



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:	Standardized baseline for institutional cook stoves in Uganda
Reference of proposed standardized baseline:	PSB0028
Name(s) of the Party or Parties to which the proposed standardized baseline applies:	Uganda
Name(s) of the proponent(s) of the proposed standardized baseline:	The Designated National Authority of Uganda
History of the submission & assessment:	<p>1) 21/01/2015: First submission was received</p> <ul style="list-style-type: none"> • 17/03/2015: Initial assessment was finalized and the proposed standardized baseline (PSB) was uploaded on website • 26/03/2015: The assessment was finalized for data quality aspects and quality assurance/quality control (QA/QC) findings were raised in accordance with requirements of "Guidelines for quality assurance and quality control of data used in the establishment of standardized baselines" (version 2.0) (QA/QC guideline). <p>2) 14/05/2015: Second submission was received</p> <ul style="list-style-type: none"> • 02/07/2015: The assessment was finalized for data quality aspects and the submission was considered to be compliant with QA/QC guideline, and therefore all QA/QC findings were closed. • 03/07/2015: The draft standardized baseline (DSB) was sent to DNA to receive its agreement. The agreement was received on 09/07/2015. • It was agreed to recommend the draft standardized baseline (DSB) to the Board for approval.

<p>Conclusion:</p> <p>(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”</p> <p>(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”:</p>	<p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> N/A</p> <p><input checked="" type="checkbox"/> One of the four approved approaches:</p> <p><input type="checkbox"/> The “Guidelines for the establishment of sector specific standardized baselines”;</p> <p><input checked="" type="checkbox"/> A methodological approach contained in an approved baseline and monitoring methodology</p> <ul style="list-style-type: none"> - AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass” (version 07.0) - AMS-I.E “Switch from non-renewable biomass for thermal applications by the user” (version 06.0); <p><input type="checkbox"/> A methodological approach contained in an approved methodological tool;</p> <p><input type="checkbox"/> The “Guideline: Establishment of standardized baselines for afforestation and reforestation project activities under the CDM”.</p>
<p>Date when the assessment report is completed:</p>	<p>09/07/2015</p>

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 institutional cook stove sector in Uganda.
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 valid approved methodologies (AMS-II.G or AMS-I.E) .

A.2. Description of the proposed standardized baseline

5. Key data parameters and data sources:

Key data parameters <i>(e.g. total production of output, kiln technology, fuel type & consumption etc.)</i>	Data sources <i>(e.g. individual facilities, government documents, literature etc.)</i>
Baseline woody biomass consumption for institutional cook stove	Data from government authorities, international institutions and other literature
Efficiency of pre-project institutional cook stove	Data from government authorities, international institutions and other literature
Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass	http://cdm.unfccc.int/DNA/fNRB/index.html

6. The scope and coverage of the data:

- (a) The scope of the standardized baseline is institutional cook stoves in Uganda, in particular for the following institutions:
 - (i) Boarding Schools;
 - (ii) Day Schools;
 - (iii) Residential institutions: Prisons, Plantation estates and Hospitals (excluding commercial institutions such as restaurants and hotels).
- (b) The data on the above parameters (i.e. baseline woody biomass consumption, efficiency of pre-project stove, and fraction of non-renewable biomass) represents all regions in the country.

SECTION B. Summary of Assessment

B.1. Assessment process

7. 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 AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass” (version 07.0) and AMS-I.E “Switch from non-renewable biomass for thermal applications by the user” (version 06.0).

