is of highest level of interest for power plants to ensure the highest level of quality of these data.
Second, the data are checked again by the experts of the ECREEE as appointed by the Cape Verde DNA, especially against data from previous years and any potential issues, errors, inconsistencies would be clarified and explained before the datasets are used for calculations.
To conclude, it is ensured that the datasets provided by the utility and government bodies following the above described processes are of high level of quality and accuracy.

Please specify how the consistency was achieved and how the data vintage provision was met.

The data for each year is collected and reported in the same format and is subject to the same reporting requirements/process as specified in the original data request by ECREEE on behalf of the DNA to Electra/MTIE. This allows the data to be updated at regular intervals (annually), so that they are traceable and are comparable over time.
The data is reported on an annual basis (January 1 – December 31) for each calendar year, which allows the required data vintage provisions to be met. The data is usually released with a delay between several months to maximum one year due to the need of processing and checking for consistency of all the data from individual power plants. Normally, we expect the datasets to be ready for publication within 6-7 months' time following the end of the previous calendar year.
This data delivery protocol requires Electra/Cabeolica/MTIE to provide information on all existing grid connected power plants, or independent power plants on each island. Electra as a national utility possesses most information on the operation of the grid-connected power plants in Cape Verde and the data on Boavista are collected through the MTIE. As mentioned above, MTIE may be involved in case of missing values under special situations.
For consistency issues, the data received would always be checked by the ECREEE experts on behalf of the DNA. It

should be mentioned that each year's annual report of Electra already compares with the previous years' data, which can already serve as a basis for cross checking yearly data. The above procedures therefore can ensure that the reported and used values are of high level of consistency.
Please specify how the completeness was achieved.
The potential risk of not reporting, omitting any of the generation facilities is not possible as the country has mandatory reporting requirements for the above information.
Please specify how the transparency was achieved.
In Cape Verde, most of the above data are publicly available on the website of Electra through its annual reports. This already ensures the highest level of transparency of data and information. The data from Cabeolica and Electric Wind (reported through Electra since 2011, for example) are made easily accessible, too. Any additional information required is provided by MTIE or Electra following the request by ECREEE on DNA behalf.
Please specify major issues and uncertainties identified during the QC procedures.
Because all of the data are provided by national utility Electra, IPP Cabeolica and government independent body following stringent reporting lines, the level of uncertainty is extremely low. In addition, the internal reporting requirements are clearly set by the Electra and MTIE and most of the data are made public available since many years, except the very small newly established company Electric Wind, and newly established Cabeolica holding a portfolio of CDM wind projects. Therefore, there are no main uncertainties involved in this process.
Please specify major corrective actions taken during the QC procedures.
There are no specific corrective actions required in this case.
Please justify the conservativeness of the approaches taken during the QC procedures
The approach follows an approved UNFCCC tool "Tool to calculate grid emission factor of an electricity system" thus all conservative measures are already taken into account within the applied tool/methodology.
Please summarize key findings and present a plan to improve the data quality in future
Cape Verde as a small island country has a solid QA/QC process to ensure high level of quality and accuracy of the data collected for this standardized baseline. However, the procedure will be improved in line with any changes in the procedures and requirements for establishment of standardized baselines.

Date to of QC report finalization

24/09/2014

Signature of the DNA