

## QUALITY CONTROL (QC) REPORT

<b>Sector:</b> Power		
<b>Name of DNA:</b> Rwanda		
<b>Primary Person Responsible for QC Procedures:</b> Ms UWIMANA IMMACULEE		
<b>Contact of the Primary Person Responsible:</b> RwandaDNA@gmail.com		
<b>Implementation Dates of QC Procedures:</b> March 2014 – 3 years from approval of SB		
<b>Please describe how your QC procedures were implemented</b>		
<p>All sources of data are included in the report detailing the calculation of the Rwanda Grid Emission Factor (GEF) Standardized Baseline (SB). The data in the SB is presented in a manner which allows for reproduction of calculations. Key data parameters can be seen below in Table 1.</p>		
<b>Data</b>	<b>Source</b>	<b>Method of cross checking</b>
Annual generation	Rwanda Electricity, Water and Sanitation Authority (EWSA)	SCADA system, individual plant records
Fuel consumption	EWSA	Fuel measurements, fuel invoices
Net calorific value (NCV)	IPCC 2006	
Fuel emission factor	IPCC 2006	
<p>Table 1: key data parameters</p> <p>EWSA is a company that distributes power and water in Rwanda. As a national utility, the company has been in existence since 1976, as ELECTROGAZ<sup>1</sup>.</p> <p>All data collected will be archived electronically and will be maintained for at least 5 years by the DNA. All data will be monitored regularly by EWSA. Each plant submits a monthly report of generation and fuel consumption to EWSA. EWSA maintains records of:</p> <ul style="list-style-type: none"> <li>• Plant commissioning and de-commissioning dates</li> <li>• The plant technology and fuel(s) used</li> <li>• The volume of fuel used</li> <li>• The net electricity generation</li> <li>• The plant meter calibrations.</li> </ul> <p>EWSA utilizes a supervisory control and data acquisition (SCADA) system to allow for constant monitoring of power plants; all data is recorded at the National Control Center. Using the data from the SCADA system, cross checked with power plant records, EWSA maintains annual electricity generation records. Fuel consumption data is gathered through fuel delivery measurements, cross checked with fuel receipts. Meters are calibrated every 6 months – 2 years, aligned with the meter instructions, by the Rwanda Bureau of Standards.</p>		
<b>Please specify how the credibility of the data sources was checked.</b>		
All data is primary data, coming directly from EWSA, the official source of electricity related data in Rwanda.		

<sup>1</sup> <http://www.ewsa.rw/index.php/En/about-ewsa/history>

212

<b>Please specify how the accuracy of the data was checked.</b>
<p><i>Accuracy</i></p> <p>The accuracy of the data was ensured by acquiring by the official data source, EWSA. The accuracy was also checked by the DNA Steering Committee reviewing the GEF SB spreadsheets. Fuel consumption and electricity generation was checked to ensure the data was accurate. The EF of each plant in each pertinent year was also checked to confirm that the EF of one plant was similar in all years reviewed and similar to other plants of the same technology.</p> <p><i>Relevance</i></p> <p>All data used in the GEF calculations is relevant to the calculation, as per the "Tool to calculate the emission factor for an electricity system, version 4.0".</p>
<b>Please specify how the consistency was achieved and how the data vintage provision was met.</b>
<p>All data was presented in the same format: annual net generation in kilowatt/hours (kWh) and annual fuel consumption in liters (converted to tonnes applying the same density values for the same fuel).</p> <p>The operating margin was calculated using 2011-2013 data; 2013 data is the most current data available. The data used to calculate the percentage of low-cost must run generation and fossil fuel generation was from 2009-2013, the most recent 5 years.</p>
<b>Please specify how the completeness was achieved.</b>
<p>Data was confirmed by EWSA as being complete. Data was checked by the DNA Steering Committee for any completeness issues; data was found to be complete.</p>
<b>Please specify how the transparency was achieved.</b>
<p><i>Transparency</i></p> <p>Data used is publicly available data. Generation and fuel consumption data is available upon request from the Electricity Generation Unit in EWSA. Data is provided in a manner which can allow for reproduction of calculations.</p> <p><i>Traceability</i></p> <p>All data sources are presented and data is accessible by other parties.</p> <p><i>Objectivity</i></p> <p>The DNA Steering Committee is comprised of individuals from various government agencies, the private sector, civil society and academic institutions. It is therefore an unbiased committee.</p> <p><i>Security</i></p> <p>No confidential data was utilized; data is publicly available.</p>
<b>Please specify major issues and uncertainties identified during the QC procedures.</b>
<p>No major issues or uncertainties were identified.</p>
<b>Please specify major corrective actions taken during the QC procedures.</b>
<p>No major corrective actions were taken.</p>
<b>Please justify the conservativeness of the approaches taken during the QC procedures.</b>

22

The use of a 10% default value for off-grid diesel electricity generation is assumed to be conservative due to Rwanda having insufficient generation to meet demand and frequent load shedding.

**Please summarize key findings and present a plan to improve the data quality in the future.**

All data used is found to be consistent, transparent, current, accurate and reliable. Data is monitored and reported in an organized manner, with cross checks in place.

In the future, significant additional off-grid generation is expected to be commissioned. A report to analyze the off-grid diesel consumption may be relevant to conduct.

Date

23 MAY 2014

Signature of DNA

Mukankomeje

Dr. Rose Mukankomeje

Director General REMA