8. The assessment consisted of the following:

- (a) Review of the documents submitted;
- (b) Identification of issues (assessment findings) and drafting 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.
9. A desk review was performed on the following data/information submitted as part of the PSB.
- (a) First submission which was considered in the initial assessment included:
 - (i) Proposed standardized baseline form (F-CDM-PSB);
 - (ii) Excel spreadsheet for small-scale thresholds;
 - (iii) QC report.
 - (b) Assessment findings were communicated to the DNA on 26/03/2015, in response to which the DNA submitted the revised documents and additional relevant documents.
 - (c) Second submission dated 14/05/2015 included:
 - (i) Revised Proposed standardized baseline form (F-CDM-PSB);
 - (ii) QC report;
 - (iii) Stakeholder meeting notes;
 - (iv) Feasibility study report;
 - (v) Institutional cook stoves report;
 - (vi) Responses to the initial findings.
 - (d) Review of the additional submissions clarified all the issues raised by the secretariat.

B.2. Assessment opinion:

10. In accordance with the QA/QC guidelines, the secretariat concluded that the all of 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. For example, a feasibility study was conducted prior to the development of SB, followed by stakeholder consultation. During this process, key sources of data and information were identified, and further cross checks with other sources were carried out.
 - (b) QC activities were clearly documented in the submitted QC report.
 - (c) Consultation process was clearly documented in the meeting notes and the QC report provided by the DNA.
 - (d) All relevant documents and data were available for assessment.
 - (e) The key data sources were government authorities and international institutions, for example, Ministry of Energy and Mineral Development, Ministry of Education and Sports, Uganda Bureau of Statistics, East African Community (EAC), Food and Agriculture Organization (FAO), United Nations Population Fund (UNFPA), and Global Village Energy Partnership (GVEP). To reconfirm the data values and statements, other literature predominantly from peer-reviewed international journals

have been also been referred to. Thereby, the credibility and accuracy of data sources was checked.

- (f) The data scope was comprehensive enough to produce “true and fair” representative SB in the sector.
 - (g) The key data and information are consistently presented, e.g. in order to determine the baseline fuel wood consumption, the per capita per year value in mass terms has been taken.
 - (h) The assumptions and conservative approaches for data processing and calculations were justified.
 - (i) There were no confidential data for which data security provisions were necessary.
11. 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.
 12. The secretariat concluded that the PSB complied with the approach of AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass” (version 07.0) and AMS-I.E “Switch from non-renewable biomass for thermal applications by the user” (version 06.0).

Appendix 1. Findings and resolutions

C L N o.	Request for 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 (open/closed)
1	<p><u>Woody biomass consumption from literature in Table 5</u></p> <p>Table 5 provides woody biomass consumption values extracted from various literatures and it calculates the average consumption per person per annum, which is 0.589.</p> <p>However, it is not clear how the vintage of data, applicability of the data for the regions covered by the proposed SB and survey methodology used by the studies, uncertainty related to data has been considered in the proposed value of 0.589.</p> <p>Therefore, the DNA is requested to further elaborate how the above issues have been considered in the proposed standardized value.</p>	<p>Traceability</p> <p>As per paragraph 15(k) of the Guideline on Quality assurance and quality control of data used in the establishment of standardized baselines, version 2.0</p>	<p>It is understood that the data available on per capita firewood consumption is not exhaustive and disintegrated for various regions. However, enough research is available over the past few years to suggest that biomass is the key source of energy for cooking needs and consumption levels have relatively remained unchanged because there has been only a marginal improvement in baseline cooking techniques.</p> <p>Uganda Bureau of Statistics (UBOS) is the principal data collecting, processing, analysing and disseminating agency responsible for coordinating and supervising the National Statistical System in Uganda (http://www.ubos.org/about-us/). As per the latest available UBOS report on Uganda national household survey, 2012/2013:</p> <ul style="list-style-type: none"> - Combined, biomass fuels (firewood + charcoal) constitute the main fuel for cooking for 96 percent of the households (page 127); - The regional characteristics are indicated as: Central, Eastern, Northern and Western. Except for Kampala and the central region where charcoal usage is more, rest of the regions have more than 85% firewood usage as cooking fuel. Table 9.9 of the report provides the cooking fuel information for the respective regions. - Further table 9.10 of the report provides the trend of cooking fuel use based on previous surveys 2005/06, 2009/10 and 2012/13. The overall percentage of households that used biomass fuels across the three surveys has remained consistently high at about 95 percent. - Furthermore, table 2.1 of the report provides the population distribution and Figure 8.1 provides the median dietary energy consumption. 	Closed

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			<table border="1" data-bbox="1048 387 1776 823"> <thead> <tr> <th data-bbox="1048 387 1178 480">Region</th> <th data-bbox="1178 387 1310 480">Population (%)</th> <th data-bbox="1310 387 1776 480">Median dietary energy consumption (Kcal/person/day)</th> </tr> </thead> <tbody> <tr> <td data-bbox="1048 480 1178 536">Central</td> <td data-bbox="1178 480 1310 536">23.0</td> <td data-bbox="1310 480 1776 536">2108</td> </tr> <tr> <td data-bbox="1048 536 1178 592">Eastern</td> <td data-bbox="1178 536 1310 592">28.9</td> <td data-bbox="1310 536 1776 592">2011</td> </tr> <tr> <td data-bbox="1048 592 1178 647">Northern</td> <td data-bbox="1178 592 1310 647">20.9</td> <td data-bbox="1310 592 1776 647">1999</td> </tr> <tr> <td data-bbox="1048 647 1178 703">Western</td> <td data-bbox="1178 647 1310 703">23.5</td> <td data-bbox="1310 647 1776 703">2589</td> </tr> <tr> <td data-bbox="1048 703 1178 759">Kampala</td> <td data-bbox="1178 703 1310 759">3.7</td> <td data-bbox="1310 703 1776 759">2220</td> </tr> <tr> <td data-bbox="1048 759 1178 823">Uganda</td> <td data-bbox="1178 759 1310 823">100</td> <td data-bbox="1310 759 1776 823">2157</td> </tr> </tbody> </table> <p data-bbox="1048 879 1928 1078">Therefore, apart from national level values, sub-regional values have also been included (wherever available), to account for the socio-economic/regional variations: Soroti - Eastern region; Hoima and Kibaale districts - Western region; and Uleppi (Arua district) - Northern region. Kampala and central region however has not been cited as they have more of charcoal usage.</p> <p data-bbox="1048 1129 1928 1412">From the above, the following could be construed: - Data vintage has not had any impact on the stated values. Moreover the values are consistent with the UBOS surveys. - Although, sub-regions have been included, simple averaging has been done without accounting for the population distribution. Given the low dietary energy consumption and low population in Northern region and higher values in other region the averaging results in conservative value. Moreover, even the averaging of cited national level values is higher than</p>			Region	Population (%)	Median dietary energy consumption (Kcal/person/day)	Central	23.0	2108	Eastern	28.9	2011	Northern	20.9	1999	Western	23.5	2589	Kampala	3.7	2220	Uganda	100	2157	
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			<p>the proposed SBL value.</p> <p>Uganda happens to have the highest fuelwood consumption at 1.77 m3 per capita per year in the African region (Brouwer et al., 2004). The Biomass Energy Strategy (BEST), 2013, Uganda, by the Ministry of Energy and Mineral Development indicates the following: household fuelwood consumption – 20.9 million tonnes; charcoal consumption – 1.5 million tonnes; Population projection for 2015 – 39,112,000 (MEMD, 2013), translating to fuelwood consumption of 0.764 tonnes/year/capita (assuming charcoal to wood consumption as 6).</p> <p>Based on the cited literature, the average fuel wood consumption per person per annum in Uganda is conservatively arrived at 0.589 tons.</p>	
2	<p><u>Woody biomass consumption for various institutional setups in Table 6</u></p> <p>1) For Day Schools, half the value estimated for Boarding Schools (0.1904) is proposed. The DNA is requested to provide further justification.</p> <p>2) For Commercial Institutions (restaurants, hotels, eateries), the same value (0.589) is proposed. The DNA is request to provide further justification.</p>	<p>Traceability</p> <p>As per paragraph 15(k) of the Guideline on Quality assurance and quality control of data used in the establishment of standardized baselines, version 2.0</p>	<p>1.In Day Schools, not all the meals get prepared. Day Schools provide at least one meal¹. In Day Schools (non-residential institution), the stove is usually used from morning up to around 2 p.m., as compared to boarding school (residential institution), where the stove is usually used from morning up to around 6 p.m. for cooking all meals (breakfast, lunch, supper and sometimes evening tea)². Therefore, unlike boarding school the fuelwood consumption in Day schools will be lesser. As a conservative estimate, therefore half the value of boarding school has been taken for Day schools.</p> <p>Although, as per literature, per capita fuelwood consumption for schools is</p>	Closed

¹ <http://www.gcnf.org/library/country-reports/uganda/2006-Uganda-School-Feeding.pdf> ;
http://www.fao.org/fileadmin/templates/est/COMM_MARKETS_MONITORING/Dairy/Documents/Uganda.pdf ;
http://econ2.econ.iastate.edu/faculty/orazem/TPS_papers/Alderman_Gilligan_Lehrer_FFE_School_Participation_04_2010.pdf
² http://www.folkecenter.dk/mediafiles/folkecenter/pdf/JEEP_Energy_Saving_Stoves.pdf

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			<p>cited as 155 kg/head/year (Disappearing forests of Uganda: The way forward , 2001), this could be on account of suppressed demand. In developing countries, the energy service levels at times are insufficient to meet the needs and demands, mainly due to lack of financial means or inaccessibility to energy infrastructure. The institutions at times lack funds, thereby cooking activities are carried out only once a day and all three meals are cooked in one instance. This has been observed in prisons or some schools where they lack funds to buy enough fuel wood. In case these institutions have access to efficient means of cooking and sufficient funds are available, they would switch to three times a day cooking schedule. For Schools (Breakfast, midday meals and academic achievement in rural primary schools in Uganda: implications for education and school health policy, 2012) and Prisons (Uganda Prisons in shilling 21.2bn shortfall for food, 2014), it is observed that the resources are not enough to cater to cooking needs of children and prisoners. In such scenario, an exhaustive baseline survey will only provide biomass consumption values, which are lower than required values of biomass consumption.</p> <p>In light of the above, the value being proposed for day schools is 0.1904 tons/person/yr.</p> <p>2.For commercial Institutions (restaurants, hotels, eateries) preparing all meals and operating throughout the year, it is assumed that the consumption would not be less than the average fuel wood consumption. As per literature, per capita fuelwood consumption for kiosks and restaurants is cited as 365 kg/head/year (Disappearing forests of Uganda:</p>	

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			The way forward , 2001). In the absence of more literature and robust dataset, for now the value proposed for commercial institutions is being excluded in this submission.	
3	<p>Reference</p> <p>Key values and information are extracted from various references. While many could be accessed, some references are not accessible. The DNA is requested to provide the secretariat the report/papers cited under the following references.</p> <p>For the following references, the link is available, but different value is found in it.</p> <p>1) D.Byarugaba, F. K. (2001). Disappearing forests of Uganda: The way forward. Current Science: Science in the Third world, 81 (8). http://www.iisc.ernet.in/currsci/oct252001/936.pdf</p> <p>2) Uganda Bureau of Statistics. (2009). Uganda Education Statistical Abstract. Annual Report, Ministry of Education and Sports, Statistics section. http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/abstracts/2009Statistical %20Abstract.pdf</p>	<p>Traceability</p> <p>As per paragraph 15(k) of the Guideline on Quality assurance and quality control of data used in the establishment of standardized baselines, version 2.0</p>	<p>The key sections of the various references have been highlighted and being submitted.</p> <ol style="list-style-type: none"> 1. From the reference document: D.Byarugaba, F. K. (2001). Disappearing forests of Uganda: The way forward..., average value was used for the cited range 490-590 kg/head/year. The same document also indicates annual per capita consumption of 0.6 tonnes of fuelwood. 2. The reference to number of schools has been wrongly cited. The values emerge from the following link: http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/PNSD/2009EducStatAbst.pdf. The break-up of the stated value 25,993 is as follows: Primary Schools (19,877), Pre-Primary (2,469), Secondary Schools (3,149), Post Primary (139) and Non Formal Schools (359). 3. The document - Ministry of Energy and Mineral Development. (2011). Inspection and evaluation of institutional stoves adoption and performance in schools and institutions, is being submitted. 4. The referred source could be accessed at the following link: http://www.hedon.info/BP29_HouseholdEnergyActivitiesInUganda 	Closed

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	<p>For the following references, the link is not provided.</p> <p>3) Ministry of Energy and Mineral Development. (2011). Inspection and evaluation of institutional stoves adoption and performance in schools and institutions</p> <p>4) P J Turyareeba, F. R. (2010). 3. Ugandan Institutional Stoves. Boiling Point (29).</p>			
4	<p>QC report</p> <p>In accordance with the “Guideline for quality assurance and quality control of data used in the establishment of standardized baselines”, the DNA is requested to provide QC report, which should elaborate how the data quality objectives were met.</p>	<p>Traceability and Documentation provisions</p> <p>As per paragraph 15(k) & 31 (e) of the Guideline on Quality assurance and quality control of data used in the establishment of standardized baselines, version 2.0</p>	<p>As per CDM-EB63-A28-Procedure: Development, revision, clarification and update of standardized baselines, Version 03.1, para 12(c), the DNA is required to submit an assessment report on the quality of the data collection, processing and compilation to establish the proposed standardized baseline in accordance with the “Guidelines for quality assurance and quality control of data used in the establishment of standardized baselines”. However further in para 14 it is stated: Notwithstanding the provision in paragraph 12, for a Party with 10 or fewer registered CDM project activities as of 31 December 2010, the assessment report referred to in paragraph 12(c) may be omitted in up to the first three submissions of a proposed standardized baseline regardless of the sector for the Party.</p> <p>For Uganda, therefore it was presumed that a QC report is not required. Nevertheless, referring to the QA/QC guidelines following could be stated about the data used in the establishment of the standardized baseline.</p> <p>Secondary data sources such as data collected by other government</p>	<p>Closed (QC report was submitted)</p>

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			<p>authorities and international institutions have been used for the SBL development. The data used comes from the following sources:</p> <ul style="list-style-type: none"> - Ministry of Energy and Mineral Development; - Ministry of Education and Sports; - Uganda Bureau of Statistics; - East African Community (EAC); - Food and Agriculture Organization (FAO); - United Nations Population Fund (UNFPA); - Global Village Energy Partnership (GVEP) <p>Further, to reinforce certain data value(s) and statements, other literature predominantly coming from peer reviewed international journals has also been cited, such as:</p> <ul style="list-style-type: none"> - Agricultural Engineering International: CIGR Journal; - International Journal of Scientific and Research Publication (IJSRP); - Open journal of Forestry; - Journal of Sustainable Forestry; - Current Science; - Research Journal of Applied Sciences; - Boiling Point. <p>Data quality is thereby ensured as the datasets are relevant, complete, consistent, credible, current, accurate and objective.</p> <p>Furthermore, a stakeholder consultation was also carried out that provided with information towards development of the SBL.</p>	
5	<p>Public consultation report: In accordance with the “Guideline for quality assurance and quality control</p>	<p>Transparency and Documentation provisions</p>	<p>A stakeholder consultation was held on 20th May 2014, minutes of meeting and the participant list of the same is being submitted. The issues raised during the consultation have been addressed in the SBL submission.</p>	<p>Closed</p>

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	of data used in the establishment of standardized baselines”, the DNA is requested to provide a public consultation report. Please note: public consultation report can be included in the above QC report.	As per paragraph 15 (j) & 31 (d) of the Guideline on Quality assurance and quality control of data used in the establishment of standardized baselines, version 2.0		

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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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